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Classification, Cladistics, and
Natural History of Species of the
Subgenus *Anisodactylus* Dejean
(Insecta: Coleoptera: Carabidae:
Harpalini: *Anisodactylus*)

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Geology*

Rodney Watkins, Editor

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Abstract

This paper revises the taxonomy and cladistics of the species of the nominate subgenus of *Anisodactylus* Dejean. Conclusions are derived from examination of type specimens and 20,491 nontype adults, including 885 collected and studied during field work by me. The examination shows that the subgenus contains 21 species with all but one (*A. karennius*) restricted to the Nearctic and Palearctic Regions.

The revision includes three keys: a key to adults of all species and keys to adults of New and Old World species. It also has: notes about recognizing species; descriptions of adult morphological features, discussions of variation among species in character states; listings of synonymies and discussions of new ones; information about natural histories; and descriptions of geographical ranges.

The paper describes the new species *A. pseudagricola*, type locality Cornwall, Connecticut. It also designates a neotype for *Harpalus melanopus* Haldeman, 1843.

New synonyms are as follows, with junior synonyms listed first: *Harpalus depressicollis* Motschulsky, 1859 = *A. californicus* Dejean, 1829; *A. formosanus* Ito, 1992 = *A. tricuspis* Morawitz, 1863; and *A. tricuspis nomurai* Ito, 1992 = *A. tricuspis tricuspis* Morawitz, 1863. *Pseudhexatrichus* Noonan, 1973 is treated as a junior synonym of *Anisodactylus* Dejean, 1829.

Lectotypes designated are: *Anisodactylus confusus* LeConte, 1851; *Anisodactylus consobrinus* LeConte, 1851; *Anisodactylus harrisii* LeConte, 1863; *Anisodactylus incertus* Casey, 1914; *Anisodactylus luctuosus* Dejean, 1829; *Anisodactylus nemorivagus atripes* Ganglbauer, 1900; *Anisodactylus nigrita* Dejean, 1829; *Anisodactylus semipunctatus* LeConte, 1860; *Anisodactylus striatus* LeConte, 1848; *Anisodactylus tricuspis* Morawitz, 1863; *Harpalus atricornis* Stephens, 1832; *Harpalus calceatus* Stephens, 1832; *Harpalus interpunctatus* Kirby, 1837; *Harpalus nigricornis* Stephens, 1832; and *Harpalus rufitarsis* Stephens, 1832.

Transfers of species to other supraspecific taxa are: *A. signatus* Panzer, 1797 to subgenus *Pseudanisodactylus* Noonan of the genus *Anisodactylus*; *Anisodactylus abaculus* Bates, 1889 to genus *Progonochaetus* Müller; and *Anisodactylus schaubergeri* Jedlička, 1932 to genus *Harpalomimetes* Schauberger. Examination of the types of *Anisodactylus abaculus* Bates, 1889 shows that it is a junior synonym of *Progonochaetus cursorius* Dejean, 1831.

The following names are of infrasubspecific rank rather than species or subspecies rank: *A. porosus* Puel, 1931; *A. matheyi* Puel, 1931; *A. epinassei* Puel, 1931; and *A. dvorakovae* Pulpan, 1948.

The type of *Anisodactylus microthorax* Motschulsky, 1849 could not be found, and the form is treated as *incertae sedis*.

A cladistic analysis of the species of the subgenus *Anisodactylus* with the computer program Hennig86 produced an initial set of 439 equally parsimonious trees that were reduced to a final set of 53 by successive character weighting. Examination of the final 53 trees resulted in selection of one as the chosen hypothesis for cladistic relationships of the species. The chosen tree has species arranged in five major lineages.

Members of the subgenus occur primarily in areas with damp soil such as in marshes and swamps and along the borders of ponds. Out of 17 species classified as to amount of moisture in their habitats, three appear hygrophilous, nine occur mostly in places with the soil damp from nearby water or a high water table and another three

occur both in the latter type of habitat and in more mesic places. Two species may be restricted to mesic areas. Most sites where adults were collected had only one species of the subgenus. Fourteen species are represented by more collected males than females. Examination of months of capture of specimens suggests that seven species are spring breeders, with teneral adults emerging in summer or early fall, overwintering and then breeding and laying eggs in spring and summer. Two species are apparently fall breeders, with teneral adults emerging in the spring or early summer, breeding in the fall and with larvae probably being the predominant overwintering stage. Data do not permit classifying the presumed breeding patterns of other species.

Introduction

The world's wetlands have a wide diversity of animals and plants and are of great economic benefit to humans (chapters in Dugan, 1993). However, human modifications of the environment are increasingly destroying them. For example, humans have destroyed approximately half the wetlands present in the lower 48 states of the United States before European colonization (chapters in Dugan, 1993). An important step in protecting wetlands is to understand better the organisms found in them.

Beetles of the nominate subgenus of *Anisodactylus* Dejean are often abundant in wetlands of the temperate Northern Hemisphere. Biologists find the relatively large adults of these insects easy to collect, and these adults are well represented in most museum collections. This publication provides a revision and classification of the species of the subgenus, keys to the species, information about the natural history of taxa and an analysis of their cladistic relationships.

Recognition of *Anisodactylus* as a formal group of insects dates from Dejean (1829). He described the genus and included in it a total of 21 species from various regions such as Europe, tropical Africa, Java and North America. Subsequently, at least 100 papers treated the taxonomy of one or more species of the genus, describing new species, redescribing species, listing species from a given region and providing regional keys to species. None of the papers dealt with the genus on a worldwide basis.

LeConte (1848) was the first worker to recognize that the genus contained several groups warranting subgeneric recognition. He divided it into three groups, the nominate group, the subgenus *Triplectrus* LeConte (now subgenus *Gynandrotarsus* Laferté-Sénéctère) and the subgenus *Aplocentrus* LeConte. Tschitschérine (1898) described the subgenus *Hexatrichus*. Lutshnik (1921) proposed the subgenus *Pseudodichirus*. Puel (1931) provided a key to species of the Palaearctic Region and described the subgenus *Pseudhexatrichus*. In his key to North American species, Horn (1880) defined the *discoideus* group but did not give it a formal subgeneric name. Casey (1914) subsequently treated the group as a separate genus named *Anadaptus* Casey. Lindroth (1968) placed *Anadaptus* back in *Anisodactylus* along with the former genus *Spongopus* LeConte. Noonan (1973) revised the subtribe Anisodactylina, keyed out its genera and subgenera, described *Pseudanisodactylus* Noonan and *Pseudaplocentrus* Noonan as subgenera of *Anisodactylus* and removed from *Anisodactylus* the former subgenera *Amphasia* Newman, 1838 and *Xestonotus* LeConte, 1853.

During approximately the last century a series of regional taxonomic papers helped the characterization of the subgenus and provided useful keys for identification of species. Antoine (1959) treated the species in Morocco. Basilewsky (1950) revised the Harpalini of Africa and Madagascar and showed that Ethiopian Region species formerly placed in *Anisodactylus* belonged to different genera. Blatchley (1910) treated taxa occurring in Indiana. Hatch (1953) provided a key to species of the Pacific Northwest of North America. Treatments of European forms included: Bedel (1879-1881) for taxa of the Seine River; Csiki (1908) for hungarian forms; Everts (1898) for forms from the Netherlands; Freude et al., (1976) for european species; Ganglbauer (1892) for middle european forms; Haberman (1968) for scandinavian taxa; Hansen (1968) for Denmark; Jacobson (1907) for Russia and western Europe; Jeannel (1942) for French forms; Kuhnt (1913) and Reitter (1908) for german forms; Lindroth (1974)

and Lindroth et al. (1986) for British and Scandinavian species respectively; Reitter (1900) for taxa from Europe, central Asia and North Africa; Stierlin (1900) for species from Switzerland; Magistretti (1965) for Italian species; Puel (1931) with a key to all known Palaearctic forms; and Trautner and Geigenmüller (1987) with keys (in both English and German) for European species.

Japanese forms became identifiable with Tanaka's (1958) keys to species and then Habu's (1973) keys and very detailed descriptions of taxa.

In North America the first notable revision of species was that by Horn (1880). The careful order that he brought to the North American forms was destroyed by Casey (1884, 1914 and 1924) who described as species many forms now known not to warrant specific status. Lindroth (1968) made a great contribution to knowledge of North American forms with his excellent keys, descriptions and illustrations of taxa.

Thus by approximately 1990 there were regional keys for all species of the subgenus. However, for some areas workers had to use several different papers to identify specimens. There was no single key to all taxa and no cladistic or biogeographical study of species.

This paper presents a taxonomic and cladistic analysis of all species of the subgenus *Anisodactylus*. The keys to species presented herein treat all known members of the subgenus. There are three keys to species. The first key is worldwide in scope while the second and third keys treat forms from the New and Old World respectively. I discuss the biogeography of taxa of the subgenus *Anisodactylus* in a separate paper (Noonan, 1996a).

The present monograph is part of an ongoing series of papers on the tribe Harpalini. Previous papers are Noonan: (1968 and 1975b) on the genus *Dicheirus* Mannerheim; (1973) with a key to genera and subgenera of the subtribe Anisodactylina and revisions of the subgenus *Gynandrotarsus* Laferté-Sénéctère of the genus *Anisodactylus* and the North American forms of subgenera *Anisotarsus* Chaudoir and *Notiobia* Perty of the genus *Notiobia*; (1974) on the genus *Allendia* Noonan; (1975a) on two Casey species of *Anisodactylus*; (1976) with a synopsis of supra-specific taxa of the tribe; (1981a, 1981b and 1982) on South American *Anisotarsus*; (1985a and 1985b) on the Selenophori Group; and (1990 and 1991) on North American forms of *Harpalus*.

Materials and Methods

Criteria for Recognition of Species and Subunits of Species

For this study I accept the phylogenetic species concept as defined by Nixon and Wheeler (1990).

Recognition and Naming of Groups of Species

Use of the methods described in the section on *Cladistic Analysis* resulted in placement of species into hierarchical categories for which I used the informal terms (arranged in successively less inclusive order) of group and subgroup.

Terms

Terms are those of Noonan (1973, 1985a and 1991).

Cladistic Analysis.

I used the methods of Hennig (1966) as modified by Watrous and Wheeler (1981) and Wiley (1981). Species and their character states were arranged in a matrix (Table 1) alphabetically by species name. The computer program Hennig86 (Farris, 1988) generated trees for analysis via its *ie** command.

After the initial set of trees was generated, successive weighting was applied ("xsteps w"). The successive weighting provided a method for basing grouping on more reliable characters without having to make *a priori* decisions on weighting. As discussed in the section on *Results of Cladistic Analysis*, the successive weighting reduced a large set of trees into a set small enough for individual examination of each tree. Once character weighting had produced a smaller set of trees, the trees were analyzed with the "xsteps" command using the "hcml" options. This analysis listed the possible character states of each hypothetical ancestor for each component of each tree, the fit of each character to each tree, the best and worst fits of each character to any of the trees and the length of each tree. The reduced set of trees was converted into a single Nelson consensus tree that was then analyzed by the above "xsteps" command.

Specimens Studied

This study is based on examination of type specimens, as described for the various species, and 20,491 adult nontype specimens. A total of 885 adults was taken during field work. I obtained most such specimens during 90 days of collecting in the western United States with Jon Twomey in the summer of 1992. Smaller series of specimens came from a total of approximately 190 days of field work in the summers of 1984 and 1985 in the same general area with Stanley Rewolinski. Other specimens came from approximately a month of collecting in Wisconsin with Todd Oakley in the summer of 1993 and from much collecting by me of Carabidae in North America over more than 30 years.

Procurement of Specimens.

Specimens collected in the field were obtained in moist habitats. For western North America the most productive collecting method was to overturn debris, such as rocks, pieces of wood and washed up plant debris, along the shores of lakes and ponds. Adults from central North America were taken both by overturning debris and by treading down aquatic vegetation along the shore and picking up the beetles that were dislodged from the plants and floated in the water. During the collecting in 1984, 1985, 1992 and 1993, extensive notes were taken about the habitats with adults. These notes were useful in describing the natural history of species. Less extensive, but still helpful, notes were taken for specimens obtained during other years.

Museums that lent specimens

The museums, curators and private individuals who lent specimens are listed below alphabetically by acronyms; such acronyms identify the museum or private collection from which specimens were borrowed.

AMNH	American Museum of Natural History, New York; L. H. Herman
ANSP	Academy of Natural Sciences, Philadelphia; D. Azuma
ASUT	Arizona State University, Tempe; M. E. Douglas

BMNH	British Museum of Natural History, (now The Natural History Museum) London; S. J. Hine and N. Stork
BMSC	Buffalo Museum of Science, Buffalo; W. K. Gall
CAS	California Academy of Sciences, San Francisco; D. H. Kavanaugh
CDAE	California Department of Food and Agriculture, Sacramento; F. G. Andrews
CISC	University of California, Berkeley; J. A. Chemsak
CNC	Canadian National Collection, Ottawa; Y. Bousquet
CUCC	Clemson University, Clemson; J. C. Morse
CUIC	Cornell University, Ithaca; E. R. Hoebeke
DEFW	University of Minnesota, St. Paul; P. J. Clausen
DEIC	Deutsches Entomologisches Institut, Eberswalde-Finow, Germany; L. Zerche
DENH	University of New Hampshire, Durham; D. S. Chandler
DEUN	University of Nebraska, Lincoln; B. C. Ratcliffe
DHIC	Drew Hildebrandt Private Collection, Cincinnati, Ohio
EMUS	Utah State University, Logan; W. J. Hanson
ESUW	University of Wyoming, Laramie; S. R. Shaw
FMNH	Field Museum of Natural History, Chicago; J. Keathly and A. F. Newton
FSCA	Florida State Collection of Arthropods, Gainesville; H. A. Denmark
ICCM	Carnegie Museum of Natural History, Pittsburgh; R. L. Davidson
INHS	Illinois Natural History Survey, Champaign; D. Voegtlin
ISNB	Institut Royal, Brussels, Belgium; L. Baert
JSPC	Formerly Joe Schuh Private Collection, now part of FSCA collection
LACM	Los Angeles County Museum of Natural History, Los Angeles; R. R. Snelling
LSUC	Louisiana State University, Baton Rouge; V. L. Moseley
MCZC	Museum of Comparative Zoology, Harvard University, Cambridge; D. G. Furth and S. P. Cover
MMUE	Manchester Museum, Manchester, United Kingdom; C. Johnson
MNHN	Museum National d'Histoire naturelle, Paris, France; Th. Deuve, M. H. Perrin
MNMS	Museo Nacional de Ciencias Naturales, Madrid, Spain; I. Izquierdo
MSNM	Museo Civico di Storia Naturale, Milan, Italy; G. Pinna
MSNV	Museo Civico di Storia Naturale, Verona, Italy; L. Sorbini
MSUC	Michigan State University, East Lansing; F. W. Stehr
MTEC	Montana State University, Bozeman; M. A. Ivie
MUIC	Mississippi State University, Mississippi State; T. L. Schiefer
NCSU	North Carolina State University, Raleigh; C. S. Parron
NDSU	North Dakota State University, Fargo; D. Rider
NHMW	Naturhistorisches Museum Wien, Wien, Austria; H. Schönmann
NMPC	National Museum, Praha, Czechoslovakia; S. Břlý
NMPG	Museum der Natur-Gotha, Gotha, Germany; W. Zimmermann
NMSU	New Mexico State University, Las Cruces; D. B. Richman
NSMT	National Science Museum, Tokyo, Japan; Ueno
NYSM	New York State Museum, Albany; T. L. McCabe

ODAC	Oregon Department of Agriculture, Salem; R. L. Westcott
OLML	Oberosterreichisches Landesmuseum, Linz, Austria; F. Gusenleitner
OSEC	K. C. Emerson Museum, Oklahoma State University, Stillwater; D. C. Arnold
OSUC	Ohio State University, Columbus; C. A. Triplehorn
OSUO	Oregon State University, Corvallis; G. Brenner
OXUM	The University Museum, Oxford, United Kingdom; C. O'Toole
PADA	Pennsylvania Department of Agriculture, Harrisburg; R. D. Lehman
PMSL	Slovenian Natural History Museum, Ljubljana, Yugoslavia; I. Sivec
PPCD	West Virginia Department of Agriculture, State Capital, Charleston; S. M. Clark and C. C. Coffman
PSUC	Frost Entomological Museum, Pennsylvania State University, S. W. Bullington
PURC	Purdue University, West Lafayette; A. Provonsha
RMNH	Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands; J. Krikken
ROME	Royal Ontario Museum, Toronto, Canada; D. Barr
RSPC	Private Collection Dr. Riccardo Sciaky, Milano, Italy
SEMC	University of Kansas, Lawrence; J. S. Ashe
SIIS	Staten Island Institute of Arts and Sciences, Staten Island; M. Molnar
SIUC	Research Museum of Zoology, Southern Illinois University, Carbondale; J. E. Mcpherson
SJSC	San Jose State University, San Jose; J. G. Edwards
SMCC	Private Collection Scott McCleve, Douglas, Arizona
SMDV	Spencer Entomological Museum, Vancouver, British Columbia; S. G. Cannings
SMTD	Staatliches Museum für Tierkunde, Dresden, Germany; O. Jäger
TAMU	Texas A & M University, College Station; H. R. Burke
TAUI	Tel Aviv University, Tel Aviv Israel; A. Freidburg
UADE	University of Arkansas, Fayetteville; J. B. Whitfield
UAIC	University of Arizona, Tucson; F. G. Werner
UASM	Strickland Entomological Museum, University of Alberta, Edmonton; G. E. Ball
UCDC	R. M. Bohart Museum of Entomology, University of California, Davis; S. L. Heydon
UCMS	University of Connecticut, Storrs; J. E. O'Donnell
UICM	University of Idaho, Moscow; F. W. Merickel
ULQC	Université Laval, Québec; J. Perron
UMBB	Übersee-Museum, Bremen, Germany; H. Ganslmayr
UMRM	University of Missouri, Columbia; W. R. Enns
UVCC	University of Vermont, Burlington; R. T. Bell
UWEM	University of Wisconsin, Madison; J. Harrington
VDAC	Virginia Department of Agriculture and Commerce, Richmond; S. A. Shives
VPIC	Virginia Polytechnic Institute and State University, Blacksburg; M. Kosztarab
WSUC	Washington State University, Pullman; R. S. Zack

ZFMK	Zool. Inst. und Museum "Alexander Koenig", Bonn, Germany; H. Roer
ZMAN	Universiteit van Amsterdam, Amsterdam, Netherlands; J. P. Duffels
ZMAS	Zoological Museum, Academy of Science, St. Petersburg, Russia; B. Kataev
ZMHB	Museum für Naturkunde der Humboldt-University of Berlin, Germany; B. Jaeger
ZMUB	University of Bergen, Norway; L. G. Jensen
ZMUC	University of Copenhagen, Denmark; O. Martin
ZMUM	University of Moscow, Russia; N. Nikitsky

Examination of Specimens

Specimens were studied with a Wild model M5 microscope (Wild Heerbrugg Ltd., Heerbrugg, Switzerland) equipped with a 360° fiber optic ringlight powered by a Lumina transformer equipped with a halogen light.

Dissection of Male Genitalia

The internal sac of the male aedeagus has useful features for delimiting and classifying species. However, many such details can be properly evaluated only after the internal sac has been completely everted. One or more sacs were everted for each species. Procedures were similar to those in Noonan (1991).

The sac was everted by first placing the males in a hot solution of distilled water and Prell shampoo (Proctor & Gamble, Cincinnati, Ohio). The hot water relaxed the specimens, and the detergent dissolved fats that would otherwise be melted by the heat and deposited on the exoskeleton. Unlike many other detergents, Prell did not darken light-colored areas of the exoskeleton. After a specimen was relaxed and then rinsed with distilled water, a pair of No. 5 watchmaker forceps was inserted into the rear genital opening to grasp the aedeagus near its base and pull it out. The aedeagus was then placed in a 25 ml crucible containing hot distilled water in which 7-12 pellets of potassium hydroxide had been dissolved. Approximately 1-5 minutes sufficed sufficiently to dissolve muscle tissue attached to the internal sac, the difference in time required possibly being related to the type of chemical used to kill the adult. The aedeagus was then put into a small Petri dish or other similar dish containing distilled water. A pair of forceps was used to clamp the basal bulb dorsoventrally just distal to the basal orifice. These forceps were kept clamped to prevent fluid from escaping through the opening. A second pair of forceps clamped the aedeagus dorsoventrally just distal to the first pair. The second pair of forceps was then moved distally, and the aedeagus was clamped again. This procedure was repeated until the ostium was reached. The fluid pressure resulting from repeating clampings partly or entirely everted the sac in many specimens.

In some specimens, fluid pressure did not evert the internal sac. It was then necessary to insert a pair of forceps into the ostium and attempt to pull the sac out. This procedure damaged some sacs and was used only when fluid pressure failed to evert the sac.

Aedeagi with everted internal sacs were placed in small Petri dishes containing glycerine and stored with the appropriate male beetle in a unit pinning tray. Such

storage simplified comparison of sacs.

Dissection of Female Genitalia

Female adults were relaxed in the above solution of distilled water and Prell shampoo. Relaxed specimens were rinsed with distilled water, and a pair of No. 5 watchmaker forceps was inserted into the rear genital opening to grasp the ovipositor and pull outward. The ovipositor was first pulled partly out of the body and then grasped at its base with the forceps and pulled outward until it separated from the body. The forceps were used carefully to tease apart the structures of the ovipositor. Membranes were removed from the valvifers that were then placed in Petri dishes containing glycerine.

Measurements

Total body length measurements were made for adults of each species to give a general impression of size range. The five largest and five smallest specimens of each species were selected visually. The total body length for a given specimen was the sum of the length of the head (measured from distal end of labrum to a line at a right angle to posterior end of eyes), the length of the pronotum measured along its middle from the anterior to posterior edges and the length of the elytra measured along the inner margin of an elytron from its anterior edge to the posterior end of its suture.

Analysis and databasing of specimen information

The OmniMap computer program (Noonan, 1994, 1995a, 1996c) was used to capture and analyze data on specimen labels and data obtained during field work. It determined and entered into the database the latitude and longitude of most populated localities found in the United States. Assistants looked up and manually entered latitude and longitude for other localities. The U.S. Department of the Interior GNIS (Geographic Names Information System) database on CD-ROM (Campbell et al., 1994) was particularly helpful for places and areas in the United States, containing approximately 2.2 million places and areas with their latitude and longitude. OmniMap was used to create databases for importation into GIS type software. It also produced reports giving statistics about numbers of specimens of each species, numbers of specimens collected per month, sex ratios and sharing of sites by different species.

Preparation of Maps

Atlas GIS (Strategic Mapping, 1994; Noonan, 1995b) was used to create map files that were copied into the Windows clipboard and then pasted into DESIGNER and arranged into plates.

The electronic maps used in Atlas GIS were extracted from the U.S. government Digital Chart of the World consisting of a set of four CD-ROMS containing approximately 1,600 megabytes of data. A Unix-based program extracted data in 5 degree tiles and arranged it into an intermediate BIN format. Because of limitations in hard disk space and in the ability of graphics programs to handle large files, the extracted files discarded all but one vertex (for each feature) for every 1/20 of a degree. The resulting BIN files were imported into Atlas GIS and provided more than enough resolution for maps produced during the study.

Preparation of Figures

Illustrations of body parts were made with the aid of a drawing tube attached to the Wild microscope. Drawings traced onto paper in pencil were enlarged with a photocopier and then traced in ink. The resulting drawings were scanned into a computer with a Hewlett-Packard Scan Jet Plus. The resulting TIFF files were imported into Micrografx Designer (version 3.1; Crawford and Bryan, 1990.). The latter program was used to reduce the bitmap images in size and to arrange images into plates.

Figures of the male aedeagus include views of the dorsa of the distal portion of the aedeagi, the dorsa of most of the aedeagi as a whole and the left side of aedeagi. The figures of the distal portion of the aedeagi were drawn with the apices situated so as to be flat or horizontal. Those of most of the dorsa were drawn with the aedeagi arranged to maximize the view of the dorsum from the apices toward approximately the distal 4/5 of the shafts. The latter arrangement resulted in apices often not being completely flat or horizontal when the dorsa were drawn. Comparisons of apices should therefore be done using the figures of the apices rather than those of the dorsa as a whole.

Graphs were produced in Charisma (version 2.1; Inge, 1990) and imported into Designer for arrangement into plates.

A Hewlett Packard Laser Jet IVP (Hewlett-Packard Company, Boise, Idaho) printed the final plates at a resolution of 600 dots per inch.

Presentation of Data About Geographical Ranges of Species

Maps with symbols show regions from which I saw adults. Each symbol may represent one locality or two to many adjacent localities. The maps collectively summarize distributional data for all species.

Appendix A lists specimens examined for all species but the newly described *A. pseudagricola*, whose description lists specimens examined.

Systematics of the Subgenus *Anisodactylus*

subgenus *Anisodactylus* Dejean

Anisodactylus Dejean, 1829: 132. Type Species: *Carabus binotatus* Fabricius, 1787, designated by Westwood (1838).

Pseudhexatrichus Noonan, 1973: 282, 352. Type Species: *Anisodactylus dejeani* Buquet, 1840, by original designation. **NEW SYNONYMY.**

Description. Body moderate in size, length 7 to 19.5 mm.; convex, with pronotum relatively small and elytra elongate and subparallel; color nonmetallic rufotestaceous to black.

Head. Clypeus with apex straight to moderately emarginate medially; with 1 setigerous puncture at each outer distal angle unless otherwise mentioned in species description; species of Old World with 1 setigerous puncture at each outer distal angle; species of New World with 1 setigerous puncture at each outer distal angle and in some species with additional setigerous punctures at such angles. Frontal foveae various.

Palpi testaceous, brunneus or infuscated to black. Ligular sclerite moderately to strongly expanded at apex. Paraglossae membranous, glabrous, slightly longer than ligular sclerite. Mentum and submentum completely fused. Mentum without a tooth or with small medial tooth. Submentum with 1 long and in most specimens 1 short seta at each side.

Pronotum. Shape and form various. Anterior bead interrupted medially in most species. Posterior bead complete in *A. harrisii*, complete to medially flattened or interrupted in other species.

Venter of Thorax. Apex of prosternal intercoxal process with several long setae.

Legs. Front tibiae each moderately dilated distally; with 2 to 5 spines at anterior outer margin; anterior side with median row of setigerous punctures in distal 1/2 and extended or not toward proximal end; many specimens with a shorter row of setae to the outer side of the median row; apical spurs each trifid in *A. carbonarius*, *A. karennius*, *A. tricuspидatus* and nontrifid in all other species; apex slightly emarginate at anterior outer margin. Posterior margins of hind femora each with 2 long setae and with 2 or 3 additional long setae in *A. carbonarius* and *A. similis* and with or without 2 to 4 short setae. Front and middle tarsi of males with apices of tarsomeres 1 or 2 and all of tarsomeres 2 (or 3), 3 and 4 expanded laterally and spongy pubescent beneath. Tarsomere 5 of all tarsi each with row of setae on each side of venter. Hind tarsi elongate, in many specimens basitarsi each longer than longest apical hind tibial spur and longer than or approximately equal to length of hind tarsomeres 2 + 3.

Elytra. Humeri each rounded to angulate depending on species. Outer intervals, base and apex with short fine setae in some species; intervals flat to moderately convex; intervals 3 each with setigerous puncture in approximately distal 1/3; intervals 9 each with anterior and posterior group of 5 to 9 ocellate punctures confluent with striae 8 and with scattered other ocellate and non-ocellate punctures. Subapical sinuations slight. Sutures rounded.

Hind Wings. Full and apparently functional in all species but *A. agricola*.

Abdomen. Sterna 2 and 3 in most specimens with patches of short fine setae medially near hind coxae; sterna 3 to 6 each with medial pair of long "ambulatory" qualification setae; sternum 6 of females and sternum 6 of some males of *A. consobrinus*, and some males of *A. californicus* and all males of *A. karennius*, *A. similis* and *A. tricuspидatus* with pair of long "ambulatory" setae laterad to medial pair.

Male Genitalia. Aedeagus and internal sac various in shape.

Female Genitalia. Valvifers each strongly sclerotized and with distal portion elongate.

Recognition. Readers can use the key to genera and subgenera of the subtribe Anisodactylina in Noonan (1973) to identify members of the genus *Anisodactylus* and then use keys here to identify members of the subgenus *Anisodactylus* as well as other taxa of the genus.

Treatment of *Pseudhexatrichus* as synonym of subgenus *Anisodactylus*.
The valvifers of *A. heros* Dejean of the former monobasic subgenus *Pseudhexatrichus* have the thickened and elongate valvifers found in the subgenus *Anisodactylus*, and the species belongs in that taxon. *Pseudhexatrichus* is herewith treated as a junior synonym of *Anisodactylus*.

List of Species of Subgenus *Anisodactylus***The *binotatus* Group****The *nemorivagus* Subgroup**

1. *A. heros* Fabricius
2. *A. nemorivagus* Duftschmid

The *binotatus* Subgroup

3. *A. consobrinus* LeConte
4. *A. hispanus* Puel
5. *A. pueli* Schaubberger
6. *A. binotatus* Fabricius
7. *A. antoinei* Puel

The *melanopus* Group**The *karennius* Subgroup**

8. *A. karennius* Bates

The *melanopus* Subgroup

9. *A. tricuspidatus* Morawitz
10. *A. agricola* Say
11. *A. pseudagricola* new species
12. *A. melanopus* Haldeman

The *nigrita* Group

13. *A. kirbyi* Lindroth
14. *A. nigrita* Dejean

The *californicus* Group

15. *A. californicus* Dejean
16. *A. similis* LeConte
17. *A. furvus* LeConte

The *carbonarius* Group

18. *A. nigerrimus* Dejean
19. *A. loedingi* Schaeffer
20. *A. carbonarius* Say
21. *A. harrisii* LeConte

Keys to Taxa

Notes About Use of the Keys. Specimens must be clean for accurate identification in those couplets that evaluate whether or not the elytra are shiny and the type of elytral microsculpture. Cleaning is best done by placing specimens into a hot solution of distilled water and Prell shampoo. Unlike many other detergents Prell does not darken light-colored portions of the body. The keys treat all species of the subgenus *Anisodactylus* and also identify other groups of the genus and cite any available revisions of species of such groups. When such groups are monobasic, the key lists the single species of the group.

Key to Adults of Species and Subgenera of the Genus *Anisodactylus*

1. Body with dorsum distinctly bicolored; head and base of elytra rufo-testaceous; pronotum (except for somewhat rufo-testaceous sides) and medial and distal portions of elytra bluish black AND pronotum with posterior angles broadly rounded. Geographical range (Fig. 223) Mediterranean region (1) *A. (A.) heros* Fabricius p. 26
- 1'. Body with dorsum not distinctly bicolored OR, if bicolored, pronotum with posterior angles not broadly rounded and geographical range North America 2
2. (1') Pronotum with lateral depression abruptly set off from convex disk by prominent inflexion of integument in apical 4/5; elytral striae sharp, semi-rectangular in section; dorsum with metallic green or aeneous tinge; geographical range eastern United States
. *A. (Pseudaplocentrus) laetus* Dejean
- 2'. Pronotum lacking such inflexion of integument; elytral striae rounded in cross section, not extremely sharp; dorsum with or without metallic tinge 3
3. (2') Front tibiae with distal apical spurs each trifid (Figs. 34, 37) 4
- 3'. Front tibiae with distal apical spurs not trifid, at most slightly swollen or angulate at each side (Figs. 35, 36) 10
4. (3) Clypeus with 1 seta at each outer distal angle 5
- 4'. Clypeus with 2 or more setae at 1 or (in most specimens) both outer distal angles 8
5. (4) Pronotal lateral base including posterior lateral depressions covered with small to large, dense asetose punctures, punctures in some specimens posteriorly large and confluent and producing rugose appearance; elytra with or without dense asetose punctures 6
- 5'. Pronotal lateral base not covered with dense asetose punctures (posterior lateral depressions of some specimens however may have a few scattered asetose punctures); elytra not covered with dense asetose punctures 7
6. (5) Elytral intervals 1-5 medially with dense asetose, moderate sized punctures and with microsculpture composed of faint transverse very fine meshes. Geographical range Japan, Taiwan and adjacent mainland Asia (Fig. 234) (9) *A. (A.) tricuspidatus* Morawitz p. 42
- 6'. Elytra intervals 1-5 medially at most with very small sparse to moderately dense asetose micropunctures and with microsculpture composed of moderately transversely stretched mesh. Geographical range mainland portions of Oriental Region (Fig. 234).
. (8) *A. (A.) karennius* Bates p. 40
7. (5') Posterior margins of hind femora each with 2 or at most 3 long setae. Geographical range Nearctic Region, subgenus *Gynandrotarsus* LaFertè-Sénéctère (see Noonan, 1973, for species key)
- 7'. Posterior margins of hind femora each with 4 or more long setae.

		Geographical range Mediterranean Region.	
	 <i>A. (Pseudodichirus) intermedius</i> Dejean (in part)	
8.	(4')	Body with dorsum metallic, with blue or green tinges. Geographical range from northern Europe to western Mediterranean region, subgenus <i>Hexatrichus</i> Tschitschérine (see Trautner and Geigenmüller, 1987, for identification of <i>A. poeciloides</i> Stephens and <i>A. virens</i> Dejean, and Jedlička, 1942, for description of <i>A. mandschuricus</i> Jedlička)	
8'		Body with dorsum not metallic, without blue or green tinges. Geographical range Nearctic or Palaearctic Regions.	9
9.	(8')	Pronotum with lateral depressions prominent (Fig. 20), evident anteriorly, and posteriorly greatly widened and embracing region of posterior lateral depressions; posterior angles rounded, without denticles. Geographical range Nearctic Region (Fig. 247)	
9'	 (20) <i>A. (A.) carbonarius</i> Say p. 68	
		Pronotum with lateral depressions slight, absent or indistinct anteriorly, little widened posteriorly. Geographical range Mediterranean Region.	
	 <i>A. (Pseudodichirus) intermedius</i> Dejean (in part)	
10.	(3')	Body with short semicordate pronotum and long parallel sided elytra, AND mandibles prolonged and with striate dorsal surfaces, AND labral apex strongly emarginate. Geographical range eastern North America	
	 <i>A. (Spongopus) verticalis</i> LeConte	
10'		Combination of morphological features not as above	11
11.	(10')	Body broad and <i>Amara</i> -like and in most specimens with metallic greenish, aeneous, bronze or bluish tinges on dorsum, AND head with outer angles of clypeus each with 1 seta, AND elytral intervals 3 each with setigerous puncture in approximately distal 1/3; intervals 9 and 10 without dense short setae, with only normal fixed longer setae. Female genitalia with valvifers lightly sclerotized and not with apical portions elongate. Geographical range Nearctic Region, subgenus <i>Aplocentrus</i> LeConte (see Lindroth, 1968 for key to species)	
11'		Combination of morphological features not as above	12
12.	(11')	Elytra with extensive rufo-testaceous or metallic tinged areas. Hind tarsi stout (Fig. 39); 1st tarsomeres each not or only slightly longer than longest apical spur of each hind tibia. Geographical range North America, subgenus <i>Anadaptus</i> Casey (see Noonan, 1996b, for species revision).	
12'		Elytra unicolorous dark, without extensive rufo-testaceous areas, lacking any metallic changes. Hind tarsi variable in length (Figs. 38, 39). Geographical range various	13
13.	(12')	Elytra with intervals 8 to 10 or 9 to 10 with dense fine, short setae	30
13'		Elytra with intervals 8 to 10 or 9 to 10 with only normal fixed setae	14
14.	(13')	Pronotum with lateral depressions prominent, at least posteriorly.	15
14'		Pronotum with lateral depressions not prominent, even posteriorly	22
15.	(14)	Pronotal posterior angles broadly rounded (Figs. 18-21)	16

- 15'. Pronotal posterior angles well-marked, right to slightly obtuse or dentate (Figs. 10-14) 18
16. (15) Head very large with small, flat eyes; frontal foveae somewhat linear, convergent posteriorly. Pronotum suborbiculate, with broadly rounded posterior angles and with prominent lateral depressions along all of both sides (Fig. 19). Body size largest in genus, length 14.4 to 19.5 mm. Geographical range southeastern United States
..... (19) *A. (A.) loedingi* Schaeffer p. 67
- 16'. Head normal in size, with normal-sized, convex eyes; frontal foveae triangular to irregular in shape, with or without posterior projections, such projections not convergent posteriorly. Pronotum and body size various. 17
17. (16') Pronotum with lateral depressions greatly widened and very broad posteriorly (Fig. 21). Geographical range eastern and southeastern United States (Fig. 248). (21) *A. (A.) harrisii* LeConte p. 71
- 17'. Pronotum with lateral depressions not greatly widened and not very broad posteriorly (Fig. 18). Geographical range eastern United States and southeastern Canada west into eastern Kansas and Nebraska and Alberta (Fig. 245) (18) *A. (A.) nigerrimus* Dejean (in part) p. 65
18. (15') Elytra medially shiny in both sexes and in most specimens somewhat iridescent; microsculpture of very fine transverse mesh 20
- 18'. Elytra medially not shiny in both sexes, dull in ♀♀; microsculpture much more prominent, of isodiametric or moderately transverse meshes. 19
19. (18') Clypeus at each side with 1 setigerous puncture (rare specimens with 2 such punctures on each side). Pronotum with posterior lateral depressions somewhat linear in shape anteriorly (Fig. 13). Aedeagus (Fig. 104) with dorsal membranous area elongate, extended approximately 4/5 to basal bulb; shaft proximally strongly striate laterally. Geographical range apparently not including central portions of North America (Fig. 238)
..... (13) *A. (A.) kirbyi* Lindroth (in part) p. 51
- 19'. Clypeus at each side with 2 setigerous punctures (rare specimens with 1 such puncture on 1 or both sides; less than ca. 0.5% with only 1 puncture at each side). Pronotum with posterior lateral depressions not somewhat linear in shape anteriorly (Fig. 14). Aedeagus (Fig. 105) with dorsal membranous area shorter, at most extended 1/2 the distance to basal bulb; shaft proximally nearly smooth laterally. Geographical range including central portions of North America (Fig. 239)
..... (12) *A. (A.) nigrita* Dejean (in part) p. 53
20. (18) Clypeus at each side with 2 setigerous punctures. Pronotum with lateral depressions more prominent, notably present even anteriorly (Fig. 12). Geographical range eastern North America west to Nebraska and Utah (Fig. 237) (12) *A. (A.) melanopus* Haldeman (in part) p. 48
- 20'. Clypeus at each side with 1 setigerous puncture. Pronotum with lateral depressions less prominent, not present anteriorly (Figs. 10, 11). Geographical range eastern North America (Figs. 235, 236). 21

21. (20') Pronotum with sides posteriorly nearly straight or straight (Fig. 10). Body size larger, length 11.0 to 13.0 mm. Aedeagus (Fig. 49) with sclerotized ligula extended over part of dorsal membranous area, without apical disk. Geographical range northeastern and north central North America (Fig. 235) . . . (10) *A. (A.) agricola* Say (in part) p. 44
- 21'. Pronotum with sides posteriorly more rounded (Fig. 11). Body size smaller, length 9.9 to 11.6 mm. Aedeagus (Fig. 50) lacking ligula, with apical disk. Geographical range northeastern United States and Ontario (Fig. 236) . . . (11) *A. (A.) pseudagricola* new species (in part) p. 46
22. (14') Pronotum cordiform in shape, sides posteriorly strongly convergent and straight or sinuate (Figs. 3, 15). Elytra with microsculpture isodiametric. Geographical range western North America (Figs. 225, 240, 241) 23
- 22'. Pronotum not cordiform in shape, sides posteriorly less convergent and more rounded, not notably sinuate (Figs. 10-14, 18, 22). Elytra with microsculpture various. Geographical range various. 24
23. (22) Pronotum (Fig. 3) short in form, more constricted posteriorly; sides not notably parallel-sided posteriorly; disk dull from isodiametric microsculpture. Aedeagus (Fig. 42) with sclerotized ligula covering part of proximal portion of dorsal membranous area. Geographical range western United States and northwestern Baja California (Fig. 225) (2) *A. (A.) consobrinus* LeConte p. 30
- 23'. Pronotum (Fig. 15) longer in form, less constricted posteriorly; sides notably parallel-sided posteriorly; disk shiny at least in part. Aedeagus (Fig. 54) without sclerotized ligula covering part of dorsal membranous area. Geographical range western United States, northwestern Canada and Mexico (Figs. 240, 241). . . (15) *A. (A.) californicus* Dejean p. 55
24. (22') Pronotal posterior angles broadly rounded (Fig. 18) (18) *A. (A.) nigerrimus* Dejean (in part) p. 65
- 24'. Pronotal posterior angles well marked, right to slightly obtuse or dentate (Figs. 10-14, 22) 25
25. (24') Elytra shiny medially in both sexes and in most specimens somewhat iridescent; microsculpture of very fine transverse mesh 28
- 25'. Elytra not shiny medially in both sexes, dull in ♀♀; microsculpture much more prominent, of isodiametric or moderately transverse meshes 26
26. (25') Body with at least part of dorsum with aeneous, bronze or dark green tinges. Pronotum (Fig. 22) somewhat quadrate in form. Geographical range western North America *A. (Aplocentrus) amaroides* LeConte
- 26'. Body with dorsum lacking aeneous, bronze or dark green tinges. Pronotum (Figs. 13-14) different in form 27
27. (26') Clypeus at each side with 1 setigerous puncture (rare specimens with 2 such punctures on each side). Pronotum with posterior lateral depressions somewhat linear in shape anteriorly (Fig. 13). Aedeagus (Fig. 104) with dorsal membranous area elongate, extended approximately 4/5 to basal bulb; shaft proximally strongly striate

- laterally. Geographical range apparently not including central portions of North America (Fig. 238) (13) *A. (A.) kirbyi* Lindroth (in part) p. 51
- 27'. Clypeus at each side with 2 setigerous punctures (rare specimens with 1 such puncture on 1 or both sides; less than ca. 0.5% with only 1 puncture at each side). Pronotum with posterior lateral depressions not somewhat linear in shape anteriorly (Fig. 14). Aedeagus (Fig. 105) with dorsal membranous area shorter, at most extended $\frac{1}{2}$ the distance to basal bulb; shaft proximally nearly smooth laterally. Geographical range including central portions of North America (Fig. 239) (12) *A. (A.) nigrita* Dejean (in part) p. 53
28. (25) Clypeus at each side with 2 setigerous punctures. Pronotum with lateral depressions more prominent, notably present even anteriorly (Fig. 12). Geographical range eastern North America west to Nebraska and Utah (Fig. 237) (12) *A. (A.) melanopus* Haldeman (in part) p. 48
- 28'. Clypeus at each side with 1 setigerous puncture. Pronotum with lateral depressions less prominent, not present anteriorly (Fig. 10, 11). Geographical range eastern North America (Figs. 235, 236) 29
29. (28') Pronotum with sides posteriorly nearly straight or straight (Fig. 10). Body size larger, length 11.0 to 13.0 mm. Aedeagus (Fig. 49) with sclerotized ligula extended over part of dorsal membranous area, without apical disk. Geographical range northeastern and north central North America (Fig. 235) . . . (10) *A. (A.) agricola* Say (in part) p. 44
- 29'. Pronotum with sides posteriorly more rounded (Fig. 11). Body size smaller, length 9.9 to 11.6 mm. Aedeagus (Fig. 50) without ligula, with apical disk. Geographical range northeastern United States and Ontario (Fig. 236) (11) *A. (A.) pseudagricola* new species (in part) p. 46
30. (13) Elytra with third intervals each with 1 setigerous puncture in approximately distal $\frac{1}{3}$ or $\frac{1}{4}$. Valvifers (Figs. 133-153, 155-161) various. 31
- 30'. Elytra with third intervals each without setigerous puncture in approximately distal $\frac{1}{3}$ or $\frac{1}{4}$. Valvifers (Figs. 172-174) with prominent sinuation along distal lateral edges. subgenus *Pseudanisodactylus* Noonan, *A. punctatipennis* Morawitz, *A. sadoensis* Schauberger, and *A. signatus* Panzer (see Habu, 1973 for key to species)
31. (30) Pronotal posterior angles broadly rounded, obsolete (Fig. 24). Geographical range central Mexico. subgenus *Anadaptus* Casey (see Noonan, 1996b, for species revision).
- 31'. Pronotal posterior angles acute to obtuse, not obsolete. (Figs. 2, 4-7, 16, 17, 23) 32
32. (31') Elytral intervals 2 and 4 with dense setose punctures along all or most of their lengths. Hind tarsi stout (Fig. 39); 1st tarsomeres each not or only slightly longer than longest apical spur of each hind tibia. subgenus *Anadaptus* Casey (see Noonan, 1996b, for species revision).
- 32'. Elytral intervals 2 and 4 with setose punctures restricted to anterior and posterior margins or absent. Hind tarsi varied in length (Figs. 38, 39).

- 33
33. (32') Pronotum cordiform in shape with sides notably convergent posteriorly and/or with posterior lateral depressions moderate to deep (Fig. 23). Hind tarsi stout (Fig. 39). Geographical range western Canada, western United States and northwestern Mexico. subgenus *Anadaptus* Casey (see Noonan, 1996b, for species revision).
- 33'. Pronotum not cordiform in shape, sides at most slightly convergent posteriorly and posterior lateral depressions shallow to moderate in depth (Figs. 2, 4-7, 16, 17). Hind tarsi more slender (Fig. 38). 34
34. (33') Frons with short fine setae laterally. Geographical range western North America (Fig. 244) (16) *A. (A.) similis* LeConte p. 59
- 34'. Frons without short fine setae laterally. Geographical range Palaearctic Region except for *A. furvus* native to the Nearctic Region and *A. binotatus* introduced into western North America 35
35. (34') Pronotum with posterior angles obtusely rounded, not dentate or subdentate (Fig. 17). Geographical range eastern North America (Fig. 244) (17) *A. (A.) furvus* LeConte p. 63
- 35'. Pronotum with posterior angles each dentate or subdentate (Figs. 2, 4-7). Geographical range Palaearctic Region except for *A. binotatus* also introduced into western North America 36
36. (35') Pronotum with short fine setae posteriorly 37
- 36'. Pronotum without short fine setae posteriorly, with or without dense asetose punctures posteriorly 38
37. (36) Pronotum with lateral depressions moderately prominent, evident near anterior angles (Fig 6). Humeri of elytra with juncture of inner anterior and lateral borders forming indistinct broad angle (Fig. 26). Body size larger, length 9 to 13 mm. Aedeagus with dorsum having 2 membranous areas (Fig. 67a, 67b). Geographical range Palaearctic Region and Pacific Northwest of North America (Figs. 230, 231). ..
- (6) *A. (A.) binotatus* Fabricius p. 35
- 37'. Pronotum with lateral depressions slight, little evident near anterior angles (Figs. 2). Humeri of elytra with juncture of inner anterior and lateral borders forming distinct somewhat narrow angle (Fig. 25). Body size smaller, length 7 to 10 mm. Aedeagus with single membranous area (Fig. 62). Geographical range Europe (Fig. 224).
- (2) *A. (A.) nemorivagus* Duftschmid p. 28
38. (36') Pronotum with lateral depressions moderately prominent, evident near anterior angles (Fig. 4); posterior margin of most specimens moderately emarginate medially. Aedeagus with dorsum having single membranous area (Fig. 64a, 64b). Geographical range Spain (Fig. 226)
- (4) *A. (A.) hispanus* Puel p. 32
- 38'. Pronotum with lateral depressions less prominent, little evident near anterior angles (Figs. 5, 7); posterior margin not moderately emarginate medially. Aedeagus with dorsum having two membranous areas (Figs. 65, 66a, 66b, 68a). Geographical range Algeria or Morocco or northern Mediterranean from Italy eastward into Russia and possibly Turkey and Iran, and also from Sikkim, India (Figs. 226, 227) 39

39. (38'') Legs rufo-testaceous to rufous
 (5) *A. (A.) pueli* Schauberger (in part) p. 33
- 39'. Legs rufo-piceous to dark piceous 40
40. (39') Pronotum with sides posteriorly somewhat less convergent (Fig. 7).
 Elytra with microsculpture of seventh interval medially of isodiametric
 mesh, not at all transversely stretched. Aedeagus long and slender
 (Figs. 68a, 92). Geographical range Algeria and Morocco (Fig. 226)
 (7) *A. (A.) antoinei* Puel p. 39
- 40'. Pronotum with sides posteriorly more convergent (Fig. 5). Elytra with
 microsculpture of seventh interval medially of slightly transversely
 stretched mesh. Aedeagus stout (Figs. 65, 66a, 89, 90). Geographical
 range (Fig. 227) northern Mediterranean and Sikkim, India.
 (5) *A. (A.) pueli* Schauberger (in part) p. 33

Key to Adults of New World Species and Subgenera of the Genus *Anisodactylus*

1. Pronotum with lateral depression abruptly set off from convex disk by
 prominent inflexion of integument in apical 4/5; elytral striae sharp,
 semi-rectangular in section; dorsum with metallic green or aeneous
 tinge; geographical range eastern United States
 *A. (Pseudaplocentrus) laetus* Dejean
- 1'. Pronotum lacking such inflexion of integument; elytral striae rounded
 in cross section, not extremely sharp; dorsum with or without metallic
 tinge 2
2. (1') Front tibiae with distal apical spurs each trifid (Fig. 37) 3
- 2'. Front tibiae with distal apical spurs not trifid, at most slightly swollen
 or angulate at each side (Fig. 35, 36) 4
3. (2) Clypeus with 1 seta at each outer distal angle. Pronotum with posterior
 lateral depressions various. subgenus *Gynandrotarsus* Laferté-
 Sénéctère (see Noonan, 1973, for species key)
- 3'. Clypeus with 2 or more setae at 1 or (in most specimens) both outer
 distal angles. Pronotum (Fig. 20) with lateral depressions prominent,
 evident anteriorly, and posteriorly greatly widened and embracing
 region of posterior lateral depressions; posterior angles rounded,
 without denticles. (20) *A. (A.) carbonarius* Say p. 68
4. (2') Body with short semicordate pronotum and long parallel sided elytra,
 AND mandibles prolonged and with striate dorsal surfaces, AND labral
 apex strongly emarginate. Geographical range eastern North America
 *A. (Spongopus) verticalis* LeConte
- 4'. Combination of morphological features not as above 5
5. (4') Body broad and *Amara*-like and in most specimens with metallic
 greenish, aeneous, bronze or bluish tinges on dorsum, AND head with

- outer angles of clypeus each with 1 seta, AND elytral intervals 3 each with setigerous puncture in approximately distal 1/3; intervals 9 and 10 without dense short setae, with only normal fixed longer setae. Female genitalia with valvifers lightly sclerotized and with apical portions not elongate. subgenus *Aplocentrus* LeConte (see Lindroth, 1968, for key to species.)
- 5'. Combination of morphological features not as above 6
6. (5') Elytra with extensive rufo-testaceous or metallic tinged areas. Hind tarsi stout (Fig. 39); 1st tarsomeres each not or only slightly longer than longest apical spur of each hind tibia. subgenus *Anadaptus* Casey (see Noonan, 1996b, for species revision).
- 6'. Elytra unicolorous dark, without extensive rufo-testaceous areas, lacking any metallic changes. Hind tarsi varied in length (Figs. 38, 39).
..... 7
7. (6') Elytra with intervals 8 to 10 or 9 to 10 with dense fine, short setae ..
..... 24
- 7'. Elytra with intervals 8 to 10 or 9 to 10 with only normal fixed setae ..
..... 8
8. (7') Pronotum with lateral depressions prominent, at least posteriorly. ..
..... 9
- 8'. Pronotum with lateral depressions not prominent, even posteriorly ..
..... 16
9. (8) Pronotal posterior angles broadly rounded (Figs. 18, 19, 21) 10
- 9'. Pronotal posterior angles well-marked, right to slightly obtuse or dentate (Figs. 10-14) 12
10. (9) Head very large with small, flat eyes; frontal foveae somewhat linear, convergent posteriorly. Pronotum suborbiculate, with broadly rounded posterior angles and with prominent lateral depressions along all of both sides (Fig. 19). Body size largest in genus, length 14.4 to 19.5 mm. Geographic range southeastern United States (Fig. 246)
..... (19) *A. (A.) loedingi* Schaeffer p. 67
- 10'. Head normal in size, with normal-sized, convex eyes; frontal foveae triangular to irregular in shape, with or without posterior projections, such projections not convergent posteriorly. Pronotum and body size various, 11
11. (10') Pronotum with lateral depressions greatly widened and very broad posteriorly (Fig. 21). Geographical range transcontinental (Fig. 248).
..... (21) *A. (A.) harrisii* LeConte p. 71
- 11'. Pronotum with lateral depressions not greatly widened and not very broad posteriorly (Fig. 18). Geographical range eastern United States and southeastern and central Canada (Fig. 245)
..... (18) *A. (A.) nigerrimus* Dejean (in part) p. 65
12. (9') Elytra medially shiny in both sexes and in most specimens somewhat iridescent; microsculpture of very fine transverse mesh 14
- 12'. Elytra medially not shiny in both sexes, dull in ♀♀; microsculpture much more prominent, of isodiametric or moderately transverse meshes
..... 13

13. (12') Clypeus at each side with 1 setigerous puncture (rare specimens with 2 such punctures on each side). Pronotum with posterior lateral depressions somewhat linear in shape anteriorly (Fig. 13). Aedeagus (Figs. 74, 104) with dorsal membranous area elongate, extended approximately 4/5 to basal bulb; shaft proximally strongly striate laterally. Geographical range apparently not including central portions of North America (Fig. 238) (13) *A. (A.) kirbyi* Lindroth (in part) p. 51
- 13'. Clypeus at each side with 2 setigerous punctures (rare specimens with 1 such puncture on 1 or both sides; less than ca. 0.5% with only 1 puncture at each side). Pronotum with posterior lateral depressions not somewhat linear in shape anteriorly (Fig. 14). Aedeagus (Fig. 75, 105) with dorsal membranous area shorter, at most extended 1/2 the distance to basal bulb; shaft proximally nearly smooth laterally. Geographical range including central portions of North America (Fig. 239). (14) *A. (A.) nigrita* Dejean (in part) p. 53
14. (12) Clypeus at each side with 2 setigerous punctures. Pronotum with lateral depressions more prominent, notably present even anteriorly (Fig. 12). Geographical range eastern North America west to Nebraska and Utah (Fig. 237) (12) *A. (A.) melanopus* Haldeman (in part) p. 48
- 14'. Clypeus at each side with 1 setigerous puncture. Pronotum with lateral depressions less prominent, not present anteriorly (Fig. 10, 11). ... 15
15. (14') Pronotum with sides posteriorly nearly straight or straight (Fig. 10). Body size larger, length 11.0 to 13.0 mm. Aedeagus (Fig. 49) with sclerotized ligula extended over part of dorsal membranous area, without apical disk. Geographical range northeastern and north central North America (Fig. 235) ... (10) *A. (A.) agricola* Say (in part) p. 44
- 15'. Pronotum with sides posteriorly more rounded (Fig. 11). Body size smaller, length 9.9 to 11.6 mm. Aedeagus (Fig. 50) without ligula, with apical disk. Geographical range northeastern United States and Ontario (Fig. 236). ... (11) *A. (A.) pseudagricola* new species (in part) p. 46
16. (8') Pronotum cordiform in shape, sides posteriorly strongly convergent and straight or sinuate (Figs. 3, 15). Elytra with microsculpture isodiametric. Geographical range western North America (Figs. 225, 240, 241) 17
- 16'. Pronotum not cordiform in shape, sides posteriorly less convergent and more rounded, not notably sinuate (Figs. 10-14, 18, 22). Elytra with microsculpture various. Geographical range various. 18
17. (16) Pronotum (Fig. 3) short in form, more constricted posteriorly; sides not notably parallel-sided posteriorly; disk dull from isodiametric microsculpture. Aedeagus (Fig. 42) with sclerotized ligula covering part of proximal portion of dorsal membranous area. Geographical range western United States and northwestern Baja California (Fig. 225) (3) *A. (A.) consobrinus* LeConte p. 30
- 17'. Pronotum (Fig. 15) longer in form, less constricted posteriorly; sides notably parallel-sided posteriorly; disk shiny at least in part. Aedeagus (Fig. 54) without sclerotized ligula covering part of dorsal membranous

- area. Geographical range western United States, northwestern Canada and Mexico (Figs. 240, 241). . . (15) *A. (A.) californicus* Dejean p. 55
18. (16') Pronotal posterior angles broadly rounded (Fig. 18). Geographical range (Fig. 245) eastern and central North America (18) *A. (A.) nigerrimus* Dejean (in part) p. 65
- 18'. Pronotal posterior angles well-marked, right to slightly obtuse or dentate (Figs. 10-14, 22). Geographical ranges various. 19
19. (18') Elytra medially shiny in both sexes and in most specimens somewhat iridescent; microsculpture of very fine transverse mesh 22
- 19'. Elytra medially not shiny in both sexes, dull in ♀♀; microsculpture much more prominent, of isodiametric or moderately transverse meshes 20
20. (19') Body with at least part of dorsum with aeneous, bronze or dark green tinges. Pronotum (Fig. 22) somewhat quadrate in form. Geographical range western North America . . . *A. (Aplocentrus) amaroides* LeConte
- 20'. Body with dorsum lacking aeneous, bronze or dark green tinges. Pronotum (Figs. 10-14) different in form 21
21. (20') Clypeus at each side with 1 setigerous puncture (rare specimens with 2 such punctures on each side). Pronotum with posterior lateral depressions somewhat linear in shape anteriorly (Fig. 13). Aedeagus (Figs. 74, 104) with dorsal membranous area elongate, extended approximately 4/5 to basal bulb; shaft proximally strongly striate laterally. Geographical range apparently not including central portions of North America (Fig. 238) (13) *A. (A.) kirbyi* Lindroth (in part) p. 51
- 21'. Clypeus at each side with 2 setigerous punctures (rare specimens with 1 such puncture on 1 or both sides; less than ca. 0.5% with only 1 puncture at each side). Pronotum with posterior lateral depressions not somewhat linear in shape anteriorly (Fig. 14). Aedeagus (Figs. 75, 105) with dorsal membranous area shorter, at most extended 1/2 the distance to basal bulb; shaft proximally nearly smooth laterally. Geographical range including central portions of North America (Fig. 239). (14) *A. (A.) nigrita* Dejean (in part) p. 53
22. (19) Clypeus at each side with 2 setigerous punctures. Pronotum with lateral depressions more prominent, notably present even anteriorly (Fig. 12). (12) *A. (A.) melanopus* Haldeman (in part) p. 48
- 22'. Clypeus at each side with 1 setigerous puncture. Pronotum with lateral depressions less prominent, not present anteriorly (Fig. 10, 11). 23
23. (22') Pronotum with sides posteriorly nearly straight or straight (Fig. 10). Body size larger, length 11.0 to 13.0 mm. Aedeagus (Fig. 49) with sclerotized ligula extended over part of dorsal membranous area, without apical disk. Geographical range northeastern and north central North America (Fig. 235) . . . (10) *A. (A.) agricola* Say (in part) p. 44
- 23'. Pronotum with sides posteriorly more rounded (Fig. 11). Body size smaller, length 9.9 to 11.6 mm. Aedeagus (Fig. 50) without ligula, with apical disk. Geographical range northeastern United States and Ontario (Fig. 236). . . . (11) *A. (A.) pseudagricola* new species (in part) p. 46

24. (7) Pronotal posterior angles broadly rounded, obsolete (Fig. 24), Geographical range central Mexico. Hind tarsi stout (Fig. 39); 1st tarsomeres each not or only slightly longer than longest apical spur of each hind tibia. subgenus *Anadaptus* Casey (see Noonan, 1996b, for species revision).
- 24'. Pronotal posterior angles acute to obtuse, not obsolete (Figs. 6, 16, 17, 23). Hind tarsi varied in length (Figs. 38, 39). 25
25. (24') Elytral intervals 2 and 4 with dense setose punctures along all or most of their lengths. Hind tarsi stout (Fig. 39); 1st tarsomeres each not or only slightly longer than longest apical spur of each hind tibia. subgenus *Anadaptus* Casey (see Noonan, 1996b, for species revision).
- 25'. Elytral intervals 2 and 4 with setose punctures restricted to anterior and posterior margins or absent. Hind tarsi more slender (Fig. 38). 26
26. (25') Pronotum cordiform in shape with sides notably convergent posteriorly and/or with posterior lateral depressions deep (Fig. 23). Hind tarsi stout (Fig. 39).; Geographical range western Canada, western United States and northwestern Mexico. subgenus *Anadaptus* Casey (see Noonan, 1996b, for species revision).
- 26'. Pronotum not cordiform in shape (Figs. 6, 16, 17), sides at most slightly convergent posteriorly and posterior lateral depressions shallow to moderate in depth. Hind tarsi more slender (Fig. 38). 27
27. (26') Frons with short fine setae laterally. Geographical range western North America (Fig. 244) (16) *A. (A.) similis* LeConte p. 59
- 27'. Frons without short fine setae laterally. Geographical range various 28
28. (27') Pronotum (Fig. 17) with posterior angles obtusely rounded, not dentate or subdentate. Geographic range (Fig. 244) predominantly eastern North America but also in western North America.
- 28'. Pronotum (Fig. 6) with posterior angles each dentate or subdentate. Geographic range (Figs. 230, 231) Palaearctic Region and Pacific Northwest of North America (6) *A. (A.) binotatus* Fabricius p. 35

Key to Adults of Palaearctic and Oriental Species and Subgenera of the Genus *Anisodactylus*

1. Body with dorsum distinctly bicolored; head and base of elytra rufo-testaceous; pronotum (except for somewhat rufo-testaceous sides) and medial and distal portions of elytra bluish black, AND pronotum with posterior angles broadly rounded. Geographical range (Fig. 223) Mediterranean region (1) *A. (A.) heros* Fabricius p. 26
- 1'. Body with dorsum not distinctly bicolored 2
2. (1') Front tibiae with distal apical spurs each trifid (Fig. 34) 3

- 2'. Front tibiae with distal apical spurs not trifid, at most slightly swollen or angulate at each side (similar to Figs. 35-36) 7
3. (2) Clypeus with 1 seta at each outer distal angle 4
- 3'. Clypeus with 2 or more setae at 1 or (in most specimens) both outer distal angles 6
4. (3) Posterior margins of hind femora each with 2 or at most 3 long setae. Pronotal lateral base including posterior lateral depressions covered with small to large, dense asetose punctures, punctures in some specimens posteriorly large and confluent and producing rugose appearance; elytra with or without dense asetose punctures. Geographical range Japan, Taiwan and adjacent mainland Asia or mainland Oriental Region (Fig. 234) 5
- 4'. Posterior margins of hind femora each with 4 or more long setae. Pronotal lateral base not covered with dense asetose punctures (posterior lateral depressions of some specimens however may have a few scattered asetose punctures); elytra not covered with dense asetose punctures. Geographical range Mediterranean Region.
 *A. (Pseudodichirus) intermedius* Dejean (in part)
5. (4) Elytral intervals 1-5 medially with dense asetose, moderate sized punctures and with microsculpture composed of faint transverse very fine meshes. Geographical range Japan, Taiwan and adjacent mainland Asia (Fig. 234) (9) *A. (A.) tricuspoidatus* Morawitz p. 42
- 5'. Elytra intervals 1-5 medially at most with very small sparse to moderately dense asetose micropunctures and with microsculpture composed of moderately transversely stretched mesh. Geographical range mainland portions of Oriental Region (Fig. 234).
 (8) *A. (A.) karennius* Bates p. 40
6. (3') Body with dorsum metallic, with blue or green tinges. Geographical range from northern Europe to western Mediterranean region. subgenus *Hexatrichus* Tschitschérine (see Trautner and Geigenmüller, 1987, for identification of *A. poeciloides* Stephens and *A. virens* Dejean, and Jedlička, 1942, for description of *A. mandshuricus* Jedlička)
- 6'. Body with dorsum not metallic, without blue or green tinges. Geographical range Mediterranean Region.
 *A. (Pseudodichirus) intermedius* Dejean (in part)
7. (2') Elytra with third intervals each with 1 setigerous puncture in approximately distal 1/3 or 1/4 8
- 7'. Elytra with third intervals each without setigerous puncture in approximately distal 1/3 or 1/4, subgenus *Pseudanisodactylus* Noonan, *A. punctatipennis* Morawitz, *A. sadoensis* Schauberger, and *A. signatus* Panzer (see Habu, 1973 for key to species)
8. (7) Pronotum with short fine setae posteriorly 9
- 8'. Pronotum without short fine setae posteriorly, with or without dense asetose punctures posteriorly 10
9. (8) Pronotum with lateral depressions moderately prominent, evident near anterior angles (Fig. 6). Humeri of elytra with juncture of inner anterior and lateral borders forming indistinct broad angle (Fig. 26). Body size

- larger, length 9 to 13 mm. Aedeagus with two dorsal membranous areas (Figs. 67a, 67b). Geographic range Palaearctic Region and Pacific Northwest of North America (Figs. 230, 231). (6) *A. (A.) binotatus* Fabricius p. 35
- 9'. Pronotum with lateral depressions slight, little evident near anterior angles (Fig. 2). Humeri of elytra with juncture of inner anterior and lateral borders forming distinct somewhat narrow angle (Fig. 25). Body size smaller, length 7 to 10 mm. Aedeagus with single dorsal membranous area (Fig. 62). Geographical range Europe (Fig. 224). (2) *A. (A.) nemorivagus* Duftschmid p. 28
10. (8') Pronotum with lateral depressions moderately prominent, evident near anterior angles (Fig. 4); posterior margin of most specimens moderately emarginate medially. Aedeagus with dorsum having single membranous area (Figs. 64a, 64b). Geographical range Spain (Fig. 226) (4) *A. (A.) hispanus* Puel p. 32
- 10'. Pronotum with lateral depressions slight, little evident near anterior angles (Figs. 5, 7); posterior margin not moderately emarginate medially. Aedeagus with dorsum having two membranous areas (Figs. 65, 66a, 66b, 68a). Geographical range Algeria or Morocco or northern Mediterranean and from Sikkim, India (Figs. 226, 227) 11
11. (10') Legs rufo-testaceous to rufous (5) *A. (A.) pueli* Schaubberger (in part) p. 33
- 11'. Legs rufo-piceous to dark piceous 12
12. (11') Pronotum with sides posteriorly somewhat less convergent (Fig. 7). Elytra with microsculpture of seventh interval medially of isodiametric mesh, not at all transversely stretched. Aedeagus longer and more slender (Figs. 68a, 92). Geographical range Algeria and Morocco (Fig. 226) (7) *A. (A.) antoinei* Puel p. 39
- 12'. Pronotum with sides posteriorly more convergent (Fig. 5). Elytra with microsculpture of seventh interval medially of slightly transversely stretched mesh. Aedeagus stouter (Figs. 65, 66a, 89, 90). Geographical range (Fig. 227) northern Mediterranean and Sikkim, India (5) *A. (A.) pueli* Schaubberger (in part) p. 33

Species Descriptions

The *binotatus* Group

Description. Body piceous to black except in *A. heros*.

Pronotum. Lateral beads of *A. heros* fine, indistinct anteriorly; in other species moderate throughout their length in most specimens, in some specimens indistinct or absent anteriorly. Posterior lateral depressions of *A. heros* moderate, somewhat elliptical in shape, each separated from sides by distinct convexity, in other species shallow in most specimens, irregularly shaped or somewhat linear, in most specimens each separated from sides by a slight convexity. Posterior angles prominently dentate

except in *A. heros* and in some specimens of *A. pueli*.

Legs. Hind tarsi of most specimens with several thick setae on dorsum of basitarsi; dorsa of other tarsomeres with or without setae.

Elytra. Intervals 9 and 10 with dense, short, fine setae in all species except *A. consobrinus*.

Male Genitalia. Aedeagus with distal portion of shaft deflected to right and in species other than *A. heros* and *A. nemorivagus* with sclerotized flap on dorsum near ostium.

Cladistic Relationships. The combination of synapomorphies defining this stock is: pronotal posterior angles dentate (except in *A. heros* and some specimens of *A. pueli*), aedeagus with distal portion of shaft slightly to strongly deflected to right and aedeagus with sclerotized flap on dorsum near ostium (except in *A. heros* and *A. nemorivagus*).

Included Taxa. This includes *A. heros*, *A. nemorivagus*, *A. consobrinus*, *A. hispanus*, *A. pueli*, *A. binotatus* and *A. antoinei*.

The *nemorivagus* Subgroup

Description.

Male genitalia. Aedeagus with shaft strongly deflected to right distally.

Cladistic Relationships. The strong deflection to the right of the male aedeagus distinguishes the two included species.

Included Taxa. The group includes *A. heros* and *A. nemorivagus*.

1. *Anisodactylus (A.) heros* Fabricius (Figs. 1, 40, 61, 85, 113, 133, 177, 223)

Carabus heros Fabricius, 1801: 204. Holotype (ZMUC): a ♀ labeled: "Type", black machine print on a red label; "Tanger Schousboe, Heros. F.", black handwriting on white label "Anisodactylus heros F. P. BASILEWSKY det.", "P. BASILEWSKY" in black machine print, remainder in black handwriting, white label. Type Locality: Tanger, Morocco, as originally cited.

Anisodactylus dejeani Buquet, 1840: 241-242. Type Locality: Algeria, as originally cited. The types probably are at MNHN (Horn and Kahle, 1935) but may be in any of the many large collections there and will be searched for when I can visit the museum. Sciaky (1979) observed that characters formerly believed to distinguish this form from *A. heros* actually varied between the two forms. He therefore synonymized the two names.

Recognition. Adults of this species are readily distinguished from other members of the subgenus by their bicolored dorsum.

Description. Body length 9.5 to 12.5 mm.

Color. Body with dorsum bicolored, with bluish black and rufo-testaceous regions; head (except for infuscated median spot on frons of some specimens) rufo-testaceous; pronotum bluish black except somewhat rufo-testaceous lateral sides; elytra rufo-testaceous anteriorly, bluish black medially and distally. Venter bicolored, with head and abdominal sterna testaceous to rufo-testaceous and thoracic sternites black.

Legs rufo-testaceous.

Head. Frons with frontal foveae somewhat linear, each with short clypeo-ocular prolongation; microsculpture isodiametric. Antennae with scapes rufo-testaceous; other articles rufo-testaceous to rufo-brunneus. Palpi rufo-testaceous. Mentum and submentum with or without short fine setae.

Pronotum. (Fig. 1) Slightly to strongly constricted posteriorly and cordate in appearance when strongly constricted. Anterior angles slight. Posterior angles evident but well rounded. Sides rounded anteriorly and nearly straight to slightly sinuate posteriorly. Lateral beads fine, indistinct anteriorly. Lateral depressions shallow and narrow, but evident throughout entire length. Posterior lateral depressions moderate, somewhat elliptical in shape, each separated from sides by distinct convexity. Disk with sparse short fine setae anteriorly near anterior angles and sides and posteriorly near sides, posterior margin and in some specimens in posterior lateral depressions; microsculpture of isodiametric mesh, obsolete medially, elsewhere moderate to prominent.

Venter of Thorax. Short moderately thick setae present on: prosternum, except medially; anterior portions of proepisterna; mesosternum and metasternum, except medially; and mesepisterna and metepisterna.

Legs. Front tibiae each in males with ventro-apical protuberance slight; apical spur lanceolate shaped; small stout apical spine laterad to apical spur. Posterior margins of hind femora each with 2 long setae and 2 to 4 shorter setae. Hind tarsi with several thick setae on dorsum of basitarsi; dorsa of other hind tarsomeres of hind tarsi with or without setae.

Elytra. Humeri with juncture of inner elytral anterior and lateral borders rounded, without tubercles. Intervals flat to slightly convex; short fine setae along entire length of intervals 9 and 10, anterior apices of most intervals and posterior apices of intervals 8 to 10. Microsculpture of somewhat granulate isodiametric mesh.

Abdomen. Sterna 2 and 3 with patches of short moderate sized setae near hind coxae.

Male Genitalia. Aedeagus (Figs. 40, 61, 85) ($n = 12$) long and slender, lightly sclerotized, only slightly arcuate dorso-ventrally; shaft in dorsal view strongly curved toward right; dorsal membranous area short; apex short, with tip broadly rounded. Everted internal sac (Fig. 113) ($n = 1$) irregular in shape, with somewhat sclerotized lobe on basal left side.

Female Genitalia. Valvifers (Fig. 133) moderately sclerotized; distal portion moderately elongate; testaceous to rufo-testaceous in color.

Natural history. Antoine (1959) reported that in Morocco adults occur in moist places.

Fig. 177 graphs monthly captures of all sexed adults.

Geographical Distribution. (Fig. 223) This species occurs along the western end of the Mediterranean, being present in Western Sahara, Morocco, Algeria and Tunisia of northern Africa and in Spain, Portugal, Sardinia and Sicily.

Notes About Synonym. Sciaky (1979: 8) correctly treated *A. dejeani* as a synonym.

Material Examined. I have seen 212 adults (102 ♂♂, 108 ♀♀ and 2 unsexed). See appendix A for a list of specimens examined.

2. *Anisodactylus (A.) nemorivagus* Duftschmid
(Figs. 2, 25, 27, 41, 62, 86, 114, 134, 178, 224)

- Carabus nemorivagus* Duftschmid, 1812: 79-80. Type lost, Gusenleitner (1984). The International Code of Zoological Nomenclature (1985) requires that a neotype be designated only when necessary to resolve taxonomic confusion. There is no confusion over recognition of specimens of *Carabus nemorivagus* and therefore no reason to designate a neotype.
- Anisodactylus gilvipes* Dejean, 1829:143-144. Lectotype (MNHN): herewith designated, a ♂ labeled: "♂", handwritten in black ink on white label; "gilvipes in Volhyn", black hand print on white label; "Ex. Musaeo Chaudoir", red machine print on white label with red line along edges; "MUSÉUM PARIS 1952 COLL R OBERTHÜR", black machine print on white label. Added label stating: "LECTOTYPE *Anisodactylus gilvipes* Dejean By G. R. Noonan", black laser print on white label. Type Locality: The original description states that the form occurs in several places including "Volhynie". This location presumably refers to "Volhynia", a former province in the Soviet Union. Examination of the Library Atlas of the world (1913) and the Times atlas of the world (1992) shows this region is now part of the Ukraine.
- Harpalus atricornis* Stephens, 1832: 381. Lectotype (BMNH): herewith designated, a ♂ without any original labels. Added label stating: "LECTOTYPE *Harpalus atricornis* Stephens By G. R. Noonan", black laser print on white label. Type Locality: Windsor and Glamorganshire, Great Britain, originally cited, herewith restricted to Windsor, Great Britain.
- Harpalus nigricornis* Stephens, 1832: 381. Lectotype (BMNH): herewith designated, a ♀ without any original labels. Added label stating: "LECTOTYPE *Harpalus nigricornis* Stephens By G. R. Noonan", black laser print on white label. Type Locality: London, England, as originally cited.
- Anisodactylus propinquus* Ballion, 1871: 328. I have not been able to locate the type. Type locality: Tschemkent, as originally cited. Csiki (1932) listed the name as junior synonym of *A. nemorivagus*.
- Anisodactylus orientalis* Guatier des Cottes, 1872: 223. A portion of Guatier des Cottes' types may have been deposited at MNHN via Oberthür (Horn and Kahle, 1935). Csiki (1932) listed *Anisodactylus orientalis* as a synonym of *A. nemorivagus*.
- Anisodactylus austriacus* Dalle Torre, 1877: 45. The types are probably lost. Some types of Dalle Torre are at the University of Innsbruck (F. Gusenleitner, *in litt.*, but *Anisodactylus austriacus* is not there (W. Schedl, *in litt.*). Csiki (1932) listed *Anisodactylus austriacus* as a synonym of *A. nemorivagus*.
- Anisodactylus nemorivagus atripes* Ganglbauer, 1900: 138. Lectotype (NHMW): herewith designated, a ♀ labeled: "ASIA-MINOR GOEX-DAHG v. BODEMEYER", black machine print on white label; "Collect. Hauser", black machine print on white label; "*Anisodactylus nemorivagus* v. *atripes* [two characters that cannot be read] glb", black handwriting on white label. Added label stating "LECTOTYPE *Anisodactylus atripes* Ganglbauer by G. R. Noonan" black laser print on white label. Type locality: not known because I could not obtain the paper with the original description.

Anisodactylus nemorivagus crouzeti Puel, 1931: 68, 79. Puel proposed this as a subspecies. The minor features cited by him do not warrant subspecific status. Puel's types are at MNHN, but the exact collection containing types of the above form is not known (*in litt.* Th. Deuve). **NEW SYNONYMY**

Anisodactylus nemorivagus nigripes Gersdorf, 1953: 117. The author described this name as a new form of *A. nemorivagus* and stated specimens were in the Zoologisches Institut of the Zoologisches Museum in Hamburg, Germany. I have not been able to obtain specimens for examination. It is unclear whether the author meant to assign subspecific or infraspecific status to the name.

Recognition. See the "Recognition" section under *A. binotatus* for features distinguishing its adults from those of *A. nemorivagus*.

Description. Body, dorsum with frons and center of pronotum slightly shiny, elytra dull; length 7 to 10 mm.

Head. Frons with frontal foveae triangular to irregular in shape, with or without clypeo-ocular prolongations; with or without median double rufous spot; microsculpture absent or weak and irregular medially and elsewhere of isodiametric mesh. Antennae with first 1 or 2 proximal antennomeres testaceous, rufous or infuscated, more distal articles darker in color. Palpi testaceous to infuscated.

Pronotum. (Fig. 2). Anterior angles slight to moderate. Posterior angles dentate. Sides rounded anteriorly, posteriorly somewhat convergent toward posterior angles and slightly rounded or straight. Lateral depressions moderate, somewhat widened posteriorly and in most specimens confluent with posterior lateral depressions, anteriorly very narrow and faint or absent. Disk with sparse short fine setae laterally, denser such setae posteriorly (in most specimens setae dense near posterior angles and posterior lateral depressions and sparse or absent medially), some specimens with such setae along lateral portions of anterior margin; with punctures along margins, such punctures each bearing a short fine seta or not, punctures dense in and near posterior lateral depressions and in many specimens producing rugose or wrinkled appearance in these areas; surface wrinkled in lateral depressions of many specimens; microsculpture weak and irregular medially and mostly moderate isodiametric mesh elsewhere.

Venter of Thorax. Short moderately thick setae present on: prosternum; in some specimens on anterior portions of proepisterna; mesosternum; in some specimens on mesepisterna and metepisterna; most of metasternum except medially.

Legs. Rufo-testaceous to black in color. Front tibiae each in males with ventro-apical protuberance prominent and bearing small distal spine (Fig. 27) (spine worn away in many males); apical spur sharply widened proximally, but not subtrifid; small stout apical spine laterad to apical spur. Posterior margins of hind femora each with 2 long setae and 0 to 4 shorter setae.

Elytra. Humeri with juncture of inner anterior and lateral borders forming distinct somewhat narrow angle (Fig. 25). Intervals slightly to moderately convex; posterior apices of intervals 4 or 5 to 10 with short fine setae; intervals 2 and 3 of a few specimens with short fine setae at apices; some specimens with short fine setae along anterior margin of all or some intervals and/or along entire lengths of interval 6. Microsculpture of somewhat granulate isodiametric mesh.

Abdomen. Sterna 2 and 3 with patches of short moderate sized setae near hind coxae; some specimens with scattered setae on sterna 4 and 5.

Male Genitalia. Aedeagus (Figs. 41, 62, 86) (n = 12) with shaft in dorsal view distally strongly curved toward the right; dorsal membranous area short; apex short, tip moderately rounded. Everted internal sac (Fig. 114) (n = 4) tubular in shape, without armature.

Female Genitalia. Valvifers (Fig. 134) moderately sclerotized; distal portion elongate and narrow; brunneous to piceous or black in color.

Natural History. Lindroth et al. (1986) reported that adults are found in drier places than those of *A. binotatus*, with adults from Scandinavia found on high ground with sandy or gravelly soil, those from Great Britain found on sandy heaths and those from Germany found on heather covered peaty soil and on cultivated land.

Fig. 178 graphs monthly captures of all sexed adults.

Geographical Distribution. (Fig. 224) I have seen specimens from throughout much of Europe. The species apparently also extends into Scandinavia and eastward into Asia Minor and northern Iran (Csiki, 1932; Freude et al., 1976; Lindroth, 1974; Lindroth et al., 1986; Puel, 1931; and Sciaky, 1979).

Material Examined. I have seen 266 specimens (125 ♂♂, 136 ♀♀ and 5 unsexed). See appendix A for a list of specimens examined.

The *binotatus* Subgroup

Description.

Pronotum. Posterior angles sub-dentate to dentate in *A. pueli* and dentate to prominently dentate in other species.

Male genitalia. Aedeagus with shaft slightly to moderately deflected to right distally, with sclerotized flap near ostium and with dorsal membranous area divided into two membranous areas in *A. antoinei*, *A. binotatus* and *A. pueli*.

Cladistic Relationships. The dentate pronotal posterior angles, deflection of aedeagus to right and sclerotized flap near ostium distinguish the included species.

Included Taxa. The group includes *A. consobrinus*, *A. hispanus*, *A. pueli*, *A. binotatus* and *A. antoinei*.

3. *Anisodactylus (A.) consobrinus* LeConte (Figs. 3, 28, 42, 63, 87, 115, 135, 179, 180, 225)

Anisodactylus consobrinus LeConte, 1851: 183. Lectotype (MCZC): herewith designated, a ♂ labeled: gold disk; "Type 88", white label with red paper pasted over most of it, "Type" in black machine print on white portion, "88" in black hand print on red portion; "A. consobrinus Lec.", black handwriting on white label. Added label stating: "LECTOTYPE *Anisodactylus consobrinus* LeConte By G. R. Noonan", black laser print on white label. Type Locality: "California borealis" [Northern California], as originally cited.

Anisodactylus brevicollis LeConte, 1851: 183. (not *Anisodactylus spurcaticornis* var. *brevicollis* Chaudoir, 1844). Holotype (MCZC): a ♀ labeled: gold disk; "Type 87", white label with red paper pasted over most of it, "Type" in black machine print on white portion, "87" in black hand print on red portion; "A.

brevicollis Lec. Williams", black handwriting on white paper. Type Locality: Santa Isabel Island, as originally cited.

Recognition. Adults look superficially like those of *A. californicus* but are distinguished by the features given under that species.

Description. Body form broad; length 9.9 to 13.5 mm; dorsum dull.

Head. Clypeus with 1 seta at each outer distal angle in most specimens (2 setae at 1 of the outer distal angles in 2 males from different sites in Washington). Frons with frontal foveae triangular to irregular in shape, without clypeo-ocular prolongations; with moderately dense very fine asetose punctures; with or without median double rufous spot; microsculpture isodiametric. Antennal scape infuscated to black. Palpi infuscated to black.

Pronotum. (Fig. 3) Short in form. Anterior angles slight to moderate. Posterior angles prominently dentate. Lateral beads moderate posteriorly, narrowed anteriorly and in some specimens indistinct anteriorly. Lateral depressions narrow, delimited medially but in most specimens not well delimited posteriorly. In most specimens posterior lateral depressions shallow and not separated from side margin by a convexity; separated from side margin by weak to moderate convexity in some specimens. Disk posteriorly with dense asetose punctures, rugose or wrinkled posteriorly in some specimens, with scattered small asetose punctures elsewhere in many specimens; microsculpture isodiametric, more prominent near margins.

Venter of Thorax. Prosternum smooth and glabrous except scattered pubescence anteriorly. Proepisterna, proepimera, mesepisterna, mesepimera, metepisterna and metepimera glabrous. Mesosternum glabrous to moderately densely pubescent. Metasternum laterally with small asetose punctures, in some specimens with few scattered setae near coxal cavity margins.

Legs. Legs dark piceous to black. Front tibiae each in both sexes with ventro-apical protuberance very small, bearing small distal spine (Fig. 28); apical spur widened proximally but not sub-trifid, slightly to moderately angulate proximally; with small stout apical spine laterad to apical spur; ventral side with 1 irregular row of spines distal to cleaning spur and on outer side; anterior side with median row of setigerous punctures in approximately distal 1/2, not extended proximally to proximal end. Tarsomere 5 of all tarsi with row of stout setae on each side of venter. Hind tarsi with basitarsi with several stout dorsal setae; dorsa of other tarsomeres without such setae.

Elytra. Short, widened behind middle. Humeri somewhat angulate, each without more than rudiment of tooth. Intervals flat to convex, glabrous. Intervals 8 to 10 lacking dense, short, fine setae. Microsculpture isodiametric, prominent, granulate.

Abdomen. Sterna glabrous except ambulatory setae and patch of short pubescence on each side of sterna 2 and 3 near hind coxae. Sixth sternum of some males with pair of long setae laterad to medial pair (1 ♂ from California with such lateral pair).

Male genitalia. Aedeagus (Figs. 42, 63, 87) arcuate, symmetrical, short and stout; shaft slightly to moderately striate laterally proximal to proximal end of the dorsal membranous area; dorsal membranous area short, proximally with large sclerotized tongue-shaped flap; apex elongate, tip bent ventrad and narrowly rounded. Everted internal sac (Fig. 115) (n = 12) enlarged and somewhat pouch-like proximally, narrower distally; with large tongue-shaped sclerotized, smooth flap at a basal end near attachment of sac to dorsum of aedeagus; with basal right narrow field of spine-like

macrotrichia; and with prominent ventral sacculus.

Female Genitalia. Valvifers (Fig. 135) moderately sclerotized; distal portion moderately elongate.

Natural History. Adults typically occur in areas with moist but not saturated ground near moisture such as creeks, small streams, lakes or in moist areas of dried up intermittent waterways. The ground in such sites varies from nearly bare to covered with grasses and other herbaceous plants. I have collected 91 adults from 15 different sites in California. One of these sites was a montane meadow at 1,450 m in the Sierra Nevada, with the soil moist beneath debris sheltering adults. Heavy growths of lichens on trees suggested that fogs provided considerable amounts of moisture. Another site was at 1,420 m in the Sierra Nevada and had adults under debris in a moist area of a shaded gully. The other sites had water in the form of ponds, creeks, lakes or small streams. Data on museum specimens show habitats with specimens as follows: 11 adults under rocks; 5 under logs; 2 under bark; 1 on ground under apple tree; 19 by vernal ponds; 16 by creeks or streams; 3 under oaks and rocks in oak woodland; 2 on a gravel bar; 20 from pitfall traps; and 1 in a potato patch.

Adults have been taken at elevations ranging from sea level to 2,774 meters, with the latter record represented by two adults from the summit of Lone Mountain in Nevada. Only 10 other specimens from 6 different sites (all in California) are from places with elevations of 2,000 meters or greater. Most adults have been taken at sites with elevations below 1,000 meters. The minimal elevations of sites with adults do not appear to increase from north to south in Washington, Oregon and California. However, the maximum elevations of such sites do increase southward from 1,006 m in Washington and 1,266 m in Oregon to 2,387 in California.

Figs. 179 and 180 graph monthly captures of all sexed adults and teneral adults, respectively.

Geographical Distribution. (Fig. 225) Adults have been taken from Washington southward into southern California and northern Baja California. Six adults have been taken in Oak Creek Canyon, south of Flagstaff in Arizona. Specimens from Nevada are two taken on the summit of Lone Mountain and one with only the state for locality data. A ♂ was taken at The Pinnacle in New Mexico.

Material Examined. Besides type specimens I have examined a total of 1,215 adults (683 ♂♂, 531 ♀♀, and 1 unsexed specimen). See appendix A for a list of specimens examined.

4. *Anisodactylus* (A.) *hispanus* Puel

(Figs. 4, 29, 43, 64a, 64b, 88, 116, 136, 181, 226)

Anisodactylus hispanus Puel, 1931: 66, 76. Puel's types are at MNHN, but the exact collection containing types of the above form is not known (*in litt.* Th. Deuve). Puel's description makes it clear that my concept of *A. hispanus* agrees with his. The redescription in Sciaky (1979) further supports my concept of the species.

Recognition. Adults resemble those of *A. binotatus*, *A. nemorivagus*, and *A. pueli*; see the "Recognition" sections under these species for distinguishing features.

Description. Body length 11.3 to 13.4 mm.

Head. Frons with frontal foveae triangular to irregular in shape, with or without clypeo-ocular prolongations; with or without median double rufous spot; microsculpture absent or weak and irregular medially and elsewhere of isodiametric mesh. Antennae with first 1 or 2 proximal antennomeres testaceous, rufous or infuscated, more distal articles darker in color. Palpi testaceous to infuscated.

Pronotum. (Fig. 4). Anterior angles slight to moderate. Posterior angles dentate. Sides rounded anteriorly, posteriorly straight to slightly rounded, not sinuate, somewhat convergent toward posterior angles. Posterior margin moderately emarginate medially. Lateral depressions moderate, slightly widened posteriorly but not confluent with posterior lateral depressions. Disk with fine asetose punctures anteriorly, such punctures densest antero-medially; with somewhat larger asetose punctures posteriorly, such punctures densest in posterior lateral depressions; microsculpture weak and irregular medially and mostly moderate isodiametric mesh elsewhere.

Venter of Thorax. Short moderately thick setae present on: prosternum; mesosternum; and most of metasternum except medially; and in some specimens on metepisterna. Remainder of venter glabrous.

Legs. Rufo-piceous to black in color. Front tibiae each in males with ventro-apical protuberance moderate and bearing small distal spine (Fig. 29) (spine worn away in many males); apical spur sharply widened proximally, but not subtrifid; small stout apical spine laterad to apical spur.

Elytra. Humeri with juncture of inner elytral anterior and lateral borders rounded, without tubercles. Intervals slightly to moderately convex; posterior apices of all intervals with short fine setae; some specimens with short fine setae along anterior margin of all or some intervals. Microsculpture of prominent granulate isodiametric mesh.

Abdomen. Sterna 2 and 3 with patches of short moderate sized setae near hind coxae.

Male Genitalia. Aedeagus (Figs. 43, 64a, 64b, 88) ($n = 10$) with shaft in dorsal view distally curved toward right, with or without slight striae on sides proximally, moderately emarginate on left side distal to distal end of paramere and with left side of dorsum projected somewhat outward from shaft; dorsal membranous area very short and mostly covered by large sclerotized flap; in lateral view, proximal end of dorsal membranous area projected upward; apex of moderate length, tip moderately rounded, bent slightly ventrad. Everted internal sac (Fig. 116) ($n = 2$) without armature; attached proximally to the sclerotized flap over ostium when sac in repose.

Female Genitalia. Valvifers (Fig. 136) moderately sclerotized; distal portion moderately elongate.

Geographical Distribution. (Fig. 226) This species is restricted to Spain.

Fig. 181 graphs monthly captures of all sexed adults.

Material Examined. I have seen 37 adults (17 ♂♂ and 20 ♀♀). See appendix A for a list of specimens examined.

5. *Anisodactylus (A.) pueli* Schaubberger

(Figs. 5, 44, 65, 66a, 66b, 89, 90, 117, 137, 182, 227, 228, 229)

Anisodactylus pueli Schaubberger, 1933: 124-125. Holotype (OLML); a ♂ labeled; card

with genitalia and abdomen glued to it; "Valona Albanien V. 1908 H. Hopp", black machine print on white label; "Type", red label, handwritten in black ink; "Anisodactylus pueli Schaub.", white label handwritten in black ink; "Loc. class", a red label with handwritten black ink glued to the white label; "Pueli Schaub. det Dr. E. Schaub", white label, first two words handwritten in black ink, remainder in black machine print; "Pueli Schaub.", additional handwritten text that cannot be read, white label handwritten black ink; "Anisodactylus s. str. Pueli Schaub.", white label handwritten in black ink. Type Locality: Valona, Albania, as originally cited.

Recognition. Adults resemble those of *A. binotatus*, *A. nemorivagus* and *A. hispanus*. See the "Recognition" section of *A. binotatus* for features distinguishing adults of *A. pueli* and *A. binotatus*. Adults of *A. nemorivagus* are distinguished by their elytral humeri having the juncture of the inner elytral anterior and lateral borders clearly forming an angle (Fig. 25). Adults of *A. hispanus* differ from those of *A. pueli* by having the pronotal posterior base more emarginate medially and by lacking setae on the metepisterna. Males of *A. pueli* have aedeagi with two dorsal membranous areas (Figs. 65, 66a, 66b) while those of *A. nemorivagus* and *A. hispanus* have a single dorsal membranous area (Figs. 62, 64).

Description. Body, dorsum with frons and center of pronotum slightly shiny, elytra dull; length 9 to 13 mm.

Head. Frons with frontal foveae triangular to irregular in shape, with or without clypeo-ocular prolongations; with or without median double rufous spot; microsculpture absent or weak and irregular medially and elsewhere of isodiametric mesh. Antennae with first 1 or 2 proximal antennomeres testaceous, rufous or infuscated, more distal articles darker in color. Palpi testaceous to infuscated.

Pronotum. Somewhat short in form (Fig. 5). Anterior angles slight to moderate. Posterior angles sub-dentate to dentate. Sides rounded anteriorly, posteriorly somewhat convergent toward posterior angles and slightly sinuate or nearly straight. Lateral depressions moderate, not notably widened posteriorly and not posteriorly confluent with posterior lateral depressions. Disk without short fine setae but with dense asetose punctures posteriorly, punctures largest and densest in or near posterior lateral depressions and posterior portions of lateral depressions and in most specimens producing rugose or wrinkled appearance in these posterior areas; disk anteriorly with sparse to moderately dense asetose punctures, such punctures smaller than those in posterior portion; microsculpture absent medially, toward sides present as weak mesh, irregular, slightly transversely stretched or isodiametric.

Venter of Thorax. Short moderately thick setae present on: prosternum; in some specimens on anterior portions of proepisterna; mesosternum; in some specimens on mesepisterna; most of metasternum except medially; and metepisterna.

Legs. Testaceous, rufo-testaceous to black in color. Front tibiae each in ♂♂ with ventro-apical protuberance moderate and bearing small distal spine (spine worn away in many males); apical spur sharply widened proximally, but not subtrifid; small stout apical spine laterad to apical spur. Posterior margins of hind femora each with 2 long setae and 0 to 4 shorter setae.

Elytra. Humeri with juncture of inner elytral anterior and lateral borders rounded, without tubercles (as in *A. binotatus*, Fig. 26). Intervals slightly to moderately convex; posterior apices of all intervals with short fine setae; some specimens with

short fine setae along anterior margin of all or some intervals. Microsculpture of intervals 1 to 6 medially varied from absent to irregular or of moderately prominent isodiametric to somewhat transversely stretched mesh; medially on interval 7 of slightly transversely stretched mesh; on apices of intervals 1 to 7 and on all of intervals 8 to 10 composed of granulate isodiametric mesh.

Abdomen. Sterna 2 and 3 with patches of short moderate sized setae near hind coxae; some specimens with scattered setae on each side of median of sterna 4 and 5.

Male Genitalia. Aedeagus (Figs. 44, 65, 66a, 66b, 89, 90) (n = 9) with shaft in dorsal view distally curved toward right, with or without slight to moderate striae on sides proximally, moderately emarginate on left side distal to distal end of paramere and with left side of dorsum projected somewhat outward from shaft; dorsal membranous area divided into distal and proximal portions by sclerotized portion of dorsum of shaft, with both membranous regions short; proximal dorsal membranous area broad to elongate; with large sclerotized flap to right of ostium; shaft in lateral view projected dorsally at proximal end of distal dorsal membranous area; apex of moderate length, tip moderately rounded, bent slightly to moderately ventrad. Everted internal sac (Fig. 117) (n = 4) without armature; attached proximally to the sclerotized flap over ostium when sac in repose.

Female Genitalia. Valvifers (Fig. 137) well sclerotized; distal portion moderately elongate.

Variation. Sciaky (1979) named the subspecies *A. puelli bucciarelli* for populations from Italy and Sicily. The most distinctive states defining the new form appear to be that the male aedeagus has the apex bent ventrally (Fig. 90) and has the proximal dorsal membranous area somewhat broader in form (Fig. 66a). In terms of these states, the new form occurs in Italy and Sicily and in Croatia and integrates with the nominate form in Greece (Figs. 228, 229).

Natural History. Sciaky (1979) reported that the species occurs in swampy terrains of both lowlands and mountains.

Fig. 182 graphs monthly captures of all sexed adults.

Geographical Distribution. (Figs. 227, 228, 229) The species occurs primarily in portions of Europe near the north central portion of the Mediterranean, but I have also seen specimens from Spain. I have seen a ♂ labeled as from Turkey (no other locality data) and four adults labeled as from "Kzasnodaz, USSR" (locality not found in gazetteers). Sciaky (1979) lists the species as also present in Asia Minor and the Bolshoy Kavkaz Mountains area of Russia.

Material Examined. I have seen a total of 64 specimens (34 ♂♂ and 30 ♀♀). See appendix A for a list of specimens examined.

6. *Anisodactylus (A.) binotatus* Fabricius

(Figs. 6, 26, 45, 67a, 67b, 91, 118, 138, 183-188, 230-233)

Carabus binotatus Fabricius, 1787: 151-152. Lectotype (ZMUC): a ♀ designated by Lindroth (1968:851) and labeled: "Lectotypus Carabus binotatus F. design Lindroth", red label, "Lectotypus" and "design." in black machine print, other text in black hand print; "Anisodactylus binot det. Lindroth 67", white label, "det. Lindroth 67", in black machine print other text in hand written pencil.

Type Locality: Kiel, Germany, as cited by Lindroth (1968).

Anisodactylus spurcaticornis Dejean, 1829: 142-143. Lectotype (MNHN) herewith designated, a ♂ labeled: "spurcaticornis Ziegler in Austria"; black handwriting on white label; "Ex. Musaeo Chaudoir", red machine print on white label with red line along edges; "MUSÉUM PARIS 1952 COLL R OBERTHÜR", black machine print on white label. Added label stating "LECTOTYPE *Anisodactylus spurcaticornis* Dejean By G. R. Noonan", black laser print on white paper.

Harpalus calceatus Stephens, 1832: 381. Lectotype (BMNH): herewith designated, a ♂ without any original labels. Added label stating "LECTOTYPE *Harpalus calceatus* Stephens By G. R. Noonan", black laser print on white paper. Type Locality: Deal, Great Britain, as originally cited.

Harpalus rufitarsis Stephens, 1832: 381. Lectotype (BMNH): herewith designated, a ♂ without any original labels. Added label stating "LECTOTYPE *Harpalus rufitarsis* Stephens By G. R. Noonan", black laser print on white paper. Type Locality: Gravesend, Great Britain, as originally cited.

Anisodactylus brevicollis Chaudoir, 1844: 431. Chaudoir specimens are at MNHN, but a search of the collections has not found types of this form. Chaudoir (1844) proposed *Anisodactylus brevicollis* as a variety of *Anisodactylus spurcaticornis* Dejean and had a ♂ and ♀. Puel (1931) treated both names as synonyms of *A. binotatus*. My examination of the lectotype of *A. spurcaticornis* shows that name to be synonymous with *A. nemorivagus*.

Recognition. Adults of both sexes resemble those of *A. nemorivagus*, *A. hispanus*, *A. antoinei* and *A. pueli*. They differ from the former by a generally larger body size; by the pronotal lateral depressions being slightly more prominent near the anterior angles; and by having the inner elytral anterior and lateral borders at the humeri being rounded rather than angulate where they meet (Fig. 26).

Members *A. hispanus* differ from those of *A. binotatus* by having the pronotal posterior base more deeply emarginate medially (compare Figs. 4 and 6) and having the pronotal disk more convex between the posterior lateral depressions and the posterior angles. Adults of *A. binotatus* have short, fine setae sparsely distributed on the pronotum along the lateral portions of the posterior end near the posterior angles; adults of *A. hispanus* lack such pubescence. In addition, some adults of *A. binotatus* have red legs while all adults of *A. hispanus* have rufo-piceous to black legs.

Adults of *A. antoinei* have less prominent pronotal lateral depressions than those of *A. binotatus* (compare Figs. 6 and 7), and lack short fine setae on the pronotum and have a different male aedeagus. They have a larger body size than those of *A. nemorivagus* and all have piceous to dark piceous colored legs while some adults of the latter species have reddish legs. The pronotal posterior bead of *A. antoinei* is straighter than that of *A. hispanus* (compare Figs. 4 and 7). The geographical ranges of *A. antoinei* and *A. pueli* are allopatric (Figs. 226, 227).

Adults of *A. pueli* have pronota (Fig. 5) that: lack pubescence on the disk; have lateral depressions not notably widened posteriorly and not confluent posteriorly with the posterior lateral depressions; and have sides posteriorly slightly sinuate or nearly straight. In contrast the pronota of adults of *A. binotatus* (Fig. 6) have: the disk with sparse short fine setae laterally and denser such setae posteriorly; have prominent lateral depressions that are notably widened posteriorly and in most specimens are

confluent posteriorly with posterior lateral depressions; and have sides posteriorly slightly rounded or straight, not sinuate.

Description. Body, dorsum with frons and center of pronotum slightly shiny, elytra dull; length 9 to 13 mm.

Head. Frons with frontal foveae triangular to irregular in shape, with or without clypeo-ocular prolongations; with or without median double rufous spot; microsculpture absent or weak and irregular medially and elsewhere of isodiametric mesh. Antennae with first 1 or 2 proximal antennomeres testaceous, rufous or infuscated, more distal articles darker in color. Palpi testaceous to infuscated.

Pronotum (Fig. 6). Anterior angles slight to moderate. Posterior angles prominently dentate. Sides rounded anteriorly, posteriorly straight to slightly rounded, not sinuate, somewhat convergent toward posterior angles. Posterior base not deeply emarginate. Lateral depressions prominent, widened posteriorly and in most specimens confluent with posterior lateral depressions. Disk with sparse short fine setae laterally; such setae denser posteriorly (in most specimens setae dense near posterior angles and posterior lateral depressions and sparse or absent medially), some specimens with such setae along lateral portions of anterior margin; with punctures along margins, such punctures bearing short fine seta or not, punctures dense in and near posterior lateral depressions and in many specimens producing rugose or wrinkled appearance in these areas; surface wrinkled in lateral depressions of many specimens; microsculpture weak and irregular medially and mostly moderate isodiametric mesh elsewhere.

Venter of Thorax. Short moderately thick setae present on: prosternum; in some specimens on anterior portions of proepisterna; mesosternum; in some specimens on mesepisterna; most of metasternum except medially; and metepisterna.

Legs. Rufo-testaceous to black in color. Front tibiae each in males with ventro-apical protuberance prominent and bearing small distal spine (spine worn away in many males); apical spur sharply widened proximally, but not subtrifid; small stout apical spine laterad to apical spur. Posterior margins of hind femora each with 2 long setae and 0 to 4 shorter setae.

Elytra. Humeri with juncture of inner elytral anterior and lateral borders rounded, without tubercles (Fig. 26). Intervals slightly to moderately convex; posterior apices of all intervals with short fine setae; some specimens with short fine setae on as much as posterior 3/4 of intervals 1 to 5 or 1 to 7; some specimens with short fine setae along anterior margin of all or some intervals and/or along entire lengths of interval 6. Microsculpture of isodiametric mesh, somewhat granulate in many specimens.

Abdomen. Sterna 2 and 3 with patches of short moderate sized setae near hind coxae; some specimens with scattered setae on sterna 4 and 5.

Male Genitalia. Aedeagus (Figs. 45, 67a, 67b, 91) long and slender, shaft asymmetrical, moderately curved to right distally, proximally with or without slight striae, strongly emarginate on left side distal to distal end of paramere and with left side of dorsum strongly projected outward from shaft; dorsal membranous area divided into distal and proximal portions by sclerotized portion of dorsum of shaft, with proximal membranous area elongate; ostium covered by a large sclerotized flap; shaft in lateral view projected dorsally at proximal end of proximal dorsal membranous area; apex broad proximally, sharply narrowed distally, tip narrow, bent slightly ventrad. Everted internal sac (Fig. 118) (n = 3) short, bulblike in shape, without armature; attached proximally to the sclerotized flap over ostium when sac in repose.

Female Genitalia. Valvifers (Fig. 138) moderately sclerotized; distal portion moderately elongate.

Variation in leg color. The color of legs of *A. binotatus* is dimorphic, rufotestaceous to rufous or piceous to black. Fig. 232 shows the geographical distribution of leg color in the Palaearctic Region and Fig. 233 depicts the geographical distribution of leg color in Europe. Examination of these figures shows that both types of leg color occur in Europe. The leg color is of the dark type in adults from islands in the Atlantic and in adults east of the Caspian Sea in Eurasia.

Natural History. In North America adults apparently occur in damp to mesic habitats. Lindroth (1968: 852) reported adults as found "on moderately moist ground with rich vegetation, usually near water." Habitat information on labels of museum specimens is: 2 ♀♀ from peat bog on Lulu Island, British Columbia; a ♂ and a ♀ found "subcortical" on fallen logs near the Willamette River at Corvallis, Oregon; 10 ♂♂ and 1 ♀ on sand dunes at Seaview, Pacific County, Washington; 2 ♀♀ along sandy, rock and marshy seashore 3.2 km N Nemah, Pacific County, Washington; and 1 ♀ in lawn at Wiser Lake, Whatcom County, Washington.

Members apparently occur in disturbed areas. Labels on museum specimens indicate that 54 adults were taken near greenhouses and 24 in dumps at Seattle, Washington. Lindroth (1957) reported the species as present in greenhouses.

During field work S. A. Rewolinski and I collected a ♀ at night along the flat banks of Lenore Lake, Grant County, Washington. The banks had mats of algae and washed up plant debris; my field notes do not say whether the adult was under such debris or out on the exposed shore.

Lindroth et al. (1986) reported that in Scandinavia adults are hygrophilus and found in open country, mostly near standing or slow-running waters. They noted that adults occur on clay-mixed sandy, gravelly or peaty soil with tall plants of grasses, sedges, etc. and on arable land. Labels on museum specimens show: one ♂ collected by a pond in Surrey, United Kingdom; one ♀ in a garden in Europe; and seven adults under stones, rocks or boulders in various localities in Germany.

Lindroth (1968: 852) noted that flying adults of this species have been repeatedly observed in Europe. Ten adults from Seattle, King County, Washington are labeled as taken in flight.

Laroche (1990) summarized reports showing that in the field in Germany adults feed on worms, mollusks and pulps of strawberries.

Figures 183 and 184 respectively graph captures in North America of all adults and of teneral per month. Figs. 185-188 graph captures in the Palaearctic and Nearctic Regions.

Geographical Distribution. (Figs. 230-233) Lindroth (1957; 1968: 352) noted that this species has been introduced in North America from Europe. The oldest North American specimen I have seen is a ♂ collected at Portland in 1911. The second oldest adult is a ♀ from Conway, Washington collected in 1918.

I have seen adults from British Columbia, Washington and northern Oregon (Fig. 230). A ♀ is labeled as collected in Dickinson County, Iowa. I believe this specimen is mislabeled because the Ohio record is 1,757 kilometers from the nearest site with *A. binotatus* in southeastern Oregon. Fig. 230 therefore does not show the Iowa locality.

The Palaearctic distribution (Fig. 231) of the species is large, extending from

Great Britain eastward through Eurasia to South Korea. The species also occurs in the Madeira and Azores Islands and on many islands in the Mediterranean. I have also seen specimens with the country label data of Morocco and Algeria.

Material Examined. I have seen 3,412 specimens (1,908 ♂♂, 1,503 ♀♀ and 1 unsexed specimen). See appendix A for a list of specimens examined.

7. *Anisodactylus (A.) antoinei* Puel
(Figs. 7, 46, 68a, 68b, 92, 139, 226)

Anisodactylus antoinei Puel, 1931: 66, 75-76. Lectotype (MNHN): herewith designated, a ♂ labeled: "Casablanca III 22 Maroc Antoine", white label with date in black hand print and remainder in black machine print; "cotype", black hand print on red label; "Antoinei Puel Antoine det.", white label with "Antoine det." in black machine print and remainder in black hand print. Added label stating "LECTOTYPE *Anisodactylus antoinei* Puel By G. R. Noonan", black laser print on white paper.

Recognition. See the comments for *A. binotatus*.

Description. Body, dorsum with frons and center of pronotum slightly shiny, elytra dull; length 10.5 to 11.6 mm.

Head. Frons with frontal foveae triangular to irregular in shape, with clypeo-ocular prolongations; with median double rufous spot; microsculpture absent or weak and irregular medially and elsewhere of isodiametric mesh. Antennae with scapes rufo-testaceous, more distal articles darker in color. Palpi testaceous to infuscated.

Pronotum. (Fig. 7) Anterior angles slight. Posterior angles dentate. Sides rounded anteriorly, posteriorly straight, not sinuate, somewhat convergent toward posterior angles. Lateral depressions slight, indistinct anteriorly, narrow posteriorly. Disk without sparse short fine setae; with dense asetose punctures in posterior lateral depressions and in adjacent areas; microsculpture weak and irregular except isodiametric microsculpture along portions of margins.

Venter of thorax. Short moderately thick setae present on: prosternum; on anterior portions of proepisterna; mesosternum; most of metasternum except medially; and anterior edges metepisterna.

Legs. Piceous in color. Front tibiae each in males with ventro-apical protuberance prominent and bearing small distal spine; apical spur sharply widened proximally, but not subtrifid; small stout apical spine laterad to apical spur.

Elytra. Humeri with juncture of inner elytral anterior and lateral borders rounded to slightly angulate, without tubercles (as in *A. binotatus*, Fig. 26). Intervals moderately convex; posterior apices of all intervals with short fine setae; scattered short fine setae along anterior margin of other intervals. Microsculpture of isodiametric mesh.

Abdomen. Sterna 2 and 3 with patches of short moderate sized setae near hind coxae.

Male genitalia. Aedeagus (Figs. 46, 68a, 68b, 92) (n = 1) long and slender, shaft asymmetrical, strongly emarginate on left side distal to distal end of paramere and with left side of dorsum strongly projected outward from shaft, moderately curved to right distally, with slight striae proximally; dorsal membranous area divided into distal

and proximal portions by sclerotized portion of dorsum of shaft, with proximal membranous area elongate; ostium covered by a large sclerotized flap; shaft in lateral view projected dorsally at proximal end of proximal dorsal membranous area (Fig. 92); apex broad proximally, sharply narrowed distally, tip narrow, bent slightly ventrad. Internal sac without armature visible through walls of aedeagus.

Female Genitalia. Valvifers (Fig. 139) moderately sclerotized; distal portion moderately elongate.

Natural History. Antoine (1959) reports that members are found in moist places on the ground, under debris and at the base of trees.

Geographical Distribution. (Fig. 226) This species is known from Algeria and Morocco. Antoine (1959) reports it as present but never abundant in all of Morocco except the south.

Material Examined. I have seen 6 specimens (2 ♂ and 4 ♀). See appendix A for a list of specimens examined.

The *melanopus* Group

Description. Body with dorsum shiny; form various.

Elytra. Microsculpture medially of moderately transversely stretched mesh in *A. karennius* and in other species of very fine transverse lines.

Cladistic Relationships. The synapomorphic elytral microsculpture defines this stock.

Included Taxa. This includes the *karennius* and *melanopus* subgroups.

The *karennius* Subgroup

Description. Body black.

Elytra. Microsculpture medially of moderately transversely stretched mesh.

Included Taxa. This includes only *A. karennius*.

8. *Anisodactylus* (*A.*) *karennius* Bates

(Figs. 8, 34, 47, 69, 93, 119, 140, 189, 234)

Harpalus (?) *karennius* Bates, 1892: 341-342. The description was based on two ♀♀. Bates' types of Carabidae (other than material for the *Biologia Centrali Americana* were deposited at MNHN via Oberthür (Horn and Kahle, 1935). The exact collection containing types of the above form is not known (*in litt.* Th. Deuve). I have seen nontype specimens identified as *A. karennius* by H. E. Andrewes, a former worker at the BMNH who was an expert on oriental Carabidae.

Anisodactylus hauseri Schauberg, 1929: 195-196. Holotype (OLML): a ♂ labeled: card with an aedeagus and abdomen; "Kansou mer. Hoei-Sien", white label with black machine print; "type", red label with handwritten black ink; "Anisodactylus hauseri Schauberg.", white label handwritten in black ink;

"loc. class.", red label handwritten in black ink and glued to white label, "Karennius Hauseri Schaub. det. Dr. E. Schaub.", white label, first three words in handwritten black ink, illegible text follows the word "Karennius", the remainder is black machine print; "Anisodactylus Apodichirts Karennius Bates S. Hauseri Schaub.", white label with handwritten black ink, "Apodichirts" difficult to read and might have different spelling. Type Locality: "China: Kansu mer. Hoei-Sein", as originally cited.

Description. Body black; dorsum shiny; small in size, length 7.9 to 8.7 mm.

Head. Frons with frontal foveae each linear, with clypeo-ocular prolongation; without rufous spot; with sparse to moderately distributed asetose micropunctures (very small, very shallow); microsculpture indistinct to isodiametric medially, isodiametric to slightly transversely stretched laterally. Antennae rufo-brunneus. Palpi brunneus to rufo-brunneus.

Pronotum. (Fig. 8) Convex, transverse in form. Anterior angles prominent. Posterior angles slightly angulate to obtusely rounded, without denticles. Sides rounded anteriorly, posteriorly less rounded and somewhat convergent. Lateral beads narrow but complete. Lateral depressions slight, narrow anteriorly, broadened posteriorly, but in many specimens posteriorly flattened and not discretely delimited internally. Posterior lateral depressions slight. Disk with or without asetose micropunctures medially, elsewhere with moderately dense asetose punctures, such punctures largest and densest in region of posterior lateral depressions; microsculpture faint to isodiametric medially, more evident and isodiametric elsewhere.

Venter of Thorax. Prosternum (except in front of prosternal intercoxal process), mesosternum and metasternum (except medially) with short fine setae. Proepisterna with or without fine asetose punctures. Mesepisterna and metepisterna with moderate sized asetose punctures.

Legs. Coxae, femora and tibiae black to piceous; tarsi same color as rest of legs or lighter in color and rufo-testaceous to rufo-brunneus or brunneus. Front tibiae in both sexes lacking distinct ventro-apical protuberance; apical spur trifid (Fig. 34) (lateral denticles may be worn in some specimens); with small stout apical spine laterad to apical spur. Dorsa of hind tarsi glabrous.

Elytra. Humeri with juncture of inner elytral anterior and lateral borders clearly forming an angle (as in Fig. 25). Intervals flat; with sparse to moderate asetose micropunctures. Microsculpture of moderately transversely stretched mesh.

Abdomen. Sterna glabrous except ambulatory setae and patch of short pubescence on each side of sterna 2 and 3 near hind coxae. Sixth sternum of males with 2 pairs of ambulatory setae.

Male Genitalia. Aedeagus (Figs. 47, 69, 93) ($n = 2$) arcuate, with shaft symmetrical; dorsal membranous area elongate, extended nearly to basal bulb; apex moderate in length, tip moderately rounded. Everted internal sac (Fig. 119) ($n = 1$) tubular in form, without armature.

Female Genitalia. Valvifers (Fig. 140) moderately sclerotized; distal portion moderately elongate, narrow and somewhat emarginate on slides.

Geographical Distribution. (Fig. 234) I have seen specimens from Sikkim, Burma, Thailand and southern China.

Synonyms. Schaubberger (1931: 153-154) changed the status of *A. hauseri* to a subspecies of *A. karennius*.

Material Examined. I examined a total of 21 specimens (12 ♂♂ and 9 ♀♀). See appendix A for a list of specimens examined.

The *melanopus* Subgroup

Description. Body color predominately dark reddish black to black.

Elytra. Microsculpture medially of very fine lines.

Included Taxa. This includes *A. agricola*, *A. tricuspidatus*, *A. pseudagricola* and *A. melanopus*.

9. *Anisodactylus (A.) tricuspidatus* Morawitz

(Figs. 9, 48, 70, 94-100, 120, 141, 175, 176, 190, 234)

Anisodactylus tricuspidatus Morawitz, 1863: 66-67. Lectotype (ZMAS): herewith designated, a ♂ labeled: "Hakodate 130-2.", black hand print on yellow label with double black border along sides; "Syntypus Anis. tricuspidatus A. [word that cannot be read]"; red label with "Anis." in black machine print, remainder in black hand print; "Zool. Inst. Acad. Sci. USSR Leningrad", black machine print on white label. Added label stating: "LECTOTYPE *Anisodactylus tricuspidatus* Morawitz By G. R. Noonan", black laser print on white label.

Anisodactylus (Anisodactylus) formosanus Ito, 1992: 47-49. Holotype (Ito): a ♂ labeled: "MUSHA FORMOSA 6.VII.1970 A.RIN", black machine print on light yellow paper; "HOLOTYPE *Anisodactylus formosanus* N.ITO", red label, "HOLOTYPE" in black machine print, other text in black hand print. Type Locality: Wushe, Nantou Hsien, Taiwan, as originally cited. NEW SYNONYMY.

Anisodactylus (Anisodactylus) tricuspidatus nomurai Ito, 1992: 49-50. NEW SYNONYMY.

Description. Body black except some specimens with lateral pronotal margins and lateral to posterior margin of elytra slightly rufo-piceous in part; dorsum shiny; length 10.0 to 13.5 mm.

Head. Frons with frontal foveae each linear, with short clypeo-ocular prolongation; lacking median double rufous spot; with moderately dense very fine asetose punctures; with microsculpture indistinct centrally, isodiametric to slightly transversely stretched laterally. Antennae rufo-brunneus, antennomeres 3 to 11 in many specimens lighter or darker in color than antennomeres 1-2. Palpi brunneus to rufo-brunneus.

Pronotum. (Fig. 9) Anterior angles prominent. Posterior angles subdentate to dentate. Sides rounded anteriorly, less rounded and nearly straight and somewhat convergent posteriorly. Lateral beads fine but complete. Lateral depressions slight. Posterior lateral depressions slight to moderate. Disk with asetose punctures, such punctures small and sparse medially, large and mostly confluent posteriorly, in some specimens producing rugose appearance in region of posterior lateral depressions; microsculpture faint, absent or indistinct and composed of fine transverse mesh centrally, somewhat more evident posteriorly and laterally.

Venter of Thorax. Prosternum (except in front of prosternal intercoxal process), mesosternum and metasternum (except glabrous central areas) with short setae. Proepisterna and mesepisterna with fine asetose punctures. Metepisterna with moderate sized asetose punctures.

Legs. Femora and tibiae rufo-piceous, apex of femora and tibiae more rufous, tarsi brunneus, rufo-brunneus, or black. Front tibiae each in both sexes lacking distinct ventro-apical protuberance; apical spur trifid (similar to Fig. 34); with small stout apical spine laterad to apical spur. Dorsa of hind tarsi glabrous.

Elytra. Humeri with juncture of inner elytral anterior and lateral borders clearly forming an angle; with faint tooth. Intervals flat to slightly convex; with dense asetose punctures. Microsculpture of faint transverse very fine meshes.

Abdomen. Sterna 2 and 3 with patches of short fine setae medially; sterna 4 and 5 of some specimens with sparsely scattered short fine setae medially. Sixth sternum of males with 2 pairs of ambulatory setae, 1 median, the other pair laterad.

Male Genitalia. Aedeagus (Figs. 48, 70, 94-100) with shaft symmetrical, moderately to strongly arcuate, with slight striae on sides proximally; dorsal membranous area elongate, extended nearly to basal bulb; apex moderate in length, tip moderately rounded. Everted internal sac (Fig. 120) ($n=4$) tubular in form, without armature other than belt of slightly enlarged microtrichia about half way between proximal and distal ends.

Female Genitalia. Valvifers (Fig. 141) moderately sclerotized; distal portion moderately elongate.

Variation and New Synonyms. Ito (1992) described *A. formosanus* based on two males and one ♀ from Taiwan. Characters distinguishing the new species included smaller body size, front and middle tarsi of males less wide and aedeagus more arcuate. The length of the holotype of *A. formosanus* is 10.3 mm when measured by techniques used in this paper. Examination of specimens of *A. tricuspoidatus* shows that body size varies from 10.5 to 11.9 mm, even within Japan. The shape of the aedeagus varies (Figs. 96-98) considerably even within Japanese specimens and also among males collected in China (Figs. 95, 99, 100). The type of *A. formosanus* is a ♂ whose aedeagus falls within the normal range of variation for *A. tricuspoidatus*. Fig. 175 plots the ratio of width of the second front tarsomere of males/length of tarsomere against total body length. The graph shows that width of the tarsi of males varies considerably within *A. tricuspoidatus*. The width of the front tarsomeres of the holotype of *A. formosanus* (represented by a "T") falls within the normal range of variation for *A. tricuspoidatus*. Fig. 176 shows that the aedeagus of *A. tricuspoidatus* varies considerably in total length. The length of the aedeagus is somewhat correlated with total body length with an R of 0.72. However specimens from Japan tend to have somewhat longer aedeagi (for a given total body length) than those from elsewhere. The holotype of *A. formosanus* (indicated by "T") has a shorter aedeagus than that of most other males of *A. tricuspoidatus*. However, the aedeagus is not so short as to warrant species level separation. The somewhat smaller body size, slightly more convex elytral intervals and slightly narrower middle tarsi described (Ito, 1932) for *A. tricuspoidatus nomurai* fall within the normal range of variation for these characters and do not warrant formal nomenclatural status.

Natural History. Habu (1973) reported that adults have been seen feeding on seeds of a species of grass and of *Setaria viridis* Beauvois.

Fig. 190 graphs monthly captures of all sexed adults.

Geographical Distribution. (Fig. 234) I have seen specimens from Japan, Taiwan and China. Habu (1973) reports the species as also present on Quelpart Island (Cheju do), South Korea.

Material Examined. I examined a total of 86 specimens (43 ♂♂ and 43 ♀♀). See appendix A for a list of specimens examined.

10. *Anisodactylus (A.) agricola* Say

(Figs. 10, 49, 71, 101, 121, 142, 191, 192, 235)

Anisodactylus agricola Say, 1823: 33. Neotype (MCZC); designated by Lindroth (Lindroth and Freitag, 1969: 354), a ♀ labeled: "Alleghny Pa", black machine print on white label; "NEOTYPUS Harpalus agricola Say design. Lth.", red label with "NEOTYPUS" and "design." in black machine print and other text in black handwriting; "Anisodactylus agricola Say det. Lindroth 68", white label with "det. Lindroth" in black machine print and other text in handwritten pencil; "NEOTYPE 32985 M.C.Z.", red label, type number in black hand print, other text in black machine print. Type Locality: Allegheny, Pennsylvania, designated by Lindroth (Lindroth and Freitag, 1969: 354).

Anisodactylus striatus LeConte, 1848: 380. Lectotype (MCZC): herewith designated, a ♀ labeled: yellow colored disk; "500.", black hand print on white label; "Type 5956", red label, "Type" in black machine print, "5956" in black hand print; "A. agricola Say. paradoxus ! Hald. striatus ! Lec." black handwriting on white label. Added label stating: "LECTOTYPE *Anisodactylus striatus* LeConte By G. R. Noonan", black laser print on white paper. Type Locality: Evansville, Iowa, as originally cited.

Recognition. Adults resemble those of *A. melanopus* and *A. pseudagricola* by having the microsculpture of the central portion of the inner elytral intervals composed of a very fine transverse mesh. They differ from adults of *A. melanopus* by having: (1) the pronotal lateral depressions less well defined along the entire length of the pronotum and absent or very narrow and indistinct anteriorly (compare Figs. 10 and 12) and (2) only 1 seta at each outer distal angle of the clypeus as contrasted to the 2 at each such angle in most adults of *A. melanopus*. See the *Recognition* section under *A. pseudagricola* for features distinguishing that species from *A. agricola*.

Description. Body stout; dorsum shiny, especially the central portion of elytra; length 11 to 13 mm. Body and legs black to dark reddish black, except in some specimens tarsi and tibiae lighter in color.

Head. Frons with frontal foveae punctiform, shallow; with slight to prominent median double rufous spot; microsculpture with meshes obsolete medially, laterally composed of transverse meshes. Antennae with scapes dorsally rufous to infuscated, darker elsewhere; antennomeres 2 in most specimens same color or slightly darker than scape; remaining antennomeres rufo-brunneous to brunneous or rufo-testaceous. Palpi testaceous, rufo-testaceous, brunneous or lightly infuscated.

Pronotum. (Fig. 10) Anterior angles slight to moderate. Posterior angles subdentate to dentate. Sides rounded anteriorly, posteriorly somewhat convergent toward posterior angles and mostly straight. Lateral beads indistinct anteriorly in most

specimens, somewhat prominently thickened posteriorly. Lateral depressions absent or very narrow and indistinct anteriorly, elsewhere narrow. Posterior lateral depressions slight to moderate, somewhat oval in shape, in most specimens separated from sides by a convexity. Disk notably convex anteriorly; with asetose punctures along margins, punctures denser and larger in and near posterior lateral depressions and in some specimens there producing rugose appearance; microsculpture with meshes obsolete or weak and transverse medially; meshes more evident and less transversely stretched toward margins, nearly isodiametric near margins of some specimens.

Venter of Thorax. Short, moderately dense setae present along: prosternum, except glabrous medially in some specimens; mesosternum; and metasternum, except glabrous medially in most specimens. Proepisterna, proepimera, mesepisterna, mesepimera, metepisterna and metepimera glabrous.

Legs. Front tibiae each in males with ventro-apical protuberance moderate, with distal spine (spine worn away in most males); apical spur widened proximally but not sharply angulate; stout apical spine laterad to apical spur. Hind tarsi with several stout setae on dorsum of basitarsi and on dorsa of 1 or more other tarsomeres.

Elytra. Stout and short. Humeri slightly angulate, with slight tooth. Intervals slightly to moderately convex; in most specimens with very small and shallow asetose punctures of various density. Microsculpture medially on inner intervals composed of very fine transverse lines; meshes more prominent, coarser and less transversely stretched in anterior, posterior and lateral portions of elytra.

Hind Wings. Relatively smaller than in most other species of subgenus but with tips reflexed.

Abdomen. Sterna glabrous except ambulatory setae and patch of short pubescence on each side of sterna 2 and 3 near hind coxae.

Male Genitalia. Aedeagus (Figs. 49, 71, 101) stout, arcuate, shaft symmetrical, moderately longitudinally striate laterally proximal to proximal end of dorsal membranous area; dorsal membranous area short, extended less than half distance to basal bulb; sclerotized triangular shaped flap located medially at proximal end of dorsal membranous area, lying over median portion of proximal end of dorsal membranous area when internal sac inverted, lying at dorsal proximal end of sac when internal sac everted; apex short, tip obtusely rounded and bent slightly ventrad. Everted internal sac (Fig. 121) (n=9) bifurcate distally due to prominent ventral sacculus; without distinct fields of enlarged macrotrichia.

Female Genitalia. Valvifers (Fig. 142) moderately sclerotized; distal portion moderately elongate.

Natural History. Little is known about habitat in which adults occur. A ♂ from Plummer's Island, Maryland is labeled as in drift (presumably drift along the shore). A ♀ from near Albany, Wisconsin was in leaf litter and under debris in moist woods with a dense canopy. A ♂ and two ♀♀ from Washington, D.C. were obtained in a picnic area near the Potomac River.

Figs. 191 and 192 graph monthly captures of all sexed adults and teneral adults, respectively.

Geographical Distribution. (Fig. 235) The species occurs in southeastern Canada and the eastern United States southward into Alabama.

Material Examined. Besides type material I examined 280 specimens (149 ♂♂ and 131 ♀♀). See appendix A for a list of specimens examined.

11. *Anisodactylus (A.) pseudagricola* new species
(Figs. 11, 50, 72, 102, 122, 143, 193, 236)

Recognition. Adults resemble those of *A. agricola* and *A. melanopus* by having: (1) the pronotal disk with dense asetose punctures posteriorly; and (2) the elytral microsculpture on intervals 1 to approximately 6 or 7 medially consisting of a very fine transverse mesh.

Adults of *A. agricola* and *A. pseudagricola* differ externally only in pronotal shape and body size. Those of the former species (Fig. 10) have the pronotal sides straight or nearly straight posteriorly while those of the latter (Fig. 11) have the sides more rounded posteriorly. The body size of *A. pseudagricola* is also smaller, with lengths of 9.9 mm to 11.6 mm versus those of 11.0 mm to 13.0 mm for *A. agricola*. The male genitalia offer the best criteria for differentiating adults of *A. agricola* from those of *A. pseudagricola*. The apex of the aedeagus of *A. pseudagricola* (Fig. 50) has an apical disk and is more elongate and pointed at the tip than in males of *A. agricola* (Fig. 49). The valvifers of the female genitalia of *A. pseudagricola* (Fig. 143) have the distal portion more narrow and elongate than in *A. agricola* (Fig. 142).

Adults of *A. pseudagricola* have the pronotal lateral depressions (Fig. 11) much less prominent than in those of *A. melanopus* (Fig. 12). The aedeagus of *A. pseudagricola* (Figs. 50, 102) has a moderately prominent apical disk on the apex while that of *A. melanopus* (Figs. 51, 103) lacks the apical disk but has the apex dorso-ventrally swollen at the tip.

Type Material. Holotype (CUIC): a ♂ labeled: "Cornwall, Ct. 9 II 1939 Chamberlain"; "*Anisodactylus agricola* Say Chamberlain". Label added stating: "HOLOTYPE *Anisodactylus pseudagricola* new sp. Det. G. R. Noonan" PARATYPES labeled as follows: 1 ♂, "Cornwall Ct 4 I 1921 Chamberlain"; "*Anisodactylus agricola* Say Chamberlain Collection" (CUIC). 1 ♂, "Cornwall Ct 9 II 1909 Chamberlain"; "*Anisodactylus agricola* Say Chamberlain Collection" (CUIC). 1 ♂ "Cornwall Ct. 9 II 1909 Chamberlain"; "*Anisodactylus agricola* Say Chamberlain Collection"; "*Anisodactylus agricola* Say" (CUIC). 2 ♂♂, "Cornwall Ct. 9 II 1909 Chamberlain"; "*Anisodactylus agricola* Say Chamberlain Collection" (CUIC). 1 ♂, "Cornwall Ct 30 IX 1920 K F Chamberlain"; "J F. Brimley Collector Bequeathed 1976"; "ANISODACTYLUS *agricola* Say 2092" (CUIC). 2 ♂♂, "Cornwall Ct 30 IX 1920 Chamberlain"; "*Anisodactylus agricola* Say Chamberlain Collection" (CUIC). 1 ♀, "Cornwall Ct. 30 IX 1920 Chamberlain"; "*sodactylus agricola* Say"; "*agricola* Say ♀"; "C. A. Frost Collection 1962" (MCZC). 1 ♀, "Tyngs" (probably refers to Tyngsborough in Middlesex County, Massachusetts); "Fredrick Blanchard Collection" (MCZC). 1 ♀, "Washtenaw Co., Mich. Scio Twp. 693da V-2-1920 M. H. Hatch"; "*Anisodactylus agricola* Say ♀ 2092" (OSUO). 1 ♂, "Orient NEW YORK 19 Roy Latham"; "*Anisodactylus agricola* Say det. H. Dietrich" (CUIC). 1 ♀, "USA:NH:Straff. (Strafford) Co, Spruce Hole 3 mi SW Durham"; "VI-10-1982 DSChandler, tread into sphagnum mat" (UVCC). 1 ♂, "Kilman Ont."; "prob. wrong locality"; "*Anisodactylus ? agricola* Say det. Lindroth 68" (CNCI). 1 ♂, "HARPALUS VIDUUS Watch Hill, R. I. June 28 1909 W. Robinson" (USNM). Label added to each paratype stating "PARATYPE *Anisodactylus pseudagricola* new sp. Det. G. R. Noonan". I have been unable to find a Kilman on Ontario maps, and "Kilman" might refer to an obscure town

or to a collector.

Location of Type Material. The types are in the museums identified by the acronyms in parentheses.

Derivation of Specific Epithet. The epithet "*pseudagricola*" refers to the similar appearance of adults of *A. agricola* and the new species and the former misidentification of members of the new species as *A. agricola*.

Description. Body stout; dorsum shiny, especially medial portion of elytra; length 9.9 to 11.6 mm. Body and legs black to dark piceous, except tarsi and tibiae of some specimens lighter in color.

Head. Clypeus with 1 seta at each outer distal angle in most specimens (1 ♂ from Kilman, Ontario with 2 setae at right angle). Frons with frontal foveae punctiform, shallow; with slight to prominent median double rufous spot; microsculpture obsolete medially, laterally composed of transverse meshes. Antennae with scape dorsally rufous to infuscated; antennomeres 2 in most specimens same color or slightly darker than scape. Palpi testaceous, reddish brown or lightly infuscated.

Pronotum. (Fig. 11) Anterior angles slight to moderate. Posterior angles subdentate to dentate. Sides rounded both anteriorly and posteriorly. Lateral beads indistinct anteriorly in most specimens. Lateral depressions progressively less evident anteriorly and narrow or absent in region of anterior angles, posteriorly of moderate width. Posterior lateral depressions slight, indistinct in shape, in most specimens separated from sides by a convexity. Disk with asetose punctures along margins, punctures dense and larger in and near posterior lateral impressions and in some specimens there producing rugose appearance; microsculpture obsolete or weak and transverse medially; meshes more evident and less transversely stretched toward margins, nearly isodiametric near margins in some specimens.

Venter of Thorax. Short setae on: prosternum, except glabrous medially in some specimens; mesosternum, and metasternum, except glabrous medially in most specimens. Proepisterna, proepimera, mesepisterna, mesepimera, metepisternum and metepimera glabrous.

Legs. Front tibiae each in males with ventro-apical protuberance slight and bearing distal spine; apical spur widened proximally but not sharply angulate; stout apical spine laterad to apical spur. Hind tarsi with or without several setae on dorsa of basitarsi, dorsa of other tarsomeres glabrous.

Elytra. Stout. Humeri slightly angulate, with slight tooth. Intervals slightly to moderately convex; intervals of most specimens with very small and shallow asetose punctures of varied density. Microsculpture with meshes on intervals 1 to 8 medially composed of very fine transverse lines; meshes more prominent, coarser, less stretched anteriorly, posteriorly and toward sides of elytra.

Abdomen. Sterna glabrous except ambulatory setae and patch of short pubescence on each side of sterna 2 and 3 near hind coxae.

Male Genitalia. Aedeagus (Figs. 50, 72, 102) arcuate, shaft symmetrical, nearly smooth laterally; dorsal membranous area extended about half distance to basal bulb; apex moderate in length, acutely rounded at tip and with moderately prominent apical disk. Everted internal sac (Fig. 122) (n = 6) with or without proximal dorsal and lateral fields of macrotrichia; with weak to moderate medial left field of microtrichia and with or without other medial fields.

Female Genitalia. Valvifers (Fig. 143) moderately sclerotized; distal portion

elongate and narrow.

Natural History. A ♀ is labeled as taken in New Hampshire by treading sphagnum mat.

Fig. 193 graphs monthly captures of all sexed adults.

Geographical Distribution. (Fig. 236) This species occurs in the northeastern United States and southern Ontario.

Material Examined. I have seen a total of 17 specimens, all types, as listed above (9 ♂♂ and 8 ♀♀).

12. *Anisodactylus (A.) melanopus* Haldeman

(Figs. 12, 51, 73, 103, 123, 144, 194, 195, 237)

Harpalus melanopus Haldeman, 1843: 302. Neotype (MCZC): herewith designated, a ♂ labeled: "yellow colored disk"; "25g.", black handwriting on white paper; "A. melanopus Lec.(Hald.) agricola ≠ Lec.", black handwriting on white paper. Additional labeled added stating: "NEOTYPE *Harpalus melanopus* Haldeman By G. R. Noonan", black laser print on white paper. Lindroth (1968: 856) stated that this specimen is probably an original Haldeman specimen but listed it as also having a label stating "Western States". The specimen lacks such a label. Because it can only be stated probably to be a Haldeman specimen, I am designating it as a neotype. Lindroth in the same paper also listed the type locality as "SE Penns.". I can find no support for such a type locality in either the original description or on the neotype's labels. Type Locality: North America, herewith designated because title of original description said "Descriptions of North American species . . ." and no more precise data are available.

Recognition. Adults resemble those of *A. agricola* and *A. pseudagricola* by having the microsculpture of the central portion of the inner elytral intervals composed of a very fine transverse mesh. They differ however from both species by having the pronotal lateral depressions more prominent posteriorly and narrowed but still evident anteriorly. Most adults of *A. melanopus* have two setae at each outer distal angle of the clypeus while those of the other two species have only one such seta. The aedeagus of *A. melanopus* differs from that of *A. agricola* by having a longer and more tapered apex. The everted internal sac of *A. melanopus* differs from that of *A. agricola* by not being bifurcate distally. The body of adults of *A. melanopus* is also stouter and has the elytra shorter and more widened behind the middle than that of adult of *A. agricola*.

Description. Body stout; dorsum of most specimens shiny, especially the central portions of elytra; length 11 to 14 mm. Body and legs black to dark piceous, except tarsi of some specimens lighter in color.

Head. Clypeus with 2 setae at each outer distal angle in most specimens. Frons with frontal foveae punctiform, shallow; with slight to prominent median double rufous spot; microsculpture obsolete medially, laterally composed of transverse meshes. Antennae with scape dorsally rufous to infuscated; antennomeres 2 and 3 darker in color than scape; in some specimens some or all or successive antennomeres reddish brown or same color as scape. Palpi infuscated.

Pronotum. (Fig. 12) Anterior angles slight to moderate. Posterior angles

subdentate to dentate. Sides rounded anteriorly, posteriorly slightly convergent and nearly straight. Lateral beads indistinct anteriorly in most specimens, somewhat prominently thickened posteriorly. Lateral depressions prominent and well delimited, especially posteriorly, notably evident even anteriorly. Posterior lateral depressions moderate, somewhat oval in shape, in most specimens separated from sides by a convexity. Disk with asetose punctures along margins, punctures denser and larger in and near posterior lateral impressions and in some specimens there producing rugose appearance; microsculpture obsolete or weak and transverse medially; meshes more evident and less transversely stretched toward margins, nearly isodiametric near margins in some specimens.

Venter of Thorax. Short fine setae present along: prosternum, sparsely distributed, center glabrous in some specimens; mesosternum, and metasternum, except center glabrous in most specimens. Proepisterna, proepimera, mesepisterna, mesepimera, metepisternum and metepimera with or without fine asetose punctures.

Legs. Front tibiae each in ♂♂ with ventro-apical protuberance moderate, with distal spine (spine worn away in most ♂♂); apical spur widened proximally but not sharply angulate; stout apical spine laterad to apical spur. Hind tarsi with several bristles on dorsa of basitarsi, dorsa of other tarsomeres glabrous.

Elytra. Stout. Humeri slightly angulate, with slight tooth. Intervals slightly to moderately convex; intervals of most specimens with very small and shallow asetose punctures of various densities. Microsculpture with meshes on center of inner intervals composed of very fine transverse lines; meshes more prominent, coarser, less stretched toward elytral margins.

Abdomen. Sterna glabrous except ambulatory setae and patch of short pubescence on each side of sterna 2 and 3 near hind coxae.

Male Genitalia. Aedeagus (Figs. 51, 73, 103) arcuate, shaft symmetrical, nearly smooth laterally; dorsal membranous area extended about 1/3 distance to basal bulb; apex moderate in length, acutely rounded at tip and with tip dorso-ventrally swollen. Everted internal sac (Fig. 123) (n = 20) with or without proximal fields of macrotrichia; with three or four medial fields of macrotrichia, medial right, medial left, and 1 or two adjacent medial ventral fields.

Female Genitalia. Valvifers (Fig. 144) moderately sclerotized; distal portion moderately elongate.

Variation. The number of setae at each outer angle of the clypeus is two in most specimens. Only 26 of 420 examined specimens have one seta at one angle and two at the other and only three adults have one seta at both angles.

Natural History. Adults occur in moist habitats and at times also in dry places. In August I took a ♂ from under mats of rotting plant debris along the flat, sandy shores of Utah Lake in Provo, Utah. The ground was saturated with water beneath the mats of vegetation. Also in August I took a ♂ in a small forest next to a lake in Kimball County, Nebraska. Adult museum specimens are labeled as: 3 from berlese litter around a pond; 1 from under boards and other debris in a sandy, dry area lacking vegetation; 1 from pond detritus; 1 from berlese litter along a stream; 2 under stones in moist soil; 3 in a sand pit; 1 under a log near "salt" creek; 1 under stone in damp spring pocket in open woods; 1 under leaves at edge of small swamp; 1 washed up on beach; 3 in "primary" flood plain; 1 on ground at night by building in area with dense, short green grass; and 2 taken by treading in marsh. Lindroth (1968: 856) recorded a ♂ from

drift material on the shore of Point Pelee, southern Ontario.

Figs. 194 and 195 graph monthly captures of all sexed adults and general adults, respectively.

Geographical Distribution. (Fig. 237) Adults occur in the eastern United States southward to approximately South Carolina. The most western records are a ♂ from Kimball County, Nebraska and a ♂ from Utah Lake in Provo, Utah. The Utah site is 667 kilometers from the Nebraska site and 1,658 kilometers from the closest site in the main or eastern part of the species's distribution. I know that the Utah specimen is correctly labeled because I collected it. Possibly, this ♂ flew into the area and does not represent a permanent population of the species. The ♂ was collected in 1984 when Utah Lake was at flood level. The collecting site had dense piles of washed up aquatic vegetation. Intensive collecting by myself and an assistant at several sites along the lake in 1992 did not reveal specimens of this species or even dense piles of washed up aquatic vegetation.

Elevations of sites where the species has been taken are mostly below approximately 300 m. However, specimens have been taken at approximately 1,030 m in the Black Mountains of North Carolina and at 1,370 m at Utah Lake, Provo, Utah.

Material Examined. Besides type material I examined 572 specimens (331 ♂♂, 233 ♀♀ and 8 unsexed). See appendix A for a list of specimens examined.

The *nigrita* Group

Description. Body and legs black to dark piceous except some adults with slight to prominent median double rufous spot on frons and/or tarsi lighter in color than body.

Head. Frons with frontal foveae punctiform, in some specimens each with short clypeo-ocular prolongation; with or without very fine asetose punctures; microsculpture obsolete to weak and mostly isodiametric medially, moderate and isodiametric or slightly transversely stretched toward margins. Antennae with scapes dorsally rufous to infuscated; antennomeres 2 and 3 darker in color than scape; in some specimens some or all of successive antennomeres brunneous or same color as scape. Palpi testaceous to infuscated.

Pronotum. (Figs. 13, 14) Anterior angles slight. Sides arcuate anteriorly, slightly convergent and nearly straight posteriorly. Lateral beads indistinct anteriorly in most specimens. Disk shiny or not; with asetose punctures along margins, punctures denser and larger in and near posterior lateral depressions and in some specimens producing rugose appearance in such depressions; microsculpture obsolete to weak and mostly isodiametric medially, moderate and isodiametric or slightly transversely stretched toward margins.

Venter of Thorax. Short fine setae present along sides and in some specimens also medially in prosternum, mesosternum, and metasternum. Proepisterna, proepimera, mesepisterna, mesepimera, metepisterna and metepimera glabrous.

Legs. Front tibiae each with apical spur widened proximally but not sharply angulate; small stout apical spine laterad to apical spur.

Elytra. Elongate, parallel sided at middle; dull to slightly shiny medially in ♂♂, dull laterally in ♂♂, dull in most ♀♀, some ♀♀ with central portions of intervals

1 to 2 or 1 to 3 shiny. Humeri slightly angulate, each with or without slight tooth. Intervals flat to slightly convex; intervals of most specimens with asetose punctures of varied prominence and density. Microsculpture of isodiametric to slightly transverse mesh, prominent in ♀♀ and slightly granulate on outer intervals and in most specimens on inner intervals; in some ♀♀ mesh slightly transverse.

Abdomen. Sterna glabrous except ambulatory setae and patch of short pubescence on each side of sterna 2 and 3 near hind coxae.

Male genitalia. Aedeagus (Figs. 52, 53, 74, 75, 104, 105) arcuate, symmetrical; apex with tip dorso-ventrally swollen.

Cladistic Relationships. The synapomorphy of apex of aedeagus dorso-ventrally swollen defines this group.

Included Taxa. This includes *A. kirbyi* and *A. nigrita*.

13. *Anisodactylus (A.) kirbyi* Lindroth

(Figs. 13, 52, 74, 104, 124, 145, 196, 197, 238)

Anisodactylus lecontei Chaudoir, 1868: 161. (nec *lecontei* Gemminger and Harold, 1868) New name for *A. nigrita* Dejean, 1829 *sensu* LeConte, 1848: 379. Chaudoir proposed *Anisodactylus lecontei* as a new name for LeConte's concept of *A. nigrita*. LeConte's concept of *A. nigrita* was (Lindroth 1954: 142-143) that of the current *A. kirbyi*.

Anisodactylus kirbyi Lindroth, 1953: 174. Holotype (CNCI): a ♂ labeled: "Nova Scotia Cheticamp No. 191. 25.V.51 Lindroth", black machine print on white paper; "Holotype Anisodact. kirbyi Lindroth", black hand print on red paper; "TYPE Anisodactylus kirbyi Lth. No 6574", red paper label with black machine print for "TYPE" and "No." and black hand print for other text. Type Locality: Cheticamp, Nova Scotia, as originally cited.

Recognition. Adults differ from those of *A. melanopus*, *A. agricola* and *A. pseudagricola* by having the elytra less shiny, with less transverse microsculpture and in having the body more elongate, with the elytra notably more elongate in *A. kirbyi*. Adults of *A. kirbyi* and *A. nigrita* are very similar externally. The most constant external feature for distinguishing them is that adults of *A. kirbyi* have only 1 seta at each outer distal angle of the clypeus while most adults of *A. nigrita* have two setae at both angles. A few specimens of the latter species have two setae at only 1 of the clypeal angles, with the other angle possessing only one setae. Most adults of *A. kirbyi* (Fig. 13) have the pronotal posterior angles more strongly dentate than those of *A. nigrita* (Fig. 14) and have the pronotal posterior lateral depressions somewhat linear in shape, as compared to the more oval shape in most *A. nigrita*. The male genitalia provide excellent features for distinguishing between ♂♂ of the two species. The aedeagus of *A. kirbyi* (Figs. 74, 104) has an elongate dorsal membranous area and proximally has the sides of the shaft strongly striate laterally while the aedeagus of *A. nigrita* (Figs. 75, 105) has a shorter dorsal membranous area and has the lateral walls smooth or nearly smooth. The bifurcation of the everted internal sac distinguishes males of *A. kirbyi* (Fig. 124) from those of *A. nigrita* (Fig. 125).

Description. Body length 9.0 to 12.9 mm.

Head. Clypeus with 1 seta at each outer distal angle in most specimens (1 ♂

with 2 setae at left angle, genitalia dissected; and 1 ♀ with 2 setae at right angle, external features most closely resemble those of *A. kirbyi* but ♀ might be member of *A. nigrita*.

Pronotum. (Fig. 13) Posterior angles subdentate to dentate. Lateral depressions prominent, well delimited, widened posteriorly. Posterior lateral depressions moderate, somewhat linear in form, in most specimens each separated from sides by a convexity.

Legs. Males with ventro-apical protuberance moderate, with small terminal spur. Hind tarsi with basitarsi with several stout dorsal setae; in most specimens several stout dorsal setae present on tarsomeres 2 and 3.

Male Genitalia. Aedeagus (Figs. 52, 74, 104) with shaft proximally strongly striate laterally; dorsal membranous area extended about 4/5 distance to basal bulb; apex moderate, narrow, narrowly rounded at tip. Everted internal sac (Fig. 124) (n=24) with prominent sacculus originating in preapical ventral region; sacculus approximately as long as remainder of sac and giving bifurcate appearance to distal portion of sac; distal portion of sacculus with or without spine-like macrotrichia.

Female Genitalia. Valvifers (Fig. 145) moderately sclerotized; distal portion moderately elongate.

Natural History. Adults of this species are notably hygrophilous. They have been taken during the day under debris in moist areas by standing water such as ponds and marshes with dense to moderately dense growths of herbaceous plants. Collectors have also taken adults by treading down the emergent portions of aquatic plants in marshy places covered with water and then picking up the adults as they float on top of the water. If disturbed, such adults hide by diving down into the water. I have collected a total of 121 adults from 19 different sites in Wisconsin. Most specimens were taken by treading down vegetation in marshy areas with water; some specimens were taken under debris near water. Judd (1971) lists a single specimen as taken in a damp, wooded portion of a bog in Ontario. Data on museum specimens are: 1 adult along road; 2 adults taken under logs near a lake shore; 1 in moss roots; 1 in a flooded meadow; 3 on marshy ground or other moist places; 5 by a pond's edge; 1 attracted to carrion bait on the ground; 1 attracted to molasses bait on the ground; 3 in pitfall traps; 2 by railroad tracks; 3 under rocks, logs or boards; 4 by streams; and 1 active at night on moist ground in a marsh with dense herbaceous plants.

Figs. 196 and 197 respectively graph captures of all adults and of teneral adults per month.

Adults are primarily found at sites with elevations below 500 m. Those at sites with elevations above 500 m are only 8 specimens from a total of 7 localities, with the highest place being 790 m at Ithaca, Michigan.

Larochelle (1990) summarized data that adults eat pieces of *Tenebrio molitor* Linnaeus (Coleoptera: Tenebrionidae).

Geographical Distribution. (Fig. 238) The species has a disjunct distribution, being in both the East and the West and absent from the central plains of North America. The shortest distance between the two disjunct areas is 1,365 kilometers and occurs between sites in eastern Oregon and North Dakota. Most adults have been taken in the East, and western records consist only of: 2 from California (1 from the eastern end of the Nicasio Reservoir in Marin County and 1 from Riverside); 6 from Oregon; 20 from Washington; 22 from British Columbia; and 2 from Idaho.

Material Examined. Besides type specimens I have examined a total of 923

specimens (476 ♂♂ and 447 ♀♀). See appendix A for a list of specimens examined.

14. *Anisodactylus (A.) nigrita* Dejean

(Figs. 14, 53, 75, 105, 125, 146, 198, 199, 239)

Anisodactylus nigrita Dejean, 1829: 149-150. Lectotype (MNHN): herewith designated, a ♂ labeled: "♂", black hand print on green label; "nigrita in Amer.bor.", black hand print on green label; "Leconte", black hand print on green paper; "interpunctatus Leconte", black hand writing on white paper; "Ex Musaeo Chaudoir", red machine print on white label. Added label stating: "LECTOTYPE *Anisodactylus nigrita* Dejean By G. R. Noonan", black laser print on white paper. Type Locality: "Amérique septentrionale", originally cited; Forest Hills, Massachusetts, designated by Lindroth, 1968: 852. Dejean said the species was sent to him by LeConte but did not say how many specimens were sent, and I therefore have designated the specimen as a lectotype.

Harpalus interpunctatus Kirby, 1837: 42. Lectotype (BMNH): herewith designated, a ♂ labeled: "Type", black machine print on white disk shaped label with red margin; "N. Amer. ♂", black hand print on white disk shaped label; "215", black hand print on white label; "Harpalus interpunctatus Kirby N. Amer 5736 Rev. Wm Kirby.", black handwriting on white label; "nigrita Dj. Det. Lindroth, 1952", white label, "nigrita Dj." and "52" in pencil hand print, remainder black machine print. Added label stating: "LECTOTYPE *Harpalus interpunctatus* Kirby det. G. R. Noonan", black laser print on white label. Type Locality: North America, "Lat. 54°", as originally cited; Lindroth (1968) stated locality probably in Alberta.

Recognition. Adults superficially resemble those of *A. binotatus* but lack pubescence along the pronotal sides and base, the outer elytral intervals and the apices of all elytral intervals. See the comments for *A. kirbyi* about distinguishing adults of it and *A. nigrita*.

Description. Body and legs black to dark reddish black, except in some specimens tarsi lighter in color; length 10.5 to 13.1 mm.

Head. Clypeus of most specimens with 2 or 3 setae at each outer distal angle; in some specimens 1 angle with only 1 seta, but other angle with 2 or more setae, in a few specimens both angles with only 1 seta. Frons shiny in appearance.

Pronotum. (Fig. 14) Posterior angles obtuse, subdentate in some specimens. Lateral depressions well delimited, widened posteriorly. Posterior lateral depressions moderate, somewhat oval in shape, in most specimens each separated from sides by a convexity.

Legs. Males with ventro-apical protuberance small, small spine distally on protuberance (spine worn away in many specimens). Hind tarsi with several stout setae on dorsum of basitarsi and in some specimens on other tarsomeres.

Male Genitalia. Aedeagus (Figs. 53, 75, 105) with shaft posteriorly nearly smooth laterally; dorsal membranous area extended about half distance to basal bulb; apex moderate, narrowly rounded at tip. Everted internal sac (Fig. 125) (n = 15) stout, with apical right and apical left fields of macrotrichia.

Female Genitalia. Valvifers (Fig. 146) moderately sclerotized; distal portion

moderately elongate.

Natural History. I have collected 2 adults from 1 site in Nebraska, 1 from a site in Washington and 131 from Wisconsin. This collecting has shown that adults occur most often in open mesic areas near or at the edge of water. The two specimens from Nebraska were taken in a small forest near a lake while the one from Washington was taken alongside a lake. All but one of the Wisconsin specimens were near the edges of ponds or marshes. These adults were taken during the day by overturning debris in damp places near the edge of the water or by treading down vegetation into the water. A single ♀ was taken in Wisconsin in June in an old gravel pit in an area not near standing water, where the soil was composed of gravel and sand and was well drained. Label data on museum specimens agree with the above conclusion derived from field work: 9 adults are labeled as from a pond edge; 5 from sites by standing water; 1 from under dead grass in a swamp; 2 from flood plain communities near a tamarack bog; 1 from mud along the edge of a *Typha* marsh; 1 from the edge of a stream in a forest; 3 active at night on river banks; 10 by treading along the margins of ponds; 2 from a gravel beach at night; 1 in a spruce-sand community; 1 in mats of vegetation; 2 on emergent vegetation by slough; 1 in sandy area; 7 on beach; 3 in pitfall traps; 3 under rocks; 2 in moist areas with dense vegetation; and 1 at night on sand-gravel bank of creek. One specimen was taken in a malaise trap and one in a light trap, suggesting adults fly.

Figs. 198 and 199 graph monthly captures of all sexed adults and teneral adults, respectively.

Geographical Distribution. (Fig. 239) The geographical range of this species is transcontinental in the North. Adults occur primarily in lowland habitats but have been taken in montane regions in the South and West. The single adult taken in North Carolina is labeled as from Asheville, Buncombe County, a locality lying at 650 m (Geographic Names Information System database on CD-ROM, Campbell et al., 1994). Adults from Colorado have been taken from sites near Boulder and Denver at elevations of approximately 1,600 m (specimen label data and Geographic Names Information System database on CD-ROM, Campbell et al., 1994). Specimens from western British Columbia occur in valleys lying at approximately 1,000 to 2,000 m (specimen label data and Times Atlas of the World, 1992).

Material Examined. Besides type material I examined a total of 1,353 specimens (722 ♂♂, 628 ♀♀ and 3 unsexed). See appendix A for a list of specimens examined.

The *californicus* Group

Description. Body form various.

Male Genitalia. Aedeagus with apex sharply pointed at apex.

Cladistic Relationship. The synapomorphic, sharply pointed, apex of the male aedeagus defines this group.

Included Taxa. This includes three species, *A. californicus*, *A. furvus* and *A. similis*.

15. *Anisodactylus* (A.) *californicus* Dejean
(Figs. 15, 30, 35, 38, 54, 76, 77, 78, 106, 126, 147, 200-206, 240-243)

- Anisodactylus californicus* Dejean, 1829: 148-149. Holotype (MNHN): a ♀ labeled: "♀", black hand print on green label; "californicus. Esc. in California D.", green label with black hand printing; "Ex Musaeo Chaudoir", white label with red machine print; "Eschscholtz", green label with black hand printing. Type Locality: California, as originally cited.
- Anisodactylus confusus* LeConte, 1851: 183. Lectotype (MCZC); herewith designated, a ♂ labeled: gold disk; "Type 86", white label with red paper pasted over most of it, "Type" in black machine print on white portion, "86" in black hand print on red portion; "confusus Lec.", black handwriting on white label; "A. confusus Lec.", black handwriting on white label. Added label stating: "LECTOTYPE *Anisodactylus confusus* LeConte By G. R. Noonan", black laser print on white label. Type Locality: San Francisco, California, as originally cited.
- Harpalus depressicollis* Motschulsky, 1859: 136. Holotype (ZMUM): a ♀ labeled: "Californis", black hand print on green label; "Amblystus depressicollis Menetr Californis", black hand print on green label. NEW SYNONYMY. Motschulsky gave only a single length and width and referred only to the ♀ sex in his original description. I therefore assume he had only a single ♀; this would be a holotype. Type locality: California, as originally cited.
- Anisodactylus angustus* Casey, 1914: 188. Lectotype (USNM): a ♂ designated by Lindroth (1975: 142) and labeled: "Cal.", black machine print with black hand made dot under letter "a", on white label; "CASEY bequest 1925", black machine print on white label; "TYPE USNM 47920", on red label, "TYPE USNM" in black machine print, remainder in black hand print; "angustus Csy.", black handwriting on white label; "LECTOTYPE *angustus* Csy. By C. H. Lindroth", species name and "Csy." in hand printed pencil, remainder in red machine print, white label. Type Locality: San Diego, California, as originally cited.
- Anisodactylus humeralis* Casey, 1914: 190. Holotype (USNM): a ♀ labeled: "Nev.", black machine print on white label with black dot before the "N"; "CASEY bequest 1925", black machine print on white label; "TYPE USNM 47921", red label, number hand printed in black ink, remainder in black machine print; "HOLOTYPE *humeralis* Csy. By C. H. Lindroth", white label, species name and "Csy." in hand printed pencil, remainder in red machine print. Type Locality: Reno, Nevada, as originally cited.
- Anisodactylus obsolescens* Casey, 1914: 188. Lectotype (USNM): a ♀ designated by Lindroth (1975: 141) and labeled: "Cal", black machine print on white label; "CASEY bequest 1925", black machine print on white label; "TYPE USNM 47922", red label, number hand printed in black ink, remainder in black machine print; "obsolescens Csy.", black handwriting on white label; "LECTOTYPE *obsolescens* Csy. By C. H. Lindroth", white label, species name and "Csy." in hand printed pencil, remainder in red machine print. Type Locality: San Francisco, California as originally cited.
- Anisodactylus oregonus* Casey, 1914: 188-189. Lectotype (USNM): a ♂ designated by

Lindroth (1975: 142) and labeled: "Clackamas Co. OREG.", black machine print on white label; "CASEY bequest 1925", black machine print on white label; "TYPE USNM 47919", red label, number hand printed in black ink, remainder in black machine print; "oregonus Csy.", black handwriting on white label; "LECTOTYPE oregonus Csy. By C. H. Lindroth", white label, species name and "Csy." in hand printed pencil, remainder in red machine print. Type Locality: Clackamas Co. Oregon, as designated by Lindroth (1975: 142).

Anisodactylus paganicus Casey, 1914: 190. Lectotype (USNM): a ♂ designated by Lindroth (1975: 142) and labeled: "Provo, Ut. June Wickham," black machine print on white label; "CASEY bequest 1925", black machine print on white label; "TYPE USNM 47917", red label, number hand printed in black ink, remainder in black machine print; "paganicus Csy.", black handwriting on white label; "LECTOTYPE paganicus Csy. By C. H. Lindroth", white label, species name and "Csy." in hand printed pencil, remainder in red machine print. Type locality: Provo, Utah, as originally cited.

Anisodactylus sinuatus Casey, 1914: 189-190. Lectotype (USNM): a ♀ designated by Lindroth (1975: 142) and labeled: "Cal", black machine print on white label; "CASEY bequest 1925", black machine print on white label; "TYPE USNM 47918", red label, number hand printed in black ink, remainder in black machine print; "sinuatus Csy.", black handwriting on white label; "LECTOTYPE sinuatus Csy. By C. H. Lindroth", white label, species name and "Csy." in hand printed pencil, remainder in red machine print. Type locality: Oregon, as originally cited.

Anisodactylus aleneanus Casey, 1924: 124. Lectotype (USNM): a ♂ designated by Lindroth (1975: 142) and labeled: "Coeur d'Alene Idaho June Wickham", black machine print on white label; "CASEY bequest 1925", black machine print on white label; "TYPE USNM 47923", red label, number hand printed in black ink, remainder in black machine print; "aleneanus Csy.", black handwriting on white label; "LECTOTYPE aleneanus Csy. By C. H. Lindroth", white label, species name and "Csy." in hand printed pencil, remainder in red machine print. Type Locality: Coeur d'Alene, Idaho, as originally cited.

Anisodactylus comes Casey, 1924: 124. Lectotype (USNM): a ♀ designated by Lindroth (1975: 142) and labeled: "Cal", black machine print on white label, with hand printed black "x" over the "a"; "CASEY bequest 1925", black machine print on white label; "TYPE USNM 47924", red label, number hand printed in black ink, remainder in black machine print; "comes Csy.", black handwriting on white label; "LECTOTYPE comes Csy. By C. H. Lindroth", white label, species name and "Csy." in hand printed pencil, remainder in red machine print. Type Locality: Valley of Redwood Creek, Humboldt County, California, as originally cited.

Anisodactylus maestus Casey, 1924: 124-125. Lectotype (USNM): a ♀ designated by Lindroth (1975: 142) and labeled: "Cal", black machine print on white label; "CASEY bequest 1925", black machine print on white label; "TYPE USNM 47925", red label, number hand printed in black ink, remainder in black machine print; "maestus Csy.", black handwriting on white label; "LECTOTYPE maestus Csy. By C. H. Lindroth", white label, species name and "Csy."

in hand printed pencil, remainder in red machine print. Type locality: Santa Cruz, California, as originally cited.

Recognition. Adults look superficially like those of *A. consobrinus*. The pronotal microsculpture of *A. californicus* is less prominent and the disk is shiny in both sexes compared to the dull disk in *A. consobrinus*. Most specimens of *A. californicus* have the pronotal sides (Fig. 15) with a longer sinuation posteriorly and the posterior lateral depressions somewhat linear, deeper than in *A. consobrinus* (Fig. 3) and separated from the side margins by a pronounced convexity; in *A. consobrinus* the depressions are shallow and not separated from the side margins by a pronounced convexity. Most adult *A. californicus* also differ by not having the posterior portion of the pronotal disk as strongly rugose as in many *A. consobrinus*.

Description. Body somewhat narrow in form; black to dark piceous; length 10.2 to 13.5 mm.

Head. Clypeus in most specimens with 2 setae at each anterior angle, in a few specimens with 2 setae at 1 of the angles and 1 seta at the other. Frons with frontal foveae triangular to irregular in shape, with or without clypeo-ocular prolongations; with or without median double rufous spot; microsculpture absent, or weak and irregularly isodiametric medially; with moderately dense very fine asetose punctures. Antennae with scape dorsally testaceous, rufous or infuscated; ventrally testaceous to rufous. Palpi testaceous to infuscated.

Pronotum. (Fig. 15) Shape cordiform, in most specimens with sides moderately sinuate posteriorly, in some specimens sides strongly sinuate or nearly straight posteriorly. Anterior angles moderate. Posterior angles right to acute, dentate in some specimens. Lateral depressions very narrow, well delimited except posteriorly where convexity extends to lateral margins. In most specimens posterior lateral depressions deep, more or less linear, separated from side-margin by a strong convexity. Moderately dense moderate sized asetose punctures present in posterior lateral depressions and in some specimens along much or all of posterior portions, in some specimens asetose punctures dense in posterior lateral depressions and elsewhere posteriorly and producing rugose appearance; sparse to moderately dense small asetose punctures on remainder of disk; posterior portion of disk not wrinkled. Microsculpture on disk varied medially from absent to very weak and isodiametric; elsewhere on disk microsculpture weak to moderate and meshes irregular to isodiametric. Disk shiny medially, and elsewhere in some ♂♂; shiny to dull medially in ♀♀.

Venter of Thorax. Prosternum smooth and glabrous except scattered to moderately dense pubescence anteriorly and in a few specimens laterally, such lateral setae extended posteriorly onto prosternal intercoxal process in some specimens; center of prosternum glabrous in all specimens. Proepisterna, proepimera, mesepisterna, mesepimera, metepisterna and metepimera glabrous. Mesosternum and metasternum glabrous to moderately densely pubescent.

Legs. Dark piceous to black. Front tibiae each in ♂♂ with ventro-apical protuberance small, bearing small distal spine (Fig. 30); apical spur (Fig. 35) widened and in some specimens somewhat angulate basally, but not sub-trifid; with small stout apical spine laterad to apical spur. Tarsomere 5 of all tarsi with row of stout setae on each side of venter. Hind tarsi with basitarsi with several stout setae on dorsum; dorsa of other tarsomeres without setae.

Elytra. Elongate, parallel sided at middle. Humeri somewhat angulate but

without more than rudiment of tooth. Intervals flat to slightly convex; with or without fine asetose punctures. (Interval nine in one specimen marked as abnormal by Lindroth with generalized pubescence.). Microsculpture isodiametric and moderate. Disk slightly shiny to dull.

Abdomen. Sterna glabrous except ambulatory setae and patch of short pubescence on each side of sterna 2 and 3 near hind coxae.

Male Genitalia. Aedeagus (Figs. 54, 76, 77, 78, 106) somewhat asymmetrical, in dorsal view curved toward right in some specimens; dorsum of shaft of some specimens strongly striate latero-dorsally proximal to the proximal end of the dorsal membranous area, in many specimens sides with striate depressions, most prominent on left; dorsal membranous area short, extended about 1/5 distance to basal bulb, lightly sclerotized in some specimens and thus only semi-membranous, other specimens with light sclerotization restricted to distal area on right side of ostium; apex short, tip sharply pointed and bent ventrad. Everted internal sac (Fig. 126) ($n = 17$) largest proximally and with basal dorsal sacculus; some specimens with basal dorsal field of macrotrichia, size and shape of field and size and sclerotization of macrotrichia various.

Female Genitalia. Valvifers (Fig. 147) moderately sclerotized; distal portion moderately elongate.

Geographical variation in male genitalia. The aedeagus shows interesting geographical variation. Figures 76-78 show the types of aedeagi, and Figs. 242 and 243 illustrate the geographic variation. Males from southwestern British Columbia, western Washington, and western Oregon have aedeagi without prominent lateral grooves along the shaft and do not have the sides swollen or projected outward (Fig. 76). These aedeagi are of the general form found in most specimens of *Anisodactylus*. Males from Utah, Nevada, portions of southern California and southern Idaho have the most modified aedeagi with prominent lateral depressions along the shaft and with the sides swollen or projected outward (Fig. 78). The most modified forms of aedeagi are thus in populations in the Great Basin and in the generally arid southern California and surrounding areas. In most specimens with modified aedeagi the left side has more prominent depressions and is more projected outward. Aedeagi intermediate between the most modified forms and the unmodified form (Fig. 77) occur in males north and west of the Great Basin.

Natural History. Adults typically occur in open, somewhat moist areas where the ground is moistened by seepage due to a high water table. Many such areas have grass or other herbaceous vegetation and are often near standing or slowly running water such as permanent and vernal ponds, lakes and creeks. The species apparently does not occur in places subject to rapid flooding or to receiving waves of water. Adults hide during the day beneath debris such as rocks or pieces of wood and are nocturnal.

The above comments are primarily based on my having collected 358 adults from 29 different sites in Arizona, California, Nevada, Idaho, Oregon and Washington (285 of these specimens taken during NSF funded work, remainder obtained during personally funded trips). All sites had a source of moisture readily available to adults. One site was a meadow at 1,450 m in the Sierra Nevada of California and had the soil moist beneath debris under which adults were present. Heavy growths of lichens on trees suggested that fogs provided significant amounts of moisture. Near the Humboldt River at Elko, Nevada, John Twomey and I obtained two adults on the shore of a pond that apparently received seepage water from the river. No adults were found along the

shores of the river. The other sites with specimens were by lakes, vernal ponds or in the moist bottoms of temporary waterways or depressions where water would gather during rains. Adults were absent from places with water that flowed rapidly or was subject to frequent or rapid changes in level or to waves. Adults were also not where the ground was saturated with water nor were they taken by treading aquatic vegetation. On 31 August 1984 Stan Rewolinski and I collected 6 adults active at night along the shores of Lenore Lake, 8.5 km N of the town of Soap Lake, Oregon. On 27 August 1984 we collected 16 adults at night as they crawled over grassy areas next to Fernan Lake, 1.6 km east of Coeur d'Alene, Idaho. I have never seen adults active during the day.

Data on museum specimens are: 29 adults under rocks or pieces of wood; 7 by a stream or creek; 19 in a marsh or slough; 55 by ponds; 2 from a grain hopper; 9 from under debris such as washed up seaweed or algae along ocean beaches; 1 by a lake; 5 by a stream or creek; 8 under trash in orange orchards; 1 in chicken manure; 1 near a green house; and 2 at a black light in April; 1 from a blacklight in June; 1 at a light in May; 20 from pitfall traps; 3 from a vacant lot; 2 under an old rug in a dry creek bed; 4 in flood debris; 1 in compost; and 7 in manure. Lindroth (1968: 855) reported adults in open grassland close to the Kootenay River at Creston; British Columbia.

Figures 200 and 201 respectively graph captures of all adults and of teneral adults per month. Figures 202-206 graph captures from within portions of the species' geographical distribution.

Adults have been taken at elevations ranging from sea level to approximately 3,200 m. Most specimens have been taken at elevations below 1,000 m. Only 475 have been found at 1,000 m or above and only 45 at 1,500 m or above. The maximum elevations of sites with adults appear to increase southward, with maximum elevation of 784 m in Washington, 1,300 in Oregon and 3,200 in California. The species is apparently absent from the xeric lowlands of Nevada and Utah, and adults have been taken in these states at elevations between approximately 1,000 and 1,900 m.

Geographical Distribution. (Figs. 240-243) The species is primarily restricted to regions west of the Rocky Mountains. A total of 8 specimens has been taken from Bon Accord and Christina Lake in Alberta to the northeast of the Rocky Mountains. A ♀ is labeled as from Colorado. A total of 13 adults has been taken from sites in northwestern Baja California. One ♂ and 2 ♀♀ are labeled as taken at Lago de Chapala Jalisco in west central Mexico in 1940. The latter record may be either a mistake in labeling or an example of a relictual population; despite collecting by several workers in Mexico over many years, no other specimens have been taken from the mainland. Three specimens are labeled as taken at Lake Forest, Lake County, Illinois. These beetles are no doubt mislabeled, being 1,465 kilometers from the nearest western site with the species. Five specimens are labeled as from Dallas, Texas and probably are also mislabeled, being 1,046 kilometers from the nearest site in the main area from which the species has been recorded.

Material Examined. Besides type specimens I have examined a total of 5,205 specimens (2,846 ♂♂, 2,358 ♀♀ and 1 unsexed). See appendix A for a list of specimens examined.

16. *Anisodactylus (A.) similis* LeConte
(Figs. 16, 31, 36, 55, 79, 107, 127, 148, 207-213, 244)

- Anisodactylus similis* LeConte, 1851: 183-184. Holotype (MCZC): a ♂ labeled: blue disk; "Type 89", white label with red piece of paper pasted over most of its surface, "Type" in black machine print on white portion of label, "89" in black handwriting on red portion of label; "A. similis Leech", black handwriting on white label; "semipunctatus 11", black handwriting on white label. Type Locality: Oregon, as originally cited.
- Anisodactylus semipunctatus* LeConte, 1860: 83. Lectotype (MCZC): herewith designated, a ♂ labeled: blue disk; "Type 5954", red label. "Type" in black machine print, "5954" in black hand print; "A. semipunctatus Lec. Suckley", black handwriting on white paper. Added label stating "LECTOTYPE *Anisodactylus semipunctatus* LeConte By G. R. Noonan", black laser print on white paper. Type Locality: "Oregon, Dr. Suckley, California", originally cited, herewith restricted to Oregon.
- Anisodactylus puncticollis*. Chaudoir, 1868: 161-162. Holotype (MNHN): a ♂ labeled: "puncticollis Chaudoir", black hand print on white paper; "Ex Musaeo Chaudoir", red machine print on white paper; "TYPE", black machine print on red paper; "similis Lec. det. Lindroth 67", white paper with "similis Lec." and "67" in pencil and rest in machine print. Type Locality: Vancouver Island, as originally cited.
- Anisodactylus incertus* Casey, 1914: 186. Lectotype (USNM): herewith designated, a ♀ labeled: "Sta Clara Co Cal", black handwriting on white label; "CASEY bequest 1925", black machine print on white label; "TYPE USNM 47916", red label, number hand printed in black ink, remainder in black machine print; "incertus Csy", black handwriting on white label; "LECTOTYPE *Anisodactylus incertus* Casey By G. R. Noonan", black laser print on white label. Type Locality: Santa Clara County, California, as originally cited. NEW SYNONYMY. (Noonan, 1975a: 227) regarded the above specimen as a holotype. However, given that Casey did not state the number of type specimens, it seems best to designate the specimen as lectotype.)
- Anisodactylus incisus* Casey, 1914: 185. Lectotype (USNM): a ♂ designated by Lindroth (1975: 142) and labeled: "Cal", black machine print on white label, with black dot over the "a"; "CASEY bequest 1925", black machine print on white label; "TYPE USNM 47914", red label, number hand printed in black ink, remainder in black machine print; "incisus Csy", black handwriting on white label; "LECTOTYPE *incisus* Csy. By C. H. Lindroth", white label, species name and "Csy." in hand printed pencil, remainder in red machine print. Type Locality: Hoopa Valley, Humboldt County, California, as originally cited.
- Anisodactylus solidus* Casey, 1914: 186. Lectotype (USNM): a ♂ designated by Lindroth (1975: 142) and labeled: "Cal", black machine print on white label; "CASEY bequest 1925", black machine print on white label; "TYPE USNM 47912", red label, number hand printed in black ink, remainder in black machine print; "solidus Csy.", black handwriting on white label; "LECTOTYPE *solidus* Csy. By C. H. Lindroth", white label, species name and "Csy." in hand printed pencil, remainder in red machine print. Type locality: Near San Francisco, California, as restricted by Lindroth (1975:142).
- Anisodactylus sericatus* Casey, 1924: 186-187. Lectotype (USNM): a ♀ designated by

Noonan (1975a: 227) and labeled: "Cal", black machine print on white label; "CASEY bequest 1925", black machine print on white label; "TYPE USNM 47915", red label, number hand printed in black ink, remainder in black machine, print; "sericatus Csy.", black handwriting on white label; "LECTOTYPE Anisodactylus sericatus Casey By G. R. Noonan", white label, genus and species name and "Casey" in black hand print, remainder in red machine print, Type locality: San Francisco Bay, California, as originally cited.

Recognition. Adults resemble those of *A. binotatus* in having pubescent outer elytral intervals. However they differ by having: (1) short fine setae on the sides of the frons of the head; (2) the pronotal disk densely punctate and wrinkled posteriorly; and (3) the pronotal posterior angles less prominently dentate. Males of *A. binotatus* also have two dorsal membranous areas in the aedeagus (Fig. 67a) as contrasted to the single such area in *A. similis* (Fig. 79).

Description. Body and legs piceous to black, except some specimens with tibiae and tarsi lighter in color; length 11.0 to 13.5 mm.

Head. Frons with frontal foveae triangular to irregular in shape, lacking clypeo-ocular prolongations; with or without median double rufous spot; microsculpture absent or weak and irregular medially and elsewhere mostly moderately prominent irregular to regular isodiametric mesh. Short fine setae, each arising from puncture, present along sides of frons, especially near the supra-orbital punctures, and in some specimens along posterior margins of frons. Antennae with scapes rufous, in some specimens infuscated dorsally; other antennomeres piceous to black. Palpi brunneous to black or infuscated. Submentum with scattered to dense short fine setae.

Pronotum. (Fig. 16) Anterior angles slight. Posterior angles acute to obtuse, with slight denticle in most specimens. Sides rounded anteriorly, posteriorly somewhat convergent toward posterior angles and straight or slightly sinuate. Lateral beads fine, complete or indistinct near anterior angles. Lateral depressions narrow, not well delimited anteriorly, obsolete posteriorly in most specimens. Posterior lateral depressions shallow, irregularly shaped or somewhat linear, each separated from side by slight to moderate convexity. Disk with setose and asetose punctures, densely arranged posteriorly, especially in posterior lateral depressions; posterior portions of disk and in some specimens other areas wrinkled; microsculpture absent or weak and irregular medially and mostly moderate irregular to regular mesh elsewhere. Sides and posterior base and in some specimens anterior margin with short fine setae.

Venter of Thorax. Short, moderately dense setae present on prosternum, anterior portions of proepisterna, mesosternum, mesepisterna of many specimens, most of metasternum except medially and metepisterna.

Legs. Front tibiae each in $\sigma\sigma$ with ventro-apical protuberance prominent, bearing distal spine (Fig. 31) (spine worn away in most $\sigma\sigma$); apical spur (Fig. 36) sharply widened proximally, somewhat sub-trifid due to small denticle on each side proximally (denticles worn in some specimens); stout apical spine present laterad to apical spur. Posterior margins of hind femora each with 2 to 4 long setae and 0 to 2 short setae. Hind tarsi with stout setae on dorsum of basitarsi and with or without stout setae on dorsa of other tarsomeres.

Elytra. Humeri angulate, in some specimens with slight tubercle. Intervals flat to slightly convex; short fine setae, each arising from puncture, present along apices of all intervals, along all of intervals 8 or 9 to 10 and in some specimens along most or all

of length of even intervals, in some specimens along anterior margin of all or some elytral intervals. Microsculpture of strong, granulate isodiametric mesh.

Abdomen. Sterna 2 and 3 each with patches of short moderate sized setae near hind coxae. Sterna 4 and 5 with scattered setae in some specimens. Sixth sternum of ♂♂ with 1 median pair of ambulatory setae and 1 pair of lateral ambulatory setae.

Male Genitalia. Aedeagus (Figs. 55, 79, 107) arcuate, shaft symmetrical, in most ♂♂ slight striae present laterally and/or ventrally proximal to apex; dorsal membranous area elongate, extended to basal bulb; apex elongate, in some specimens apex deflected slightly or moderately toward right and asymmetrical in dorsal view, tip bent ventrad and sharply pointed. Everted internal sac (Fig. 127) (n = 30) with large basal dorsal lobe bearing spine-like macrotrichia and with large basal dorsal field of spine-like macrotrichia located on main body of sac.

Female Genitalia. Valvifers (Fig. 148) moderately sclerotized; distal portion moderately elongate.

Natural History. My field work has yielded a total of 162 adults from 17 sites total in California and Oregon. The work showed that adults occur in open moist habitats such as grassy human clearings in mountains, natural montane meadows and in coastal canyons or hills. Vegetation where I collected adults was typically lush and dense and composed of grasses or a mixture of grasses and other herbaceous plants. All 17 sites had moisture in them from various sources such as creeks, seepage water or moisture remaining in dry creek beds or depressions. The adults occurred in places with moist soil or in places with the soil dry on the surface but situated close to water or moist to damp soil. The adults were found during the day beneath debris on the ground such as pieces of wood or bark, tree trunks, dried cow droppings and rocks. Data on museum specimens confirm these observations: 7 adults on ground under grass; 3 under apple tree and 1 under trash in an orchard; 1 in a meadow by logs; 75 under rocks; 7 under rocks and logs; 4 under pieces of wood or bark; 45 by edge of pond; 1 near marshy lake; 10 under rocks near water; 1 in deer guts; 3 in *Pinus ponderosa* driftwood; 5 in weedy field; 3 in pitfall traps; 4 "on range", presumably open grassy areas; 13 on hills; and 1 near creek edge. A total of 57 of these adults is labeled as found near water. Lindroth (1968: 856) reported adults as having been taken at Creston, British Columbia, in a moist spot in an open meadow.

Elevations of sites with adults range from sea level to approximately 2,400 m, with most adults taken below approximately 2,200 m. Adults do not show a progressive restriction to higher elevations from north to south along the coast and have been taken from elevations near sea level in southern California. However, my impression from many collecting trips in California is that adults are more common in mountains, especially in the southern half of the state. The maximum elevation at which adults occur does increase from north to south in the United States, with a recorded maximum of 1,088 m for Washington, 1,550 for Oregon and 2,439 for the Sierra Nevada of California.

Figures 207 and 208 graph captures per month of all adults and of teneral adults respectively and figures 209-213 graph captures in portions of the geographical range of the species.

Geographical Distribution. (Fig. 244) Adults occur west of the Rocky Mountains or at lower elevations in these mountains southward from southern British Columbia through Washington, western Montana, Oregon, Idaho and California. A

single ♀ is labeled as from Dallas, Texas. This specimen probably is mislabeled because the Dallas site is 1,102 kilometers from the nearest other site for the species (Auburn, Weld County, Colorado, 4 specimens) and 1,726 kilometers from the main portion of the species' geographical range. Four adults have been taken at Auburn, Weld Co., Colorado along the eastern edge of the Rocky Mountains.

Material Examined. Besides type material I examined a total of 2,996 specimens (1,618 ♂♂ and 1,378 ♀♀). See appendix A for a list of specimens examined.

17. *Anisodactylus (A.) furvus* LeConte
(Figs. 17, 32, 56, 80, 108, 128, 149, 214, 215, 244)

Anisodactylus furvus LeConte, 1863: 14. Holotype (MCZC): a ♀ labeled: salmon colored disk; "Type 5952", red label, "Type" in black machine print, "5952" in black hand print; "furus Ga. Lee", black handwriting on light blue colored paper; "rusticus19", black handwriting on white paper. Type Locality: Georgia, as originally cited.

Recognition. Adults somewhat resemble those of *A. harrisii* and *A. nigerrimus* in having the pronotal posterior angles rounded. However, the posterior angles of adults of *A. furvus* (Fig. 17) are much less rounded than those in the other two species (Figs. 18, 21). Adults of *A. furvus* also have only 1 seta at each outer distal angle while most adults of the other two species have 2 or more at each angle.

Description. Body dark piceous to black; length 10.9 to 12.5 mm.

Head. Frons with frontal foveae triangular to irregular in shape, with or without clypeo-ocular prolongations; with weak to prominent median double rufous spot; microsculpture medially with mesh obsolete or weak and irregular or isodiametric, isodiametric and more prominent laterally. Antennae with scapes testaceous, brunneus, light piceous or infuscated; antennomeres 2 and 3 darker in color than scape; in some specimens some or all of successive antennomeres approximately same color as scape or testaceous. Palpi brunneus to black or infuscated.

Pronotum. (Fig. 17) Anterior angles moderate. Posterior angles prominent but obtusely rounded. Sides slightly arcuate anteriorly, almost straight posteriorly. Lateral beads fine, complete or indistinct anteriorly. Lateral depressions obsolete anteriorly, more widened posterior to lateral setigerous punctures but still poorly delimited posteriorly. Posterior lateral depressions shallow, varied in shape, in most specimens separated from sides by convexity. Disk with asetose punctures posteriorly and in lateral depressions, punctures larger and deeper in posterior lateral depressions and in some specimens producing somewhat rugose appearance in such depressions; microsculpture obsolete, irregular or isodiametric medially and more prominent (granulate in some specimens) toward margins.

Venter of Thorax. Short fine setae present along; prosternum, except medially; and prosternal intercoxal process. Moderate sized setae present along; mesosternum; metasternum, except medially; and in some specimens along anterior margin of metepisterna.

Legs. Piceous to black except some specimens with tibiae and tarsi lighter in color. Front tibiae each in ♂♂ with ventro-apical protuberance obsolete (Fig. 32); with stout apical spine laterad to apical spur; apical spur widened and in some specimens

slightly angulate proximally. Posterior margins of hind femora each with 2 long setae and in some specimens with 1 or 2 short setae. Tarsomere 5 of all tarsi with row of stout setae on each side of venter. Hind basitarsi with or without several stout dorsal setae.

Elytra. Humeri slightly angulate, with or without tubercles. Intervals flat to slightly convex and in some specimens with short fine setae along anterior and posterior apices; intervals 5 in many specimens each with 1 or more distal setae; intervals 7 each with distal ocellate puncture and 3 or more distal setigerous punctures; intervals 9 to 10 with short fine setae along entire lengths. Microsculpture granulate and isodiametric.

Abdomen. Sterna 2 and 3 with patches of short moderate sized setae near hind coxae; some specimens with scattered setae on sterna 4 and 5; sterna 6 of ♂♂ with 1 pair of median ambulatory setae.

Male Genitalia. Aedeagus (Figs. 56, 80, 108) with dorsal membranous area extended about 3/5 distance to basal bulb; apex very elongate and very narrow and very sharply pointed at tip. Everted internal sac (Fig. 128) (n = 10) with: prominent basal dorsal lobe, with proximal end of lobe free of sac, and with all of lobe bearing macrotrichia enlarged into thick stout spines, and with medial dorsal field of macrotrichia.

Female Genitalia. Valvifers (Fig. 149) moderately sclerotized; distal portion moderately elongate.

Natural History. Habitat data are limited. Lindroth (1968: 850) reported a ♂ among *Carex* vegetation on the clayish bank of a small, slow brook in southern Ontario. Label data on museum specimens are: 2 under rocks; 3 under pine log; 1 in an alfalfa field; 4 in cotton fields; 1 in soybean field; 3 in peach orchards; 12 in grassy areas; 66 in pitfall traps, with 1 such adult from pecan field and 1 from under willow bark. Adults apparently fly. Eight have been taken from light traps. Most adults have been taken in lowland habitats, but the species apparently also occurs in mountains of North Carolina.

Figs. 214 and 215 graph monthly captures of all sexed adults and teneral adults, respectively.

Geographical Distribution. (Fig. 244) All but two adults have been taken east of the Rocky Mountains from southern Ontario southward to the Gulf of Mexico. A ♂ is labeled as found at Nogales, Santa Cruz, Arizona and a ♂ is labeled as found 8 km north of Eugene, Lane County, Oregon. Distances of the Nogales and Eugene sites from nearest sites with specimens in the East are 1,168 and 2,313 kilometers respectively. The two western sites are thus far removed from the main eastern sites where the species has been found and might be due to mislabeling of specimens or to adults having dispersed into these areas but not become established there.

Material Examined. Besides type material I examined 309 specimens (135 ♂♂ and 174 ♀♀). See appendix A for a list of specimens examined.

The *carbonarius* Group

Description. Body form various.

Pronotum. Posterior angles broadly rounded.

Cladistic Relationships. The broadly rounded pronotal posterior angles define this stock.

Included Taxa. This includes four species, *A. nigerrimus*, *A. loedingi*, *A.*

carbonarius and *A. harrisii*.

18. *Anisodactylus (A.) nigerrimus* Dejean
(Figs. 18, 57, 81, 109, 129, 150, 216, 217, 245)

- Harpalus nigerrimus* Dejean, 1831: 842-843. Holotype (MNHN): a ♂ labeled: "nigerrimus m in Ameribor.", black hand print on green label; "Leconte", black hand print on green label; "Harpalus", black hand print on green label; "Ex Musaeo Chaudoir", red machine print on white label. Type Locality: "Amérique septentrionale", originally cited; restricted to Marion, Massachusetts by Lindroth (1968: 850).
- Harpalus laticollis* Kirby, 1837: 43. Holotype (BMNH): a ♀ labeled: "Type H.T.", white disk shaped label with red margin; "N. Amer. ♂", black hand writing on white disk shaped label; "Harpalus laticollis Kirby N. Amer. 5738 Rev. W. Kirby", black hand writing on white label; "nigerrimus Dej. Det. Lindroth, 1952", white label. "nigerrimus Dej." and "52" in pencil hand writing, remainder in black machine print. Type Locality: North America as originally listed in title of paper and on type label.
- Anisodactylus punctulatus* LeConte, 1863: 14. Holotype (MCZC): a ♂ labeled: pink colored disk; "Type 5955", red colored label, "Type" in black machine print, "5955" in black hand print; "A. punctulatus Lec.". Type Locality: "Middle States", as originally cited.
- Harpalus opacus* Casey, 1884: 8-9, 195. Holotype (USNM): a ♀ labeled: "Pa.", black machine print on white label; "CASEY bequest 1925", black machine print on white label; "TYPE USNM 47910", red label, number hand printed in black ink, remainder in black machine print; "CASEY determ. nigerrimus. 10", white label with "CASEY determ." in black machine print, remainder in black handwriting; "This seems to be the 'eastern Pa.' specimen described originally as *Harpalus opacus* (L.B.)". Type locality eastern Pennsylvania as originally cited.

Recognition. Adults resemble those of *A. harrisii* in having two or more setae at each outer angle of the clypeus and in having the pronotal posterior angles broadly rounded. However adults of *A. nigerrimus* differ by having the pronotal lateral depressions obsolete (Fig. 18) (versus prominent and broad posteriorly [Fig. 21] in the other species) and by having the dorsal microsculpture less prominent, especially on the elytra. Males of the two species also differ in armature of the internal sac of their genitalia. In *A. nigerrimus* (Fig. 129) there is a pair of preapical ventral fields of macrotrichia (and in many specimens a pair of medial ventral fields also) while in *A. harrisii* (Fig. 132) there is a single basal ventral and a single medial ventral field of macrotrichia.

Description. Body somewhat stout; dark piceous to black except frons with weak to prominent median double rufous spot; length 9.2 to 12.6 mm; dorsum slightly shiny in most specimens.

Head. Clypeus with 2 to 3 setae at each outer distal angle in most specimens (adults with only 1 seta at each such angle are: 1 ♂ reported by Lindroth (1968: 851) from Halifax, Nova Scotia; 1 ♂ from Kentucky; and 1 ♀ from Storrs, Connecticut). Frons with frontal foveae triangular to irregular in shape, without clypeo-ocular

prolongations; microsculpture medially obsolete to present as weak isodiametric mesh, more prominent and composed of granulate isodiametric mesh toward margins. Antennae with scapes testaceous, brunneus, light piceous or infuscated; antennomeres 2 and 3 darker than scapes; in some specimens some or all of antennomeres 4 to 11 brunneus, testaceous or approximately same color as scapes. Palpi brunneus to black or infuscated.

Pronotum. (Fig. 18) Transverse in form, with rounded sides. Anterior angles slight. Posterior angles broadly rounded. Sides rounded. Lateral beads complete, widened and prominent posteriorly. Lateral depressions not well defined, not broad, not widened posteriorly. Posterior lateral depressions slight, varied in shape, in most specimens each separated from sides by convexity. Disk with asetose punctures posteriorly and in lateral depressions; such punctures larger and deeper in posterior lateral depressions and in some specimens giving somewhat rugose appearance to these depressions; microsculpture medially obsolete or present, more prominent and forming granulate isodiametric mesh toward margins.

Venter of Thorax. Prosternum with short fine setae; some specimens with median elongate shaped glabrous area. Prosternal intercoxal process laterally with short fine setae in many specimens, glabrous medially in most specimens. Proepisterna glabrous. Mesosternum with short fine setae. Anterior margin of mesepisterna with few short fine setae in some specimens. Metasternum with fine short setae anteriorly and posteriorly. Metepisterna and metepimera with shallow asetose punctures.

Legs. Front tibiae each in $\sigma\sigma$ with ventro-apical protuberance very small, nearly indistinct, with small spine; apical spur widened and in some specimens somewhat angulate proximally, but not trifid or sub-trifid. Hind tarsi with basitarsi with or without several stout dorsal setae.

Elytra. Humeri slightly angulate, with or without tubercles. Intervals flat to moderately convex. Microsculpture isodiametric to slightly transversely stretched.

Abdomen. Sterna 2 and 3 with patches of short setae near hind coxae. Some specimens with scattered setae on sterna 4 and 5.

Male Genitalia. Aedeagus (Figs. 57, 81, 109) arcuate, symmetrical; shaft with weak longitudinal striations, dorsal membranous area long, extended to or nearly to basal bulb; apex short and with tip obtusely rounded and bent slightly ventrad. Everted internal sac (Fig. 129) ($n = 6$) with 2 preapical ventral fields of spines each located slightly laterad of median portion of venter; most $\sigma\sigma$ with 2 medial ventral fields of spines each located slightly to laterad of median portion of venter, fields of varied sizes and in some specimens absent or reduced to 1 or 2 spines.

Female Genitalia. Valvifers (Fig. 150) moderately sclerotized; distal portion moderately elongate.

Natural History. Adults apparently occur in open areas. Lindroth (1968: 851) reported adults taken at Cowansville, Quebec, in an old gravel pit that had "rich vegetation". Adult museum specimens with habitat data are: 1 under railroad ties on ground next to upland woods; 1 under logs and debris in a mesic prairie; 1 on "vetch"; 1 under rock; 1 under log; 1 under stone in moist field; 1 in drift material; 1 under board in grassy area; 1 in leaf litter in sandy area; 1 in sand pit; 1 in pitfall trap; 1 under log in swampy ground; and 1 under cover on pond shore.

Figures 216 and 217 respectively graph captures of all sexed adults and of teneral adults per month.

Adults are primarily found at sites with elevations below 1,000 m. Those taken at higher elevations are: 2 ♂♂ at 1,036 m at Balsam, North Carolina; a ♀ at 1,067 m in the Unicoi Mountains of Tennessee; 1 ♀ at 1,067 m from Big Meadows, Virginia; 1 ♀ from Hanover at 1,162 m in New Hampshire; 2 ♂♂ and 1 ♀ at 1,169 m near Highlands, North Carolina; and 1 ♀ on Mount Washington in New Hampshire at between 1,220 to 1,524 m.

Geographical Distribution. (Fig. 245) Adults occur from the eastern United States and southeastern Canada westward into eastern Kansas and Nebraska. An adult has been taken in southwestern Saskatchewan and one from southeastern Alberta. Specimens with locality data restricted to state only show the species occurs slightly west of the area shown in Fig. 245, with such records being: 2 ♀♀ from Texas; and a ♀ from South Dakota.

Material Examined. Besides type specimens I have examined a total of 991 specimens (518 ♂♂, 472 ♀♀ and 1 unsexed). See appendix A for a list of specimens examined.

19. *Anisodactylus (A.) loedingi* Schaeffer
(Figs. 19, 58, 82, 110, 130, 151, 218, 246)

Anisodactylus loedingi Schaeffer, 1911: 114. Lectotype (USNM): a ♂ designated by Erwin and House (1978: 234) and labeled: "Type ♂", white label, ♂ in black hand print, remainder in red machine print; "Mobile Alab.", black hand writing on white label; "BROOKLYN MUSEUM COLL. 1929", black machine print on white label; "Catal. No. 3557", white label, "3557" in black handwriting, remainder black machine print; "Type No. 42494 U.S.N.M.", black machine print on red label; "Anisodactylus loedingi type ♂ Schaeff.", black handwriting on white label; "Anisodactylus loedingi Schaeff.", black handwriting on white label with double red lines along sides; "Anisodactylus Cephalogyna loedingi det. Schaeffer Schfr. Holotype", "det." in black machine print, remainder in black hand print, white rectangular shaped label with red bar at each end; "LECTOTYPE ♂ Anisodactylus loedingi Schaeffer By Erwin 78", white label, "LECTOTYPE" and "By" in red machine print, remainder in black hand print. Type Locality: Mobile, Alabama, as originally cited.

Recognition. Adults of this species are distinguished by their large body size (the largest in the genus, length 14.4 to 19.5 mm), relatively large head and reduced size of the eyes. Other notable features include the suborbiculate pronotum (Fig. 19) with very deep and prominent lateral depressions and broadly rounded posterior angles.

Description. Body size largest in genus, length 14.4 to 19.5 mm; dorsum dull. Body and legs black except frons with weak to prominent median double rufous spot.

Head. Large and broad. Eyes small and flat, little protruded from sides of head. Frons with frontal foveae somewhat linear in shape and convergent posteriorly; microsculpture isodiametric and prominent. Antennae with scapes and antennomeres 2 (and in some specimens 3) black except brunneus at distal apices in some specimens; other antennomeres brunneus to black. Palpomeres brunneus to black, with apices lighter in color in many specimens.

Pronotum. (Fig. 19). Suborbiculate in shape and with sides evenly rounded.

Anterior angles moderate. Posterior angles broadly rounded. Lateral beads indistinct anteriorly, evident posteriorly. Lateral depressions broad, deep and prominent, even anteriorly. Posterior lateral depressions large, deep, oval to elliptical or somewhat linear in shape, in most specimens separated from sides by convexity. Disk notably convex medially and laterally sharply sloped toward sides; with dense asetose punctures except medially; punctures denser in lateral depressions and especially in posterior lateral depressions; surface of posterior lateral depressions and in some species of lateral depressions rugose due to large dense and confluent punctures; microsculpture isodiametric to slightly stretched, prominent toward margins.

Venter of Thorax. Short pubescence present on prosternum, mesosternum and metasternum, except medially.

Legs. Front tibiae each in ♂♂ with ventro-apical protuberance prominent and bearing distal spine. Hind tarsi with dorsa glabrous.

Elytra. Humeri rounded. Intervals flat to moderately convex. Microsculpture isodiametric and granulate.

Abdomen. Sterna 2 and 3 with patches of short moderate sized setae near hind coxae; sternum 6 of ♂♂ with 1 pair of median ambulatory setae.

Male Genitalia. Aedeagus (Figs. 58, 82, 110) arcuate, shaft symmetrical, with slight to moderate striae laterally; dorsal membranous area short; apex moderately long and with tip broadly rounded and bent slightly ventrad. Everted internal sac (Fig. 130) (n = 4) broad, with prominent sacculus originating in preapical ventral region; sacculus approximately as long as remainder of main body of sac, giving bifurcate appearance to distal portion of sac; sacculus with or without preapical left field of macrotrichia.

Female Genitalia. Valvifers (Fig. 151) heavily sclerotized; distal portion elongate and narrow.

Geographical Distribution. (Fig. 246) This species has been collected in an area extending from the southeastern United States north to Long Island, New York. A single ♀ from the Henry Ulke Collection of the Carnegie Museum of Natural History is labeled as from "Mass", presumably meaning from the state of Massachusetts.

Natural History. Nothing is known about the habitats occupied by adults of this species. Figure 218 graphs the captures of all sexed adults per month. I have not seen teneral specimens. The species might be extinct; the only specimen I am aware of that was collected after 1927 is a ♂ taken at Lucedale, George County, Mississippi.

Material Examined. Besides type material I examined 50 specimens (27 ♂♂ and 23 ♀♀). See appendix A for a list of specimens examined.

20. *Anisodactylus (A.) carbonarius* Say

(Figs. 20, 33, 37, 59, 83, 111, 131, 152, 219, 220, 247)

Harpalus carbonarius Say, 1823: 32-33. Neotype (MCZC): designated by Lindroth (Lindroth and Freitag, 1969: 354), a ♂ labeled: "Camden S.C. Feb.15-25", black handwriting on white label; "Roland Hayward Coll.", black machine print on white label; "NEOTYPUS *Harpalus carbonarius* Say design. Lth.", red label with "NEOTYPUS" and "design." in black machine print and other text in black handwriting; "*Anisodactylus carbonarius* Say det. Lindroth 68", white label with "det. Lindroth" in black machine print and

other text in handwritten pencil; "M.C.Z. NEOTYPE 32987", red label, type number in black hand print, other text in black machine print. Type Locality: Camden, South Carolina, designated by Lindroth (Lindroth and Freitag, 1969: 353).

Anisodactylus luctuosus, Dejean, 1829: 151-152. Lectotype (MNHN): herewith designated, a ♂, labeled: "luctuosus m in Amer.bor.", black hand print on green label; "♂", black hand print on green label; "Leconte", black hand writing on green label; "Ex Musaeo Chaudoir", red machine print on white label. Added label stating: "LECTOTYPE *Anisodactylus luctuosus* Dejean By G. R. Noonan", black laser print on white paper. Type Locality: Amérique septentrionale [North America], as originally cited.

Anisodactylus rufipennis LeConte, 1848: 381. Holotype (MCZC): a ♂ labeled: light purple colored disk; "2723", handwritten on white paper; "Type 5953", on red paper, "Type" black machine print, "5953" black hand print; "var. rufipennis Lec.", handwritten on white label; "carbonarius 4", handwritten on white paper. Type Locality: Brooklyn, Long Island, New York, as originally cited.

Triplectrus brevior Casey, 1924: 126-127. Lectotype (USNM): a ♀ designated by Lindroth (1975: 141) and labeled: "Penn.", black machine print on white label; "CASEY bequest 1925", black machine print on white label; "TYPE USNM 47928", red label, number hand printed in black ink, remainder in black machine print; "brevior Csy.", black handwriting on white label; "LECTOTYPE brevior Csy. By C. H. Lindroth", white label, species name and "Csy." in hand printed pencil, remainder in red machine print. Type Locality: Pennsylvania, as originally cited.

Recognition. Adults of *A. carbonarius* resemble those of *A. harrisii* having pronota (Figs. 20, 21) with prominent lateral depressions and broadly rounded posterior angles. However, adults of the latter do not have the apical spurs of the front legs trifid and lack pubescence on the pronotum, outer elytral intervals and apices of elytral intervals.

Description. Body with dorsum dull in luster; length 11.4-13.1 mm.

Head. Clypeus with 2 to 3 setae at each outer distal angle in most specimens; in a few specimens 1 outer distal angle with only 1 seta. Frons with frontal foveae triangular to irregular in shape, without clypeo-ocular prolongations; piceous to black, with weak to prominent median double rufous spot; microsculpture isodiametric. Antennae with scapes and in some specimens second antennomere rufous, brunneus or infuscated and lighter in color than other antennomeres. Palpi brunneus to black or infuscated. Mentum with varied number of setae of various lengths. Submentum with short fine setae over most of surface.

Pronotum. (Fig. 20) Piceous to black, except some specimens with sides and posterior margin light to dark brunneus. Anterior angles slight to prominent. Posterior angles obtusely to broadly rounded. Sides rounded. In some specimens posterior bead indistinct laterally near posterior angles. Lateral beads indistinct anteriorly. Lateral depressions broad, prominent, greatly widened posteriorly. Posterior lateral depressions slight, in some specimens each separated from sides by slight convexity. Disk laterally and posteriorly with punctures, most setose, in some specimens such punctures dense and area of posterior lateral impressions somewhat

rugose; microsculpture weak and isodiametric medially, more prominent and composed of granulate isodiametric mesh toward margins.

Venter of Thorax. Dark brunneus, piceous or black. Short moderately thick setae present on: prosternum; anterior portions of proepisterna; mesosternum; most of metasternum except median area; and metepisterna. Some specimens with short moderately thick setae on mesepisterna.

Legs. Dark brunneus, piceous or black. Front tibiae each in ♂♂ with prominent ventro-apical protuberance (Fig. 33), small spine distally on protuberance (spine worn away in many specimens); apical spur (Fig. 37) trifid; stout apical spine laterad to apical spur. Posterior margins of hind femora each with 2 to 3 long setae and approximately 10 to 15 shorter setae. Hind tarsi with several stout setae on dorsum of basitarsi; dorsa of other tarsomeres with or without stout setae.

Elytra. Piceous to black in most specimens; in some specimens partly or completely light to dark brunneus. Humeri slightly angulate, without tubercles. Intervals flat to moderately convex; short fine setae present along elytral intervals 8 or 9 to 10, posterior apices of elytral intervals and in some specimens along anterior margin of all or some elytral intervals. Microsculpture granulate and isodiametric.

Abdomen. Sterna dark brunneus, piceous or black; sterna 2 and 3 with patches of short moderate-sized setae near hind coxae; some specimens with scattered setae on sterna 4 and 5; sixth sternum of ♂♂ with 1 pair of median ambulatory setae.

Male Genitalia. Aedeagus (Figs. 59, 83, 111) arcuate, with dorsal membranous area elongate, extended to basal bulb; apex moderate in length, tip bent slightly ventrad and pointed. Everted internal sac (Fig. 131) ($n = 5$) with basal right field of macrotrichia and with prominent sacculus originating in medial ventral region and with ventral field of spines.

Female Genitalia. Valvifers (Fig. 152) moderately sclerotized; distal portion elongate and narrow.

Variation. Out of 992 specimens examined, I have seen eight adults with only one seta at one of the outer distal angles of the clypeus; these eight adults all had two or more setae at the other distal angle.

Natural History. Little is known about the habitats in which adults occur. Data associated with museum specimens are: a ♂ on soil under grass in a peach orchard in Richmond County, North Carolina, and a ♀ in a similar habitat in Upson County, Georgia; a ♀ in clumps of grass in Illinois; a ♂ on a beach at Hampton, New Hampshire; and a ♂ at a river in Williams Co., Ohio. Adults apparently fly. A total of 28 adults has been taken at lights. Three adults have been taken from light traps.

Figures 219 and 220 graph monthly captures of all sexed adults and teneral adults, respectively.

Geographical Distribution. (Fig. 247) Adults occur in the eastern United States and southeastern Canada. Three specimens are labeled as from sites in Washington. Adults occur mostly in lowlands but in the Southeast also occur in mountains: a ♂ was taken at 1,990 m at Clingman's Dome in Tennessee; a ♂ and ♀ were taken at 1,525 m in the Great Smokey Mountains National Park, Tennessee; 3 ♂♂ were found at 1,036 m at Balsam, Jackson County, North Carolina; and a ♀ was taken at 524 to 971 m at Clayton, Rabun County, Georgia.

Material Examined. Besides type material I examined 992 adults (448 ♂♂, 542 ♀♀ and 2 unsexed). See appendix A for a list of specimens examined.

21. *Anisodactylus (A.) harrisii* LeConte
(Figs. 21, 60, 84, 112, 132, 153, 221, 222, 248)

Anisodactylus harrisii LeConte, 1863: 14-15. Lectotype (MCZC): herewith designated, a ♂ labeled: pink colored disk; "256.", black handwriting on white label; "Type 5968", red label, "Type" in black machine print, "5968" in black hand print; "A. Harrisii + Lec. agricola (equal sign with vertical through it) Harris", black handwriting on white label ("agricola" underlined). Label added staking: LECTOTYPE: *Anisodactylus harrisii* LeConte By G. R. Noonan", black laser print on white label. Type Locality: Marion, Massachusetts, designated by Lindroth, 1968: 850.

Anisodactylus lacertosus Casey, 1924: 123. Holotype (USNM) a ♀ labeled: "L", black machine print on white label; "CASEY bequest 1925", black machine print on white label; "TYPE USNM 47913", red label, number hand printed in black ink, remainder in black machine print; "lacertosus Csy", black handwriting on white label; "Holotype lacertosus Csy. By C. H. Lindroth", white label, species name and "Csy." in hand printed pencil, remainder in red machine print. Type Locality: probably Indiana, originally cited, herewith restricted to Indiana.

Recognition. See the comments for *A. carbonarius* and *A. nigerrimus*.

Description. Body somewhat stout, dark piceous to black except weak to prominent median double rufous spot on frons; length 10.3 to 13.0 mm.

Head. Clypeus with 2 to 3 setae at each outer distal angle. Frons with frontal foveae each triangular to irregular in shape, with or without clypeo-ocular prolongations; microsculpture medially obsolete or weak and isodiametric, weak and isodiametric laterally; surface, except laterally in some specimens, somewhat shiny. Antennae with scapes testaceous, brunneus, light piceous or infuscated; antennomeres 2 and 3 darker in color than scapes; in some specimens some or all of antennomeres 4 to 11 approximately same color as scape or testaceous. Palpi brunneus to black or infuscated.

Pronotum. (Fig. 21) Transverse in form. Anterior angles slight. Posterior angles broadly rounded. Sides rounded. Lateral beads indistinct anteriorly, widened and prominent posteriorly. Lateral depressions broad and prominent, greatly widened posteriorly. Posterior lateral depressions slight, varied in shape; in most specimens each separated from sides by a convexity. Disk with asetose punctures posteriorly and in lateral depressions; punctures larger and deeper in posterior lateral depressions and in some specimens producing somewhat rugose appearance in such depressions; microsculpture obsolete medially, more prominent and of granulate isodiametric mesh toward margins; surface, except laterally, slightly shiny.

Venter of Thorax. Prosternum with short fine setae except some specimens with median longitudinal glabrous area. Prosternal intercoxal process laterally with short fine setae in many specimens; glabrous medially in most specimens. Proepisterna glabrous. Mesosternum with moderate fine short setae. Mesepisterna of

some specimens with few fine short setae along anterior margins. Metepisterna and metepimera with or without shallow asetose punctures. Metasternum with fine short setae anteriorly and posteriorly.

Legs. Front tibiae each in ♂♂ with ventro-apical protuberance small, with small distal spine. Hind tarsi with basitarsi with or without several dorsal stout setae.

Elytra. Humeri slightly angulate, with or without tubercles. Intervals flat to moderately convex; with or without small, asetose, shallow punctures, sparsely to densely distributed. Microsculpture isodiametric, granulate in ♀♀.

Abdomen. Sterna 2 and 3 with patches of short, moderate sized setae near hind coxae; some specimens with scattered setae on sterna 4 and 5.

Male Genitalia. Aedeagus (Figs. 60, 84, 112) arcuate, symmetrical; some specimens with shaft longitudinally striate on sides proximally; dorsal membranous area moderate in length, extended about three-quarters distance to basal bulb; apex moderate in length, tip bent slightly ventrad and narrowly rounded. Everted internal sac (Fig. 132) (n = 8) stout, with basal ventral and medial ventral fields of spine like macrotrichia; medial ventral field extended onto 1 or more sides in some ♂♂.

Female Genitalia. Valvifers (Fig. 153) moderately sclerotized; distal portion moderately elongate.

Natural History. I have collected 15 adults from a total of six sites in Montana, Washington and Wisconsin and noted that adults occurred in open areas such as fields and pastures where the ground was damp but not saturated with water. Sources of moisture included water in lakes, pools and ponds or moisture remaining in depressed areas after rains. Adults sheltered beneath debris on the ground during the day. I collected at night at Lenore Lake in Washington and Forest Lake in Wisconsin and took a total of five adults active at night along the lake shores. Data on museum specimens are: 4 adults under rocks; 1 under rock in field; 3 under debris near a pond; 2 under railroad ties on moist, gravelly soil; and 1 under rocks on the banks of a stream. Lindroth (1968: 851) reported adults as "on moderately moist meadow ground, often near water" in Canada.

Figures 221 and 222 respectively graph captures of all sexed adults and of general adults per month.

Adults have been taken primarily from lowland sites. Records for sites above 1,000 m are: a ♂ from Butte, Montana, at 1690 m; 15 adults from the Boulder region of Colorado at elevations ranging from approximately 1,500 to 1,630 m; a ♂ labeled as from Salt Lake, Utah (elevation of city is 1,298 m, but label could refer also to Salt Lake County); a ♀ from Blowing Rock, North Carolina, at 1,091 m; and a ♀ from Balsam, North Carolina, at 1,036 m.

Larochelle (1990) summarized observations that adults have been seen eating seeds of grasses and other plants in the field and in captivity have eaten pieces of ham and earthworm.

Geographical Distribution. (Fig. 248) Adults occur across northern portions of the United States and southern Canada and south into Arizona, southern California and Louisiana.

Material Examined. Besides type specimens I have examined a total of 1,484 specimens (788 ♂♂, 695 ♀♀ and 1 unsexed). See appendix A for a list of specimens examined.

Species Transferred to Subgenus

Pseudanisodactylus Noonan

The examination of sister group relationships done for the cladistic analysis given below shows that *A. signatus* Panzer, 1797 belongs in the subgenus *Pseudanisodactylus* of the genus *Anisodactylus*. The valvifers of *A. signatus* (Fig. 174) each have a distinct situation at the apex; a feature characteristic of the subgenus *Pseudanisodactylus*. Adults of *A. signatus* also share with other species of *Pseudanisodactylus* the synapomorphy of the third elytra interval lacking a posterior setigerous puncture. This species is herewith transferred to the latter subgenus.

Species Transferred to Genus

Progonochaetus Müller

Anisodactylus abaculus Bates, 1889: 207-208. Lectotype (RMNH): herewith designated: a ♂ labeled: "type", black handwriting on white label; "Stampfli Gunkriv, Liberia", black handwriting on circular shaped white label; "Cotype", black machine print on blue label; "Anisodactylus abaculus Bates", black handwriting on white label; "Museum Leiden Anisodactylus (Anisod. s. str.) abaculus H. W. Bates", black machine print on label with black line along margin; "type", black machine print on red label. Added label stating: "LECTOTYPE Anisodactylus abaculus Bates By G. R. Noonan", black laser print on white label.

In his revision of the harpalines of tropical Africa and Madagascar Basilewsky (1951) listed names for which he could not examine types. Because the genus *Anisodactylus* does not occur in tropical Africa, I did not seek to obtain the five forms listed there as having been described as members of the genus. However, during the current study I received from RMNH 20 adults labeled as *Anisodactylus abaculus*. Four of the adults were labeled as types. Examination of the lectotype and other specimens shows that the form is a junior synonym of *Progonochaetus cursorius* Dejean, 1831. I herewith transfer *Anisodactylus abaculus* to the genus *Progonochaetus* and place it in synonymy with Dejean's species.

Species Transferred to Genus

Harpalomimetes Schaubberger

Anisodactylus schaubbergeri Jedlička, 1932: 45-46. Holotype (NMPC): a ♂ labeled: "Tali Haut Yunnan", white label with black machine print; "TYPE", red label with black machine print and black line along edges; "Kinn ohne Zahn", black hand print on white label; "Mus. Nat. Prage. Inv. 65601", orange colored label, "65601" in black hand printing, remainder in black machine print; "Schaubbergeri mihi TYPE DET.ING.Jedlicka", pink label, "Schaubbergeri mihi TYPE DET.ING.Jedlicka" in black machine print, remainder in black hand writing.

Examination of the holotype shows that it belongs in the genus *Harpalomimetes* as defined by Noonan (1973).

Incertae Sedis

Anisodactylus microthorax Motschulsky, 1849: 70-71. Motschulsky said that the description of this form was based on a single ♀ that resembled *A. binotatus* and was collected in Spain. I have not found the type of this form. Sciaky (1979: 16) said that *A. microthorax* might be a synonym of *A. binotatus*. The SMTD museum lent me 21 non-type specimens labeled as *A. microthorax*. These specimens are members of the genus *Harpalus*.

Names of infraspecific rank

The following names were proposed at the infrasubspecific rank and have not been raised to a higher level by subsequent workers. Puel (1931) proposed *Anisodactylus porosus* as a variety of *A. nemorivagus*. He apparently regarded the former as of infrasubspecific rank because he used the category subspecies for other names listed as members of *A. nemorivagus*. Puel also proposed *A. matheyi* as an aberration of *A. binotatus* and *A. binotatus epinassei* as a variety of *A. binotatus*. Given his uses of the subspecies category elsewhere in the paper, the latter two names are of infrasubspecific rank. Pulpan (1948) described *A. dvorakovae* as an aberration of *A. binotatus*.

Results of Cladistic Analysis

Selection of outgroups for analysis of character polarities

The genus *Anisodactylus* belongs in the Anisodactyloid Group of the subtribe Anisodactylina (Noonan, 1973). A synapomorphic fusion of the mentum and submentum of the head defines this group, and a synapomorphic expansion of the ligula apex of the mouthparts delimits a subgroup of anisodactyloids containing the genus *Anisodactylus*. Within this subgroup the synapomorphic presence of pubescence over the dorsum of the body defines a lineage with four genera other than *Anisodactylus*. The remaining taxa of the above subgroup are the genus *Geopinus* and the subgenera of *Anisodactylus*.

A previous attempt (Noonan, 1973) failed to find a synapomorphy linking the subgenus *Anisodactylus* to a sister group. A reappraisal in progress suggests that synapomorphies of the valvifers of the female genitalia identify a sister group composed of the subgenera *Gynandrotarsus* LaFerté-Sénéctère and the monobasic subgenus *Pseudaplocentrus* Noonan.

Most harpalines have valvifers that are lightly sclerotized and not elongate in form. In the anisodactyloid subgroup that includes the genus *Anisodactylus* the valvifers share synapomorphies in five subgenera of *Anisodactylus*. The valvifers in these subgenera are moderately to strongly sclerotized, dorso-ventrally thickened and modified from the usual shape into a more elongate form.

Within the subgenus *Anadaptus* the valvifers (Figs. 155-161) are moderately to strongly sclerotized and moderately thickened dorso-ventrally. Their distal portions (distal part not covered by membrane) are moderately elongate. Adults of *Anadaptus* differ from those of the other five subgenera by having the hind tarsi relatively short in form.

Females of the three species of the subgenus *Pseudanisodactylus* Noonan have valvifers (Figs. 172-174) with the distal portion moderately elongate. However,

the distal lateral margins differ from those in the subgenus *Anisodactylus* by being deeply sinuate. Moreover, adults of *Pseudanisodactylus* differ from those of subgenus *Anisodactylus* by the synapomorphic loss of the setigerous puncture. This puncture is found in the approximately distal 1/3 of each elytron of adults in the subgenus *Anisodactylus* and in most other members of the subtribe Anisodactylina.

The valvifers of *Gynandrotarsus* and *Pseudaplocentrus* (Figs. 162-171, 154) are heavily sclerotized and dorso-ventrally thickened. They also have the distal portion elongate (least so in *A. dulcicollis*, Fig. 164). The overall shape of the valvifers is elongate in *Gynandrotarsus* and *Pseudaplocentrus* and approximates that found in the subgenus *Anisodactylus* (Figs. 133-153).

Females of the above two subgenera have valvifers with the additional synapomorphy of lacking setae on their distal portions. The valvifers of the females in these subgenera also have a concave area on their distal portion. A slightly less convex area also occurs in some females of many species in subgenus *Anisodactylus*.

The subgenera *Gynandrotarsus* and *Pseudaplocentrus* thus share with the subgenus *Anisodactylus* synapomorphies for the female valvifers and do not have the tarsal or elytral synapomorphies found in the subgenera *Anadaptus* and *Pseudanisodactylus* respectively. The former two subgenera are thus probably the sister group to subgenus *Anisodactylus*. At minimum they may be regarded as a suitable outgroup for polarizing character states.

Noonan (1973) treated *Pseudodichirus* as the sister group of *Gynandrotarsus*. However examination of additional females of *A. intermedius* Dejean (sole species of *Pseudodichirus*) shows that the valvifers of the female examined by Noonan apparently were abraded. Valvifers of this species have setae and lack features suggesting sister group relationship to *Gynandrotarsus*.

Character states used to reconstruct the trees

This section discusses characters and polarity of character states used in reconstructing the trees shown in Figs. 249-266. Numbers on these figures refer to synapomorphies listed below. Superscript marks (') denote states forming part of a transformation series. A question mark after a number associated with a species in these figures shows that the apomorphic state is present in some members of the species. A question mark after a number labeling synapomorphies defining a lineage shows that Hennig86 considered it equally parsimonious to assume that a given synapomorphy was absent or present in the ancestor of that lineage.

Examination of characters in the subgenus *Anisodactylus* and out group discussed above facilitated polarization of 12 characters used in constructing phylogenetic trees for species of the subgenus. Unless otherwise noted the plesiomorphic state of each character occurs in all species of the sister or outgroup to subgenus *Anisodactylus*. Table 1 lists distribution of character states by taxa.

Pronotum (states 0-2)

0. Posterior angles broadly rounded or not. Plesiomorphic = Not broadly rounded (Figs. 2-17). ? = State varies within a species or within the outgroup. 0 = Broadly rounded (Figs. 1, 18-21). Broadly rounded posterior angles occur in *A. dulcicollis* of the subgenus *Gynandrotarsus*.

1. Posterior angles prominently dentate or not. Plesiomorphic = Not

prominently dentate (Figs. 1, 8, 16-21), = Prominently dentate (Figs. 2-7, 10-12). ? = State varies within a species.

2. Lateral depressions very prominent or not. Plesiomorphic = Not prominent, not wide posterior to lateral setae, not sharply delimited from disk in dorsal view (Figs. 1-11, 13-18). 2 = Very prominent, wide posterior to lateral setae, sharply delimited from disk in dorsal view (Figs. 12, 19-21). Adults of *Anisodactylus* (*Pseudaplocentrus*) *laetus* Dejean have prominent pronotal lateral depressions. These depressions are separated from the pronotal disk on each side by a prominent inflexion of the pronotal integument (Noonan, 1973). The assumption is that the prominent pronotal lateral depressions evolved independently in both *Pseudaplocentrus* and the subgenus *Anisodactylus* because prominent lateral depressions in adults of the subgenus *Anisodactylus* are not associated with prominent inflexions of the integument. Within the subgenus *Anisodactylus* moderate lateral depressions are evident in some specimens of *A. binotatus*, *A. kirbyi* and *A. nigrata*. These species were scored as lacking the apomorphic state because the lateral depressions are much more prominent in *A. carbonarius*, *A. harrisii*, *A. loedingi* and *A. melanopus*.

Legs (state 3)

3. Shapes of apical spurs of anterior tibiae. Plesiomorphic = Not trifold (Figs. 35, 36). 3 = Trifold (Figs. 34, 37). The apomorphic state occurs in all species of *Gynandrotarsus* and in three species of subgenus *Anisodactylus*. However, the plesiomorphic state occurs in *Pseudaplocentrus*. The assumption is that the trifold state evolved in the ancestor of *Gynandrotarsus* and independently within the subgenus *Anisodactylus*.

Elytra (state 4)

4. Microsculpture. Plesiomorphic = Mesh isodiametric, granulate or not. 4 = Mesh medially weak, irregular or slightly transverse. 4' = Mesh very fine transverse lines.

Aedeagus (states 5-11)

5. Shaft unmodified or moderately to strongly emarginate on left side distal to distal end of paramere and with left side of dorsum not projected outward or projected moderately to strongly outward from shaft. Plesiomorphic = Not emarginate to very slightly emarginate, and with dorsum not projected outward on left side. 5 = Shaft moderately emarginate on left side distal to distal end of paramere and with left side of dorsum projected somewhat outward from shaft (Figs. 64b, 66b). 5' = Shaft strongly emarginate on left side distal to distal end of paramere and with left side of dorsum strongly projected outward (Figs. 67b, 68b).

6. Distal portion of shaft deflected to right or not. Plesiomorphic = Not notably deflected (Figs. 69-76, 79-84). 6 = Slightly to moderately deflected (Figs. 63-68a, 77). 6' = Strongly deflected (Figs. 61, 62).

7. Shaft not projected dorsally or projected dorsally at proximal end of dorsal membranous area (species with dorsal membranous area not divided) or at proximal end of distal dorsal membranous area (species with divided dorsal membranous area). Plesiomorphic = Not projected (Figs. 85-87, 92-112). 7 = Projected (Figs. 88-92).

8. Dorsal membranous area divided or not by sclerotized portions of dorsum into proximal and distal portions. Plesiomorphic = Not divided (Figs. 61-

64b, 69-84). 8 = Divided (Figs. 65-68a).

9. Sclerotized flap at proximal end of dorsal membranous area absent or present. Plesiomorphic = Absent (Figs. 61-62, 69, 70, 72-84). 9 = Present (Figs. 63-68a, 71).

10. Presence or absence of dorso-ventro swelling at tip of apex or presence or absence of apical disk. Plesiomorphic = Absent (Figs. 85-101, 106-112). 10 = With notable dorso-ventro swelling (Figs. 103, 104, 105). 10' = With prominent apical disk (Fig. 50, 72). The presence of a notable dorso-ventro swelling is regarded as an intermediate state between the plesiomorphic condition and that of apical disk present. An apical disk is present in six of the 10 species of subgenus *Gynandrotarsus* and in *Anisodactylus (Pseudaplocentrus) laetus*. Within the 21 species of subgenus *Anisodactylus*, three have a notable dorso-ventro swelling on the apex and one has an apical disk. The presence of the states of notable dorso-ventro swelling present and prominent apical disk present were classified as apomorphic within the subgenus *Anisodactylus*. Classification as plesiomorphic would require that the lack of such structures evolved for the ancestors of 18 of the study taxa.

11. Apex with tip somewhat rounded or sharply pointed. Plesiomorphic = Tip somewhat rounded (Figs. 40-53, 57-60). 11 = Tip sharply pointed (Figs. 54-56).

Internal sac of male aedeagus (when viewed in everted position) (state 12)

12. Sac with or without large proximal sclerotized lobe with dense spines. Plesiomorphic = Absent (Figs. 113-126, 129-132). 12 = Present (Figs. 127, 128).

Final weighted trees produced by Hennig86

The first run of the *ie** option produced 439 equally parsimonious trees, each with length of 24, consistency index of 70 and retention index of 84. Successive runs of *ie** with the *xs w* option reduced the number of trees to 53, each with a length of 166, consistency index of 81 and retention index of 91.

Discussion of trees by components

The final 53 trees have five major groups (1-5) that may be analyzed by referring to eight components shown in Figs. 249-256. The figures show for each component the synapomorphies defining the component and its lineages for all trees having a given component and list the apomorphies present in each species of a component.

All trees have either component 1a, 1b or 1c. Components 1a and 1b have the same species composition but differ basally in arrangement of taxa. The former component (Fig. 249) treats *A. heros* as the sister taxon to all other species. According to Hennig86 it is equally parsimonious to assume the ancestor of 1a had states 6 or 6' (distal portion of aedeagus shaft respectively slightly to moderately or strongly deflected to the right).

Component 1b (Fig. 250) groups together *A. heros* and *A. nemorivagus* because of their possession of state 6'. Trees with this component list state 6 as present in the component ancestor. They also list state 1 (pronotal posterior angles prominently dentate) as equally parsimonious to have been present or absent in the component ancestor. Such listing is presumably due to adults of *A. heros* having

state 0, pronotal posterior angles broadly rounded. The ancestor of species terminal to *A. heros* and *A. nemorivagus* is listed as having state 1.

Component 1c (Fig. 251) is similar to 1a except that it does not have *A. heros*. The presence of state 0 (pronotal posterior angles broadly rounded) in the species results in it being more parsimonious in some trees to put *A. heros* elsewhere than in component 1c. The 1c ancestor is listed as having state 1 (pronotal posterior angles prominently dentate). Trees with component 1c list its ancestor as having state 6 and treat 6' as having evolved in *A. nemorivagus*. Component 1c is present in the Nelsen tree (Fig. 265). Given that 1c is a subset of 1a and 1b it can be regarded as present in all trees.

All trees (including the Nelsen, Fig. 265) have components 2 (Fig. 252) and 4 (Fig. 254). In contrast, component 3 (Fig. 253) is absent in some trees.

Some trees have component 5a (Fig. 255) or 5b (Fig. 256). The former component differs from the latter by lacking *A. nigerrimus*. Adults of this species do not have state 2 (pronotal lateral depressions very prominent) which is present in the other three species of component 5b.

Figures 257-264 group trees by the relationships of their components. The figures show components as numbers and letters within circles. They also use abbreviations to denote species not arranged in a component (C = *A. carbonarius*, H = *A. heros*, Ha = *A. harrisii*, K = *A. kirbyi*, L = *A. loedingi*, Ng = *A. nigerrimus*, Ni = *A. nigrita*). The figures show synapomorphies uniting components. In some trees the figures also show component ancestors as having a synapomorphy not shown in Figs. 249-256. Rectangles denote that a group of joined components or species lack a synapomorphy. A question mark denotes that regarding a given apomorphic state as absent or present within a particular portion of a tree is equally parsimonious. "AN" identifies apomorphies listed as present in the ancestor of all species. The number within a rectangle in the lower right portion of each cell with a tree denotes the tree number. Cells that are blank except for crossed lines lack corresponding trees.

Figures 257-259 show in component form the 23 trees with component 1a. Trees without component 3 and those with it forming the outgroup to other species are shown in Fig. 257. Among the three trees lacking component 3, trees 14 and 15 group together component 1a and 5a and 5b respectively. Tree 14 groups them by their ancestor having state 0, pronotal posterior angles broadly rounded. Such grouping seems dubious. While the angles are broadly rounded in adults of *A. heros*, they are state 1 (prominently dentate) in most specimens of *A. pueli* and in all specimens of other species of the component. Tree 15 lists the presence or absence of broadly rounded posterior angles in the ancestor of 1a and 5b as equally parsimonious. Tree 42 groups together components 1a, 2, 4 and 5b without any synapomorphy uniting them.

Three trees of Fig. 257 have component 3 as the sister to other taxa. Trees 10 and 11 unite components 1a and 5a or 5b respectively and seem dubious for the same reasons as trees 14 and 15. Tree 37 groups together the same components as tree 42 without a synapomorphy uniting them. Figure 257 also shows tree 36, the only one in Figs. 257-259, that does not combine lineages without having a defining synapomorphy. The tree also shows all five major groups.

The eight trees of Fig. 258 have components 2, 3 and 4 joined without any

uniting synapomorphy. Differences between these trees involve having 1a and 5a or 5b joined, lacking both 5a and 5b, and having 5a or 5b as outgroup to other species.

Figure 259 includes two trees (8 and 9) that unite components 2, 3, 4, and a lineage comprising 1a and 5a or 5b. These trees seem dubious for the same reasons discussed above for trees 14 and 15 of Fig. 257. Trees 39-41 have 1a, 2, 3 and 4 joined without any uniting synapomorphy. Tree 38 assumes that state 0 was present in the ancestor of the subgenus. If it were so present, then state 0 is not a synapomorphy within the subgenus, and no synapomorphy unites the five groups shown arising after component 5a.

Figures 260-261 show the 12 trees with component 1b. In Fig. 260 trees 20 and 22 have 1b, 2, 4 and 5b united without any supporting synapomorphy. The remaining trees group 1b, 2, 3 and 4 without a uniting synapomorphy.

Figure 261 depicts five trees with 1b and 3 united and one tree with 5 lineages. For trees with 1b and 3 united the presence or absence of state 1 (pronotal posterior angles prominently dentate) is equally parsimonious in the ancestor of these components. If the state is regarded as having been absent, no synapomorphy unites these components. Trees 44, 45, 46 and 47 unite groups without supporting synapomorphies whatever may be true for state 1.

Figures 262-264 show the 18 trees with component 1c. In Fig. 262 tree 24 has four lineages while the other five trees have components 1c and 3 joined. The uniting of groups by state 6 (distal portion of aedeagus shaft slightly to moderately deflected to right) in tree 24 is ambiguous. It is equally parsimonious to assume presence or absence of this state in the ancestor of 5b and *A. heros* and in the ancestor of these taxa and component 1c. Four of the trees grouping 1c and 3 (trees 49, 50, 51 and 52) unite components without supporting synapomorphies. For tree 48 it is equally parsimonious to assume the presence or absence of state 1 (pronotal posterior angles prominently dentate) for the ancestor of 1c and 3.

All of the six trees in Fig. 263 group components together without supporting synapomorphies. Five of the six trees in Fig. 264 unite taxa without supporting synapomorphies. Tree 23 does not group without supporting synapomorphies and is somewhat similar to tree 16 of Fig. 261. It differs by having component 1c rather than 1b, by having 5a rather than 5b and by uniting *A. heros* with 5a and *A. nigerrimus*.

Final weighting of characters

Table 2 includes the final weighting of characters. Only character 3, shape of apical spurs of front tibiae, received a weight of 0. This weight is not surprising given that trifold spurs occur in all species of subgenus *Gynandrotarsus* and in 3 of the subgenus *Anisodactylus* (*A. carbonarius*, *A. karennius* and *A. tricuspидatus*). Assignment of a greater weight than 0 would also contradict synapomorphies defining major groups. *A. carbonarius* is a member of components 5a and 5b. The synapomorphy defining these components (state 0, pronotal posterior angles broadly rounded) received a final weight of 10. *A. karennius* and *A. tricuspидatus* are members of component 2. This component has the apomorphic state of character 4, elytral microsculpture medially weak, irregular or slightly transverse. This state does not occur elsewhere in the subgenus and received a final weight of 10. *A. tricuspидatus* is in a part of component 2 separated from *A. karennius* by a more

apomorphic state of character 4, elytral microsculpture of very fine transverse lines.

Character 2, prominence of pronotal lateral depressions, received a weight of 3. While the apomorphic state of this character helps define component 5a and three species of 5b, it also occurs in *A. melanopus* of component 2 and in *A. laetus* of the subgenus *Pseudaplocentrus*. Hennig86 treated it as present in the ancestor of eight trees, 12 and 13 (Fig. 258), 41 (Fig. 259), 21 (Fig. 260), 47 (Fig. 261), 52 (Fig. 262), 32 (Fig. 263) and 33 (Fig. 264). The program treated ancestral presence or absence of the state as equally parsimonious in eight other trees, 4 and 5 (Fig. 258), 38 (Fig. 259), 17 (Fig. 260), 44 (Fig. 261), 51 (Fig. 262), 29 (Fig. 263) and 30 (Fig. 264).

Both characters 9 (presence or absence of sclerotized flap at proximal end of dorsal membranous area) and 10 (dorso-ventro swelling or apical disk at aedeagus apex) had final weights of 4. The apomorphic state of character 9 does not occur in the outgroup subgenera and helps define a lineage of five species within components 1a, 1b and 1c. Its relatively low weight is probably due to its also occurring in males of *A. agricola* of component 2.

The most apomorphic state of character 10 (apical disk at aedeagus apex) occurs in males of six of the ten species of subgenus *Gynandrotarsus*, in *Anisodactylus laetus* of the subgenus (*Pseudaplocentrus*) and in *A. pseudagricola* of component 2. The intermediate apomorphic state (notable dorso-ventro swelling at tip of aedeagus apex) defines component 3 but also occurs in *A. melanopus* of component 2. Hennig86 treated the intermediate apomorphic state as present in the ancestors of four trees, 14 (Fig. 257), 22 (Fig. 260) and 34-35 (Fig. 263). It also regarded ancestral presence or absence of this state as equally parsimonious in six trees, 10, 11 and 37 (Fig. 257), 20 (Fig. 260) and 27 and 28 (Fig. 264). Presence in an ancestor of the subgenus means that the states presumed as apomorphic are actually plesiomorphic for the trees in question.

The remaining characters (0, 1, 4-8, 11-12) received weights of 10, the highest weight assigned by Hennig86 in the cladograms.

The weighting of character 0 as 10 is somewhat perplexing. The presumably apomorphic state of pronotal posterior angles broadly rounded occurs within one species of subgenus *Gynandrotarsus*. Hennig86 treats this state as present in the ancestor of 24 trees, 0, 4, 5, 7, 12 and 13 of Figs. 258, 38, 40 and 41 of Figs. 259, 17, 19 and 21 of Figs. 260, 44, 46 and 47 of Figs. 261, 49, 51 and 52 of Figs. 262, 25, 29 and 32 of Figs. 263 and 30, 31 and 33 of Figs. 264. The program treats the presence or absence of this state as equally parsimonious for the ancestors of nine trees, 1-3, and 6 of Figs. 258, 39 of Figs. 259, 18 of Figs. 260, 45 of Figs. 261, 50 of Figs. 262 and 26 of Figs. 263. While the presumably apomorphic state is a synapomorphy for components 5a and 5b, it also occurs within adults of *A. heros* of components 1a and 1b.

The apomorphic state of character 1 (pronotal posterior angles prominently dentate) is a synapomorphy shared by all adults of five of the six terminal taxa in components 1a, 1b and 1c and by most adults of the sixth species. The state also occurs within some adults of seven species found in components 2, 3 and 4. The high weight for the character may be partially due to concurrence with apomorphic states for characters 5, 6, 7, 8 and 9 in components 1a, 1b and 1c.

Apomorphic states of character 4 (microsculpture of elytra) occur only in

component 2. The intermediate apomorphic state (microsculpture medially weak, irregular or slightly transverse) is the synapomorphy defining component 2. The more apomorphic state (microsculpture forming a mesh of very fine transverse lines) defines a lineage within the component.

The apomorphic states of characters 5 to 8 are modifications of the aedeagus of male genitalia. The high weighting of these states is presumably due to their serving as synapomorphies defining lineages within components 1a, 1b and 1c, their absence from the outgroup and their nearly universal absence from other components within the subgenus *Anisodactylus*. The only occurrence of an apomorphic state of these characters outside components 1a, 1b and 1c is that the intermediate apomorphic state of character 6 (distal portion of aedeagus shaft slightly to moderately deflected to right) occurs in some males of *A. californicus* of component 4. As noted in the discussion of morphological variation for that species, the aedeagus of its males shows striking geographic variation in other structural components. The presence of the intermediate apomorphic state of character 6 in some males of the species is probably an independent evolution of the state.

The high weight for character 11 is presumably due to the apomorphic state (tip of male aedeagus sharply pointed) occurring only in component 4 and forming the synapomorphy that defines the component. Similarly, the high weight for character 12 presumably is because its apomorphic state (internal sac with large proximal sclerotized lobe bearing dense spines) occurs only in two species of component 4 and is the synapomorphy uniting these taxa.

Selection of a tree as favored hypothesis for cladistic relationships of species

The Nelsen tree (Fig. 265) is not contradicted by any of the final 53 trees. However, it is rejected because it leaves unresolved the cladistic relationships of eight species. Trees with component 1a are rejected because they do not group into a separate lineage *A. heros* and *A. nemorivagus*. These species have state 6', aedeagus with distal portion of shaft strongly deflected to the right. This is a highly unusual state among harpalines, and I feel that species with it should be in a separate lineage in the trees with component 1b.

Component 1c does not include *A. heros*, presumably because adults of this species have the pronotal posterior angles broadly rounded. I believe that this species should not be separated from those of 1c because its males the highly modified form of aedeagus of state 6'. As noted above, this state is shared by *A. nemorivagus*. A less modified form of state 6 is found in all other species of 1c.

Trees with component 1b group *A. heros* and *A. nemorivagus* together into a lineage defined by the state 6'. These trees (Figs. 260-261) are candidates for selection as the chosen hypothesis for cladistic relationships.

The trees in Fig. 260 are unsuitable because they combine taxa into lineages without a defining synapomorphy. These trees are indeed equally parsimonious with those that unite taxa only by synapomorphies. However, using a tree that combines taxa without defining synapomorphies may lead to confusion. Biologists, such as biogeographers, who do comparative studies often redraw trees without indicating whether or not they unite lineages defined by a synapomorphy. Readers of such comparative studies may assume that all the tree dichotomies are defined by synapomorphies.

Five of the trees in Figs. 261 (43-47) also seem unsuitable as a chosen hypothesis about cladistic relationships. These trees combine lineages for which it is equally parsimonious to assume that the ancestor had or did not have the synapomorphy state of character 1, pronotal posterior angles prominently dentate. Trees 44-47 also combine groups without synapomorphies.

Tree 16 of Fig. 261 does not combine lineages without a supporting synapomorphy. It includes component 5b rather than the smaller 5a. Inclusion of *A. nigerrimus* in a component, instead of treating it separately, is a bolder hypothesis about cladistic relationships. Tree 16 has component 1b that I regard, as noted above, as a better hypothesis of cladistic relationships than components 1a and 1c. The tree is therefore selected as the favored hypothesis for cladistic relationships within the subgenus *Anisodactylus*. Figure 266 shows the tree with all its species and with synapomorphies that define lineages or occur within species.

Evolutionary trends

The most striking evolutionary trend is progressive modification of the male aedeagus within component 1b of the chosen tree (Fig. 266). The ancestor of the component presumably acquired the apomorphic condition of the distal portion of the aedeagus slightly to moderately deflected to the right (Figs. 63, 64a, 65, 66a, 67a and 68a). The ancestor of the *nemorivagus* Subgroup apparently then evolved the apomorphy of having the distal portion of the aedeagus strongly deflected to the right (Figs. 61, 62). The chosen tree presumes that the ancestor of the five remaining species of component 1b retained the intermediate apomorphy of having the aedeagus slightly to moderately deflected to the right. It also assumes that the ancestor acquired the additional apomorphy of having a sclerotized ligula cover part of the dorsal membranous area (Figs. 63-68a). The ancestor of the four species distal to *A. consobrinus* apparently gained two synapomorphies, aedeagus moderately emarginate on the left side and with the left side of the dorsum projected somewhat outward from the shaft (Figs. 64b, 66b) and aedeagus shaft projected dorsally (Figs. 88-92). The ancestor of the three species that evolved after *A. hispanus* evidently acquired the apomorphy of having the dorsal membranous area split into proximal and distal portions (Figs. 65-68a). Lastly, the ancestor of the terminal two species apparently acquired a more apomorphic state of character 5, with the aedeagus shaft (Figs. 67b, 68b) strongly emarginate on the left and with the left side of the dorsum strongly projected outward.

The strong deflection of the aedeagus to the right in males of *A. heros* and *A. nemorivagus* may reflect a change in mating habits. Among Carabidae in general (observations at night during approximately 25 years of field work), the male rests its forebody on the female, and the aedeagus curves down toward the female. The aedeagus typically has a dorso-ventro curvature that helps its extension toward the female's genital opening. Such dorso-ventro curvature is nearly absent in the aedeagus of *A. heros* (Fig. 85) and present in all other males of the subgenus (Figs. 86-112). The almost complete absence of such curvature in the aedeagus of *A. heros* seems to preclude the aedeagus curving downward from the male toward the female's genital opening. The strong curvature to the right in the aedeagus of that species and *A. nemorivagus* might be due to a different orientation during mating, such as the adults mating while side by side. I do not know what factors might have

produced the other modifications in male aedeagi.

Adults of component 2 have an apomorphic type of elytral microsculpture. In *A. karennius* the microsculpture medially is weak, irregular or slightly transverse. The remaining species of the component have microsculpture composed of very fine transverse lines. Erwin (1979) suggested that carabids living in wet, marshy areas or bogs tend to have such type of microsculpture. Adults of the subgenus are apparently mostly found in such habitats; there are no data about significant habitat differences between adults of component 2 and other components.

Transformation series in apomorphies

The chosen cladogram (Fig. 266) assumes transformations in apomorphies for three characters. The ancestor of component 1b presumably had the intermediate apomorphic state of the aedeagus slightly to moderately deflected to the right (character 6; Figs. 63, 64a, 65, 66a, 67a and 68a). The ancestor of the *nemorivagus* group evolved the more highly apomorphic state (6'; Figs. 61, 62) of having the shaft strongly deflected to the right. The ancestor of species terminal to *A. consobrinus* in component 1b apparently gained the intermediate apomorphic state (character 5; Figs. 64b, 66b) of having the aedeagus shaft moderately emarginate on the left side and with the left side of the dorsum projected somewhat outward from the shaft. Apparently the ancestor of *A. antoinei* and *A. binotatus* acquired the more apomorphic condition (5'; Figs. 67b, 68b) of having the aedeagus shaft strongly emarginate on the left side and with the left side of the dorsum strongly projected outward. Within component 2 the ancestor of all species presumably evolved the intermediate apomorphy of having the elytral microsculpture medially weak, irregular or slightly transverse (character 4). Presumably the ancestor of species terminal to *A. karennius* evolved the more apomorphic state (4') of having the microsculpture consist of very fine transverse lines.

Convergent evolution of apomorphic character states

The cladogram in Fig. 266 postulates convergent evolution in seven apomorphies.

Broadly rounded pronotal posterior angles (character 0) apparently evolved independently in the ancestor of component 5b and *A. heros*. Placing *A. heros* in component 5b would contradict the postulated transformation series in component 1b for character 6.

Prominently dentate pronotal posterior angles (character 1) are a synapomorphy for component 1b. They also occur in some specimens of most species of components 2, 3 and 4. Possibly the ancestor of the subgenus had a gene or group of genes promoting the expression of this apomorphic feature. Such assumption seems intuitively more parsimonious than assuming that dentate angles evolved repeatedly among many populations of species in components 2, 3 and 4.

Prominent pronotal lateral depressions (character 2) apparently arose independently in *A. melanopus* and in the ancestor of three species of component 5b. The placement of taxa with this apomorphy into a single lineage would contradict synapomorphies defining components 2 and 5b.

Trifid anterior tibial (character 3) spurs apparently evolved three times, once each in *A. carbonarius*, *A. karennius* and *A. tricuspoidatus*. Noonan (1973)

suggested that trifold spurs might be advantageous for burrowing. Assumption that there was not homoplasy for trifold spurs would contradict synapomorphies linking these taxa with species lacking trifold spurs and would ignore the assignment by Hennig86 of a final weight of 0 for trifold spurs.

The condition of having the aedeagus shaft slightly to moderately deflected to the right (character 6) presumably evolved in the ancestor of component 1b and in some specimens of *A. californicus*. As noted in the description for the latter species, the aedeagus of that species shows interesting geographical variation. The deflection of the shaft to the right mostly occurs among males with modified aedeagi (prominent lateral grooves on dorsum, sides swollen and projected outward) and may have arisen in isolated populations in the southwestern United States, as presumably did the other modifications.

The presence of a sclerotized flap at the proximal end of the dorsal membranous area (character 9) is a synapomorphy defining a lineage within component 1b. The sclerotized flap apparently evolved independently in the ancestor of *A. agricola*. Assumption that *A. agricola* is closely related to members of component 1b is contradicted by synapomorphies defining lineages within components 1b and 2.

The presence of a dorso-ventro swelling at the apex of the aedeagus (character 10) presumably evolved independently in the ancestor of component 3 and in the ancestor of *A. melanopus* and *A. pseudagricola*. An attempt to link the above taxa into a single lineage would be contradicted by the synapomorphies defining component 2.

Evolution from one apomorphic state to another

The chosen cladogram (Fig. 266) treats prominently dentate pronotal posterior angles (character 1) as a synapomorphy for component 1b. The ancestor of *A. heros* presumably acquired the apomorphy of pronotal posterior angles broadly rounded (character 0). The tree does not assume any other changes from one apomorphic state to another.

General Trends in Natural History

Occurrence in Habitats by Amount of Moisture

Table 3 classifies 17 species according to moisture in habitats where they occur. Data for this classification come from my field work, labels on museum specimens or publications. The predominant pattern is for adults mostly to occur in damp areas. Nine species apparently mostly occur in habitats with the soil damp from nearby water or a high water table. Another three species occur both in damp areas and in more mesic places. Three species seem hygrophilous, occurring in swamps or marshes. Adults of *A. nemorivagus* appear to occur in mesic areas away from water. The limited data in Antoine (1959) report that adults of *A. antoinei* occur in moist places on the ground, under debris and near trees. Such places are here tentatively classified as mesic. However, additional data might show that such habitats are damp areas or are near water.

Sharing of Sites

Table 5 lists the percents of sites with different numbers of species for the entire geographic range of the subgenus and for areas within that range. Only 16.6 percent of all sites had more than 1 species over the entire geographical range. The Palaearctic Region had notably fewer shared sites than the Nearctic Region, 3.33 percent sites with 1 or more species versus 18.41 percent for the latter. I do not know what factors might be responsible for the lower percents of shared sites in the Palaearctic versus the Nearctic Region. Possibly more intensive collecting has been done for *Anisodactylus* in the Nearctic than in the Palaearctic.

There may be geographic variation within both faunal regions in the amount of sharing of sites. Sharing of sites in western North America may be slightly less common than in central or eastern areas. The western areas of British Columbia, California, Oregon and Texas have 20 percent or less of sites with more than one species. Except for Kansas, sites in central or eastern areas have more than 20 percent of sites with more than one species. Within the Palaearctic Region Italy has 5.26% of sites with more than one species while the more northern country of Germany has only 1.52 %.

For some sites the number of shared species may be at least partly due to the sites actually representing regions rather than individual sites. Table 6 lists sites with five or more species. Sites number 2, 4, 5, 6, 12, 13 and 17 are significant sized metropolitan areas. Specimens may have been taken within these areas or collectors may have captured them in places near these areas. Sites 7 and 14 are places with universities having entomology departments both relatively old and with staff who have done significant collecting over many years. I do not know why site number 1 has more species than any other.

Over the entire geographic range for the subgenus *Anisodactylus* only 16.6% of sites had more than one species. This low percent contrasts with the 51% of sites reported by Noonan (1991:230) as having two or more species of *Harpalus*. The greater sharing of sites in *Harpalus* may be due to differences in habitats. Adults of *Harpalus* mostly occur in grassy arid to mesic habitats such as grasslands, woodlands for natural or artificial clearings in forests. They are not commonly found at the edge of permanent bodies of water such as streams and lakes (Noonan, 1991). In contrast, adults of subgenus *Anisodactylus* occur commonly in wet habitats such as in marshes or swamps, the shores of lakes or of pools of standing water alongside streams, by ponds and in wet meadows.

My impression from extensive collecting of both groups is that at most collecting sites wet areas are surrounded by much larger and diverse dryer areas. A given site with *Harpalus* might include a large area of grassland searched by collectors. However, the same site might have a small wet area near a pond with *Anisodactylus*. The smaller wet areas may have fewer species because of smaller area size and possibly also because of less variation in microhabitats.

The relative sharing of sites by different groups of Carabidae offers an interesting topic for ecological study.

Sex Ratios

Table 4 presents data about the number of males, females, unsexed specimens and sex ratio for each species. Fourteen of the 21 species are represented

by more collected males than females. The general pattern of more collected males than females is similar to that reported by Noonan (1991) for North American *Harpalus*. Available data do not explain the greater abundance of males. See Noonan (1991) for possible reasons.

Annual Activity Rhythms

Figures 177 to 222 are graphs of the number of all adults and of teneral adults of the subgenus *Anisodactylus*. The numbers on the graphs are derived from examination of adults collected by me in the field and adults borrowed from museums and having data on the month of capture. These graphs provide data for making inferences about annual activity patterns for species of subgenus *Anisodactylus*.

Hurka (1986) and Thiele (1977) summarized data about annual activity patterns in Carabidae. While as many as 12 patterns have been recorded, the patterns may be grouped into two basic ones, spring breeders and fall breeders. In spring breeding species, teneral adults emerge in summer or early fall, overwinter and then breed and lay eggs in spring and summer. In fall breeders, teneral adults emerge in the spring or early summer and breed in the fall, with the resulting larvae usually being the primary overwintering stage.

The capture data for species of subgenus *Anisodactylus* suggest that seven species are probably spring breeders: (1) *A. binotatus*, with a pronounced peak of teneral emergence in August (Fig. 184); (2) *A. californicus*, with most tenerals collected between June and November (Fig. 201); (3) *A. consobrinus*, with most tenerals obtained from June through October (Fig. 180); (4) *A. furvus*, with the few captured tenerals found in June and July (Fig. 215); (5) *A. harrisii*, with most tenerals found from June into September (Fig. 222); (6) *A. melanopus*, with tenerals observed from July into October (Fig. 195); and (7) *A. similis*, with a few observed tenerals in April and May but most tenerals from June through August and 1 teneral taken in September (Fig. 210). *A. binotatus* has a Holarctic distribution due to introduction into North America. Graphs of captures of tenerals for the Nearctic and Palearctic Regions show the same peak in August as does the graph for all tenerals (Figs. 185-188).

These seven species show two patterns regarding captures of all adults. Four species have a pattern of maximum captures of adults in the spring, in April and/or May, declining numbers of captures afterwards and relatively few adults collected before March: *A. binotatus* (Fig. 183); *A. furvus* (Fig. 214); *A. harrisii* (Fig. 221); and *A. melanopus* (Fig. 194). Three species show more evenly distributed captures, with captures increasing from February up to a maximum in May or June and then gradually declining: *A. californicus* (Fig. 200); *A. consobrinus* (Fig. 179); and *A. similis* (Fig. 212). Division of data for *A. binotatus* into faunal regions shows peak captures of all adults in the spring in both the Nearctic and Palearctic Regions (Figs. 185, 187).

Two species probably are fall breeders: (1) *A. carbonarius*, with highest number of captured tenerals in June and July (Fig. 220); and (2) *A. nigrita* with highest number of captured tenerals in July and August (Fig. 199). Both species have somewhat evenly distributed numbers of all captured adults with numbers rising in the spring to a peak in June and July in the former and May through July in

the latter and then declining.

Two species may breed in both fall and spring. *A. nigerrimus* has peaks in captures of teneralis in both April and September (Fig. 217). *A. kirbyi* has a peak in captures of teneralis in May and a smaller peak in October (Fig. 197).

Captures of teneralis are insufficient to classify breeding patterns of the remaining species.

Examination of the graphs suggests that 11 species may be placed into two groups based on peaks in all captured adults. Eight species have maximum capture of adults in the spring, in March to May, with captures few before then and decreasing afterwards, *A. agricola* (Fig. 191), *A. binotatus* (Fig. 183), *A. furvus* (Fig. 214), *A. harrisii* (Fig. 221), *A. heros* (Fig. 177), *A. loedingi* (Fig. 218), *A. melanopus* (Fig. 194) and *A. nigerrimus* (Fig. 216). Three species have captures that rise from January or February toward a peak in May to June or July and then decrease, *A. californicus* (Fig. 200), *A. consobrinus* (Fig. 179) and *A. similis* (Fig. 207).

Breeding patterns are somewhat similar to those found by Noonan (1991) for Nearctic *Harpalus* in which most species were spring breeders. Data permit classifying nine species of subgenus *Anisodactylus* into spring or fall breeders with seven of these being spring breeders. Thiele (1977) reported that in Europe and North America spring breeders apparently dominate in open country and fall breeders in the forest. Members of the subgenus *Anisodactylus* usually occur either in open areas or in clearings (such as marshes) in forests. *Harpalus* mostly also occur in open areas (Noonan, 1991). Examination of capture data for *Anisodactylus* does not suggest different activity patterns for different geographical regions within species. For example, Figs. 202-206 for *A. californicus* and Figs. 209-213 for *A. similis* do not show notable differences in captures within northern and southern regions.

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Tables

Table 2. Analysis of characters for the chosen tree for subgenus *Anisodactylus*.

character	0	1	2	3	4	5	6	7	8	9	10	11	12
final weight	10	10	3	0	10	10	10	10	10	4	4	10	10
steps	2	2	2	3	2	2	2	1	1	2	3	1	1
consistency index	50	50	50	33	100	100	100	100	100	50	66	100	100
retention index	66	75	66	0	100	100	100	100	100	80	66	100	100

Table 3. Occurrence of members of subgenus *Anisodactylus* in habitats by amount of moisture.

Species	mesic	damp or by water	hygrophilous
<i>A. heros</i>		■	
<i>A. nemorivagus</i>	■		
<i>A. consobrinus</i>		■	
<i>A. hispanus</i>			
<i>A. pueli</i>			■
<i>A. binotatus</i>		■	
<i>A. antoinei</i>	■		
<i>A. karennius</i>			
<i>A. tricuspidatus</i>			
<i>A. agricola</i>		■	
<i>A. pseudagricola</i>			■
<i>A. melanopus</i>		■	
<i>A. kirbyi</i>			■
<i>A. nigrita</i>		■	
<i>A. californicus</i>		■	
<i>A. similis</i>		■	
<i>A. furvus</i>	■	■	
<i>A. nigerrimus</i>	■	■	
<i>A. loedingi</i>			
<i>A. carbonarius</i>	■	■	
<i>A. harrisii</i>		■	

Table 4. Sex ratios in subgenus *Anisodactylus*.

Species	♂	♀	unsexed	♂/♀
<i>A. heros</i>	102	108	2	0.94
<i>A. nemorivagus</i>	125	136	5	0.92
<i>A. consobrinus</i>	683	531	1	1.29
<i>A. hispanus</i>	17	20	0	0.85
<i>A. pueli</i>	34	30	0	1.13
<i>A. binotatus</i>	1908	1503	1	1.27
<i>A. antoinei</i>	2	4	0	0.5
<i>A. karennius</i>	12	9	0	1.33
<i>A. tricuspidatus</i>	43	43	0	1
<i>A. agricola</i>	149	131	0	1.14
<i>A. pseudagricola</i>	9	8	0	1.13
<i>A. melanopus</i>	331	233	8	1.42
<i>A. kirbyi</i>	476	447	0	1.06
<i>A. nigrita</i>	722	628	3	1.15
<i>A. californicus</i>	2846	2358	1	1.21
<i>A. similis</i>	1618	1378	0	1.17
<i>A. furvus</i>	135	174	0	0.78
<i>A. loedingi</i>	27	23	0	1.17
<i>A. carbonarius</i>	448	542	2	0.83
<i>A. harrisii</i>	788	695	1	1.13
<i>A. nigerrimus</i>	518	472	1	1.1

Table 5. Sharing of sites by species of subgenus *Anisodactylus*.

Area & in () # spp., total diff. sites †									
# species at site -	1	>1	2	3	4	5	6	7	8
for subgenus of <i>Anisodactylus</i>	% of sites with given number of species								
Entire range (21, 3475)	83.4	16.6	11	3.7	1.44	0.2	0.2	0.06	0
Nearctic (15, 3037)	81.6	18.4	12	4.3	1.61	0.2	0.3	0.07	0.3
British Columbia (6, 121)	80.2	19.8	14.9	2.5	2.48	0	0	0	0
California (7, 872)	85.2	14.8	11.4	3.3	0.11	0	0	0	0
Kansas (5, 13)	100	0	0	0	0	0	0	0	0
Missouri (5, 14)	71.4	28.6	21.4	0	7.14	0	0	0	0
New York (9, 167)	74.9	25.2	13.8	6.6	1.8	0.6	2.4	0	0
Ohio (7, 47)	76.6	23.4	14.9	4.3	4.26	0	0	0	0
Oregon (7, 258)	89.2	10.9	7.36	2.3	1.16	0	0	0	0
Pennsylvania (7, 94)	76.6	23.4	17	0	3.19	1.1	1.1	1.06	0
Quebec (6, 76)	76.3	23.7	13.2	6.6	2.63	1.3	0	0	0
Texas (5, 5)	80	20	0	20	0	0	0	0	0
Palaearctic (8, 420)	96.7	3.33	3.33	0	0	0	0	0	0
Germany (2, 132)	98.5	1.52	1.52	0	0	0	0	0	0
Italy (4, 57)	94.7	5.26	5.26	0	0	0	0	0	0

Explanation for table 5. The first column lists different areas for the subgenus *Anisodactylus*. Each such area is followed by a parentheses containing two numbers giving respectively the number of species of the subgenus found in the area and the total number of sites in that area with one or more species of the subgenus. The remaining columns list the percents of sites for each area at which a given number of species were collected. For example, within California seven species have been collected from a total of 872 different sites and 11.4 percent of such sites had two species of the subgenus.

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Contributions

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Classification, Cladistics, and
Natural History of Species of the
Subgenus *Anisodactylus* Dejean
(Insecta: Coleoptera: Carabidae:
Harpalini: *Anisodactylus*)

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Table 6. Sites with 5 or more species of subgenus *Anisodactylus*.

#	Site	# spp.		#	Site	# spp.
1	Connecticut, Litchfield Co., Cornwall	8		10	Pennsylvania, Allegheny Co., Pittsburgh	6
2	Michigan, Wayne Co., Detroit	7		11	Washington, Grant Co., Grand Coulee	6
3	Pennsylvania, West-moreland Co., Jeannette	7		12	Canada, Ontario, Toronto	5
4	Illinois, Cook Co., Chicago	6		13	Canada, Quebec, Montreal	5
5	New York, Kings Co., Brooklyn Heights	6		14	Connecticut, Tolland Co., Storrs	5
6	New York, New York Co., New York	6		15	Massachusetts, Middlesex Co., Cambridge	5
7	New York, Tompkins Co., Ithaca	6		16	New York, Warren Co., Peekskill	5
8	New York, Orange Co., West Point	6		17	Pennsylvania, Philadelphia Co., Philadelphia	5
9	North Carolina, Buncombe, Asheville	6		18	Oregon, Spokane Co., Spokane	5

Appendix A. Lists of specimens examined

Introduction

OmniMap generated the specimen lists presented below. It totaled the specimens for a given month for each locality. The following abbreviations are used in the lists of material examined. NoCo. = No county given on specimen label and not possible to determine county from other data. Nomonth. = No month given on specimen label. NoSt. = No state or province given on specimen label and impossible to determine same from other data. Nosubd. = No major political subdivision given on specimen label and impossible to determine same from other data. OmniMap also listed latitude and longitude for all places that were located in electronic or printed gazetteers or maps. It recorded such data as decimal degrees with six decimal places. Such decimal degrees are the preferred reference system for many GIS programs. Positive and negative latitudes indicate sites north and south of the equator respectively. Positive and negative longitudes denote places east and west of the Prime Meridian respectively.

1. *Anisodactylus (A.) heros* Fabricius

NO LOCALITY: 15 ♂♂, 15 ♀♀, Nomonth. 1 ♀, X. 2 ♀♀, Nomonth. Alucordovar: 1 ♂, V. Gallia: 1 ♂, Nomonth. Manif der Hongai: 1 ♂, 1 ♀, Nomonth. Tagma Forest: 2 ♂♂, 2 ♀♀, Nomonth. **ALGERIA:** Nosubd.: 36.833333, 3.000000, 7 ♂♂, 7 ♀♀, Nomonth. (Tarfaiia), 36.833333, 3.000000, 2 ♀♀, Nomonth. (Tenet el Anz), 31.833333, 3.150000, 1 ♂, Nomonth. (Tenet el Anz), 36.833333, 3.150000, 1 ♂, 1 ♀, Nomonth. 4 ♂♂, VI. Algiers: (Kabylie), 36.833333, 3.000000, 1 ♂, Nomonth. **ALGER:** 36.783333, 3.050000, 1 ♀, Nomonth. **ALGER:** 36.833333, 3.000000, 4 ♂♂, 1 ♀, Nomonth. **ALGER:** 36.833333, 3.016667, 1 ♀, Nomonth. **CONSTANTINE:** Skikda: 36.883333, 6.900000, 2 ♂♂, 4 ♀♀, Nomonth. **MÉDÉA:** Médéa: 36.266667, 2.750000, 1 ♂, 4 ♀♀, Nomonth. **TIZI OUSOU:** Yakouren: 36.733333, 4.433333, 1 ♂, 3 ♀♀, Nomonth. **ITALY:** Nosubd.: Sardegna: 40.016667, 9.016667, 1 ♀, Nomonth. **SARDEGNA:** 40.000000, 9.000000, 4 ♂♂, 6 ♀♀, Nomonth. (Ehlers), 40.000000, 9.000000, 1 ♂, Nomonth. (Maud.), 40.000000, 9.000000, 2 ♂♂, Nomonth. (Stagno di Bara), 40.000000, 9.000000, 5 ♂♂, 1 ♀, V. (Staud), 40.000000, 9.000000, 1 ♂, Nomonth. **MACOMER:** 40.266667, 8.783333, 5 ♂♂, 4 ♀♀, Nomonth. **ORISTANO:** 39.900000, 8.600000, 1 ♂, Nomonth. **SICILIA:** 38.000000, 13.500000, 1 ♂, Nomonth. **MOROCCO:** Nosubd.: 34.000000, -6.000000, 2 ♂♂, 6 ♀♀, Nomonth. Casablanca: 33.390000, 7.350000, 1 unsex. II. **TANGER:** 35.800000, -5.833333, 1 ♀, Nomonth. **PORTUGAL:** **COIMBRA:** Coimbra: 40.200000, -8.416667, 1 ♀, VI. **SPAIN:** Nosubd.: 37.600000, -4.500000, 10 ♂♂, 8 ♀♀, Nomonth. **ANDALUCIA:** 37.600000, -4.500000, 7 ♂♂, 2 ♀♀, Nomonth. **AVILA:** Arenas de San Pedro: 40.200000, -5.083333, 1 ♀, Nomonth. Avila: 40.650000, -4.700000, 1 ♂, 1 ♀, Nomonth. Candeleda: 40.166667, -5.233333, 1 ♀, IV. Ramacastañas: 40.183333, -5.033333, 2 ♀♀, Nomonth. **CÁCERES:** Cáceres: 39.483333, -6.383333, 1 ♂, 1 ♀, VI. Mirajadas: 39.166667, -5.900000, 1 ♀, XI. Sierra de Guadalupe: 39.433333, -5.416667, 1 ♀, Nomonth. **CIUDAD REAL:** Alcazar: 36.850000, -3.333333, 1 ♀, Nomonth. Ciudad Real: 38.983333, -3.933333, 1 ♂, 1 ♀, Nomonth. Fucealiente: (Sierra Morena), 38.416667, -4.300000, 1 ♀, Nomonth. **CÓRDOBA:** Córdoba: 37.883333, -4.766667, 2 ♂♂, Nomonth. **CUENCA:** Arcas: 39.983333, -2.100000, 1 unsex. Nomonth. **HUELVA:** Cardenas: 37.283333, -6.933333, 1 ♂, 1 ♀, Nomonth. **JAÉN:** Centenillo: (Sierra Morena), 38.333333, -3.750000, 1 ♀, Nomonth. **LEÓN:** Ponferrada: 42.550000, -6.583333, 4 ♂♂, 2 ♀♀, Nomonth. **LUGO:** Milan: 42.466667, -7.583333, 2 ♀♀, Nomonth. **MURCIA:** Columbares: 37.916667, -1.016667, 1 ♂, Nomonth. **TARRAGONA:** Villalva: 41.116667, 0.416667, 1 ♂, 1 ♀, Nomonth. **TUNISIA:** Nosubd.: Tunis: 36.833333, 10.216667, 1 ♂, 1 ♀, Nomonth. **TUNISIA:** Le Kef: 36.166667, 8.666667, 3 ♀♀, Nomonth. **WESTERN SAHARA:** Nosubd.: Galtat Zemmour: 24.166667, -12.333333, 1 ♂, 1 ♀, Nomonth.

2. *Anisodactylus nemorivagus* Duftschmid

NO LOCALITY: 19 ♂♂, 20 ♀♀, Nomonth. 1 ♀, I, 1 ♂, 1 ♀, V., 1 ♀, VI., 4 ♂♂, 2 ♀♀, VII., 1 ♂, XI. Aggertal: 3 ♂♂, XI. Andelinatt??: 1 ♂, Nomonth. Bomin??: 1 ♂, VII. Folmin: 1 ♂, III, 2 ♀♀, IV., 1 ♂, 2 ♀♀, V. Gallia: 2 ♀♀, Nomonth. Goek-Dagli: 1 unsex., Nomonth. Gross-steinburg: 1 ♂, 1 ♀, VI. Hailaud??: 1 ♀, I. Hollemor: 1 ♀, V. Kerzesch: 1 ♀, Nomonth. Kraim: 1 ♀, Nomonth. Loana: 1 ♀, VII. Lucassen: 1 ♂, 4 ♀♀, Nomonth. Pyr-or: 1 ♂, Nomonth. Rumburg: 1 ♀, VIII. Russ. mer: 1 ♀, Nomonth. Schadau: 1 ♂, VI. Silezie: 1 ♂, 2 ♀♀, Nomonth. Stalia: 4 unsex., V. Sug.: 2 ♂♂, 5 ♀♀, IV. Tolenein: 1 ♂, Nomonth. Ungarn??: 1 ♀, Nomonth. Weessenstein: 1 ♀, V. Noghera: 1 ♀, Nomonth. Kalobie: 1 ♀, IV. **AUSTRIA:** Nosubd.: 5 ♂♂, 6 ♀♀, Nomonth. 1 ♂, VI. Lichtenwald: 1 ♀, Nomonth. **KÄRNTEN:** 46.750000, 13.833333, 1 ♂, VII. Dobratsch Mt.: 46.616667, 13.666667, 2 ♂♂, Nomonth. Rudenthein: 46.800000, 13.716667, 2 ♂♂, 1 ♀, Nomonth. **STEIERMARK:** Zirbitzkogel: 47.116667, 14.566667, 1 ♀, Nomonth. **TIROL:** 47.200000, 11.150000, 1 ♂, 1 ♀, Nomonth. (Levico), 47.250000, 11.333333, 2 ♀♀, I. Gries im Sellrain: 47.200000, 11.150000, 1 ♂, Nomonth. **VORARLBERG:** Bregenz: 47.516667, 9.766667, 2 ♀♀, Nomonth. **BOSNIA-HERZEGOVINA:** Nosubd.: Bielasica: 43.133333, 18.416667, 1 ♀, Nomonth. Bjelasnica: 43.166667, 18.350000, 1 ♀, Nomonth.

Prozor: 43.833333, 17.600000, 1 ♂, 2 ♀♀, Nomonth. Travnik: 44.216667, 17.666667, 1 ♂, 2 ♀♀, Nomonth. **BULGARIA:** Nosubd.: Samokov: 42.316667, 23.566667, 6 ♂♂, 3 ♀♀, Nomonth. Treva: 42.866667, 25.500000, 1 ♀, VI. Tschan Korija: 42.250000, 23.583333, 1 ♂, 1 ♀, Nomonth. RILA: Samokov: 42.316667, 23.566667, 3 ♂♂, Nomonth. SMOLYAN: Cepakare: 41.733333, 24.683333, 1 ♂, IX. **CROATIA:** Nosubd.: 45.166667, 15.500000, 1 ♀, Nomonth, 1 ♀, VI. Fiume: 45.333333, 14.450000, 1 ♂, V. **CZECHOSLOVAKIA:** MORAVIA: 49.400000, 15.566667, 4 ♂♂, 1 ♀, Nomonth. SLOVENSKO: Sturovo: 47.816667, 18.666667, 1 ♀, V. **FRANCE:** HAUTE-SAVOIE: Saint Gervais: 45.900000, 6.716667, 1 ♂, Nomonth. NIEVRE: Settons: 47.183333, 4.066667, 3 ♀♀, Nomonth. **GERMANY:** Nosubd.: 4 ♂♂, 2 ♀♀, Nomonth, 1 ♂, VIII. Hohenburg: 50.100000, 12.233333, 1 ♀, Nomonth. BADEN-WÜRTTEMBERG: Schwarzwald Mountains, Fahmar: 47.666667, 7.833333, 3 ♂♂, 4 ♀♀, 1 ♀, I. Heidelberg: 49.416667, 8.700000, 1 ♂, 2 ♀♀, Nomonth. Heidelberg: 49.483333, 8.000000, 2 ♂♂, Nomonth. Nordbaden: 49.333333, 9.000000, 5 ♂♂, 1 ♀, IV. BAYERN: Bruckburg: 48.500000, 12.000000, 1 ♀, IV. Erlangen: 49.600000, 11.016667, 1 ♀, V. Grain: 49.333333, 12.050000, 1 ♂, Nomonth. Heidelberg: 49.416667, 8.700000, 2 ♂♂, 1 ♀, Nomonth. Hohenburg: 49.283333, 11.816667, 1 ♂, Nomonth. Krain: 49.333333, 12.050000, 2 ♀♀, Nomonth. Landshut: 48.533333, 12.150000, 1 ♂, IV. BERLIN: Berlin: 52.533333, 13.416667, 1 ♀, Nomonth. DRESDEN: Dresden: 51.050000, 13.750000, 1 ♀, Nomonth. LOITBUS: Wilhelmsfeld: 51.383333, 14.616667, 1 ♀, V. RHEINLAND-PFALZ: Kirchen: 50.800000, 7.883333, 1 ♂, Nomonth. SACHSEN: 51.116667, 13.116667, 1 ♀, III. Dresden: 51.050000, 13.750000, 5 ♂♂, 4 ♀♀, Nomonth. Klotzsche: 51.116667, 13.766667, 1 ♂, Nomonth. SAXONY: 51.000000, 13.000000, 1 ♀, III. **HUNGARY:** Nosubd.: 47.200000, 18.150000, 2 ♀♀, Nomonth. BUDAPEST: Ujpest: 47.550000, 19.083333, 1 ♂, Nomonth. **ITALY:** Nosubd.: Paderno del Grappa: 1 ♂, II. BOLZA: Tiroli: 46.420000, 11.090000, 1 ♀, Nomonth. BOLZANO: Merano: 46.683333, 11.166667, 1 ♂, 2 ♀♀, Nomonth. CANAVESE: Ceresole Reale: 45.433333, 7.216667, 1 ♂, VII. COZENZA: Lago: 39.166667, 16.150000, 1 ♀, IV. EMILIA-ROMAGNA: Bagni di Lucca: 44.016667, 10.583333, 3 ♂♂, 3 ♀♀, VII. LOMBARDIA: 45.416667, 9.200000, 1 ♂, Nomonth. (Corezzano), 45.666667, 9.500000, 1 ♂, V. Bergamasche, Alpi, Grigna, Mt.: 45.966667, 9.383333, 1 ♀, VII. Lugano, Lago Di: 45.966667, 9.000000, 1 ♀, VII. NOVARA: Stresa: 45.883333, 8.533333, 1 ♀, Nomonth. PIEMONTE: Piemonte: 45.716667, 7.400000, 1 ♂, Nomonth. PIEMONTE: Susa: 45.133333, 7.033333, 1 ♂, Nomonth. TREVISO: Susegana: 45.850000, 12.250000, 1 ♂, IV. UMBRIA: Brughiera di Rovasenda: 42.783333, 12.550000, 1 ♂, V. **NETHERLANDS:** Nosubd.: 1 ♀, V. Houthem: 50.866667, 5.766667, 1 ♂, Nomonth. Schinveld: 50.950000, 5.983333, 1 ♂, VI. Valkenburg: 52.166667, 4.466667, 1 ♀, VI. **POLAND:** Nosubd.: Szezakociny: 50.633333, 19.816667, 1 ♂, Nomonth. **ROMANIA:** TIMISOARA: Mehadia: 44.900000, 22.366667, 1 ♂, Nomonth. TRANSYLVANIA: 46.500000, 25.000000, 1 ♂, 2 ♀♀, Nomonth. (Bedelö), 47.000000, 24.000000, 1 ♀, Nomonth. **RUSSIA:** Nosubd.: 1 ♀, Nomonth. **SLOVENIA:** Nosubd.: Liabach: 46.066667, 14.500000, 1 ♂, 1 ♀, Nomonth. Ljubljana: 46.066667, 14.500000, 1 ♂, 2 ♀♀, Nomonth. Tolmin: 46.183333, 13.750000, 1 ♂, Nomonth. **SPAIN:** LEÓN: Brañuelas: 42.633333, -6.200000, 2 ♀♀, VII. MADRID: Cercedilla: 40.733333, -4.066667, 1 ♂, Nomonth, 1 ♂, XI. **SWITZERLAND:** Nosubd.: Fiims: 46.850000, 9.283333, 1 ♀, VII. TICINO: Locarno: 46.166667, 8.800000, 2 ♂♂, V. Lugano: 46.000000, 8.966667, 1 ♀, Nomonth, 1 ♀, V.

3. *Anisodactylus (A.) consobrinus*

NO LOCALITY: 1 ♀, Nomonth. **MEXICO:** BAJA CALIFORNIA: Ensenada, 16 km E, 31.883333, -116.633333, 1 ♀, VII. Collected in repanian habitat. **UNITED STATES:** ARIZONA: Coconino Co.: Flagstaff: (Oak Creek Canyon), 35.198056, -111.650556, 1 ♀, V. Pump house wash, Flagstaff, 27 km S, (Oak Creek Canyon), 35.198056, -111.650556, 1 ♂, VIII. Flagstaff, 32.3 km S, (Oak Creek Canyon), 35.198056, -111.650556, 1 ♂, IX. Sedona, 24.2 km N, (Hwy 179), 34.869722, -111.760278, 1 ♂, Nomonth. CALIFORNIA: NoCo.: 34 ♂♂, 24 ♀♀, Nomonth. NoCo.: Oriental California National Forest, 1 ♂, Nomonth. NoCo.: Canyon Edge Col. Desert: 1 ♂, 1 ♀, Nomonth. NoCo.: Eagle Point: 1 ♂, IX. NoCo.: Mormon Pass: 1 ♂, Nomonth. NoCo.: San Antonio Canyon: 34.160000, -117.676944, 1 ♀, Nomonth. NoCo.: San Jose del Cabo: 1 ♂, 1 ♀, Nomonth. Alameda Co.: 37.800000, -122.266667, 1 ♂, 2 ♀♀, III. Alameda: 37.765278, -122.240556, 1 ♂, 1 ♀, Nomonth. Arroyo Mocho: 37.676944, -121.911111, 2 ♀♀, Nomonth, 2 ♂♂, 1 ♀, II, 1 ♂, III, 1 ♀, V. Arroyo Mocho, 32.18 km S, 37.676944, -121.911111, 1 ♀, III. Arroyo Mocho, 32.2 km S, 37.676944, -121.911111, 4 ♂♂, 2 ♀♀, II, 2 ♂♂, III. Arroyo Mocho, 32.3 km S, 37.676944, -121.911111, 1 ♂, 5 ♀♀, II. Livermore: 37.681944, -121.766944, 3 ♂♂, III; 1 ♂, 2 ♀♀, III. Under oaks and rock in oak woodland. Livermore: (Los Mochos Canyon), 37.681944, -121.766944, 3 ♂♂, 1 ♀, IX. Livermore, 41.8 km SE, 37.681944, -121.766944, 1 ♂, X. Livermore, 8.1 km S, 37.681944, -121.766944, 3 ♀♀, III. Livermore Hills: (Los Mochos Canyon), 37.682310, -121.771233, 1 ♀, IX. Niles Canyon: 37.598056, -121.964167, 1 ♂, III. Niles Canyon: 37.580556, -121.964167, 4 ♀♀, IV, 1 ♂, 1 ♀, V. Oakland: (Mills College), 37.804444, -122.269722, 2 ♂♂, III. Alpine Co.: Monitor Pass, 7.3 km W, (Monitor Creek), 38.675556, -119.619444, 1 ♂, 2 ♀♀, VII. Amador Co.: Cole Creek: 38.486111, -120.239167, 2 ♂♂, VI. Fiddlerown, 1.6 km E, 38.503889, -120.754444, 1 ♂, III. Pine Grove: 38.413056, -120.657778, 4 ♂♂, 2 ♀♀, III. Plymouth, 8 km N, Highway 49, 38.481944, -120.843611, 1 ♀, VI. Waterman: 38.385245, -120.934070, 2 ♂♂, 1 ♀, VIII. Butte Co.: Paradise: 39.746389, -121.636111, 1 ♂, VIII. Calaveras Co.: 38.166667, -120.700000, 1 ♂, IX. Big Trees: 38.277500, -120.309444, 1 ♀, IX. Mokelumne Hill: 38.300556, -120.705278, 2 ♂♂, 1 ♀, V, 2 ♂♂, 1 ♀, VI, 4 ♂♂, 2 ♀♀, VII. Murphys: 38.137500, -120.458611, 3 ♂♂, V. Colusa Co.: Rumsey Canyon: 38.860833, -122.282778, 1 ♀, X. Contra Costa Co.: 38.016667, -122.133333, 1 ♂, 1 ♀, Nomonth. Brentwood: 37.931944, -121.694722, 1 ♂, VII. Mount Diablo: 37.881667, -121.912778, 1 ♂, 1 ♀, X. Tassajara: 37.796667, -121.863056, 1 ♀, V. Del Norte Co.: Crescent City: 41.756111, -124.200556, 1 ♂, IX. Under beach plant. El Dorado Co.: 38.716667, -120.783333, 1 ♀, VI. Garden Valley: 38.854167, -120.858333, 1 ♀, Nomonth. Placerville: 38.729722, -120.797500, 2 ♂♂, 1 ♀, VI. Riverton: 38.771111, -120.448333, 2 ♂♂, 2 ♀♀, VII. Eldorado National Forest, Riverton: 38.771111, -120.448333, 7 ♂♂, 1 ♀, VII. Fresno Co.: Kings Canyon National Park, 36.716667, -119.783333, 3 ♂♂, 1 ♀, VI. (Dalton Creek), 36.716667, -119.783333, 1 ♂, V. Auberry, 4.8 km NE, (Mill Creek), 37.080833, -119.484444, 1 ♂, V. Antifreeze pit trap near *Arctostaphylos*. Fresno: 36.747778, -119.771389, 4 ♂♂, 2 ♀♀, Nomonth, 6 ♂♂, 5 ♀♀, VI. Huntington Lake: 37.231667, -119.235000, 1 ♂, VII. Sierra National Forest. McKinley Grove: ((Sierra Redwoods)), 37.021667, -119.094444, 1 ♂, Nomonth. San Joaquin: 36.606667, -120.188056, 1 ♂, III. Humboldt Co.: 40.750000, -124.166667, 2 ♂♂, Nomonth. Arcata: 40.866667, -124.081667, 1 ♂, 1 ♀, VI. Fort Seward: 40.223056, -123.642222, 2 ♂♂, 1 ♀, VI. Honeydew: 40.244444, -124.121667, 1 ♂, VIII. Rio Dell: 40.499444, -124.105278, 1 ♂, 1 ♀, VI. Inyo Co.: Panamint Mountains, 36.800000, -118.200000, 1 ♀, IV. (Adda), 36.800000, -118.200000, 2 ♀♀, IV, under rocks. (Adda Creek), 36.800000, -118.200000, 1 ♂, IV, under rocks. Independence, Independence, 11.3 km W, (Independence Cr.), 36.802778, -118.199167, 3 ♂♂, VII. Panamint Springs: 36.339722, -117.466944, 1 ♂, IV. Panamint Valley:

36.166667, -117.333333, 5 ♂♂, 2 ♀♀, IV. Inyo National Forest, White Mountains: (Wyman Creek), 37.583333, -118.266667, 2 ♀♀, VII. Wildrose Canyon: 36.172778, -117.260278, 1 ♂, IX. Inyo National Forest, Wyman Creek, 20 km W Bishop, 37.350556, -118.394167, 2 ♀♀, VI. Kern Co.: 35.383333, -119.000000, 2 ♂♂, 2 ♀♀, Nomonth. Alta Sierra, 1.6 km W, 35.729167, -118.548611, 1 ♂, V. Arvin, 17.7 km E, 35.209167, -118.827500, 3 ♂♂, IV. Caliente: (Way 58), 35.291111, -118.626944, 7 ♂♂, V. Glennville, 10.9 to 11.7 km E, on rte 155, 35.728889, -118.702778, 1 ♂, VI, under wood and rocks along moist areas of dried up gully. Glennville, 10.9-11.7 km E on rte 155, 35.728889, -118.535714, 2 ♀♀, VI, under wood and rocks along moist areas of dried up gully. Glennville, 11.3 km E, (Alder Creek), 35.728889, -118.702778, 3 ♂♂, 5 ♀♀, Nomonth. Havilah: 35.517778, -118.517778, 1 ♂, Nomonth. Kernville: 35.754722, -118.424444, 1 ♂, IV. Lake Isabella: 35.646389, -118.481389, 1 ♂, X, under rocks along mostly bare sand banks of lake. Sequoia National Forest, Rhymes Campground, 1.6 km S, 35.685556, -118.573333, 2 ♀♀, V. Tehachapi: 35.132222, -118.448056, 2 ♀♀, Nomonth, 1 ♂, 1 ♀, IX. Lake Co.: (Adams Springs), 39.050000, -122.900000, 1 ♂, VI. Barkerville, 16 km SE, (Middletown), 39.154444, -122.561389, 1 ♂, IV. Lower Lake: 38.910556, -122.609167, 1 ♂, IX, Upper Lake, 19.3 km N, 39.164722, -122.909444, 1 ♀, III. Lassen Co.: Susanville: 40.416389, -120.651944, 1 ♀, IV. Cascade Range, Susanville, 0.16 km W, (Susan River), 40.416389, -120.651944, 3 ♀♀, V. Wendel: 40.348333, -120.232500, 1 ♀, IX. Los Angeles Co.: 34.000000, -118.250000, 7 ♂♂, 4 ♀♀, Nomonth. (Big Dalton Dam), 34.000000, -118.250000, 1 ♂, III, 1 ♂, VI. Angeles National Forest, Bouquet Reservoir: 34.578333, -118.385278, 4 ♂♂, VI. Claremont: 34.096667, -117.718889, 2 ♂♂, 3 ♀♀, Nomonth. Hidden Lake: (Pine Canyon), 34.708889, -118.545833, 2 ♀♀, III. Laguna: 33.976667, -118.138889, 3 ♂♂, 2 ♀♀, Nomonth, 1 ♂, VI, 5 ♂♂, 9 ♀♀, VII. Los Angeles: 34.052222, -118.242778, 1 ♂, 1 ♀, Nomonth, 1 ♂, III, 1 ♂, IV. Pasadena: 34.147778, -118.143611, 2 ♂♂, II, 1 ♀, III, 1 ♂, X, 1 ♂, 3 ♀♀, XI. Pomona: 34.055278, -117.751389, 2 ♀♀, Nomonth. San Gabriel Canyon: 34.160833, -117.907778, 1 ♂, IV. San Gabriel Mountains: 34.300000, -117.916667, 1 ♂, Nomonth. Topanga: 34.093611, -118.600556, 1 ♂, X. Tujunga: 34.252222, -118.287500, 1 ♂, XI. Tujunga: (near Charlton Flats), 34.252222, -118.287500, 1 ♂, XI. Whitewater Canyon: 34.355833, -118.352778, 3 ♂♂, Nomonth. Madera Co.: (Chiquito Creek), 36.950000, -120.066667, 3 ♂♂, 3 ♀♀, VII. Bass Lake: 37.320000, -119.556667, 1 ♀, VI, 1 ♂, 1 ♀, VII. Bass Lake, 11 km NE, (The Pines), 37.320000, -119.556667, 2 ♂♂, VII. Coarsegold: 37.262222, -119.700000, 4 ♂♂, 3 ♀♀, V, 2 ♂♂, 2 ♀♀, VII. North Fork: 37.229722, -119.508611, 1 ♂, II, 1 ♂, 2 ♀♀, III. O'Neals: 37.128333, -119.693333, 1 ♂, 3 ♀♀, III. Marin Co.: 37.966667, -122.516667, 1 ♂, 2 ♀♀, Nomonth, 1 ♂, 1 ♂, IV, 3 ♂♂, 2 ♀♀, IX. (Arraya Sansal), 37.966667, -122.516667, 2 ♀♀, VII. Arroyo Sausal: (2.4 km W Novato Blvd.), 38.161667, -122.780278, 1 ♂, 1 ♀, VII. Dillon Beach: 38.250833, -122.964167, 1 ♀, V. Fairfax: 37.987222, -122.587778, 2 ♂♂, 6 ♀♀, IX. Laurel Dell: 37.924167, -122.625833, 2 ♂♂, VII. Mill Valley: 37.906111, -122.543889, 1 ♂, VI. Mount Tamalpais: 37.927500, -122.590833, 1 ♂, IX. Nicasio Reservoir, 0.8 km SW Nicasio Reservoir, (Lagunitas Creek), 38.076667, -122.753333, 1 ♀, IV. Sausalito: 37.859167, -122.484167, 2 ♀♀, V. Marin Co.: Buck Meadows, 16.1 km E, 37.812778, -120.063333, 1 ♂, VI. Coulterville: 37.710556, -120.196944, 1 ♀, IV. Curry Village (Mirror Lake, Yosemite), 37.738056, -119.572778, 1 ♂, Nomonth. Mariposa: 37.485000, -119.965278, 1 ♂, 2 ♀♀, V, 1 ♀, VI. Miami Ranger Station: 37.419722, -119.744444, 1 ♂, V, under bark. Yosemite National Park: 37.850000, -119.566667, 3 ♂♂, 2 ♀♀, V. Mendocino Co.: Hopland: 38.973056, -123.115278, 1 ♀, VII. Mendocino National Forest, Little Doe Campground: 39.894722, -122.986944, 2 ♂♂, 1 ♀, VIII. Philo, 3.2 km NW, (Navarro River), 39.065833, -123.443889, 1 ♀, VII. Ukiah: 39.150278, -123.206667, 1 ♂, III. Monterey Co.: 36.683333, -121.666667, 1 ♂, V, (Hastings Res.), 36.683333, -121.666667, 3 ♂♂, 6 ♀♀, III. Arroyo Seco Creek: 36.413611, -121.341389, 1 ♂, 2 ♀♀, V. Santa Lucia Mountains, Arroyo Seco Creek, 8 km SE jct. Jamesburg Rd. and Cachagua Creek, 36.413611, -121.341389, 1 ♂, 1 ♀, V. Santa Lucia Range, Arroyo Seco Creek, 8 km SE jct., (Arroyo Seco-Jamesburg Rd. & Cachagua), 36.413611, -121.341389, 2 ♂♂, V. Carmel By The Sea: 36.555000, -121.918333, 5 ♂♂, VII. Santa Lucia Range. Escondido Camp Ground, 17 km SE, 36.140278, -121.493889, 1 ♀, V. Santa Lucia Range, Escondido Camp Ground, 3.9 km SE, (Arroyo Seco Creek), 36.140278, -121.493889, 1 ♂, V. Fort Ord: 36.630278, -121.819722, 1 ♀, IV, 2 ♂♂, 1 ♀, VI. Paraiso Springs: 36.331389, -121.367778, 2 ♂♂, V. Santa Lucia Range, 1.6 km S, (Tularcitos Rd.), 36.140278, -121.493889, 1 ♂, V. Santa Lucia Range, 1.6 km S, (Tularcitos Rd., jct. Tassajara Rd. &), 36.140278, -121.493889, 1 ♀, V. Tassajara Hot Springs: 36.234167, -121.547778, 1 ♀, V, 1 ♂, IX, 1 ♂, X. Napa Co.: 38.333333, -122.283333, 1 ♀, VII. Saint Helena: 38.505278, -122.469167, 2 ♂♂, X. Nevada Co.: Graniteville: (Bowman Lake), 39.440833, -120.738611, 1 ♂, VIII. Placer Co.: 38.866667, -121.083333, 4 ♂♂, 2 ♀♀, VII. Auburn, 16.1 km E, 38.896667, -121.075833, 1 ♀, V. Colfax: 39.100833, -120.952222, 2 ♂♂, VI. Dutch Flat: 39.206111, -120.836667, 1 ♂, X. Emigrant Gap: 39.296944, -120.671667, 1 ♂, Nomonth. Lincoln: 38.891667, -121.291944, 1 ♂, 1 ♀, VII. Plumas Co.: Lake Almanor, Canyon Dam Pic. Area: (S end of lake), (Westwood), 3.9 W on route A21, 18.1 km S on rte 147, 0.6 km W on rte. 89), 40.173167, -121.085833, 1 ♂, VII, ex. rocks (sand-gravel damp beneath) on artif. lake shore (with sparse-mod. green grass and herbs.) by dry stream, evergreen forest. Lake Davis, Honker Cove: (Beckwourth), 3.9 km W on rte. 70, 10.3 km NW on rte. 112), 39.893333, -120.481167, 1 ♀, VII, under rocks (sand damp beneath) on bare, flat to mod. sloped lake shore near boat ramp and intermittent stream, countryside pine forest. Lake Davis, Lightning Tree Boat Pt.: (Beckwourth), 3.9 km W on rte. 70, 15.3 km NW on rte. 112), 39.929167, -120.510500, 1 ♂, VII, Under dirt clods (clay damp beneath) on bare, mod. sloped, bare lake bottom near water, pine forest and pine woodland with sagebrush. Quincy: 39.936944, -120.946111, 4 ♀♀, VI. Collected under rocks along stream. Quincy, 6.4 km W, 39.936944, -120.946111, 1 ♂, VII. Twain: 40.018889, -121.032778, 1 ♂, VIII. Twain, Near Virgilia, 40.018889, -121.032778, 1 ♀, VIII. Riverside Co.: 33.983333, -117.350000, 1 ♂, 1 ♀, IV. Bautista Canyon: 33.668889, -116.795278, 1 ♂, 2 ♀♀, Nomonth. Bautista Canyon, 19.3 km SE Hemet, 33.668889, -116.795278, 1 ♂, Nomonth. San Jacinto Mountains, Hemet: (Lake Hemet), 33.747500, -116.971111, 1 ♂, V. San Bernardino National Forest, Herkey Creek: (San Jacinto Mountains), 33.664167, -116.679444, 5 ♂♂, VI; 1 ♂, 1 ♀, VI, under log; 2 ♀♀, VI, under stones: 1 ♂, 2 ♀♀, VI. Collected under log., 2 ♂♂, VI. Under stones. Idyllwild: 33.740000, -116.718056, 2 ♀♀, V; 1 ♂, V, under bark. San Jacinto Mts., Idyllwild: 33.740000, -116.718056, 1 ♀, VI, 4 ♂♂, VII. Palm Springs: 33.830278, -116.544444, 2 ♀♀, Nomonth, 3 ♀♀, III, 1 ♀, IV. Temecula: 33.493611, -117.147500, 1 ♀, VI. Valle Vista, 9.7 km, (Bautista Canyon), 33.747778, -116.892500, 1 ♀, Nomonth. Sacramento Co.: Sacramento: 38.581667, -121.493333, 1 ♀, X. San Benito Co.: Llanada: 36.609167, -120.915556, 1 ♂, XI. San Bernardino Co.: (Cienega Seca), 34.173285, -116.716630, 1 ♂, Nomonth. San Bernardino Mountains, Arrowbear Lake, 0.5 km E, (Hwy. 18), 34.210833, -117.082500, 1 ♂, V. Arrowbear Lake, 1.6 km NE, 34.210833, -117.082500, 1 ♂, 2 ♀♀, Nomonth. San Bernardino Mountains, Arrowhead Highlands, 1.6 km NE, 34.230000, -117.261944, 2 ♀♀, Nomonth. San Bernardino Mountains, Barton Flats, 4.8 km E, (Sant Ana River headwaters), 34.172500, -116.862222, 1 ♀, V. San Bernardino Mountains, Beaumont, 13.8 km N, (Little San Gorgonio Creek), 33.941667, -117.005000, 1 ♀, V. Big Bear Lake: 34.243889, -116.910556, 1 ♂, 1 ♀, VII. Camp Angelus: (San Bernardino Mountains), 34.145833, -116.981667, 1 ♀, VII. Cedar Glen, 1.6 km E, 3.7 km NE, 34.253889, -117.163889, 5 ♂♂, 3 ♀♀, VI. Along creek banks. Cedar Spring Dam, [formerly town of Cedar Springs], (Miller Canyon P.C. [now under Silverwood Lake]), 34.305000, -117.313333, 1 ♂, 1 ♀, IV, under debris by stream; 1 ♂, IV. Active at night along banks of stream. Cedar Spring Dam, 1.5 km NE [formerly town of Cedar Springs], 34.305000, -117.313333, 2 ♂♂,

3 ♀♀, IV. Active at night on banks of creek. Cedar Spring Dam, 3.2 km N [formerly town of Cedar Springs], 34.305000, -117.313333, 2 ♂♂, 1 ♀, III. San Bernardino Mountains, Crestline (Waterman Canyon), 34.241944, -117.284722, 1 ♂, IV, under rocks by stream. Mojave Desert, Helendale: (Mojave River), 34.743889, -117.323611, 3 ♂♂, 3 ♀♀, Nomonth. San Bernardino Mountains, Lake Arrowhead: 34.248333, -117.188333, 5 ♂♂, 7 ♀♀, VI; 1 ♂, VII, on ground under apple tree. Mill Creek Canyon: 34.088333, -117.038611, 1 ♂, 9 ♀♀, IX. Old Baldy Council Camp: 34.295278, -116.913056, 1 ♂, 3 ♀♀, VI. Redlands: 34.061944, -117.181667, 1 ♀, III, under stone. San Bernardino Mountains, Running Springs, 1.1 km S. (Route 30), 34.207778, -117.108333, 1 ♂, Nomonth. San Bernardino Mountains, Running Springs, 4 km NE, (Bear Creek), 34.207778, -117.108333, 3 ♂♂, 4 ♀♀, V, By creek. San Bernardino: 34.121389, -117.302222, 1 ♀, Nomonth, 1 ♂, VII. San Bernardino: (Waterman Gadsden), 34.121389, -117.302222, 1 ♂, Nomonth, 1 ♂, 1 ♀, II. Seven Oaks: 34.186389, -116.913333, 1 ♂, 1 ♀, V. Mt. Baldy Upland, 2.4 km NE, (San Antonio Canyon), 34.097500, -117.647500, 2 ♀♀, V. Upland, 9.6 km N, 34.097500, -117.647500, 1 ♀, Nomonth. Yucaipa, 4.8 km E, 34.033611, -117.042222, 1 ♀, IV. San Diego Co.: 32.716667, -117.166667, 2 ♂♂, 1 ♀, Nomonth, 1 ♂, VI. Banner: 33.068889, -116.545278, 3 ♀♀, III; 1 ♀, VII, on stream banks in gully. Boulder Oaks: 32.731667, -116.483889, 1 ♂, 6 ♀♀, V. El Capitan Lake: 32.885556, -116.808333, 1 ♂, III, by San Diego River. Glen Oaks: 32.838333, -116.803056, 2 ♂♂, Nomonth. Julian: 33.078611, -116.601111, 2 ♂♂, Nomonth, 2 ♂♂, III. Julian: (Lake Cuyamaca), 33.078611, -116.601111, 2 ♂♂, Nomonth. Volcan Mountains, Julian, 6.4 km N, 33.078611, -116.601111, 1 ♀, II. Julian, 8 km SE, 33.078611, -116.601111, 1 ♀, VII, on shores of small pond. Laguna Mountains: 32.808333, -116.448333, 1 ♂, Nomonth. Morena Village: (Morena Lake), 32.679444, -116.504167, 1 ♂, 1 ♀, VI. Mount Laguna: 32.872222, -116.417500, 4 ♂♂, 1 ♀, 1 unsp., VI. Palomar Mountain (post Office): 33.322778, -116.877778, 1 ♀, VII. Pine Valley: 32.821389, -116.528333, 2 ♂♂, V. Poway: 32.962778, -117.035000, 1 ♂, 2 ♀♀, Nomonth. San Diego: 32.715278, -117.156389, 1 ♂, 2 ♀♀, Nomonth. San Luis Rey, 2.3 km NW, 33.231944, -117.322778, 23 ♂♂, 11 ♀♀, II, under rocks and logs in shaded areas near shore of San Luis Creek in gully. San Luis Rey, 3.9 km NW, 33.231944, -117.322778, 1 ♂, II, by creek. Santa Ysabel: 33.109167, -116.672222, 1 ♀, III. Warner Springs: (Agua Caliente Creek), 33.282222, -116.632778, 3 ♂♂, 1 ♀, IV. Warner Springs: (Lake Henshaw), 33.282222, -116.632778, 2 ♂♂, V. Warner Springs: (Palomar Mountain), 33.282222, -116.632778, 1 ♂, Nomonth. San Francisco Co.: San Francisco: 37.775000, -122.418333, 3 ♂♂, 1 ♀, Nomonth, 1 ♂, VII, 1 ♀, XI. San Luis Obispo Co.: 35.300000, -120.666667, 3 ♀♀, IX. Santa Lucia Range: 36.051111, -121.468056, 1 ♂, VI. San Mateo Co.: Portola Valley: 37.384167, -122.234167, 1 ♂, X. Santa Barbara Co.: Santa Barbara: 34.903056, -120.311389, 1 ♀, V. Oso Canyon: 34.586957, -119.758824, 1 ♀, Nomonth. San Marcos Pass: 34.511667, -119.823611, 1 ♂, III. Santa Barbara: 34.423333, -119.703333, 1 ♀, Nomonth. Santa Cruz Island: 34.016667, -119.716667, 3 ♂♂, Nomonth. Santa Cruz Island: (Christi Beach Station), 34.016667, -119.716667, 1 ♂, VI. Santa Clara Co.: 37.333333, -121.900000, 2 ♂♂, Nomonth. Arroyo Bayo: (Mt. Hamilton Rd.), 37.385556, -121.571389, 4 ♂♂, X, under rock. Gilroy, 9 km NE, (on Coyote Creek), 37.005833, -121.567222, 1 ♂, XI. Mount Hamilton: 37.341944, -121.641944, 2 ♂♂, V. San Antonio Valley: (Arroyo Mochos), 37.402222, -121.486389, 3 ♂♂, XI. San Jose: 37.335278, -121.893889, 2 ♂♂, 2 ♀♀, Nomonth. Santa Cruz Co.: 36.983333, -122.033333, 1 ♂, Nomonth, 2 ♂♂, 1 ♀, VIII. Santa Cruz: 36.974167, -122.029722, 1 ♂, V. Shasta Co.: 40.600000, -122.416667, 2 ♀♀, V, 2 ♂♂, VII. Anderson: 40.448333, -122.296667, 12 ♂♂, 6 ♀♀, V, vernal pool under rocks, 1 ♀, VI, vernal pool under rocks. Burney: 40.882500, -121.659722, 1 ♀, VI. Castella: (Castle Crags), 41.138611, -122.316667, 1 ♂, VII. Hidden Lake: 40.491111, -121.329722, 1 ♀, IV. Hidden Lake: (Pine Canyon), 40.491111, -121.329722, 1 ♂, III. Lassen National Forest, Old Station: 40.675278, -121.429722, 1 ♀, VI, 1 ♂, IX. Redding: 40.586667, -122.390556, 1 ♀, VIII. Shasta Springs: 41.246944, -122.260000, 1 ♂, VI. Viola: (Manton Road), 40.518056, -121.676667, 2 ♂♂, 2 ♀♀, IX. Sierra Co.: (West Hom), 39.583333, -120.800000, 2 ♀♀, V. Downieville: 39.559444, -120.825833, 1 ♀, X. Siskiyou Co.: 41.716667, -122.600000, 1 ♂, Nomonth, 4 ♂♂, VII. (Cottonwood Creek), 41.930833, -121.794444, 1 ♂, 1 ♀, VI. (Gunboat Lake), 41.716667, -122.600000, 1 ♂, VIII. Collected under lake. Klamath National Forest, Doek Well: 41.649444, -121.722222, 1 ♂, VII. Dunsuir: 41.219722, -122.273889, 2 ♂♂, Nomonth. Hill: (Cottonwood Creek), 41.995000, -122.622222, 2 ♂♂, 3 ♀♀, VI. Pick-Aw-Ish Campground, 1.35 km E, (Willow Creek), 41.705278, -123.458611, 2 ♂♂, VI. Willow Creek. Weed, 3.2 km S, 41.422778, -122.385000, 1 ♂, IV. Weed, 3.28 km S, 41.422778, -122.385000, 1 ♂, Nomonth. Yreka: 41.735556, -122.633333, 2 ♂♂, 4 ♀♀, V; 1 ♀, VI. Collected under rocks along stream. Yreka, 1.3 km N, (Shasta River), 41.735556, -122.633333, 1 ♂, IV. Yreka, 8 km W, 41.735556, -122.633333, 7 ♂♂, 4 ♀♀, VI, 3 ♂♂, 1 ♀, VII. Solano Co.: Gates Canyon: (W Vacaville), 38.381389, -122.037222, 1 ♀, VII. Sonoma Co.: Annapolis: 38.721944, -123.368611, 3 ♂♂, VIII. Guerneville, 3.2 km S, (Russian River), 38.501944, -122.995000, 1 ♂, VI. Santa Rosa: 38.440556, -122.713333, 1 ♂, VI. Sonoma State Home (Eldridge P O): (Eldridge), 38.347222, -122.517500, 1 ♂, 1 ♀, Nomonth, 1 ♂, VI. Sonoma State Home (Eldridge P O): (Eldridge), 38.347222, -122.517500, 1 ♀, Nomonth. Stanislaus Co.: Adobe Creek: 37.408889, -121.407500, 2 ♂♂, 3 ♀♀, XI. Adobe Creek, 35.4 km W Patterson, 37.408889, -121.407500, 1 ♂, IV. Frank Raines Park, Del Puerto Canyon: 37.488333, -121.205833, 1 ♀, IV. Del Puerto Creek: 37.541389, -121.114444, 1 ♀, II. Del Puerto Creek: 37.397222, -121.456111, 1 ♀, XI. Del Puerto Creek: 37.541389, -121.114444, 2 ♂♂, XI. Del Puerto Creek, 16 km to 24 km E San Antonio Valley, 37.541389, -121.114444, 1 ♂, XI. Del Puerto Creek, 16 km to 24 km E San Antonio Valley, Red Bluff: 40.178611, -122.234722, 1 ♀, IV. Tehama, 9.7 km W, 40.027222, -122.122222, 1 ♂, VII. Potato patch crop. Trinity Co.: Hayfork, 9.6 km SE, 40.554444, -123.181944, 1 ♀, V. Mad River: 40.205556, -123.155278, 1 ♀, II, 1 ♀, VIII. Trinity Alps: 40.857500, -122.889167, 1 ♂, VIII. Tulare Co.: Sequoia National Park, 36.333333, -119.300000, 3 ♂♂, 2 ♀♀, V. (Hot Springs), 36.333333, -119.300000, 1 ♂, 1 ♀, VII. Horse Creek Road: 36.458484, -118.635687, 1 ♂, III. Johnsondale: 35.974722, -118.540000, 1 ♂, IV. Sierra Nevada Range, Johnsondale, 3.2 km SW, (Parker Meadow Cr. nr. Hwy 190), 35.974722, -118.540000, 1 ♂, VII. Kaweah: 36.469722, -118.917500, 2 ♂♂, 2 ♀♀, II. Quaking Aspen Camp, 24.3 km W on Hwy 190, 36.120556, -118.544167, 1 ♂, VII. Sequoia National Park: 36.447653, -118.590772, 1 ♂, 1 ♀, Nomonth, 1 ♀, V. Sequoia National Park: (Mineral King), 36.447653, -118.590772, 1 ♂, VIII. Sequoia National Park: (Potwisha), 36.447653, -118.590772, 1 ♂, VI. Sequoia National Park: (Potwisha, W Ash Mt.), 36.447653, -118.590772, 1 ♂, VI. Three Rivers: 36.438889, -118.903611, 1 ♂, 1 ♀, IV, 1 ♀, VII, 2 ♂♂, 2 ♀♀, X. Three Rivers: (Kaweah River), 36.438889, -118.903611, 2 ♀♀, V. Three Rivers: (Lemon Cove), 36.438889, -118.903611, 1 ♂, VII. Three Rivers, 0.3 km SW on rte 198, 36.438889, -118.903611, 1 ♂, 1 ♀, VI. Three Rivers, 16 km SE, (S Fork Kaweah), 36.438889, -118.903611, 4 ♂♂, 2 ♀♀, V. Tulare: 36.207778, -119.346389, 2 ♂♂, 2 ♀♀, Nomonth. Tuolumne Co.: 37.966667, -120.366667, 1 ♀, Nomonth. Long Barn: 38.093056, -120.133333, 1 ♀, IX. Stanislaus National Forest, Long Barn, 6.1 km NE, 38.093056, -120.133333, 15 ♂♂, 7 ♀♀, VII, under rocks and dried cowpies in meadow with loam soil, scattered grasses and herb. plants 1450 m. Marble Quarry: (Marble Quarry Rd. at South Fork Sta), 38.063056, -120.383333, 4 ♂♂, 3 ♀♀, III. Tuolumne: 37.960833, -120.236389, 1 ♂, 3 ♀♀, IV. Ventura Co.: Los Padres National Forest, Alamo Mountain, NE base, (Piru Creek), 34.666667, -118.958333, 1 ♂, V. Matilija: 34.475406, -119.274502, 2 ♂♂, 1 ♀, III. Ojai: 34.448056, -119.241944, 2 ♀♀, III, 2

♂♂, 1 ♀, IV. Sespe (Sespe Creek), 34.400000, -118.949444, 1 ♂, 1 ♀, Nomonth. Pine Mts., Wheeler Springs, 31.9 km N, (Hwy 33 nr. Seps Cr), 34.508056, -119.290556, 3 ♂♂, 3 ♀♀, V. Yolo Co.: Davis, 13.4 km SW, 38.545000, -121.739444, 1 ♂, V. Rumsey, 4.2 km N, 38.888333, -122.236389, 1 ♀, IV. Winters, 11 km E, 38.525000, -121.969722, 1 ♂, III, margin of ck. Winters, 12.9 km W, 38.525000, -121.969722, 1 ♂, III. Winters, 13.4 km E, 38.525000, -121.969722, 1 ♂, 3 ♀♀, III, on margin of creek. Yuba Co.: Challenge, 39.487500, -121.222500, 1 ♂, VIII. Smartville, 4.8 km N, (Sierra Foothill Field Station), 39.207500, -121.297500, 6 ♂♂, 3 ♀♀, V. COLORADO: NoCo.: 1 ♀, Nomonth. IDAHO: Kootenai Co.: Hayden Lake, 47.758889, -116.755833, 1 ♀, VI. Latah Co.: Troy, 46.736944, -116.768611, 1 ♀, V. Nez Perce Co.: Coyote Grade, 46.455278, -116.661111, 2 ♂♂, III. Lewiston, 46.416667, -117.016667, 1 ♀, V. NEVADA: NoCo.: 1 ♂, Nomonth. Esmeralda Co.: Lone Mountain summit, 38.024444, -117.493611, 1 ♂, 1 ♀, VI. NEW MEXICO: Eddy Co.: The Pinnacle, 32.192500, -104.631667, 1 ♀, VI. OREGON: NoCo.: 2 ♂♂, 2 ♀♀, Nomonth. NoCo.: Cow Canyon, 1 ♂, X. Baker Co.: Comucopia (Wallowa Mts.), 45.008333, -117.191667, 1 ♂, VII. Huntington Junction, 14.5 km SE, 44.345833, -117.601667, 1 ♂, IX. Benton Co.: Corvallis, 44.564722, -123.260833, 1 ♀, VII. Coos Co.: Bandon, 1.2 km S, 43.119167, -124.407222, 3 ♂♂, III. Curry Co.: Gold Beach, 42.407500, -124.420556, 1 ♂, VI. Deschutes Co.: Redmond, 8.1 km W, (Deschutes River), 44.272778, -121.172778, 1 ♀, X. Douglas Co.: Glendale, 42.736389, -123.422222, 2 ♂♂, 1 ♀, VI. Roseburg, 43.216667, -123.340556, 1 ♀, VI. Cascade Divide, Steamboat Creek (Crescent Lake), 43.509444, -121.968333, 1 ♀, VII. Cascade Range. Toketee Falls (Umqua River), 43.275833, -122.449722, 1 ♂, VII. Grant Co.: Blue Mts., Dale, 1.6 km N, 44.988611, -118.946389, 1 ♂, V. John Day (U.S. Highway 30), 44.416111, -118.951944, 1 ♀, V. Hamey Co. (Fork Springs), 43.583333, -119.083333, 1 ♀, X. Hood River Co.: Dee, 45.588333, -121.625556, 4 ♂♂, 4 ♀♀, V. Hood River, 45.705556, -121.520278, 1 ♀, VIII. Jackson Co.: Siskiyou Mountains, Applegate, 3.2 km W. (Applegate River), 42.257222, -123.167222, 3 ♂♂, 1 ♀, V. Ashland, 42.194722, -122.708333, 2 ♂♂, VIII. Ashland, 14.5 km SE, 42.194722, -122.708333, 1 ♂, X. Ashland, 19 km E, 42.194722, -122.708333, 1 ♀, III, gravel bar at creek. Ashland, 19.3 km E, 42.194722, -122.708333, 1 ♂, 1 ♀, III, gravel bar at creek. Ashland, 19.4 km E, 42.194722, -122.708333, 1 ♂, III, Gravel Bar at creek. Brownsboro, 4.8 km E, 42.468333, -122.708889, 2 ♀♀, V. Cascade Range, Butte Falls, 0.5 km E, (S. Fork Big Butte Creek), 42.543333, -122.564444, 8 ♂♂, 1 ♀, VII. Cascade Range, Butte Falls, 0.5 km E., (S fork Big Butte Creek), 42.543333, -122.564444, 1 ♂, VII. Cascade Range, Butte Falls, 9.8 km SE, (Willow Creek), 42.543333, -122.564444, 1 ♂, VII. Copper, 16.1 km, (Thompson Creek), 42.026667, -123.145556, 1 ♀, V. Dead Indian Soda Springs, 42.332222, -122.447778, 1 ♂, V. Dead Indian Soda Springs, 4.8 km W, 42.332222, -122.447778, 1 ♀, V, Found under rocks at stream bank. Eagle Point, 42.472778, -122.801667, 2 ♂♂, IX. Hyatt Reservoir, 42.171944, -122.466111, 1 ♀, IV, 1 ♀, IX. McLeod (McLeod State Park), 42.662500, -122.686667, 2 ♀♀, V. Medford, 42.326667, -122.874444, 1 ♂, VI. Prospect (Valley of the Rogue St. Park), 42.751111, -122.487778, 1 ♀, VIII. Tou Velle State Park, Rogue River, 42.436111, -123.170833, 1 ♂, V. Rogue River, 2.4 km - 3.2 km, (Rogue River), 42.436111, -123.170833, 3 ♂♂, 6 ♀♀, IX. Ruch, 16.1 km S, 42.236667, -123.041111, 1 ♀, Nomonth. Star Ranger Station, 42.150833, -123.059722, 1 ♂, III. Jefferson Co.: Madras, 44.633611, -121.128333, 2 ♂♂, III. Josephine Co.: Cave Junction, 42.163056, -123.646944, 1 ♂, V, 2 ♂♂, VI. Siskiyou Mts., Cave Junction, 1.6 km S, 42.163056, -123.646944, 1 ♂, 1 ♀, V. Siskiyou Mts., Cave Junction, 1.6 km S, (E fork Illinois R.), 42.163056, -123.646944, 1 ♀, V. Golden, 42.682500, -123.330278, 2 ♂♂, 2 ♀♀, Nomonth, 2 ♀♀, V. Grants Pass, 42.439167, -123.327222, 1 ♂, 1 ♀, V, on ground. Illinois River, 42.550278, -124.065000, 1 ♂, V. Kerby (Illinois River), 42.194444, -123.650556, 2 ♂♂, 1 ♀, V. Thompson Creek, 16 km NW, 41.864167, -123.307500, 1 ♀, V. Klamath Co.: Warm Springs Indian Reservation, Hot Springs, 42.115278, -121.285000, 1 ♂, 2 ♀♀, Nomonth. Gravel Bar. Keno, 19 km SW, (Klamath River), 42.126667, -121.928889, 1 ♂, 1 ♀, V. Keno, 19.3 km SW, 42.126667, -121.928889, 1 ♂, III, under rock. Keno, 19.3 km SW, (Klamath River), 42.126667, -121.928889, 1 ♀, VIII. Keno, west of, (Klamath River), 42.126667, -121.928889, 1 ♀, IV, under rock. Lane Co.: Eugene, 44.052222, -123.085556, 1 ♀, VIII. Marion Co.: Clear Lake, 45.035556, -123.019722, 1 ♂, Nomonth. Umatilla Co.: Blue Mountain, 1.6 km N, (Dale), 45.868611, -118.401667, 7 ♂♂, 1 ♀, V. Rieth, 9.5 km, (Umatilla River), 45.661111, -118.870278, 1 ♂, 1 ♀, V. Wasco Co.: Warm Springs Indian Reservation, 44.850000, -121.400000, 1 ♂, 1 ♀, V, gravel bar. Warm Springs Indian Reservation (Hot Springs), 44.850000, -121.400000, 2 ♂♂, 1 ♀, V, gravel bar. WASHINGTON: NoCo.: 8 ♂♂, 5 ♀♀, Nomonth. NoCo.: Snugall, 1 ♂, 1 ♀, Nomonth. Asotin Co.: Anatone, 16 km SW, (Hwy. 129 nr Rattlesnake Cr.), 46.135000, -117.131389, 1 ♂, VIII. Asotin, 46.339444, -117.047222, 2 ♂♂, 2 ♀♀, IV, 2 ♂♂, V, 1 ♂, VIII. Clarkston, 46.416389, -117.044167, 2 ♀♀, III, 1 ♀, IV, 2 ♀♀, VIII. Chelan Co.: Wenatchee, 47.423611, -120.309167, 1 ♀, V. Garfield Co.: Colton, 12.9 km SW, (Steptoe Canyon), 46.472924, -117.193253, 1 ♀, II. Colton, 16.1 km SW, 46.472924, -117.193253, 1 ♀, IV. Grant Co.: Grand Coulee (Dry Falls), 47.941667, -119.002222, 1 ♂, 1 ♀, V. King Co.: Carkeek Park, Seattle, 47.606389, -122.330833, 1 ♀, IV. Seattle (Carkeek Park), 47.606389, -122.330833, 1 ♀, IV. Seattle (Laurelhurst), 47.606389, -122.330833, 2 ♀♀, V. Klickitat Co.: Horse Heaven Hills, Bickleton, 1.6 km W. (Pine Creek), 45.998056, -120.299444, 1 ♂, V. Simcoe Mts., Goldendale, 25.1 km E. (Rock Cr.), 45.820833, -120.820556, 1 ♂, V. Skagit Co.: Mount Vernon, 48.421389, -122.332778, 1 ♂, VII. Spokane Co.: Spokane, 47.658889, -117.425000, 1 ♂, V. Stevens Co.: Colville National Forest, Deep Lake, 48.858056, -117.604167, 1 ♂, 2 ♀♀, Nomonth. Whitman Co.: Almota, 46.703056, -117.468333, 1 ♀, Nomonth, 2 ♂♂, III, 1 ♂, 9 ♀♀, IV, 2 ♀♀, V. Almota (near Snake River), 46.703056, -117.468333, 2 ♀♀, III. Almota (Wawawai Canyon), 46.703056, -117.468333, 1 ♂, V. Almota, 1.4 km E. (Wawawai Canyon), 46.703056, -117.468333, 1 ♂, V. Colton, 4.8 km SW, (Steptoe Canyon), 46.568056, -117.127500, 3 ♂♂, 1 ♀, VI, ex pitfall tra, 1 ♂, VII, ex pitfall tra. Pullman, 46.731389, -117.178611, 1 ♂, Nomonth, 1 ♂, IX. Steptoe Canyon: 46.451111, -117.205278, 3 ♀♀, VI, ex pitfall trap, 1 ♂, 1 ♀, VII, ex pitfall trap. Steptoe Canyon, ca 4.8 km SW Colton, 46.451111, -117.205278, 1 ♂, VI, pitfall trap between mile m. Wawawai, 46.636667, -117.378333, 2 ♂♂, Nomonth, 1 ♂, V.

4. *Anisodactylus (A.) hispanus* Puel

SPAIN: Nosubd.: (Embalse del Vellón) 37.600000, -4.500000, 3 ♀♀, IV. (Portillo de Padornelo), 37.600000, -4.500000, 1 ♂, VII. Sierra Nevada Mountains, 37.166667, -3.583333, 1 ♂, 1 ♀, VII. AVILA: 40.583333, -5.000000, 1 ♀, Nomonth. (Valle de Iruelas), 40.583333, -5.000000, 1 ♀, IV. Bohoyo, 40.316667, -5.433333, 1 ♂, Nomonth. La Adrada, 40.300000, -4.633333, 1 ♀, V. Puerto Del Pico, 40.316667, -5.016667, 1 ♀, V. BURGOS: Villaricos, 37.250000, -1.766667, 1 ♂, IV. Cádiz: Miraflores, 36.733333, -6.333329, 2 ♂♂, IX. GRANADA: Guéjar Sierra, 37.166667, -3.433333, 1 ♂, 1 ♀, VI. GUADALAJARA: Cercadillo, 41.166667, -2.783333, 1 ♂, Nomonth. Escalera, 40.766667, -2.016667, 1 ♂, Nomonth. HUESCA (Villanca), 42.166667, -0.166667, 1 ♀, VI. MADRID: (Laguna de Ontigola), 40.416667, -3.716667, 1 ♀, IV. Cercedilla, 40.733333, -4.066667, 2 ♂♂, Nomonth. Coluacuar (Rio Manbauars), 40.500000, -3.666667, 1 ♀, IV. El Escorial, 40.583333,

-4.116667, 1 ♀, Nomonth. Escorial: 40.583333, -4.116667, 1 ♂, Nomonth. Madrid: 40.400000, -3.683333, 3 ♀♀, Nomonth. Robledo de Chavela: 40.500000, -4.233333, 1 ♀, V. ORENSE: 42.166667, -7.500000, 1 ♀, Nomonth. OVIEDO: Puerto de Pajares: 43.000000, -5.766667, 1 ♀, Nomonth. Puerto De Pajares: 43.016667, -5.766667, 1 ♂, Nomonth. Puerto Pajares: 43.000000, -5.766667, 1 ♂, Nomonth. PICACHO: 43.416667, -6.933333, 1 ♂, Nomonth. SEGOVIA: Navas de Rofrio: 40.866667, -4.133333, 1 ♂, 1 ♀, Nomonth. San Ildefonso: 40.900000, -4.000000, 1 ♂, Nomonth.

5. *Anisodactylus (A.) pueli* Schaubberger

NO LOCALITY: 5 ♀♀, Nomonth. **ALBANIA:** Nosubd.: Valora: 40.483333, 19.483333, 1 ♀, V. Vlore: 40.483333, 19.483333, 1 ♂, 3 ♀♀, Nomonth. 1 ♂, V. VLORE: Valona: 40.033333, 19.483333, 1 ♀, Nomonth. Valona: 40.483333, 19.483333, 2 ♂♂, 1 ♀, Nomonth. **CROATIA:** Nosubd.: 45.166667, 15.500000, 1 ♀, Nomonth. **CRES ISLAND:** Mali Losinj: 44.533333, 14.466667, 2 ♂♂, VII. **FRANCE:** CORSICA: Aleria: 42.083333, 9.500000, 1 ♂, Nomonth. **GREECE:** IONIAN ISLANDS: Kefallinia: Avytho-See: 38.216667, 20.483333, 1 ♂, Nomonth. Charakti: 38.166667, 20.683333, 1 ♂, Nomonth. Charakti: 38.216667, 20.483333, 4 ♂♂, 3 ♀♀, Nomonth. Kharaktion: 38.216667, 20.483333, 1 ♂, Nomonth. IPIROS: Psáka: 39.466667, 20.416667, 1 ♀, IV, 1 ♂, VIII. **PELOPONNESUS:** Lapás: 38.100000, 21.416667, 1 ♀, IV. **INDIA:** SIKKIM: 27.750000, 88.500000, 1 ♀, Nomonth. **ITALY:** CASERTA: Piedimonte Matese, 7 km N. (Lago del Matese), 41.366667, 14.366667, 2 ♂♂, 3 ♀♀, V. CUNEO: Canale: 44.800000, 8.000000, 1 ♂, 1 ♀, Nomonth. SICILIA: Messina: Messina: (Quattrocci): 38.216667, 15.550000, 1 ♂, VII. Monti Nebrodi: Mistretta: 37.933333, 14.366667, 2 ♂♂, 2 ♀♀, Nomonth, 2 ♂♂, VI. Mistretta: (Lake Quattrocci), 37.933333, 14.366667, 1 ♂, VII. **TUSCANY:** Fucecchio: (Fucecchio Marsh), 43.733333, 10.800000, 4 ♂♂, 3 ♀♀, III, 1 ♂, VII. Florence: Florence: 43.783333, 11.250000, 1 ♂, 1 ♀, V. **SPAIN:** LEÓN: Foncebadón: 42.483333, -6.350000, 1 ♀, Nomonth. **TURKEY:** Nosubd.: 1 ♂, Nomonth. **USSR:** Nosubd.: (Kzasnodaz), 3 ♂♂, 1 ♀, IV.

6. *Anisodactylus (A.) binotatus* Fabricius

NO LOCALITY: 105 ♂♂, 59 ♀♀, 1 unsex., Nomonth. 3 ♂♂, 1 ♀, II, 1 ♂, 1 ♀, III, 13 ♂♂, 4 ♀♀, IV, 17 ♂♂, 7 ♀♀, V, 8 ♂♂, 5 ♀♀, VI, 2 ♂♂, 2 ♀♀, VII, 3 ♂♂, 4 ♀♀, VIII, 1 ♂, 2 ♀♀, IX, 1 ♀, X, 1 ♂, 2 ♀♀, XI, 1 ♀, Nomonth. 1 ♂, Nomonth. 1 ♀, VI. **ACARNANIA:** 1 ♂, Nomonth. **Altfluss:** 1 ♀, Nomonth. **Bauat:** 1 ♀, Nomonth. **Bergen:** 1 ♂, 1 ♀, Nomonth. 1 ♂, 2 ♀♀, VIII. **Besciden:** 1 ♀, Nomonth. **Borshom:** 1 ♂, Nomonth. **Bozen:** 1 ♀, Nomonth. **Brenna (Besk.):** 1 ♂, VI. **Canale Paganetti:** 1 ♂, Nomonth. **Cercedilla:** 1 ♀, XI. **Cien de Luchon:** 1 ♂, VII. **Cier de Inchon:** 2 ♀♀, VII. **Ciladetra:** 1 ♂, Nomonth. **Corle Ioo:** 1 ♂, III. **Degstgeest, Tuin:** 1 ♂, IX. **Ehizhade:** 1 ♂, VIII. **Frolstien?:** 1 ♂, Nomonth. **Galía:** 1 ♂, Nomonth. **Guhrau:** 1 ♂, Nomonth. **Hörrach:** 1 ♀, VIII. **Jaygetes:** 1 ♂, Nomonth. **Kaukas:** 1 ♂, Nomonth. **Kykduin:** 1 ♂, IV. **Lago Watese:** 6 ♀♀, VI. **LeBuisson:** 1 ♂, Nomonth. **Lenne-waden:** 1 ♂, 1 ♀, Nomonth. **Lug:** 1 ♀, IV, 3 ♂♂, 3 ♀♀, IX. **Meckleub.:** 1 ♂, Nomonth. **Moravia:** 4 ♀♀, Nomonth. **Neisse River:** 1 ♂, Nomonth. **Piuzolo:** 1 ♀, VIII. **Pourrey Isl.:** 1 ♀, Nomonth. **Reetsterzwaag:** 1 ♂, VI. **Rosenauer:** 1 ♂, Nomonth. **Rott:** 2 ♂♂, IV. **Ryswyk:** 3 ♂♂, III, 1 ♀, V. **Salonich:** 1 ♀, Nomonth. **Salringer:** 1 ♀, Nomonth. **Sarenta:** 1 ♀, VI. **Silesia:** 1 ♂, Nomonth. **Silesia:** 1 ♂, Nomonth. **Spanten:** 1 ♂, 1 ♀, Nomonth. **Talyschgeb:** 1 ♀, Nomonth. **Talyschgeb:** 1 ♀, Nomonth. **Troce:** 1 ♂, Nomonth. **Valle de Arám:** 1 ♀, Nomonth. **Vellebij:** 1 ♀, Nomonth. **Wallis:** 1 ♂, Nomonth. 1 ♀, Nomonth. **Parnass:** 1 ♀, Nomonth. **Julds:** 3 ♂♂, 2 ♀♀, Nomonth. **Tayget:** 1 ♂, 1 ♀, Nomonth. O. Fievoland: 1 ♀, IV. **Rudchichka:** 3 ♂♂, 1 ♀, Nomonth. **ALGERIA:** Nosubd.: 36.833333, 3.000000, 4 ♂♂, Nomonth. **ASIA MINOR:** Nosubd.: 1 ♀, Nomonth. 1 ♂, 2 ♀♀, XI. **AUSTRIA:** Nosubd.: 5 ♂♂, 3 ♀♀, Nomonth, 1 ♀, V. **Hallsstatt:** 47.566667, 34.650000, 2 ♂♂, 4 ♀♀, Nomonth. **Perg:** 48.250000, 14.633333, 2 ♀♀, Nomonth. **Thüringen:** 47.216667, 9.783333, 2 ♂♂, Nomonth. **AUSTRIA:** **Hallsstatt:** 47.566667, 34.650000, 2 ♀♀, Nomonth. **Neusiedler See:** 47.833333, 16.750000, 2 ♀♀, Nomonth. 2 ♀♀, IV, 2 ♀♀, VIII. **Salzburg:** **Lofler:** 47.600000, 12.700000, 2 ♀♀, Nomonth. **BURGENLAND:** **Neusiedler:** 47.966667, 16.850000, 2 ♂♂, Nomonth. **KARNTEN:** **Carinthia:** 46.633333, 14.333333, 1 ♂, Nomonth. **Carinthia:** 46.750000, 13.833333, 1 ♀, Nomonth. **Carinthia:** 46.633333, 14.333333, 1 ♂, Nomonth. **Carinthia:** 46.750000, 13.833333, 1 ♀, Nomonth. **NIEDER STERREICH:** **Lunz Am See:** 47.850000, 15.050000, 1 ♂, Nomonth. **Lunz Am See:** 47.866667, 15.033333, 1 ♂, 2 ♀♀, Nomonth. **Lunz Am See:** 47.850000, 15.050000, 1 ♂, Nomonth. **Lunz Am See:** 47.866667, 15.033333, 1 ♂, 2 ♀♀, Nomonth. **NIEDERÖSTERREICH:** **Lunz Am See:** 47.850000, 15.050000, 6 ♂♂, Nomonth. **ÖBERÖSTERREICH:** **Gmunden:** 47.933333, 13.800000, 2 ♂♂, Nomonth. **STEIERMARK:** **Graz:** 47.083333, 15.366667, 2 ♂♂, Nomonth. **TIROL:** 47.283333, 11.416667, 2 ♂♂, Nomonth. **Innsbruck:** 47.266667, 11.400000, 2 ♂♂, VIII. **VORARLBERG:** 47.250000, 9.916667, 2 ♂♂, Nomonth. **Thüringen:** 47.216667, 9.783333, 2 ♂♂, Nomonth. **WIEN:** **Vienna:** 48.200000, 16.366667, 2 ♀♀, Nomonth. **AZERBAIJAN:** Nosubd.: **Lenkoran:** 38.750000, 48.833333, 2 ♂♂, Nomonth. **BELGIUM:** Nosubd.: (Calmphout), 1 ♂, VIII. **Bouillon:** 49.783333, 5.066667, 2 ♂♂, VI. **ANTWERPEN:** **Antwerpen:** 51.216667, 4.416667, 2 ♂♂, 2 ♀♀, Nomonth. **BRABANT:** **Bruxelles:** (Woluwe dist.), 50.833333, 4.350000, 2 ♂♂, Nomonth. **LUXEMBOURG:** **Bouillon:** 49.783333, 5.066667, 4 ♀♀, VI. **WEST FLANDERS:** **Brugge:** 51.216667, 3.233333, 2 ♂♂, III. **BELORUSSIA:** Nosubd.: **Slonim:** 53.083333, 25.350000, 2 ♂♂, Nomonth. **BOSNIA-HERZEGOVINA:** Nosubd.: 1 ♀, Nomonth. **Bjelasnica:** 43.016667, 18.350000, 1 ♀, Nomonth. **Bjelasnica:** 43.166667, 18.350000, 1 ♂, 1 ♀, Nomonth. **Bjelasnica:** 43.016667, 18.350000, 1 ♀, Nomonth. **Bjelasnica:** 43.166667, 18.350000, 1 ♂, 1 ♀, Nomonth. **Prozor:** 43.833333, 17.600000, 2 ♀♀, Nomonth. **Sarajevo:** 43.833333, 18.416667, 2 ♀♀, Nomonth. **Velez-Plannia:** 43.333333, 18.000000, 2 ♀♀, Nomonth. **BULGARIA:** Nosubd.: **Sofiya:** 42.666667, 23.300000, 4 ♂♂, 4 ♀♀, IX. **Trevna:** 42.866667, 25.500000, 2 ♂♂, VI. **CANADA:** **BRITISH COLUMBIA:** 2 ♂♂, VIII. **Abbotsford:** 49.066667, -122.183333, 1 ♂, VI. **Agassiz:** 49.233333, -121.766667, 11 ♂♂, 13 ♀♀, VIII. **Golden Ears Provincial Park, Alouette Lake:** 49.350000, -122.416667, 1 ♀, VI. **Vancouver Island, Bamfield:** 48.833333, -125.133333, 1 ♂, V. **Bowser:** 49.433333, -124.666667, 1 ♂, V, 1 ♀, VI. **Burnaby:** 49.233333, -122.950000, 1 ♂, VIII. **Chilliwack:** (McGillivray Creek Game Reserve), 49.166667, -121.950000, 1 ♂, 1 ♀, VII. **Vancouver Island, Cowichan Bay:** 48.733333, -123.616667, 1 ♂, V. **Crescent:** 49.078431, -122.847230, 2 ♂♂, IV. **Essondale:** 49.233333, -122.800000, 1 ♀, IX. **Gallano Island, north end:** 48.985915, -123.553191, 2 ♂♂, IV. **Hope:** 49.383333, -121.450000, 8 ♂♂, 3 ♀♀, IV, 8 ♂♂, 3 ♀♀, VI. **Hope, 24.5 km W. on Rt. 1,** 49.383333, -121.450000, 3 ♂♂, 5 ♀♀, VIII. **Huntingdon:** 49.000000, -122.266667, 1 ♀, VII. **Ladner:** 49.083333, -123.083333, 1 ♂, VI. **E. Vancouver, Langley:** 49.100000, -122.650000, 1 ♂, IV. **Lulu Island:** 49.150000, -123.100000, 1 ♂, IV, 2 ♀♀, IV, ex peat bot. **Milner:** 49.000000, -122.000000, 3 ♂♂, 1 ♀, V. **Mission City:** 49.133333, -122.300000, 2 ♂♂, 3

♀♀, VI, 1 ♂, VII. Nanaimo, 8 km S., 49.166667, -123.933333, 1 ♀, VI. Oliver, 3.2 to 4.8 km E. (Vaseaux Lake), 49.183333, -119.550000, 1 ♂, V. Vancouver Island, Royal Oak: 48.500000, -123.350000, 2 ♂♂, IV. Sardis: 49.133333, -121.950000, 11 ♂♂, 9 ♀♀, VIII. Smithers: 54.783333, -127.166667, 2 ♂♂, V, 1 ♂, VII. Vancouver Island, Sooke, 8.7 km W, 48.366667, -123.716667, 1 ♀, III. Lulu Island, Steveston: 49.133333, -123.183333, 1 ♀, VI, 2 ♂♂, VII. Vancouver: 49.250000, -123.116667, 1 ♂, 1 ♀, III, 8 ♂♂, 9 ♀♀, IV, 3 ♂♂, 1 ♀, V, 3 ♂♂, VI, 2 ♂♂, 2 ♀♀, VII, 3 ♂♂, 3 ♀♀, VIII, 1 ♂, X. Vancouver: (Lion's Bay), 49.250000, -123.116667, 1 ♂, I. Vancouver: (Lion's Bay Pool), 49.250000, -123.116667, 1 ♂, V. Vancouver: (Point Grey), 49.250000, -123.116667, 1 ♀, IV. Vancouver: (UBC Campus), 49.250000, -123.116667, 28 ♂♂, 21 ♀♀, IV, 8 ♂♂, 3 ♀♀, VI, Victoria 48.433333, -123.366667, 1 ♀, V. Vancouver Island, Victoria: 48.433333, -123.366667, 1 ♀, V, 1 ♂, VIII. Vancouver Island, Wellington: 49.200000, -124.016667, 1 ♂, III, 3 ♀♀, IV, 7 ♂♂, 3 ♀♀, V. West Vancouver: (Lions Bay), 49.333333, -123.183333, 1 ♂, I. Vancouver Island: Cowichan Bay: 48.733333, -123.616667, 1 ♀, IV, 1 ♀, V. Duncan: 48.783333, -123.700000, 1 ♀, VI, Royal Oak: 48.500000, -123.350000, 1 ♀, IV, 1 ♀, VI, 1 ♂, VIII. **CROATIA:** Nosubd.: 45.166667, 15.500000, 4 ♂♂, 2 ♀♀, Nomonth. (Velebit Mountains), 45.166667, 15.500000, 2 ♂♂, 2 ♀♀, Nomonth. (Velebit), 45.166667, 15.500000, 2 ♂♂, Nomonth. Krka: 43.716667, 15.850000, 2 ♂♂, 4 ♀♀, IX. Noghera: 45.216667, 14.533333, 2 ♂♂, Nomonth. Velebit: 45.166667, 15.500000, 1 ♂, Nomonth. Velebit: 46.016667, 19.950000, 1 ♀, Nomonth. Velebit: 45.166667, 15.500000, 1 ♂, Nomonth. Velebit: 46.016667, 19.950000, 1 ♀, Nomonth. Zagreb: 45.800000, 15.966667, 2 ♀♀, VI. **CZECHOSLOVAKIA:** Nosubd.: St. Rovo: 1 ♂, V. **MORAVIA:** 49.400000, 15.566667, 2 ♂♂, 2 ♀♀, Nomonth. Moravia: 50.100000, 14.433333, 8 ♂♂, 2 ♀♀, Nomonth. **EUROPE:** Nosubd.: 4 ♂♂, 4 ♀♀, Nomonth. **FINLAND:** POHJOIS-KARJALA: Liperi: (Liperinsalo), 62.550000, 29.483333, 2 ♂♂, VII. **UUSIMAA:** Esbo: 60.166667, 24.700000, 2 ♂♂, Nomonth. **FRANCE:** Nosubd.: 1 ♂, Nomonth. (La Jemare): 1 ♂, V. La Jemare: 1 ♀, V. **ARDENNES:** Charleville: 49.766667, 4.716667, 6 ♂♂, VII. **AUDE:** Quillan: 42.866667, 2.183333, 2 ♀♀, V. **CALVADOS:** Caen: 49.183333, -0.366667, 2 ♀♀, Nomonth. **CORSICA:** 42.300000, 9.133333, 2 ♀♀, Nomonth. Ajaccio: 41.916667, 8.716667, 10 ♂♂, 6 ♀♀, Nomonth. 2 ♂♂, 2 ♀♀, IV. Aleria: 42.083333, 9.500000, 4 ♂♂, Nomonth. Bocognano: 42.083333, 9.083333, 4 ♂♂, 6 ♀♀, Nomonth. Folelli: 42.433333, 9.500000, 18 ♂♂, 6 ♀♀, Nomonth. EURE: Auvergne: 48.883333, 0.733333, 42 ♂♂, 22 ♀♀, V. **GARD:** Pont Saint Esprit: 44.250000, 4.650000, 2 ♂♂, Nomonth, 4 ♀♀, IV. **GERS:** Bretagne: 43.883333, 0.150000, 2 ♀♀, Nomonth. **GIROUDE:** Arcachon: 44.666667, -1.183333, 2 ♂♂, Nomonth. **HAUTE-MARNE:** St. Ciergues: 44.459000, 4.050000, 2 ♂♂, 6 ♀♀, VIII. **HAUTES-PYRÉNÉES:** Allier: 43.183333, 0.116667, 20 ♂♂, Nomonth. **INDRE-ET-LOIRE:** Amboise: 47.416667, 1.000000, 2 ♂♂, Nomonth. **MEURTHE-ET-MOSELLE:** Nancy: 48.700000, 6.200000, 4 ♂♂, 8 ♀♀, Nomonth. Nièvre: Charenton: 47.266667, 2.983333, 2 ♀♀, Nomonth. Settons: 47.183333, 4.066667, 2 ♂♂, 2 ♀♀, Nomonth. Settons: (Lucassen), 47.183333, 4.066667, 4 ♂♂, Nomonth. **NORD:** Merville: 50.650000, 2.650000, 2 ♀♀, Nomonth. **PYRÉNÉES-ORIENTALES:** Arles sur Tech: 42.450000, 2.616667, 2 ♀♀, V. Maury: 42.816667, 2.566667, 2 ♀♀, Nomonth. Pyrénées Mts., Prats de Mollo la Preste: 42.416667, 2.466667, 2 ♀♀, V. **SEINE-ET-OISE:** Versailles: 48.800000, 2.133333, 2 ♂♂, 4 ♀♀, V. **VAR:** Hyères: 43.116667, 6.133333, 2 ♀♀, Nomonth. **VIENNE:** Poitiers: 46.583333, 0.333333, 2 ♂♂, VI. **VOSGES:** 48.166667, 6.333333, 2 ♀♀, Nomonth. 48.166667, 6.466667, 1 ♂, Nomonth. 48.166667, 6.333333, 2 ♀♀, Nomonth. 48.166667, 6.466667, 1 ♂, Nomonth. 48.166667, 6.333333, 2 ♀♀, VI. **GERMANY:** Nosubd.: 9 ♂♂, 6 ♀♀, Nomonth, 2 ♂♂, 2 ♀♀, 1, 2 ♂♂, IV, 1 ♀, VI. (Prussia), 1 ♂, Nomonth. (Schwarzwald Mountains), 48.000000, 8.250000, 2 ♀♀, VIII. Acker: 50.733333, 7.533333, 4 ♀♀, IV, 10 ♂♂, 2 ♀♀, V, 2 ♂♂, IX, 2 ♀♀, X. Boinsdorf: 1 ♀, V. Brieselang: 52.583333, 13.033333, 2 ♀♀, Nomonth. Buch: 1 ♀, IX. Grünberg: 1 ♂, VII. Heissen: 2 ♀♀, VII. Hessen: 1 ♂, VIII. Holstein: 1 ♂, Nomonth. Karben: 50.216667, 8.866667, 4 ♂♂, V. Minster: 1 ♀, V. Roth: 2 ♂♂, 1 ♀, V. Rott: 47.916667, 10.966667, 2 ♀♀, Nomonth. Speewald: 4 ♂♂, 1 ♀, IX. Ulm: 8 ♂♂, 5 ♀♀, Nomonth. Ulm-Württemberg: 2 ♂♂, 3 ♀♀, Nomonth. Ulm-Württemberg: 1 ♂, Nomonth. Vogland: 50.500000, 12.250000, 4 ♂♂, Nomonth. Wachau: 1 ♂, Nomonth. Weinberg: 1 ♀, V. **BADEN-WÜRTTEMBERG:** 49.416667, 8.700000, 2 ♂♂, IV. Fahrmau: 47.666667, 7.833333, 1 ♂, Nomonth. Schwarzwald Mountains, Fahrmau: 47.666667, 7.616667, 1 ♂, 1 ♀, Nomonth. Fahrmau: 47.666667, 7.833333, 1 ♂, Nomonth. Schwarzwald Mountains, Fahrmau: 47.666667, 7.616667, 1 ♂, 1 ♀, Nomonth. Fahrmau: 47.666667, 7.833333, 6 ♂♂, 4 ♀♀, IV. Fahrmau: 47.666667, 7.616667, 2 ♂♂, V. Schwarzwald Mountains, Fahrmau: 47.666667, 7.833333, 2 ♂♂, 2 ♀♀, VI. Schwarzwald Mountains, Feldberg: 47.850000, 8.033333, 2 ♀♀, Nomonth. Güttingen: 47.766667, 9.000000, 2 ♀♀, Nomonth. Müllheim: 47.800000, 7.616667, 2 ♀♀, VIII. Rheintal: 47.716667, 7.616667, 4 ♂♂, V. Waldshut: 47.616667, 8.233333, 2 ♂♂, IV. **BANDENBERG:** Kirchain: 50.816667, 8.966667, 2 ♂♂, Nomonth, under stone. **BAVARIA:** Riedenburg: 48.950000, 11.700000, 2 ♀♀, VII. **BAYERN:** Bayern: 47.800000, 12.533333, 2 ♀♀, Nomonth. Erlangen: 49.600000, 11.016667, 4 ♂♂, Nomonth. Garching: 48.250000, 11.650000, 6 ♂♂, 4 ♀♀, V. Grafing: 48.033333, 11.966667, 2 ♂♂, VII. Klingenberg: 48.350000, 10.416667, 2 ♂♂, Nomonth. Krain: 49.333333, 12.050000, 2 ♂♂, Nomonth. Marahöh: 49.000000, 11.500000, 2 ♂♂, V. under gammeltt j. Muggendorf: 49.800000, 11.266667, 2 ♂♂, Nomonth. München: (Schleissheim, Birket), 48.150000, 11.583333, 4 ♂♂, IV. Nymphenburg: 48.166667, 11.500000, 2 ♂♂, Nomonth, 2 ♀♀, IX. Rott: 47.916667, 10.966667, 2 ♂♂, Nomonth, 2 ♂♂, IV, 2 ♂♂, V, 2 ♂♂, IX. Sächenheim: 49.600000, 9.966667, 6 ♂♂, Nomonth. Schaffhausen: 48.366667, 20.150000, 2 ♂♂, Nomonth. **BERLIN:** Berlin: 52.516667, 13.400000, 2 ♂♂, 2 ♀♀, Nomonth. Berlin: 52.516667, 13.416667, 2 ♂♂, 1 ♀, Nomonth. Berlin: 52.533333, 13.416667, 2 ♂♂, 3 ♀♀, Nomonth. Berlin: 52.516667, 13.400000, 2 ♂♂, 2 ♀♀, Nomonth. Berlin: 52.516667, 13.416667, 2 ♂♂, 1 ♀, Nomonth. Berlin: 52.533333, 13.416667, 2 ♂♂, 3 ♀♀, Nomonth. **BRANDENBERG:** Herzberg: 51.700000, 13.233333, 2 ♀♀, Nomonth. **BREMEN:** Bremen: 53.083333, 8.800000, 2 ♀♀, V. **COTTBUS:** Saxonia: 52.383333, 14.116667, 2 ♀♀, Nomonth. **DESSAU:** 51.833333, 12.200000, 8 ♀♀, IV. **DRESDEN:** 51.166667, 14.333333, 2 ♀♀, VI. Dresden: 51.050000, 13.750000, 2 ♂♂, 2 ♀♀, Nomonth. Dresden: 51.166667, 14.000000, 2 ♂♂, Nomonth, 4 ♂♂, 4 ♀♀, III. Dresden: 51.050000, 13.750000, 1 ♀, IV. Dresden: 51.166667, 14.000000, 2 ♂♂, 1 ♀, IV. Dresden: 51.050000, 13.750000, 1 ♀, IV. Dresden: 51.166667, 14.000000, 2 ♂♂, 1 ♀, IV. Gersdorf: 51.233333, 14.050000, 4 ♀♀, IV. Gersdorf: 51.116667, 14.850000, 1 ♂, V. Gersdorf: 51.233333, 14.050000, 1 ♀, V, 2 ♂♂, 6 ♀♀, VI, 2 ♀♀, VII. Gersdorf: 51.116667, 14.850000, 2 ♂♂, VIII. Gersdorf: 51.233333, 14.050000, 2 ♀♀, X. Kamenz: 51.266667, 14.100000, 2 ♀♀, VI. Kamenz: (Ostsachsen), 51.266667, 14.100000, 4 ♂♂, 4 ♀♀, IV, 2 ♀♀, V. Klotzsche: 51.116667, 13.783333, 2 ♀♀, Nomonth, 2 ♂♂, V. Lomnitz: 51.183333, 13.900000, 2 ♀♀, Nomonth. Moritzburg: 51.166667, 13.683333, 2 ♂♂, 4 ♀♀, Nomonth, 2 ♂♂, V. Niedera: 51.166667, 13.533333, 2 ♂♂, Nomonth. Pillnitz: 51.016667, 13.883333, 2 ♀♀, VII. Strassgräben: 51.350000, 14.066667, 2 ♀♀, VIII. Collected in a garden. Zeithain: 51.333333, 13.350000, 2 ♀♀, Nomonth. Oberlausitz: 51.166667, 14.333333, 2 ♀♀, V. Baselitz: 51.233333, 13.483333, 2 ♂♂, X. Gutttau: 51.250000, 14.566667, 2 ♂♂, Nomonth. Laske: 51.300000, 14.233333, 2 ♂♂, IV. Picho: 51.100000, 14.366667, 2 ♂♂, V. Wohla: 51.133333, 14.650000, 2 ♂♂, IV. **ERFURT:** Bleicherode: 51.433333, 10.566667, 2 ♂♂, Nomonth. Erfurt: 50.966667, 11.033333, 2 ♂♂, VIII. Gotha: 50.950000, 10.716667, 2 ♀♀, Nomonth. Thuringia: Auleben: 51.433333, 10.933333, 4 ♂♂, V. GERA: 50.933333, 11.583333, 4 ♀♀, V.

4 stst, V. Beekhuizen Velp: 52.000000, 5.983333, 2 stst, Nomonth. Bemelen: 50.833333, 5.750000, 2 stst, V. Bergen Op Zoom: 51.500000, 4.283333, 2 stst, Nomonth. Breda: 51.583333, 4.766667, 2 stst, Nomonth, 2 stst, IV, 2 stst, V. Chaam: 51.500000, 4.866667, 2 stst, VI. Delft: 52.016667, 4.350000, 2 stst, IV. Den Haag: 52.083333, 4.266667, 2 stst, Nomonth. Deventer: 52.250000, 6.166667, 2 stst, IX. Doetinchem G.: 51.966667, 6.283333, 2 stst, Nomonth. Eindhoven: 51.433333, 5.500000, 2 stst, Nomonth. Enschede: 52.216667, 6.916667, 2 stst, X. Gravenhage: 52.083333, 4.300000, 2 stst, IV, 2 stst, V. Gravenhage: 52.033333, 4.300000, 2 stst, VI. Gravenhage: 52.083333, 4.300000, 3 stst, 2 stst, VI. Gravenhage: 52.033333, 4.300000, 2 stst, VI. Gravenhage: 52.083333, 4.300000, 3 stst, 2 stst, VI. Gravenhage: 52.033333, 4.300000, 2 stst, VI. Gravenhage: 52.033333, 4.300000, 2 stst, VI. Gravenhage: 52.033333, 4.300000, 1 st, 1 st, VII. Gravenhage: 52.083333, 4.300000, 1 st, 1 st, VII. Gravenhage: 52.033333, 4.300000, 1 st, 1 st, VIII. Gravenhage: 52.033333, 4.300000, 6 stst, 4 stst, VIII, 2 stst, 6 stst, X. Herkenboch: 51.150000, 6.066667, 2 stst, V. Hilversum: 52.233333, 5.166667, 2 stst, V. Loosduinen: 52.050000, 4.250000, 4 stst, IV. Nisse: 51.450000, 3.866667, 2 stst, Nomonth. Norg: 53.066667, 6.466667, 2 stst, IX. Norg Drente: 53.066667, 6.500000, 12 stst, 2 stst, Nomonth. Oegstgeest: 52.183333, 4.466667, 2 stst, IX. Oostvoorne: 51.916667, 4.100000, 2 stst, VI. Rhoon: 51.866667, 4.416667, 2 stst, V. Roosendaal: 51.533333, 4.466667, 2 stst, IX. Steyl: 51.333333, 6.133333, 2 stst, 2 stst, Nomonth. Texel: 53.083333, 4.833333, 2 stst, Nomonth. Tilburg: 51.550000, 5.116667, 2 stst, VII. Veur: 52.083333, 4.433333, 2 stst, IV. Vollenhove: 52.683333, 5.966667, 2 stst, VII. Voorburg: 52.066667, 4.366667, 4 stst, V, 2 stst, 2 stst, VI, 2 stst, VIII, 2 stst, X. Vorden: 52.116667, 6.300000, 4 stst, VII. Vreeland: 52.216667, 5.033333, 2 stst, VIII. Winterswijk: 51.966667, 6.750000, 2 stst, Nomonth. Woensdrecht: 51.416667, 4.300000, 2 stst, VIII. DRENTHE: Norg: 53.066667, 6.466667, 2 stst, 2 stst, IX. Westerborik: 52.833333, 6.600000, 2 stst, VI. GELDERLAND: Laag-Soeren: 52.066667, 6.100000, 3 stst, 5 stst, Nomonth. Laag-Soeren: 52.083333, 6.083333, 1 st, Nomonth. Laag-Soeren: 52.066667, 6.100000, 3 stst, 5 stst, Nomonth. Laag-Soeren: 52.083333, 6.083333, 1 st, Nomonth, 2 stst, V. Velp: 51.983333, 6.000000, 2 stst, 1, 2 stst, VIII. Vorden: 52.116667, 6.300000, 2 stst, 4 stst, VI. Winterswyk: 51.966667, 6.733333, 2 stst, VIII. GRONINGEN: Ter-Apel: 52.866667, 7.100000, 2 stst, VI. LIMBURG: (Raven's bosch(forest)), 51.250000, 6.000000, 2 stst, IV. Houthem: 50.866667, 5.766667, 2 stst, IV. NORTH BRABANT: Best: 51.516667, 5.400000, 2 stst, VII, 2 stst, VIII, 2 stst, X. SOUTH HOLLAND: Den Haag: 52.083333, 4.266667, 2 stst, 2 stst, IV, 2 stst, V. Gravenhage: 52.083333, 4.300000, 4 stst, 8 stst, Nomonth, 2 stst, II, 2 stst, III, 2 stst, 4 stst, IV. Loosduinen: 52.050000, 4.250000, 2 stst, IV, 2 stst, VI. Oegstgeest: 52.183333, 4.466667, 2 stst, IV. Voorburg: 52.066667, 4.366667, 2 stst, 2 stst, Nomonth, 8 stst, IV, 2 stst, VIII. UTRECHT: Leiden: 52.166667, 4.500000, 2 stst, V. NEW ZEALAND: Nosubd.: 1 st, Nomonth. NORWAY: Nosubd.: 1 st, Nomonth. AUST-AGDER: Landvik: 58.350000, 8.533333, 2 stst, 4 stst, Nomonth. POLAND: Nosubd.: Szczecin: 53.416667, 13.883333, 2 stst, Nomonth. Szczekociny: 50.633333, 19.816667, 4 stst, 4 stst, Nomonth. Tatry mountains: 49.050000, 20.200000, 2 stst, Nomonth. KJELCE: Szczekociny: 50.633333, 19.816667, 2 stst, Nomonth. SKIERNIEWICE: (K. Skierniewice), 51.966667, 20.166667, 2 stst, Nomonth. PORTUGAL: Nosubd.: Porto: 41.150000, -8.616667, 2 stst, Nomonth. AZORES: 38.500000, -28.000000, 6 stst, 6 stst, Nomonth. Graciosa: 39.066667, -28.000000, 4 stst, Nomonth. Ponta Delgada: (San Miguel), 39.350000, 31.150000, 2 stst, Nomonth. São Miguel: 37.783333, -25.500000, 20 stst, 12 stst, III. Terceira: 38.716667, -27.216667, 2 stst, Nomonth. COIMBRA: Coimbra: 40.200000, -8.883333, 2 stst, 2 stst, Nomonth. MADEIRA ISLANDS: 32.633333, -16.883333, 2 stst, Nomonth. (Casa das Queimadas), 32.633333, -16.883333, 18 stst, IV, grassy ground. Arzeiro Mountains: 32.716667, -16.933333, 2 stst, IV. ROMANIA: TIMISOARA: Mehadia: 44.900000, 22.366667, 2 stst, Nomonth. TRANSYLVANIA: 46.316667, 25.000000, 1 st, Nomonth. 46.500000, 25.000000, 1 st, Nomonth. 46.316667, 25.000000, 1 st, Nomonth. 46.500000, 25.000000, 2 stst, 2 stst, Nomonth. Taga: 46.916667, 24.050000, 2 stst, Nomonth. RUSSIA: Nosubd.: 1 st, IV. St. Petersburg: 59.916667, 30.416667, 2 stst, IX. KAZAKH: Sarepta: 49.666667, 72.383333, 2 stst, Nomonth. TANNU TUVA: Tsergiin Gol: 49.750000, 96.600000, 4 stst, Nomonth. SERBIA: Nosubd.: 44.000000, 21.000000, 2 stst, Nomonth. Arandelovac: 44.316667, 20.583333, 2 stst, VII. Barat Novo Selo: 44.983333, 20.816667, 4 stst, Nomonth. Belgrad: 44.833333, 20.500000, 2 stst, Nomonth. Novi Pazar: 43.150000, 20.483333, 2 stst, Nomonth. Palics: 46.116667, 19.766667, 2 stst, VIII. SLOVENIA: Nosubd.: Gottschee: 45.650000, 14.850000, 2 stst, 4 stst, Nomonth. SOUTH KOREA: Nosubd.: 36.000000, 129.000000, 2 stst, V. SPAIN: Nosubd.: 1 st, Nomonth. SPAIN: 37.600000, -4.500000, 2 stst, 2 stst, Nomonth. (Camellos), 37.600000, -4.500000, 2 stst, Nomonth. AVILA: Piedralaves: 40.316667, -4.700000, 2 stst, Nomonth. Villarejo del Valle: 40.283333, -4.983333, 2 stst, Nomonth. CORUÑA: 43.166667, -8.416667, 2 stst, Nomonth. Betanzos: 43.283333, -8.216667, 2 stst, Nomonth. Bolivar: 43.166667, -8.416667, 2 stst, Nomonth. Noya: 42.783333, -8.883333, 2 stst, II. CUENCA: Cañizares: 40.516667, -2.183333, 2 stst, Nomonth. GERONA: Lloret de Mar: 41.700000, 2.850000, 4 stst, IX. Tossa de Mar: 41.716667, 2.933333, 4 stst, VI. GRANADA: Sierra Nevada. Esploradora: 36.950000, -3.050000, 2 stst, Nomonth. Las Alpujarras Mountains, Lonjaron: 36.833333, -3.333333, 2 stst, Nomonth. GUADALAJARA: Arias: (Cañada del Cubillo), 40.750000, -1.950000, 2 stst, VII. GUADALUPE: Lebrancón: 40.783333, -2.033333, 2 stst, VI. HUESCA: Benasque: 42.600000, -0.533333, 2 stst, VIII. LA CORUÑA: Ferrol: 43.483333, -8.233333, 2 stst, XI. LEÓN: Foncebadón: 42.483333, -6.350000, 4 stst, Nomonth. Noceda: 42.716667, -6.400000, 2 stst, VI. Ponferrada: 42.550000, -6.583333, 10 stst, 4 stst, Nomonth. Zuare de Páramo: 42.333333, -5.683333, 6 stst, VI. LUGO: (Bahamonde), 43.000000, -7.500000, 2 stst, Nomonth. Moreda: 37.433333, -3.333333, 2 stst, VI. MADRID: Agustén de Guadalix: (Rio Guadalix), 40.616667, -3.683333, 2 stst, IX. Aranjuez: 40.033333, -3.600000, 4 stst, Nomonth, 2 stst, 2 stst, XI. El Escorial: 40.583333, -4.116667, 2 stst, Nomonth. NAVARRA: Isaba: 42.866667, -0.916667, 2 stst, VI. OVIEDO: Gijón: 43.533333, -5.666667, 2 stst, Nomonth. Llanes: 43.416667, -4.750000, 4 stst, 8 stst, Nomonth. PONTEVEDRA: Vigo: 42.250000, -8.733333, 2 stst, Nomonth. SANTANDER: La Molina: 43.283333, -3.983333, 2 stst, VII. Mazcareras: 43.300000, -4.200000, 4 stst, VII. Puente Viesgo: 43.300000, -3.966667, 2 stst, Nomonth. Puentevescoso: 43.300000, -3.966667, 2 stst, VIII. VIZCAYA: Gallarta: 43.316667, -3.066667, 2 stst, Nomonth. SWEDEN: Nosubd.: Aker: 59.116667, 17.250000, 10 stst, Nomonth. HALLAND: Dagsas-trakten: 2 stst, Nomonth. Lusterp: 1 st, VII. STOCKHOLMS LÄN: Ormo: 59.050000, 18.400000, 4 stst, V. SWITZERLAND: Nosubd.: 46.916667, 7.466667, 2 stst, 6 stst, Nomonth. Ben: 46.916667, 7.466667, 2 stst, Nomonth. BERN: Bantiger: 46.983333, 7.533333, 2 stst, IV. Kandersteg: 46.500000, 7.683333, 2 stst, VIII. GRAUBÜNDEN: Flims: 46.850000, 9.283333, 2 stst, 4 stst, Nomonth. Flims: 46.833333, 9.283333, 2 stst, VII. HELVETIA: Morschach: 46.966667, 8.633333, 2 stst, VI. Piotta: 46.516667, 8.683333, 2 stst, VI. TICINO: Chiasso: (Chiasso), 45.833333, 9.033333, 2 stst, Nomonth. Locarno: 46.166667, 8.800000, 2 stst, V. UR: Andermatt: 46.633333, 8.600000, 2 stst, XI. VALAIS: Valais: 46.583333, 6.500000, 2 stst, 2 stst, Nomonth. VAUD: Lausanne: 46.533333, 6.650000, 2 stst, 2 stst, III. TURKEY: Nosubd.: 1 st, Nomonth. ANATOLIA: 39.000000, 35.000000, 1 st, Nomonth. DIYARBAKIR: Mardin: (Toros Dagları Mountains),

37.316667, 40.716667, 4 ♂♂, 2 ♀♀, Nomonth. **UKRAINE**: Nosubd.: Kalush: 49.033333, 24.333333, 2 ♀♀, Nomonth. **CHARKOIS**: 1 ♂, Nomonth. **UNITED KINGDOM**: Nosubd.: 1 ♂, Nomonth. **SOUTHAMPTON**: Brockenhurst Hants: 50.816667, -1.566667, 2 ♀♀, IV. **SURREY**: Esher: 51.366667, -0.366667, 2 ♂♂, Nomonth. Found by a pond. **UNITED STATES**: **IOWA**: Dickinson Co.: 43.416667, -95.133333, 1 ♂, VII. **NEVADA**: NoCo.: 1 ♀, XI. **OREGON**: Benton Co.: Willamette Park, Corvallis: 44.564722, -123.260833, 1 ♂, 1 ♀, III, Subcortical on fallen logs; near Willamette River, Marion Co.: Gervais: 45.108333, -122.896389, 17 ♂♂, 9 ♀♀, VII. Multnomah Co.: Portland: 45.523611, -122.675000, 1 ♂, V. **WASHINGTON**: Grant Co.: Dry Falls Junction: 47.626389, -119.331111, 1 ♂, V. Grand Coulee: 47.941667, -119.002222, 2 ♀♀, V. Grays Harbor Co.: Pacific Beach: 47.209167, -124.201944, 1 ♂, VIII. Island Co.: Whidbey Island: 48.292778, -122.333333, 1 ♀, V. Bothell: 47.760000, -122.204444, 16 ♂♂, 14 ♀♀, IV, 3 ♂♂, V, 6 ♂♂, 1 ♀, VIII. Camation: 47.648056, -121.912778, 1 ♂, IV, 2 ♂♂, 2 ♀♀, V. Kent: 47.381111, -122.233611, 1 ♂, III. North Park: 47.706667, -122.348611, 1 ♀, V. Redmond: 47.674167, -122.120278, 1 ♀, V, 6 ♂♂, 1 ♀, VIII. Renton: 47.483056, -122.215833, 3 ♂♂, 1 ♀, V. Seattle: 47.606389, -122.330833, 1 ♂, IV, 2 ♂♂, 8 ♀♀, IV, in flight; 19 ♂♂, 15 ♀♀, IV, near greenhouses; 12 ♂♂, 12 ♀♀, V, on dump. Seattle: (Carkeek Park), 47.606389, -122.330833, 1 ♀, IV, 6 ♂♂, 3 ♀♀, V. Seattle: (Harbor Island), 47.606389, -122.330833, 1 ♀, IV. Seattle: (Hawthorne Hill), 47.606389, -122.330833, 1 ♂, 1 ♀, Nomonth; 1 ♂, 2 ♀♀, VII, vacant lot. Seattle: (Josieville), 47.606389, -122.330833, 1 ♀, IV. Seattle: (Laurelhurst), 47.606389, -122.330833, 70 ♂♂, 48 ♀♀, IV, 88 ♂♂, 45 ♀♀, V, 17 ♂♂, 23 ♀♀, VI, 11 ♂♂, 7 ♀♀, VII, 7 ♂♂, 6 ♀♀, VIII. Seattle: (NE Seattle), 47.606389, -122.330833, 1 ♂, IV. Seattle: (Pinehurst), 47.606389, -122.330833, 2 ♂♂, VI. Seattle: (Saxe Greenhouse), 47.606389, -122.330833, 4 ♂♂, 1 ♀, IV, 4 ♂♂, 2 ♀♀, V. Seattle: (U.W. Campus), 47.606389, -122.330833, 39 ♂♂, 47 ♀♀, IV, 7 ♂♂, 4 ♀♀, V. Kitsap Co.: Bremerton: 47.567500, -122.631389, 2 ♂♂, IX. Illahee: 47.613056, -122.595556, 2 ♂♂, 1 ♀, Nomonth, 1 ♂, VI, 3 ♂♂, VII, 1 ♂, 3 ♀♀, IX, 1 ♂, 3 ♀♀, X, 1 ♀, XI. Kitsap Lake: 47.583056, -122.707222, 1 ♂, IX. Lemolo: 47.711944, -122.621111, 1 ♂, V. Winslow: 47.624722, -122.520000, 1 ♂, IV, 7 ♂♂, 1 ♀, V. Lewis Co.: Bremer: 46.578611, -122.413889, 1 ♂, 1 ♀, IV. Mason Co.: 47.233333, -123.083333, 1 ♀, V. Camp Spillman: 47.477500, -122.925556, 1 ♂, Nomonth, 1 ♂, 1 ♀, V. Stimson: 47.090556, -123.230556, 1 ♂, 1 ♀, IV. Pacific Co.: Bruceport: 46.679444, -123.898889, 1 ♀, V. Nahcotta: 46.498611, -124.032222, 1 ♂, VII. Nemah, 3.2 km N, 46.512222, -123.884722, 2 ♀♀, V, along sandy, rocky and marshy seashore. Ocean Park: 46.491667, -124.048889, 1 ♂, VIII. Seaview: 46.334722, -124.053333, 10 ♂♂, 1 ♀, V, sand dunes. Pierce Co.: Mount Rainier National Park, Paradise: 46.786389, -121.734167, 1 ♂, VII. Parkland: 47.155556, -122.432778, 1 ♂, IV. Tacoma: (Fort Lewis), 47.253056, -122.443056, 1 ♂, IV. San Juan Co.: San Juan Island, American Campsite: 48.463889, -123.018889, 1 ♂, V. San Juan Island, Friday Harbor: 48.534444, -123.015833, 1 ♂, V. Orcas: 48.598056, -122.943333, 1 ♂, V. Skagit Co.: Conway: 48.340556, -122.341667, 1 ♂, V. Conway: (Pietsweet Berry Farm), 48.340556, -122.341667, 1 ♀, IV. Mount Vernon: 48.421389, -122.332778, 1 ♂, IV, 2 ♂♂, V, 2 ♂♂, VII, 1 ♀, VIII. Snohomish Co.: Alderwood Manor: 47.822222, -122.280833, 1 ♂, 1 ♀, VII. Chase Lake: 47.797778, -122.346111, 6 ♂♂, 3 ♀♀, V. Snohomish: 47.913056, -122.096944, 4 ♂♂, 2 ♀♀, IV. Thurston Co.: Millersylvania State Park: 46.912778, -122.909722, 1 ♂, V. Olympia: 47.038056, -122.899444, 2 ♂♂, 2 ♀♀, V, 38 ♂♂, 24 ♀♀, VIII. Tenino: 46.856944, -122.851667, 1 ♀, IV. Whatcom Co.: Custer: 48.917500, -122.636667, 1 ♀, IX. Wisner Lake: 48.903889, -122.480000, 1 ♀, IX, collected in lawn. Whitman Co.: Pullman: 46.731389, -117.178611, 1 ♂, Nomonth. **UZBEKISTAN**: Nosubd.: Samarkand: 39.666667, 66.950000, 4 ♂♂, 4 ♀♀, Nomonth. **YUGOSLAVIA**: Nosubd.: 1 ♂, Nomonth. Osijek: 1 ♀, IV.

7. *Anisodactylus (A.) antoinei* Puel

ALGERIA: KABYLIE: Forêt d' Akfadou: 36.666667, 4.583333, 1 ♂, IV. **MOROCCO**: Nosubd.: 34.000000, -6.000000, 1 ♂, 3 ♀♀, Nomonth. **TAZA**: Bab Bou Idir: 34.066667, -4.116667, 1 ♀, Nomonth.

8. *Anisodactylus (A.) karennius* Bates

Nosubd.: Khasis: 3 ♀♀, Nomonth. **BURMA**: Nosubd.: Kambaiti: 25.416667, 98.100000, 1 ♀, IV. **KACHIN STATE**: Kambaiti: 25.416667, 98.100000, 1 ♂, Nomonth, 3 ♂♂, 2 ♀♀, IV, 1 ♂, V, 1 ♂, VIII. **TENASSERIM DIVISION**: Ruby Island: 11.366667, 98.466667, 1 ♂, Nomonth. **CHINA**: YUNNAN: 25.000000, 102.000000, 2 ♂♂, Nomonth. **INDIA**: SIKKIM: 27.750000, 88.500000, 1 ♂, 1 ♀, Nomonth. Gopaldhara: 27.500000, 88.500000, 1 ♂, 1 ♀, Nomonth. **THAILAND**: MON ANGETT: Chiang Mai: 18.800000, 98.983333, 1 ♂, 1 ♀, IV.

9. *Anisodactylus (A.) tricuspoidatus* Morawitz

NO LOCALITY: 1 ♀, Nomonth, 1 ♂, V. Hako dadi?: 1 ♂, Nomonth. **CHINA**: Nosubd.: Pingshiang: 35.110000, 119.050000, 1 ♂, Nomonth. **CHEKIANG**: 29.000000, 120.000000, 4 ♂♂, IV. Tien Mu Shan: 30.333333, 119.616667, 1 ♂, 1 ♀, VI. Tien Mu Shan: 30.350000, 119.483333, 1 ♂, VI. Tien Mu Shan: 30.383333, 119.616667, 1 ♂, VI. Tien Mu Shan: 30.333333, 119.616667, 1 ♀, VII. Tien Mu Shan: 30.350000, 119.483333, 1 ♀, VII. **JIANGXI**: Kuling: 29.550000, 115.966667, 1 ♀, VII. **KANSU**: Hweisin: 38.000000, 102.000000, 1 ♀, Nomonth. **KIANGSU**: Chinkiang: 32.200000, 119.500000, 9 ♂♂, 2 ♀♀, V. Lungtan: 32.116667, 119.000000, 1 ♂, 1 ♀, V. Soochow: 31.350000, 120.666667, 1 ♀, IV. **SHANGHAI MUNICIPALITY**: Shanghai: 31.216667, 121.416667, 4 ♂♂, 1 ♀, V, 3 ♀♀, VI, 1 ♀, VII. **TIANJIN**: Tianjin: 39.133333, 117.200000, 1 ♀, Nomonth. **JAPAN**: Nosubd.: 3 ♂♂, 5 ♀♀, Nomonth. Rikuchiu: 1 ♀, VII. Sueki: 1 ♀, VI. **HOKKAIDO**: Jozankei: 42.966667, 141.133333, 2 ♀♀, VII. Onuma: 41.966667, 140.683333, 5 ♂♂, 3 ♀♀, VII. Sapporo: 43.083333, 141.350000, 1 ♂, Nomonth. Shikotsu-ko Lake: 42.776389, 141.424722, 2 ♂♂, VIII. **HONSHU**: (Oirase River), 40.583333, 141.333333, 1 ♀, VI. Hanadate: 38.100000, 139.483333, 1 ♀, Nomonth. Kobe: 34.683333, 135.166660, 1 ♀, V. Kobe: 34.683333, 135.166667, 1 ♀, VII. Mount Kasuga: 34.616667, 132.050000, 1 ♀, V. Nagata: 37.916667, 139.050000, 1 ♀, IX. Nikko: 36.750000, 139.616667, 1 ♂, V. Onuma: 41.966667, 140.683333, 1 ♂, VII. Shoji: 35.533333, 138.616667, 1 ♂, VIII. Yamanashi: Maruno Mountain: 34.900000, 139.016667, 1 ♀, VI, 1 ♀, VII. **KYOTO**: Kyoto: 35.033333, 135.750000, 1 ♂, Nomonth. **KYUSHU**: Beppu: 33.300000,

131.500000, 1 ♀, IX. Hondo: 32.450000, 130.200000, 1 ♀, Nomonth. Oita: 33.250000, 131.600000, 1 ♂, X. Unzen: 32.766667, 130.266667, 4 ♀♀, VII, 1 ♂, VIII. SHIKOKU: Saeki: 32.950000, 131.900000, 1 ♂, VI. TAIWAN: Nosubd.: (Musha), 25.083333, 121.533333, 1 ♂, VII. (Tungpu), 25.083333, 121.533333, 2 ♀♀, VI.

10. *Anisodactylus (A.) agricola* Say

NO LOCALITY: NO COUNTRY: Nosubd.: 11 ♂♂, 2 ♀♀, Nomonth. **CANADA:** ONTARIO: Ridgeway: 42.883333, -79.050000, 1 ♀, Nomonth. Essex: Wheatley: 42.100000, -82.450000, 1 ♂, Nomonth. QUEBEC: Montréal: 45.500000, -73.600000, 1 ♂, X. **NORTH AMERICA:** Nosubd.: 1 ♀, Nomonth. **UNITED STATES:** No state: NoCo.: 1 ♂, 1 ♀, Nomonth. Nosubd.: NoCo.: Hogsback: 1 ♂, V. **ALABAMA:** Bibb Co.: 32.933333, -87.133333, 1 ♀, III. **CONNECTICUT:** Litchfield Co.: Cornwall: 41.843611, -73.329722, 2 ♂♂, II. New Haven Co.: South Meriden: 41.516111, -72.834167, 1 ♂, IX. **DELAWARE:** New Castle Co.: Wilmington: 39.745833, -75.546944, 1 ♂, Nomonth. **DISTRICT OF COLUMBIA:** NoCo.: 2 ♂♂, Nomonth. NoCo.: Washington: 38.895000, -77.036667, 3 ♂♂, 6 ♀♀, Nomonth, 1 ♂, 1 ♀, IV, 1 ♀, VII. NoCo.: Washington, 16 km NW, (Turkey Run picnic area, Potomac R): 38.895000, -77.036667, 1 ♂, 2 ♀♀, VIII. **ILLINOIS:** NoCo.: 6 ♂♂, 5 ♀♀, Nomonth, 4 ♀♀, III, 1 ♀, V, 2 ♀♀, VIII. Champaign Co.: Urbana: 40.110556, -88.207222, 1 ♂, III. Cook Co.: Chicago: 41.850000, -87.650000, 1 ♂, 2 ♀♀, Nomonth, 1 ♂, 1 ♀, V, 1 ♂, X. Chicago: (Glenview), 41.850000, -87.650000, 1 ♂, 1 ♀, IX. Cicero: 41.845556, -87.753889, 3 ♂♂, IV. Lyons: 41.813333, -87.818056, 4 ♂♂, 2 ♀♀, IV. Riverside: 41.835000, -87.822778, 1 ♂, 2 ♀♀, IV. Pratt Co.: White Heath: 40.086111, -88.512778, 1 ♀, V. **INDIANA:** NoCo.: 1 ♂, Nomonth. NoCo.: (Stein College), 1 ♀, Nomonth. Knox Co.: 38.666667, -87.500000, 1 ♂, X. Kosciusko Co.: 41.250000, -85.833333, 1 ♀, VIII. Lagrange Co.: 41.666667, -85.416667, 1 ♂, X. Marion Co.: 39.766667, -86.150000, 1 ♂, V, 2 ♂♂, 1 ♀, VI, 1 ♂, XI. Indianapolis: 39.768333, -86.158056, 1 ♂, Nomonth, 1 ♀, IV, 1 ♀, VII, 1 ♂, VIII, 2 ♂♂, IX. Vigo Co.: 39.416667, -87.416667, 1 ♀, IV, IOWA: Des Moines Co.: Burlington: 40.807500, -91.112778, 1 ♀, Nomonth. Johnson Co.: Iowa City: 41.661111, -91.530000, 1 ♀, IV. Story Co.: Ames: 42.034722, -93.619722, 1 ♀, Nomonth, 4 ♂♂, 2 ♀♀, IV, 1 ♀, V. Woodbury Co.: Sioux City: 42.500000, -96.400000, 1 ♀, IV. **KANSAS:** NoCo.: 3 ♂♂, 3 ♀♀, Nomonth. Riley Co.: 39.183333, -96.566667, 1 ♀, V. Wyandotte Co.: Argentine: 39.075000, -94.672222, 1 ♂, V. **KENTUCKY:** NoCo.: 1 ♂, Nomonth. **MAINE:** Franklin Co.: Weld: 44.698611, -70.421944, 1 ♂, VII. **MARYLAND:** NoCo.: 5 ♂♂, 2 ♀♀, Nomonth. Montgomery Co.: Cabin John, 2 km West (Potomac River), 38.975278, -77.158333, 1 ♂, VI. Plummers Island: 38.969444, -77.176667, 1 ♂, III. In drift. **MASSACHUSETTS:** Middlesex Co.: Ashland: 42.261111, -71.463889, 1 ♀, VI. **MICHIGAN:** Genesee Co.: 43.000000, -83.750000, 1 ♂, VI. Ingham Co.: Lansing: 42.732500, -84.555556, 1 ♀, Nomonth. Kalamazoo Co.: Gull Lake (Gull Lake Biology Station), 42.370833, -85.386667, 1 ♂, IV. Mackinac Co.: Brevort: 46.018889, -85.041667, 1 ♀, Nomonth. Wayne Co.: Detroit: 42.331389, -83.045833, 1 ♀, IV. **MINNESOTA:** Wabasha Co.: Wabasha, 11.3 km SW, 44.383889, -92.032778, 1 ♂, V. **NEBRASKA:** Douglas Co.: Omaha: 41.258611, -95.937500, 1 ♀, VI. Omaha (Child's Point), 41.258611, -95.937500, 1 ♀, VIII. **NEW HAMPSHIRE:** Strafford Co.: Milton: 43.409722, -70.988889, 1 ♂, VI. **NEW JERSEY:** NoCo.: 1 ♀, Nomonth. Bergen Co.: Emerson: 40.976111, -74.026667, 1 ♂, IV. **NEW YORK:** NoCo.: 1 ♂, Nomonth. Kings Co.: Brooklyn Heights: 40.695278, -73.994167, 1 ♀, Nomonth. Orange Co.: West Point: 41.391389, -73.956389, 1 ♀, V. Tompkins Co.: Ithaca: 42.440556, -76.496944, 1 ♂, V. **OHIO:** Adams Co.: 38.783333, -83.550000, 1 ♀, IV. Clinton Co.: 39.333333, -83.833333, 1 ♀, IV. Franklin Co.: Columbus: 39.961111, -82.998889, 3 ♂♂, Nomonth, 1 ♂, IV. Greene Co.: 39.666667, -83.916667, 1 ♂, V. Licking Co.: 40.083333, -82.416667, 1 ♂, V. Montgomery Co.: Vandalia: 39.890556, -84.198889, 1 ♂, IV. **PENNSYLVANIA:** NoCo.: 3 ♂♂, 4 ♀♀, Nomonth. Allegheny Co.: 40.433333, -80.016667, 12 ♂♂, 6 ♀♀, Nomonth, 1 ♂, 1 ♀, IV, 2 ♂♂, 3 ♀♀, V (Ehrmann), 40.433333, -80.016667, 1 ♀, Nomonth. Allegheny Acres: 40.615278, -79.870278, 3 ♂♂, 6 ♀♀, Nomonth, 1 ♀, V. Elizabeth: 40.269167, -79.890000, 1 ♂, V. Pittsburgh: 40.440556, -79.996111, 6 ♂♂, 5 ♀♀, Nomonth, 1 ♂, 4 ♀♀, IV, 1 ♂, VI, 5 ♂♂, 4 ♀♀, VII, 1 ♂, 2 ♀♀, VIII. Pittsburgh (Allegheny River), 40.440556, -79.996111, 1 ♂, 1 ♀, Nomonth. Berks Co.: Alleghenyville: 40.234167, -75.988889, 2 ♂♂, 1 ♀, Nomonth. Cumberland Co.: Camp Hill: 40.239722, -76.920278, 2 ♂♂, 2 ♀♀, IV. Westmoreland Co.: Jeannette: 40.328056, -79.615556, 2 ♂♂, 1 ♀, IV, 1 ♂, V, 1 ♂, VI, 2 ♂♂, 3 ♀♀, VIII, 2 ♂♂, 1 ♀, IX, 1 ♀, X. **RHODE ISLAND:** Washington Co.: Watch Hill: 41.314167, -71.846667, 2 ♀♀, VI. **SOUTH CAROLINA:** Preckens Co.: Rocky Bottom, 3.2 km SW (Eastatoe River), 35.045833, -82.802500, 1 ♂, Nomonth. **TENNESSEE:** NoCo.: 1 ♂, Nomonth. **VIRGINIA:** NoCo.: 1 ♂, IX. Arlington Co.: Rosslyn: 38.896667, -77.072778, 3 ♀♀, III. Fairfax Co.: 38.850000, -77.333333, 1 ♂, 2 ♀♀, IX. (Plymmer's Island), 38.850000, -77.333333, 2 ♀♀, V, 1 ♀, IX. Prince William Co.: Potomac River, Cherry Hill (Potomac River, Washington D.C.), 38.569722, -77.267222, 3 ♂♂, 6 ♀♀, IV. **WEST VIRGINIA:** Kanawha Co.: Kanawha State Forest: 38.253333, -81.623056, 1 ♂, IV. **WISCONSIN:** Green Co.: Albany, 2.8 km SW on 59, 0.4 km W on Oliver Road, (Abraham's Woods, T3NR9E, Sec 31, SW1/4), 42.707778, -89.436944, 1 ♀, VII. Milwaukee Co.: Milwaukee: 43.038889, -87.906389, 1 ♂, VII. Racine Co.: Burlington: 42.678056, -88.276111, 1 ♂, Nomonth, treading marsh.

11. *Anisodactylus (A.) pseudagricola* new species

Specimens are listed in the species description.

12. *Anisodactylus (A.) melanopus* Haldeman

NO LOCALITY: 3 ♂♂, 2 ♀♀, Nomonth, 1 ♂, IV, 1 ♀, V. **CANADA:** ONTARIO: Bois Blanc Island: 42.100000, -83.116667, 1 ♂, VIII. Point Pelee (Lake Erie), 41.950000, -82.533333, 1 ♂, VI. Toronto: 43.666667, -79.383333, 1 ♂, 3 ♀♀, V. Welland: 42.983333, -79.250000, 1 ♂, VI. Kent: Kent: 42.528000, -82.130434, 1 ♂, V. **UNITED STATES:** No state: NoCo.: 2 ♂♂, Nomonth. **CONNECTICUT:** Fairfield Co.: New Canaan: 41.146667, -73.495278, 1 ♂, IV, 2 ♂♂, 3 ♀♀, IX. Hartford Co.: East Hartford: 41.782222, -72.612500, 1 ♂, IV. Litchfield Co.: Cornwall: 41.843611, -73.329722, 2 ♂♂, 2 ♀♀, IV. Kent: 41.724722, -73.477500, 1 ♂, 1 ♀, Nomonth. Middlesex Co.: Haddam: 41.477222, -72.512500, 1 ♂, IV. Middletown: 41.562222, -72.651111, 1 ♀, V. New Haven Co.: Bethany: 41.421667, -72.997500, 1 ♀, X. New Haven: 41.308056, -72.928611, 1 ♂, VI. Under stone, moist soil. South Meriden: 41.516111, -72.834167, 1 ♂, IV, 1 ♂, V. New London Co.: Groton, 4.8 km N, 41.350000, -72.078889,

1 ♂, 2 ♀♀, IX, berlese litter around pond. Tolland Co.: Chaffeeville: 41.794722, -72.208889, 1 ♀, IV, Mansfield City: 41.765833, -72.234167, 2 ♂♂, V, 2 ♂♂, 1 ♀, X. Stafford: 41.980488, -72.287096, 1 ♂, IV, 3 ♂♂, V. Storrs: 41.808333, -72.250000, 1 ♀, Nomonth, 1 ♂, 1 ♀, III, 1 ♂, 3 ♀♀, IV, 5 ♂♂, 1 ♀, V, 1 ♀, VIII, 1 ♂, X. DISTRICT OF COLUMBIA: NoCo.: Washington: 38.895000, -77.036667, 1 ♂, Nomonth, 1 ♂, III, 1 ♀, VI, 1 ♂, IX, 1 ♂, XI. NoCo.: Washington: (Receiving Reservoir), 38.895000, -77.036667, 1 ♀, IV. ILLINOIS: Mc Henry Co.: McHenry: 42.344722, -88.273889, 1 ♂, Nomonth. Putnam Co.: 41.250000, -89.350000, 1 ♀, VII. Will Co.: Braidwood: 41.265000, -88.212222, 1 ♂, 1 ♀, V, Braidwood, 0.5 km E, 1.3 km S. (Hwy 113, jet. Park Road), 41.265000, -88.212222, 1 ♀, V, under boards and other debris in sandy, dry area, no vegetation. INDIANA: Knox Co.: 38.666667, -87.500000, 1 ♀, IX. Marion Co.: McHenry: 39.766667, -86.150000, 1 ♂, Nomonth. Indianapolis: 39.768333, -86.158056, 1 ♀, V. Monroe Co.: Morgan-Monroe Forest, Hindustan: 39.308056, -86.483333, 1 ♂, X. Warren Co.: 40.283333, -87.283333, 1 ♂, V. MARYLAND: NoCo.: 1 ♂, 2 ♀♀, Nomonth. Anne Arundel Co.: Odenton: 39.083889, -76.700556, 1 ♂, 1 ♀, VI. Baltimore City Co.: Baltimore: 39.290278, -76.612500, 4 ♂♂, 1 ♀, V, 1 ♂, 1 ♀, VI. Calvert Co.: Chesapeake Beach: 38.686111, -76.535000, 1 ♂, 1 ♀, V, treading marsh. Kenwood Beach: (Chesapeake Bay), 38.497778, -76.503611, 1 ♀, VIII. Montgomery Co.: Cabin John: (Cabin John Bdge.), 38.975278, -77.158333, 1 ♂, XI. Fairland: 39.076111, -76.958056, 2 ♀♀, IV. Prince Georges Co.: Branchville: 38.998889, -76.924444, 1 ♂, Nomonth. MASSACHUSETTS: NoCo.: 1 ♂, Nomonth. Bristol Co.: Somerset: 41.769444, -71.129167, 1 ♂, X. Hampden Co.: Springfield: 42.101389, -72.590278, 1 ♂, Nomonth. MICHIGAN: NoCo.: 1 ♂, Nomonth. Barry Co.: 42.666667, -85.333333, 1 ♀, IV. Berrien Co.: Saint Joseph, 8 km SW, (Grand Mere Dunes), 42.109722, -86.480000, 1 ♀, V. Washtenaw Co.: Ann Arbor: 42.283333, -83.745833, 1 ♂, 1 ♀, IV. Wayne Co.: Detroit: 42.331389, -83.045833, 1 ♀, Nomonth. MINNESOTA: NoCo.: 1 ♂, XII. Wabasha Co.: Lake City: 44.449444, -92.266667, 1 ♀, V. MISSOURI: Dent Co.: Montauk State Park, Montauk: 37.447778, -91.695556, 1 ♀, IV. St. Louis City Co.: Saint Louis: 38.627222, -90.197778, 1 ♂, Nomonth. NEBRASKA: Kimball Co.: Lodgepole Wayside Area: 41.229722, -103.823889, 1 ♂, VIII, on sandy and rocky pond margin. NEW JERSEY: NoCo.: 15 ♂♂, 11 ♀♀, Nomonth. Atlantic Co.: 39.450000, -74.733333, 1 ♂, VII. Atlantic City: 39.364167, -74.423333, 1 ♂, VII. Bergen Co.: Alpine: 40.955833, -73.931667, 1 ♂, V. Emerson: 40.976111, -74.026667, 1 ♂, IV. Fort Lee: 40.850833, -73.970556, 1 ♂, Nomonth. Hasbrouck Heights: 40.858056, -74.081111, 4 ♂♂, VI. Montvale: 41.046667, -74.023333, 1 ♀, V. Palisades Park: 40.848056, -73.998056, 1 ♂, 1 ♀, Nomonth. Rivervale: 41.009444, -74.011667, 1 ♂, 1 ♀, V. Burlington Co.: Bridgeboro: 40.021944, -74.932778, 1 ♂, 1 ♀, XII. Burlington: 40.071111, -74.865278, 1 ♂, Nomonth. Medford: 39.900833, -74.823889, 1 ♀, IV. Red Lion: 39.889444, -74.745000, 1 ♀, V. Camden Co.: Clementon: 39.811389, -74.983333, 1 ♂, VIII. Cape May Co.: Anglesea: 39.018611, -74.795278, 1 ♂, Nomonth, 1 ♂, IV. Ocean City: 39.277500, -74.575000, 1 ♂, V. Sea Isle City: 39.153333, -74.693333, 2 ♂♂, VI. Wildwood: 38.991667, -74.815278, 1 ♂, VI. Essex Co.: Caldwell: 40.839722, -74.276944, 1 ♂, V. Upper Montclair: 40.846111, -74.201667, 1 ♀, VI. Westville: 40.844444, -74.300000, 1 ♂, V. Gloucester Co.: Malaga: 39.569722, -75.048056, 1 ♀, V. Swedesboro: 39.747500, -75.310833, 3 ♀♀, VIII. Westville: 39.867778, -75.131944, 1 ♂, V. Hudson Co.: Arlington: 40.777500, -74.138611, 6 ♀♀, Nomonth, 2 ♂♂, 1 ♀, III, 2 ♂♂, XI. Hoboken: 40.743889, -74.032778, 1 ♀, IV. Secaucus: 40.789444, -74.056944, 2 ♂♂, 1 ♀, III. Mercer Co.: Somerset: 40.276111, -74.849444, 1 ♂, 1 ♀, IV. Trenton: 40.216944, -74.743333, 2 ♂♂, 3 unsex., III. Middlesex Co.: Jamesburg: 40.352500, -74.440556, 1 ♂, X. Morgan: 40.466667, -74.268611, 1 ♂, 5 unsex., IV. Morris Co.: Boonton: 40.902500, -74.407500, 2 ♂♂, IV. Budd Lake: 40.871111, -74.734444, 1 ♂, 1 ♀, VIII, 1 ♂, IX. Chester: 40.784167, -74.697222, 1 ♂, IV. Morris Plains: 40.821667, -74.481389, 1 ♂, V, 1 ♀, V, sand pit pond detritus. Snake Hill: 40.890833, -74.505000, 5 ♂♂, 1 ♀, Nomonth. Ocean Co.: Lakehurst: 40.014444, -74.311667, 1 ♂, IV. Manchester: 39.950000, -74.433333, 1 ♂, IV. Passaic Co.: Browns: (Greenwood Lake), 41.156667, -74.348611, 1 ♂, IV. Little Falls: 40.868889, -74.208611, 2 ♀♀, IV. Somerset Co.: (Natchung Mts.), 40.566667, -74.616667, 1 ♂, VI. NEW YORK: NoCo.: 10 ♂♂, 16 ♀♀, Nomonth. NoCo.: Long Island, 1 ♂, 1 ♀, Nomonth. Chautauqua Co.: Forest Park: 42.333889, -79.605000, 1 ♀, IV. Van Cortlandt Park: 40.897778, -73.883889, 1 ♂, 1 ♀, Nomonth. Chautauqua Co.: Forest Park: 42.333889, -79.605000, 1 ♂, Nomonth. Kings Co.: Bergen Beach: 40.620278, -73.907222, 1 ♀, V. Brooklyn Heights: 40.695278, -73.994167, 2 ♂♂, 2 ♀♀, Nomonth, 3 ♂♂, 2 ♀♀, IV, 2 ♂♂, V, 1 ♀, VI. Nassau Co.: Hewlett: 40.643056, -73.696111, 2 ♀♀, VI. New York: New York: 40.714167, -74.006389, 1 ♂, III. New York: (Cypress Hills), 40.714167, -74.006389, 1 ♂, V, 1 ♂, VI, 2 ♂♂, 1 ♀, VII. Orange Co.: Greenwood Lake: 41.222500, -74.294722, 1 ♂, Nomonth. West Point: 41.391389, -73.956389, 2 ♂♂, 1 ♀, IV, 3 ♂♂, 2 ♀♀, V, 1 ♂, 1 ♀, IX. Queens Co.: Douglaston: 40.768611, -73.747500, 2 ♂♂, 1 ♀, Nomonth. Flushing: 40.765278, -73.817778, 1 ♀, IV. Long Island, Flushing: 40.765278, -73.817778, 1 ♂, VII. Flushing: (Long Island), 40.765278, -73.817778, 1 ♀, Nomonth. Jamaica: 40.691389, -73.806111, 4 ♂♂, 1 ♀, V. Kew Gardens: 40.714167, -73.831389, 1 ♀, VIII. Long Island City: 40.744722, -73.949167, 1 ♀, Nomonth. Long Island, Rockaway Beach: 40.571389, -73.851944, 1 ♀, V. Long Island, Rockaway Point: 40.560556, -73.915556, 1 ♂, V. Rosedale: (Long Island), 40.661944, -73.735833, 1 ♀, V. Richmond Co.: Staten Island, Eltingville: 40.570248, -74.141304, 1 ♀, IV. Graniteville: (Staten Island), 40.624722, -74.148889, 1 ♀, IV. Rockland Co.: Jones Point: (Bear Mountain), 41.286111, -73.956389, 1 ♂, V. Palisades: 41.011111, -73.913889, 1 ♂, 1 ♀, IV. Suffolk Co.: Long Island, Hog Creek: (Threemile Harbor), 41.046667, -72.167500, 1 ♂, VII, under log near margin of salt creek. Huntington: 40.868056, -73.426111, 1 ♂, IV. Long Island, Montauk: 41.035833, -71.955000, 1 ♂, VIII. Long Island, Orient: 41.138889, -72.303889, 2 ♂♂, 2 ♀♀, VII. Long Island, Riverhead: 40.916944, -72.662500, 1 ♂, VI, 1 ♂, IX. Tompkins Co.: Ithaca: 42.440556, -76.496944, 1 ♀, Nomonth, 1 ♂, IV. Westchester Co.: Ardsley: 41.010556, -73.844167, 1 ♀, V. Bronxville: 40.938056, -73.832500, 1 ♂, IV. Chappaqua: 41.159444, -73.765278, 1 ♂, III, 4 ♂♂, VI, 1 ♂, IX, under stone in damp spring pocket in open woods; 1 ♀, IX, under leaves at edge of small swamp; open woods. Peekskill: 41.290000, -73.920833, 1 ♂, 2 ♀♀, Nomonth, 1 ♂, IV. Somers: 41.328056, -73.686111, 1 ♂, IV. Van Cortlandtville: 41.314722, -73.904167, 1 ♀, Nomonth. White Plains: 41.033889, -73.763333, 2 ♂♂, III, 2 ♂♂, 2 ♀♀, V. Yonkers: 40.931111, -73.899167, 1 ♂, 1 ♀, VII. NORTH CAROLINA: NoCo.: 6 ♂♂, 4 ♀♀, Nomonth. Buncombe Co.: Asheville: 35.600833, -82.554167, 2 ♂♂, 1 ♀, Nomonth, 1 ♂, 3 ♀♀, IV, 1 ♀, V, 2 ♀♀, VI. Black Mountain: 35.617778, -82.321389, 1 ♀, VIII. Black Mountain: (Little Switzerland), 35.617778, -82.321389, 3 ♀♀, Nomonth. Macon Co.: Highlands: (East Swamp), 35.052500, -83.196944, 4 ♂♂, 4 ♀♀, IX. Highlands Biological Station, Highlands, 0.8 km S on rte 28, 35.052500, -83.196944, 1 ♀, IV, on ground around building at night, dense short green grass. Swain Co.: Cherokee: 35.474167, -83.315000, 1 ♂, 1 ♀, VI. Transylvania Co.: Lake Toxaway: 35.132222, -82.934167, 1 ♂, Nomonth. OHIO: NoCo.: 1 ♀, Nomonth. NoCo.: Jefferson: 1 ♂, Nomonth. NoCo.: Old Woman Creek: 41.384167, -82.512222, 1 ♂, VI. NoCo.: Old Woman Creek: (Lake Erie Beach), 41.384167, -82.512222, 1 ♀, VI. NoCo.: Sugar Grove: 1 ♀, Nomonth. Ashtabula Co.: 41.733333, -80.766667, 2 ♂♂, 1 ♀, IV. Jefferson: 41.738611, -80.770000, 1 ♀, VII. Athens Co.: Athens: 39.329167, -82.101389, 1 ♂, IV. Dow Lake: 39.336667, -82.018333, 1 ♀, XI. Cuyahoga Co.: Cleveland: 41.499444, -81.695556, 1 ♂, VI. Erie Co.: Cedar Point: 41.480000, -82.682500, 1 ♂, VII. Fairfield Co.: Jefferson: 39.813889, -82.760833, 2 ♂♂, 1 ♀, Nomonth. Franklin Co.: 40.000000, -83.000000, 1 ♀, VI. Columbus: 39.961111, -82.998889, 1 ♂, V. Hamilton Co.: Cincinnati: 39.161944, -84.456944, 1 ♀, V. Holmes Co.: (Prairie 2, Section 16), 40.583333,

-81.916667, 1 ♀, IV. Huron Co.: 41.250000, -82.583333, 1 ♀, V. Jackson Co.: Wellston: 39.123333, -82.533056, 1 ♂, V. Jefferson Co.: Sugar Grove: 40.507778, -80.657222, 1 ♀, Nomonth. Licking Co.: Buckeye Lake: 39.933611, -82.472500, 1 ♂, VIII. Mahoning Co.: Mill Creek Park: 41.040833, -80.692778, 2 ♂♂, IV. Paulding Co.: Marron Valle, (Yellow Lake), 41.083333, -84.583333, 1 ♀, Nomonth. Sandusky Co.: 41.333333, -83.083333, 1 ♂, IV. Vinton Co.: Lake Alma: 39.145278, -82.514167, 8 ♂♂, 2 ♀♀, VII. Washington Co.: Marietta: 39.415278, -81.455000, 1 ♀, III. Wayne Co.: (Brown's Bog), 40.833333, -81.916667, 1 ♂, IV. PENNSYLVANIA: NoCo.: 6 ♂♂, 1 ♀, Nomonth, 1 ♀, XII. NoCo.: (Germantown), 1 ♂, 1 ♀, VI. NoCo.: (Phil Neck), 1 ♂, Nomonth. NoCo.: (Phila Neck), 3 ♂♂, 1 ♀, Nomonth. NoCo.: (PhilaNeck), 1 ♂, Nomonth. Adams Co.: Germantown: 39.769167, -77.148333, 1 ♀, V. Allegheny Co.: 40.433333, -80.016667, 1 ♂, 1 ♀, Nomonth, 1 ♀, V. Pittsburgh: 40.440556, -79.996111, 1 ♂, VI, 1 ♂, 2 ♀♀, VII, 1 ♂, IX. Pittsburgh: (Allegheny), 40.440556, -79.996111, 1 ♂, Nomonth. Butler Co.: Slippery Rock: 41.063889, -80.056667, 1 ♂, V. Centre Co.: Bear Meadows: 40.729167, -77.762500, 1 ♂, V. Julian: 40.864167, -77.939722, 1 ♂, IV. Rockview Reservoir: 40.833333, -77.753333, 1 ♀, V. State College: 40.793333, -77.860278, 1 ♂, IV, 1 ♂, V. Clarion Co.: Easton: 41.127222, -79.541111, 1 ♂, Nomonth, 1 ♀, V, 2 ♂♂, VI. Mount Airy: 41.094167, -79.522222, 2 ♂♂, 2 ♀♀, V, Cumberland Co.: Camp Hill: 40.239722, -76.920278, 1 ♂, 2 ♀♀, V, 1 ♀, IX, 1 ♂, X. Pine Grove Furnace: 40.033333, -77.298889, 1 ♀, IV. Dauphin Co.: 40.250000, -76.833333, 1 ♀, V. Harrisburg: 40.273611, -76.884722, 3 ♂♂, 3 ♀♀, Nomonth, 2 ♀♀, II, 2 ♂♂, 1 ♀, III, 2 ♂♂, 1 ♀, IV, 1 ♂, XI. Harrisburg: (Wetzel's Swamp), 40.273611, -76.884722, 1 ♀, IV. Inglenook: 40.413056, -76.981389, 1 ♂, Nomonth. Delaware Co.: Collingdale: 39.911667, -75.277500, 1 ♀, II. Lansdowne: 39.938056, -75.272222, 1 ♂, III. Little Tincicum Island: 39.853333, -75.287778, 1 ♂, IV. Swarthmore: 39.901944, -75.350278, 3 ♂♂, VII. Lancaster Co.: Kirkwood: 39.856111, -76.077222, 1 ♂, IX, berlese litter along stream. Lehigh Co.: Lehigh Gap: 40.776667, -75.608611, 1 ♀, VII. Mc Kean Co.: Mount Alton: 41.794167, -78.628056, 1 ♀, II. Monroe Co.: Delaware Water Gap: 40.979167, -75.143333, 6 ♂♂, Nomonth. Pocono Lake: 41.105278, -75.476389, 1 ♀, VII. Montgomery Co.: Glenside: 40.102222, -75.152500, 1 ♀, IV. Northampton Co.: Wind Gap: 40.848056, -75.291944, 1 ♂, V, 1 ♂, VI. Perry Co.: New Bloomfield: (McKee W NW), 40.419722, -77.186667, 1 ♀, V. Taken under damp stones. Philadelphia Co.: 40.000000, -75.216667, 2 ♂♂, 1 ♀, III. Frankford: 40.028056, -75.085278, 1 ♂, 1 ♀, V. Philadelphia: 39.952222, -75.164167, 1 ♀, III, 5 ♂♂, IV, 1 ♂, 1 ♀, VII, 1 ♀, X, 1 ♂, 1 ♀, XII. Philadelphia: (South Philadelphia), 39.952222, -75.164167, 1 ♂, IV. Stenton (subdivision): 39.989722, -75.159722, 1 ♀, III. Westmoreland Co.: Jeannette: 40.328056, -79.615556, 1 ♂, 1 ♀, Nomonth, 1 ♀, IV, 2 ♂♂, 1 ♀, VII, 1 ♂, 3 ♀♀, VIII, 2 ♂♂, 1 ♀, IX. RHODE ISLAND: Providence Co.: Providence: 41.823889, -71.413333, 1 ♂, VI. SOUTH CAROLINA: Horry Co.: Myrtle Beach: 33.688889, -78.886944, 1 ♂, IV, Washed up on the beach. Lee Co.: Meredith: 34.141935, -80.277307, 1 ♂, V. Oconee Co.: Camp Oak: (CCC Camp F2), 34.858056, -83.034167, 1 ♀, V, 1 ♀, IX. Pickens Co.: Camp Adger: 35.019167, -82.756389, 1 ♂, V. Clemson: 34.683333, -82.837500, 1 ♂, XI. UTAH: Utah Co.: Provo: (E side Utah Lake), 40.233889, -111.657778, 1 ♂, VIII. Under mats of rotting plant debris on flat sandy shores of lake during day. VIRGINIA: NoCo.: 1 ♂, IV, 1 ♀, V, NoCo.: Alexandria: 38.804722, -77.047222, 2 ♂♂, 1 ♀, Nomonth, primary flood plain. Arlington Co.: Rosslyn: 38.896667, -77.072778, 1 ♂, III, 2 ♀♀, V. Lee Co.: Stone Creek: 36.776389, -83.056944, 1 ♂, Nomonth. WASHINGTON: NoCo.: 1 ♂, 1 ♀, Nomonth. WEST VIRGINIA: Greenbrier Co.: White Sulphur Springs: 37.796389, -80.297778, 1 ♀, V. Taylor Co.: Thornton, by stream, 39.345556, -79.942222, 5 ♂♂, V. WISCONSIN: Vernon Co.: 43.550000, -90.900000, 1 ♂, IV

13. *Anisodactylus (A.) kirbyi* Lindroth

NO LOCALITY: 3 ♂♂, 5 ♀♀, Nomonth, 1 ♂, I. Fossambeault Port: 1 ♂, VIII. Hogsback: 1 ♂, V. Huron Mts.: 1 ♀, VIII. Reado: 1 ♀, V. Readville: 1 ♂, IV. CANADA: NoSubd.: 3 ♂♂, 5 ♀♀, Nomonth, 1 ♂, IX. BRITISH COLUMBIA: Vancouver Island, Bevan: 49.666667, -125.083333, 1 ♀, VII. Duncan: 48.783333, -123.700000, 1 ♀, V. Huntingdon: 49.000000, -122.266667, 1 ♂, IX. Kamloops: 50.666667, -120.316667, 1 ♀, XI. Lakeshore under log. Ladner: 49.083333, -123.083333, 1 ♂, VI. Oliver: 49.183333, -119.550000, 1 ♂, V. Pender Harbor: 48.100000, -123.116667, 1 ♂, VI, 1 ♂, VIII. Penticton: 49.500000, -119.583333, 2 ♂♂, VI. Salmon Arm: 50.683333, -119.283333, 2 ♂♂, III, 1 ♂, IV, 1 ♀, V. Lakeshore under log. Salmon Arm: (Loon Lake), 50.683333, -119.283333, 1 ♀, IX. Tappen: 50.783333, -117.333333, 2 ♂♂, VIII. Vancouver Island: 48.433333, -123.366667, 1 ♂, 2 ♀♀, Nomonth. Vancouver Island, S end: 48.433333, -123.366667, 1 ♂, VI. Wellington: 49.200000, -124.016667, 1 ♂, V. Vancouver Island: Victoria: 48.433333, -123.366667, 2 ♀♀, VI. MANITOBA: Miami: 49.366667, -98.233333, 1 ♂, VI. Niverville: 49.600000, -97.050000, 1 ♂, VII. North Winnipeg: (Selkirk), 50.166667, -96.866667, 1 ♀, VII. NEW BRUNSWICK: 2 ♂♂, VIII. NOVA SCOTIA: Cape Breton Island: 46.000000, -60.500000, 2 ♂♂, 1 ♀, VIII. ONTARIO: 3 ♂♂, Nomonth. Amberley: 44.050000, -81.716667, 1 ♀, VI. Atikokan, 7.3 km W, (Rainy River Dist. Harkatck L.), 48.750000, -91.616667, 1 ♂, VI, along road. Bayview: 44.600000, -80.700000, 1 ♀, VI. Bell's Corners: 45.316667, -75.833333, 1 ♂, VI. Belleville: 44.166667, -77.383333, 2 ♀♀, VIII. Britannia Bay: 45.366667, -75.816667, 3 ♂♂, 2 ♀♀, IV, 7 ♂♂, 2 ♀♀, V, 1 ♀, X. Dunnville: 42.900000, -79.600000, 1 ♂, 2 ♀♀, VI. Grand Bend: 43.316667, -81.750000, 2 ♂♂, 4 ♀♀, VI. Grand Bend: (Lake Huron), 43.316667, -81.750000, 1 ♂, Nomonth, 4 ♂♂, 2 ♀♀, VI. Hastings: 44.300000, -77.950000, 1 ♂, 1 ♀, V. Hazeldean: 45.300000, -75.883333, 1 ♀, VI. Kincardine, S, (Amberley, Lake Huron), 44.183333, -81.633333, 1 ♂, 2 ♀♀, VI. Lansdowne: (St. Lawrence Island National Park), 44.400000, -76.016667, 1 ♂, Nomonth. Long Point: (Lake Erie), 42.583333, -80.416667, 2 ♂♂, 2 ♀♀, VI. Ottawa: 45.416667, -75.700000, 4 ♂♂, V, 1 ♀, X. Pelee Islands: (Lake Erie), 41.750000, -82.683333, 1 ♂, Nomonth. Point Edward: 43.000000, -82.400000, 1 ♀, VI. Point Pelee: 41.950000, -82.533333, 1 ♀, VI. Point Pelee: 41.950000, -82.516667, 1 ♂, VI. Point Pelee: (Lake Erie), 41.950000, -82.533333, 1 ♂, VI. Point Pelee National Park: 41.950000, -82.516667, 2 ♂♂, VII. Port Dover, 2 km, (Turkey Point), 42.783333, -80.200000, 1 ♀, VI. Richmond: (Manotick), 45.183333, -75.833333, 1 ♂, 1 ♀, VI. Rondeau Park: 42.316667, -81.850000, 1 ♂, VI, 1 ♀, IX. Simcoe: (Delhi), 42.833333, -80.300000, 2 ♂♂, VI. Simcoe: (St. Williams), 42.833333, -80.300000, 1 ♂, VI. Sudbury: 46.500000, -81.000000, 1 ♂, III. Thornton: 43.666667, -79.383333, 1 ♂, Nomonth, 1 ♀, VII. Trenon: 44.100000, -77.583333, 1 ♀, V, 1 ♀, X. Washago: 44.750000, -79.333333, 1 ♂, VI. Washago: (Lake Simcoe), 44.750000, -79.333333, 2 ♀♀, VI. Edward: 48.250000, -88.370000, 1 ♀, V. Norfolk: Long Point: (Hwys 24 & 59), 42.583333, -80.416667, 1 ♂, V, woodlot under leaf litter edge of temp. pond. Prince Edward: 44.016667, -77.150000, 4 ♀♀, IV, 3 ♂♂, V, 1 ♀, VI. Renfrew: Pembroke: 45.816667, -77.116667, 1 ♂, Nomonth. QUEBEC: 1 ♂, IV. Ancienne-Lorette: 46.800000, -71.350000, 2 ♂♂, 1 ♀, Nomonth. Berthierville: 46.083333, -73.166667, 3 ♂♂, IV, 2 ♂♂, V. Madeleine Island, Cap-aux-Meules: 47.383333, -61.866667, 1 ♂, 1 ♀, VII. Carillon: 45.566667, -74.383333, 1 ♂, IX. Carillon: (Pointe-Fortune), 45.566667, -74.383333, 1 ♂, 1 ♀, V. Choisy: 45.470585, -74.279410, 1 ♀, IV, 1 ♀, XI. Gatineau Park: 45.483333, -75.666667, 3 ♂♂, 1 ♀, VI. Hébertville: 48.400000, -71.683333, 1 ♂, 1 ♀, VI. Hudson: 45.450000, -74.150000, 1 ♂, 1 ♀, VI, 1 ♂, VIII. Hull: 45.433333,

-75.733333, 5 σ , 7 σ , V, 7 σ , VI, 11 σ , 14 σ , X, 1 σ , XI. Joliette: 46.016667, -73.450000, 1 σ , IV, 1 σ , X. La Trappe: 45.500000, -74.033333, 4 σ , 5 σ , IV, 4 σ , 5 σ , V. Longueuil: (Chambly), 45.533333, -73.500000, 1 σ , 1 σ , IX. Montréal: 45.500000, -73.600000, 1 σ , IV, 2 σ , V, 2 σ , VII. Montréal: (Boucherville), 45.500000, -73.600000, 1 σ , VIII. Québec: 46.816667, -71.233333, 1 σ , IV. Richelieu: 45.450000, -73.250000, 1 σ , 1 σ , IX. Rigaud: 45.483333, -74.300000, 1 σ , Nomonth, 1 σ , V; 2 σ , 2 σ , V, Sablière: Sous d bns v g taux bord- riv. Saint Fidèle: 47.733333, -69.983333, 1 σ , 1 σ , VI. Sorel: 46.033333, -73.116667, 1 σ , VI. St-Benoît-Labre: 46.066667, -70.800000, 3 σ , IX. St. Hubert: 45.500000, -73.416667, 1 σ , XI. Ste-Mathilde: 47.683333, -70.100000, 1 σ , VI. Ste. Rose: 45.600000, -73.783333, 1 σ , IV, 1 σ , V. Vaudreuil: 45.400000, -74.033333, 1 σ , 1 σ , VIII. Madeleine Island: Cap-aux-Meules: 47.383333, -61.866667, 1 σ , VII. Havre-Aubert: 47.233333, -61.950000, 1 σ , 1 σ , VIII. UNITED STATES: No state: NoCo.: 1 σ , IV. CALIFORNIA: Marin Co.: Nicasio: 38.061667, -122.697500, 1 σ , XII. Riverside Co.: Riverside: 33.953333, -117.395278, 1 σ , Nomonth. CONNECTICUT: Fairfield Co.: Westport: 41.141389, -73.358333, 1 σ , III. Hartford Co.: East Hartford: 41.782222, -72.612500, 1 σ , IV. Hartford: 41.763611, -72.685556, 1 σ , Nomonth. Manchester: 41.775833, -72.521944, 1 σ , IV. Litchfield Co.: Cornwall: 41.843611, -73.329722, 2 σ , II, 1 σ , VI, 2 σ , IX. Kent: 41.724722, -73.477500, 1 σ , VII. New Haven Co.: New Haven: 41.308056, -72.928611, 1 σ , XI. New London Co.: (Lyme), 41.333333, -72.083333, 1 σ , 1 σ , IV, 1 σ , X. Tolland Co.: Mansfield Center: 41.765278, -72.198611, 5 σ , 3 σ , VIII, 2 σ , 2 σ , X. Storrs: 41.808333, -72.250000, 2 σ , IV. IDAHO: Kootenai Co.: Hayden Lake: 47.758889, -116.755833, 2 σ , IX. ILLINOIS: NoCo.: 1 σ , 1 σ , Nomonth, 1 σ , IV. Cook Co.: 41.816667, -87.616667, 1 σ , Nomonth. Chicago: 41.850000, -87.650000, 1 σ , 3 σ , Nomonth, 1 σ , V, 1 σ , 3 σ , VIII, 1 σ , 1 σ , X. Lake Co.: Beach: 42.418611, -87.819722, 1 σ , V. INDIANA: NoCo.: 1 σ , Nomonth. Kosciusko Co.: 41.250000, -85.833333, 1 σ , VI. La Porte Co.: 41.583333, -86.750000, 1 σ , VI. Lagrange Co.: 41.666667, -85.416667, 1 σ , V. Lake Co.: East Chicago: (Indiana Harbor), 41.639167, -87.454722, 1 σ , IV. Marion Co.: 39.766667, -86.150000, 1 σ , VI. Marshall Co.: 41.333333, -86.333333, 1 σ , VI. Porter Co.: Indiana Dunes State Park: 41.663056, -87.036944, 1 σ , V. Dunes State Park, Tremont, 1.6 km N, 41.648611, -87.043611, 1 σ , VI. Putnam Co.: Wolf Lake: (Wolf Lake), 41.335000, -85.495833, 1 σ , III. Starke Co.: 41.250000, -86.666667, 1 σ , VIII. Steuben Co.: 41.583333, -85.000000, 1 σ , V. Vigo Co.: 39.416667, -87.416667, 1 σ , XII. MAINE: NoCo.: 1 σ , Nomonth. Androscoggin Co.: East Auburn: 44.142778, -70.227500, 1 σ , VI. Wales Corner: 44.183611, -70.065556, 1 σ , IX. Franklin Co.: Weld: 44.698611, -70.421944, 1 σ , VII. Kennebec Co.: Monmouth: 44.238611, -70.036111, 1 σ , VI, 2 σ , 1 σ , VII. Waterville: 44.551944, -69.632222, 1 σ , 1 σ , VII. Oxford Co.: Bethel: 44.404167, -70.791111, 1 σ , V. Paris: 44.259722, -70.501111, 1 σ , VI, 1 σ , VII. MASSACHUSETTS: NoCo.: 6 σ , Nomonth, NoCo.: Wachusett Mountain: 42.576389, -71.983333, 1 σ , VI. Bristol Co.: Dartmouth: 41.616667, -70.983333, 1 σ , V. Essex Co.: Beverly Farms: 42.563889, -70.811111, 1 σ , XI. Hampden Co.: Chicopee: 42.148611, -72.608333, 1 σ , Nomonth, 1 σ , IV. Hampshire Co.: Mount Tom State Park, Mount Tom: 42.286111, -72.616667, 1 σ , IX. Middlesex Co.: Arlington: 42.415278, -71.156944, 1 σ , III. Moss roots, Bedford: (0.2km E), 42.490556, -71.276667, 1 σ , 1 σ , VI. Cambridge: 42.366667, -71.100000, 3 σ , 2 σ , Nomonth, 1 σ , IV, 1 σ , XI. Concord: 42.460278, -71.349444, 1 σ , IV, 1 σ , V. Concord: (Great Meadows Wildlife Ref.), 42.460278, -71.349444, 1 σ , 2 σ , VI. Framingham: 42.279167, -71.416667, 1 σ , Nomonth, 1 σ , 2 σ , IV, 1 σ , V. Flooding Meadow, Lexington: 42.447222, -71.225000, 1 σ , 1 σ , VI, 1 σ , VII. Lincoln: 42.425833, -71.304444, 1 σ , VII. Lowell: 42.633333, -71.316667, 1 σ , Nomonth. North Lexington: (Hwy. 128, 0.5 km SW Hwy. 225), 42.463333, -71.237500, 2 σ , VI. Sudbury: 42.383333, -71.416667, 1 σ , 1 σ , III, 1 σ , V. Waltham: 42.376389, -71.236111, 2 σ , V. Wayland: 42.362500, -71.361944, 4 σ , 3 σ , III, 1 σ , IV, 3 σ , 4 σ , V, 3 σ , VI. Norfolk Co.: Brookline: 42.331667, -71.121667, 1 σ , Nomonth. Milton Village (subdivision): 42.266667, -71.072222, 1 σ , Nomonth. Wellesley: 42.296389, -71.293056, 1 σ , 1 σ , V, 1 σ , IX. Plymouth Co.: Hanson: 42.075000, -70.880556, 1 σ , VIII. Harnarock: 42.136111, -70.690556, 1 σ , VII. Suffolk Co.: Dorchester (subdivision): 42.279222, -71.075000, 2 σ , IV, 1 σ , V. West Roxbury (subdivision): 42.279167, -71.150000, 1 σ , V. Worcester Co.: Northborough: 42.319444, -71.641667, 1 σ , V. MICHIGAN: NoCo.: 1 σ , V, 1 σ , 2 σ , X. Allegan Co.: Allegan: 42.529167, -85.855278, 1 σ , VI. Baraga Co.: L'Anse: 46.756667, -88.452778, 1 σ , VIII. Barry Co.: 42.666667, -85.333333, 1 σ , V, (T2N R10W s. 22), 42.666667, -85.333333, 1 σ , VI, Marshy ground. Calhoun Co.: Battle Creek: 42.321111, -85.179722, 4 σ , V, Cheboygan Co.: Ingleside: (Douglas Lake), 45.581111, -84.696944, 1 σ , VIII. Mackinaw City: 45.783889, -84.727778, 1 σ , VII. Clinton Co.: Bath: 42.818611, -84.448611, 1 σ , V. Rose Lake St Wildlife Research Stn: 42.805278, -84.392500, 1 σ , V, 1 σ , VI. Delta Co.: Escanaba: 45.745278, -87.064444, 1 σ , VII, 1 σ , IX. Eaton Co.: Eaton Rapids: 42.509167, -84.655833, 1 σ , IV, 1 σ , V. Genesee Co.: Flint: 43.012500, -83.687500, 1 σ , VI. Grafton Co.: Ithaca: 43.291667, -84.607500, 1 σ , V. Summer (Summer Twp Sec 24), 43.306944, -84.815833, 1 σ , IX. Ingham Co.: East Lansing: 42.736944, -84.483889, 1 σ , IV. Lansing: 42.732500, -84.555556, 1 σ , V. Lansing: (Agricultural College Michigan), 42.732500, -84.555556, 1 σ , 1 σ , X. Kalamazoo Co.: Gull Lake: (Gull Lake Biology Station), 42.399722, -85.411389, 1 σ , IV, 1 σ , V. Kalamazoo: 42.291667, -85.587222, 1 σ , Nomonth. Livingston Co.: Green Oak: 42.492500, -83.698056, 1 σ , 1 σ , V. Whitmore Lake: 42.439444, -83.743889, 1 σ , VI, under log. Whitmore Lake, Livingston and Washtenaw, 42.439444, -83.743889, 1 σ , VI, under board. Marquette Co.: Marquette: 46.543611, -87.395278, 1 σ , Nomonth, 1 σ , VI. Mason Co.: Ludington State Park: 44.046389, -86.496944, 1 σ , VI. Midland Co.: Midland: 43.615556, -84.247222, 1 σ , Nomonth. Monroe Co.: Stony Creek: 41.964167, -83.334167, 1 σ , VI. Muskegon Co.: Muskegon State Park: 43.240556, -86.339444, 2 σ , V. Oakland Co.: 42.616667, -83.283333, 1 σ , VII. Pontiac: 42.638889, -83.291111, 1 σ , V. Washtenaw Co.: 42.283333, -83.750000, 1 σ , VIII. MINNESOTA: NoCo.: St. Anthony Park, 1 σ , VI. Anoka Co.: 45.200000, -93.400000, 1 σ , IV, 1 σ , V. Bunker Lake: 45.218333, -93.282222, 1 σ , IV. Chisago Co.: Stacy: 45.398056, -92.987222, 1 σ , IV. Clay Co.: Moorhead: 46.873889, -96.767222, 1 σ , V. Dakota Co.: Hastings: 44.743333, -92.852222, 1 σ , VI. Hennepin Co.: 44.966667, -93.250000, 1 σ , V, oak grove. Olmsted Co.: 44.016667, -92.500000, 1 σ , Nomonth. Ramsey Co.: Saint Paul: 44.944444, -93.093056, 1 σ , V, 1 σ , VI. Traverse Co.: 45.800000, -96.483333, 1 σ , Nomonth. Wabasha Co.: 44.400000, -92.066667, 1 σ , V. Wabasha: 44.383889, -92.032778, 1 σ , V. Winona Co.: Whitewater State Park, Saint Charles, 9.7 km N, 43.969444, -92.064167, 1 σ , V. NEW HAMPSHIRE: NoCo.: 1 σ , Nomonth. NoCo.: (Peabody R.), 1 σ , Nomonth. Cheshire Co.: Winchester: (Ashuelot River), 42.773333, -72.383611, 1 σ , IV. Coos Co.: Colebrook: 44.894444, -71.496389, 1 σ , VI, 1 σ , VII, pitfall trap. Colebrook: (mouth of Mohawk River), 44.894444, -71.496389, 1 σ , VI. Errol, 1.6 km NW, 44.781389, -71.138333, 1 σ , VI, clear stream. Lancaster: (island, Connecticut River), 44.488889, -71.569722, 1 σ , Nomonth. White Mountains, Peabody River: 44.379167, -71.050556, 1 σ , VII. Grafton Co.: Lebanon: (Mascoma River), 43.642222, -72.252222, 1 σ , VI. Plymouth: 43.756944, -71.688611, 3 σ , 3 σ , VII. Quinttown: 43.865833, -72.055833, 1 σ , Nomonth. Rumney: 43.805278, -71.813056, 2 σ , 1 σ , VI, 1 σ , VIII. Wentworth: 43.871667, -71.914722, 1 σ , Nomonth. Hillsborough Co.: Pelham, 4.8 km W, 42.734444, -71.325000, 1 σ , VI. Rockingham Co.: Exeter: 42.981389, -70.948333, 1 σ , VI. Hampton Falls: 42.916111, -70.864167, 1 σ , VII. Powwow River: 42.909167, -71.016111, 1 σ , VII. Salem: (Rt. 28 Spicket

River), 42.788333, -71.201389, 1 ♀, VII. Strafford Co.: Durham: 43.133889, -70.926944, 1 ♂, VII, pitfall trap. Durham: (Durham Point), 43.133889, -70.926944, 1 ♂, VII. Durham: 1.6 km SW, 43.133889, -70.926944, 1 ♀, X. Milton: 43.409722, -70.988889, 2 ♀♀, VI. Sullivan Co.: Claremont, 1.6 km NW, (Sugar River), 43.376667, -72.347222, 1 ♂, VIII. NEW JERSEY: NoCo.: 2 ♀♀, Nomonth. Bergen Co.: Alpine: 40.955833, -73.931667, 1 ♂, V. Palisades Park: 40.848056, -73.998056, 1 ♂, Nomonth. Woodcliff Lake: 41.023333, -74.066944, 1 ♂, 1 ♀, VI. Camden Co.: Snow Hill: 39.870000, -75.033056, 1 ♀, Nomonth. Hudson Co.: Arlington: 40.777500, -74.138611, 1 ♂, Nomonth. Morris Co.: Budd Lake: 40.871111, -74.734444, 1 ♂, VIII. Riverdale: 40.993889, -74.303889, 1 ♀, V. Sussex Co.: Hamburg: 41.153333, -74.576667, 1 ♂, VI. Hopatcong: 40.932778, -74.659722, 1 ♀, Nomonth. NEW YORK: NoCo.: 2 ♂♂, 4 ♀♀, Nomonth. NoCo.: Long Island, 1 ♂, V. NoCo.: (Marquette), 1 ♂, Nomonth. NoCo.: Potter Swamp: 42.723611, -77.166667, 1 ♂, VI. Albany Co.: Feura Bush: 42.577778, -73.879167, 4 ♂♂, 6 ♀♀, VI. Meadowdale: 42.670556, -73.984167, 2 ♂♂, 1 ♀, V. Cayuga Co.: Montezuma (Montezuma Marsh), 43.010000, -76.703611, 1 ♂, V. North Fair Haven: 43.332778, -76.700000, 1 ♀, VI. Chautauqua Co.: 42.083333, -79.233333, 1 ♀, IX. Columbia Co.: Hudson: 42.252778, -73.791389, 1 ♂, 1 ♀, VII. New Lebanon: 42.463889, -73.396944, 1 ♀, VI. Cortland Co.: McLean (McLean Bogs Reserve), 42.551944, -76.291389, 1 ♂, 1 ♀, VII. Erie Co.: Buffalo: 42.886389, -78.878611, 1 ♀, V, 1 ♂, 1 ♀, VI. East Aurora: 42.767778, -78.613611, 1 ♂, 1 ♀, V. Williamsville: 42.963889, -78.738056, 1 ♀, VI. Essex Co.: Chapel Pond: 44.139167, -73.747778, 1 ♂, 1 ♀, VI. Genesee Co.: Batavia: 42.998056, -78.187778, 3 ♂♂, 8 ♀♀, V, 1 ♀, VI. Jefferson Co.: Stony Island: 43.893611, -76.331389, 1 ♂, V. Kings Co.: Brooklyn Heights: 40.695278, -73.994167, 2 ♂♂, IV. New Lots Yards: 40.6594167, -73.903889, 1 ♂, V. Monroe Co.: Rochester: 43.154722, -77.615833, 1 ♂, VIII. Spencerport: 43.186389, -77.804167, 2 ♀♀, VIII. New York Co.: New York: 40.714167, -74.006389, 1 ♀, V. Niagara Co.: Niagara Falls: 43.094444, -79.056944, 1 ♀, VI. Olcott: 43.337778, -78.715000, 1 ♀, IV, 1 ♂, VI, 1 ♀, X. Queens Co.: Brooklyn Manor: 40.694722, -73.848056, 1 ♂, V. Flushing: 40.765278, -73.817778, 1 ♀, III. Long Island. Rockaway Beach: 40.571389, -73.851944, 1 ♂, VI. Schuyler Co.: 42.383333, -76.866667, 1 ♂, IV. St Lawrence Co.: Rossie: 44.378611, -75.655278, 1 ♂, V. Suffolk Co.: Long Island, (Northwest), 40.883333, -72.666667, 1 ♂, IX. Montauk: 41.035833, -71.955000, 1 ♂, VI. Orient: 41.138889, -72.303889, 1 ♀, Nomonth. Long Island. Orient: 41.138889, -72.303889, 1 ♀, IX. Tompkins Co.: (Ringwood Res.), 42.416667, -76.500000, 1 ♀, VII. Ithaca: 42.440556, -76.496944, 2 ♂♂, 2 ♀♀, Nomonth, 1 ♀, 1, 2 ♂♂, 2 ♀♀, III, 5 ♂♂, 1 ♀, IV, 8 ♂♂, 17 ♀♀, V, 1 ♂, 1 ♀, VI, 1 ♂, IX, 2 ♂♂, X. Ithaca: (Cayuga Lake), 42.440556, -76.496944, 1 ♂, V. McLean: 42.551944, -76.291389, 1 ♀, V. McLean (McLean Bogs), 42.551944, -76.291389, 2 ♂♂, VII. Taughannock Falls: 42.535556, -76.611111, 3 ♂♂, 1 ♀, VI. Wayne Co.: 43.083333, -77.000000, 2 ♀♀, VI. Westchester Co.: Chappaqua: 41.159444, -73.765278, 1 ♀, VI. Wyoming Co.: Pike: 42.556389, -78.153056, 1 ♂, Nomonth, 1 ♀, V. NORTH DAKOTA: Cass Co.: Fargo: 46.877222, -96.789444, 1 ♂, V. Cavalier Co.: 48.766667, -98.366667, 1 ♂, VI. Richland Co.: Mirror Pool: 46.525833, -97.241389, 1 ♂, V. OHIO: Ashtabula Co.: Conneaut: 41.947500, -80.554444, 1 ♂, V. Rock Creek: 41.660278, -80.860833, 1 ♂, VI. Holmes Co.: Millersburg: 40.554444, -81.918056, 1 ♂, Nomonth, 1 ♀, VI. Ottawa Co.: Port Clinton: (Oak Harbor), 41.511944, -82.937778, 1 ♀, VI. Paulding Co.: Washington Township: (Little Auglaize River), 41.045278, -84.395278, 1 ♀, VI. Putnam Co.: Continental: (Monroe sec 5 S. Powell creek), 41.100278, -84.266389, 1 ♀, VI. OREGON: Douglas Co.: Roseburg: 43.216667, -123.340556, 1 ♂, VI. Hood River Co.: Odell: 45.627222, -121.541944, 1 ♀, VI. Josephine Co.: Grants Pass: 42.439167, -123.327222, 2 ♂♂, 1 ♀, Nomonth. Lane Co.: Blue River Lake: (N end), 44.172222, -122.327778, 1 ♂, V, under rocks. Multnomah Co.: Portland: 45.523611, -122.675000, 1 ♀, VI. PENNSYLVANIA: NoCo.: 1 ♀, Nomonth. Allegheny Co.: Pittsburgh: 40.440556, -79.996111, 1 ♀, Nomonth. Pittsburgh: (Allegheny), 40.440556, -79.996111, 1 ♂, Nomonth. Lackawanna Co.: Chinchilla: 41.475000, -75.677500, 1 ♀, V. Lebanon Co.: Lebanon: 40.340833, -76.411667, 1 ♂, VIII. Northampton Co.: Easton: 40.688333, -75.221111, 1 ♂, IV. Philadelphia Co.: Philadelphia: 39.952222, -75.164167, 1 ♂, IV. Somerset Co.: Windber: 40.239722, -78.835278, 1 ♀, XI. Westmoreland Co.: Jeannette: 40.328056, -79.615556, 1 ♂, III. RHODE ISLAND: Providence Co.: Providence: 41.823889, -71.413333, 1 ♀, V. VERMONT: NoCo.: 1 ♂, Nomonth. NoCo.: (Queechee G.), 2 ♀♀, Nomonth. Grand Isle Co.: South Alburg: 44.887500, -73.278889, 1 ♂, VII. WASHINGTON: NoCo.: 1 ♂, V. Adams Co.: Keystone: (Sprague Lake), 47.240833, -118.150278, 1 ♀, VII. Grant Co.: Grand Coulee: (Dry Falls), 47.941667, -119.002222, 3 ♂♂, 3 ♀♀, IV, 1 ♂, 1 ♀, V. Grand Coulee: (Park Lake), 47.941667, -119.002222, 5 ♂♂, 1 ♀, IV. King Co.: Black Diamond: 47.308889, -122.001944, 1 ♂, VIII. Seattle: 47.606389, -122.330833, 1 ♀, X. Spokane Co.: Newman Lake: 47.776944, -117.093889, 1 ♀, VII. Spokane: 47.658889, -117.425000, 2 ♂♂, V. Stevens Co.: Colville National Forest. Deep Lake: 48.858056, -117.604167, 1 ♀, V. Loon Lake: 48.061667, -117.631667, 1 ♂, V. WISCONSIN: NoCo.: 1 ♂, 1 ♀, Nomonth, 1 ♂, VI. Dane Co.: 43.083333, -89.383333, 1 ♂, V, 1 ♀, VIII. Madison: 43.073056, -89.401111, 1 ♂, 2 ♀♀, Nomonth, 1 ♂, IV, 1 ♀, IX. Monona: 43.062222, -89.333889, 1 ♂, Nomonth. Dodge Co.: Beaver Dam: 43.457778, -88.837222, 10 ♂♂, 7 ♀♀, Nomonth, 1 ♂, III, 1 ♂, 2 ♀♀, X. Horicon, 0.3 mi N of rte 33 on rte 28, 43.455167, -88.622000, 3 ♀♀, VI, by treading dead and alive vegetation in flat wet area between pond and forested slope, southern mesic forest. Horicon, 3.2 km SE, (Wildcat Swamp), 43.451389, -88.631111, 1 ♂, VII. Fond Du Lac Co.: Eldorado State Wildlife Area: (North Fond du Lac, 6.1 km W), 43.814667, -88.565000, 5 ♂♂, 1 ♀, V. By clearing or treading live and dead herb. veg. on edge of flat unshaded marsh area: 3 ♂♂, 2 ♀♀, VI. raking dead herbaceous plants along edge of marsh; 1 ♂, 2 ♀♀, VI, epigeal, by raking debris away along marsh edge; 11 ♂♂, 8 ♀♀, VI, by raking debris away along marsh edge, epigeal; 1 ♂, 1 ♀, VI, by treading down vegetation in shallow water along edge of marsh. Eldorado State Wildlife Area: (North Fond du Lac, 13.3 km W-rte.23, 0.5 km E-Henrich Rd., 1.3 km N-Dike Rd), 43.810833, -88.588333, 1 ♂, VI, by treading on cattails, sedges in swamp on mounds of earth which rose above standing water, oak savannah. Green Lake Co.: Green Lake: 43.844167, -88.960000, 1 ♀, VI, 1 ♂, VII. Kenosha Co.: Kenosha, 10.4 km W on rte. 50, 42.542000, -87.951833, 2 ♂♂, 1 ♀, VI, by treading in marsh with standing water, cattails, countryside had field with scattered trees, oak savannah. Kenosha, 11 km SW, 42.537333, -87.934000, 3 ♂♂, 3 ♀♀, VI, by treading around dead grass like plants on ground with several inches of water, oak savannah. Kenosha, 3.4 km W on rte. 50, 2.3 km S on rte. 31, 42.545500, -87.893000, 1 ♂, 4 ♀♀, VI, treading on edge of small marsh, dead and live vegetation, semi-urban countryside oak savannah. Milwaukee Co.: 43.050000, -87.916667, 1 ♀, Nomonth. Milwaukee: 43.038889, -87.906389, 1 ♀, VII. Oak Creek: 42.885833, -87.863056, 1 ♀, VI. Ozaukee Co.: Mud Lake, ca. 1.5 mi S Newburg, 43.374444, -88.021111, 1 ♀, VI. Saukville: 43.385000, -88.020167, 1 ♂, VIII, caught in pitfall trap on ground. Saukville: (UWM Field Station, First Island), 43.385000, -88.020167, 1 ♀, VII, attracted to carrion bait on ground; 1 ♀, VII, attracted to molasses bait on ground. Saukville, 7.9 km W on rte 33, 3.7 km S on Bluegoose Rd., (Cedarburg Bog), 43.385000, -88.020167, 1 ♂, VI, by treading down aquatic plants growing in sphagnum bog, standing water, conifer swamp. Saukville, 7.9 km W on rte 33, 3.7 km S on Bluegoose Rd., (University of Wisc. Field Station), 43.385000, -88.020167, 1 ♂, 2 ♀♀, VIII, under logs in shaded areas on islands in Cedarburg Bog. Racine Co.: Burlington, 9.0 km NE on rtes 83 & 36, 42.678056, -88.276111, 3 ♂♂, V, by treading. Waterford, 5.6 km NW, 42.763056, -88.214167, 1 ♀, VI, drainage ditch. Sauk Co.: Ferry Bluff Scientific Area: 43.241111, -89.814167, 1 ♂, VI. Sauk City: 43.270833, -89.721944, 1 ♀, VI, marshy area along Honey Creek. Walworth Co.: Bloomfield State Wildlife Area: (Lake Geneva, 4.8 km SE on rte H), 42.555500, -88.402833, 1 ♀, VI, by treading

down cattails, and other reed-like and grass-like vegetation, standing water, oak savannah. East Troy, 1.2 mi E on rte 24, 42.785278, -88.377447, 1 ♀, VI, from forest grassland at pond's edge w. East Troy, 1.9 km E on rte 24, 42.785278, -88.377447, 3 ♂♂, 2 ♀♀, VII, Under debris in moist depression by pond. East Troy, 1.9 km E on the rte 24, (Small pond off Hwy 24), 42.785278, -88.377447, 1 ♂, VI, Treading emergent vegetation. Lyons State Wildlife Area: (Lake Geneva, 4.5 km NW on Sheridan Springs Rd.), 42.624333, -88.385667, 14 ♂♂, 9 ♀♀, VI, by treading down grassy vegetation in wet area, sedge meadows, standing water. Washington Co.: Crooked Lake, S end: (West Bend, 22.6 km N), 43.617766, -88.143845, 1 ♂, VI, edge of corn field, shrub-carr an. Jackson, 3.4 km E. (Jackson Marsh), 43.323889, -88.166667, 6 ♂♂, 1 ♀, VI, 1 ♀, VII, Jackson, 3.4 km E. (Jackson Marsh), 43.323889, -88.166667, 2 ♂♂, 2 ♀♀, VI, Jackson, 4.8 km E, 1.3 km N, (Jackson Marsh), 43.323889, -88.166667, 1 ♀, VII, active on ground at night in moist area with dense 30-72 inch vegetation. Jackson, 7.9 km W, 43.323889, -88.166667, 1 ♀, VI, Under rocks by small pond. Jackson Marsh: (Jackson, 3.4 km E on rte 60, 1.5 km N on rte G), 43.333333, -88.122333, 1 ♂, VI, by treading in standing water along edges of marsh, southern mesic forest. Waukesha Co.: Kettle Moraine State Forest, 43.016667, -88.216667, 1 ♂, 2 ♀♀, VII, Railroad Tracks. Big Bend: (banks of Fox River), 42.881389, -88.206667, 1 ♂, IX, Doustman, 3.4 km N on rte. 67, (a pond connected to Duck Lake), 43.050667, -88.471167, 1 ♀, VI, by treading down vegetation on edge of shallow pond, oak savannah. Kettle Moraine State Forest, Eagle, 2.3 km N on rte 67 & 2.7 km E on Wilton Rd., 42.901333, -88.505833, 1 ♂, 2 ♀♀, V, by treading live & dead herb. veg. along flat marsh edge, countryside open oak woodland & fields. Eagle, 2.4 km NW, (Scuppernon Prairie Marsh), 42.901333, -88.505833, 2 ♂♂, 6 ♀♀, VI, By treading in marsh. Eagle, 8.2 km N, 42.946167, -88.478167, 1 ♂, 2 ♀♀, V, by treading pond margin. Kettle Moraine State Forest, Eagle, 8.2 km N on rte. 67, 42.946167, -88.478167, 1 ♂, 2 ♀♀, V, by treading live and dead herb. veg. along flat pond margin, countryside open oak woodland and fields. Menomonee Falls, 3.5 km S on Pilgrim Rd., 0.7 W on Good Hope Rd., 43.148500, -88.112667, 1 ♂, VI, by treading on old dead young live cattails, dense growth, southern mesic forest. Vernon State Wildlife Area: (Mukwonago, 4.0 km N on rte. 83, 1.9 km E on Frog Alley Rd.), 42.900667, -88.320833, 5 ♂♂, 1 ♀, VI, by raking old dead plant material along edge of marsh oak savannah.

14. *Anisodactylus (A.) nigrita* Dejean

NO LOCALITY: 8 ♂♂, 5 ♀♀, Nomonth. Green Lake: 1 ♂, VI, Orleans: 1 ♂, V, Saint Johns: 1 ♂, Nomonth. St. Joachim: 1 ♂, IV, St. Joachim: 1 ♂, X. CANADA: Nosubd.: 6 ♂♂, 4 ♀♀, Nomonth. ALBERTA: 1 ♂, 2 ♀♀, VIII, Brooks: 50.583333, -111.883333, 20 ♂♂, 4 ♀♀, VIII, Carmangay: (Little Bow R. and Rte. 23 jct.), 50.133333, -113.116667, 1 ♀, VI, Carmangay: (Little Bow River jct. and Route 23), 50.133333, -113.116667, 1 ♀, VI, Lethbridge: 49.700000, -110.833333, 1 ♂, V, Medicine Hat, 29 km N, (Chappelle Lake), 50.050000, -110.666667, 1 ♂, 3 ♀♀, VI, Newell Lake: 50.433333, -111.916667, 1 ♂, 6 ♀♀, VI, Walsh, 6.1 km W, (Rte. 1), 49.950000, -110.050000, 1 ♂, VI, BRITISH COLUMBIA: Canal Flats, 16 km S, 50.150000, -115.816667, 1 ♀, VI, Canal Flats, 16.09 km S, 50.150000, -115.816667, 1 ♂, VI, Cranbrook: 49.500000, -115.766667, 5 ♂♂, 1 ♀, VII, 1 ♂, 1 ♀, IX, Fernie, 90 km W, 49.500000, -115.066667, 1 ♂, VIII, Fernie, 90 km W on rte. 3, 49.500000, -115.066667, 2 ♂♂, 1 ♀, VIII, Fort Steele: 49.750000, -114.750000, 2 ♂♂, 3 ♀♀, VII, edge of pond, Lumby: (Rawlings Lake), 50.250000, -118.966667, 2 ♂♂, X, Marron Valley: (Velloco Lake), 49.366667, -119.666667, 1 ♂, III, Okanagan Falls: (Ross Lake), 49.350000, -119.566667, 1 ♂, VI, Oliver: 49.183333, -119.550000, 1 ♀, V, Peachland: 49.766667, -119.733333, 1 ♂, VII, Rampart: 49.551020, -116.593750, 2 ♂♂, VI, Salmon Arm: 50.683333, -119.283333, 2 ♂♂, IX, Salmon Arm: (Loon Lake), 50.683333, -119.283333, 1 ♂, IX, Vernon: 50.266667, -119.266667, 6 ♂♂, 2 ♀♀, IV, 4 ♂♂, 1 ♀, V, 1 ♀, VII, Westbank: 49.833333, -119.633333, 3 ♂♂, VI, MANITOBA: (Whitewater Lake), 5 ♂♂, VII, Arlington: 1 ♀, V, Aweme: 49.716667, -99.600000, 1 ♂, 1 ♀, V, 1 ♂, VI, 1 ♀, VII, Baldur: 49.383333, -99.250000, 2 ♂♂, 9 ♀♀, VII, Boissevain: 49.233333, -100.050000, 2 ♂♂, 4 ♀♀, VII, Brandon: (Whitewater Lake), 49.833333, -99.850000, 1 ♀, VII, Brandon, 30 km SE, (Baldur), 49.833333, -99.850000, 1 ♂, Nomonth, 14 ♂♂, 7 ♀♀, VII, Glenboro: 49.583333, -99.333333, 1 ♂, VI, Spruce-Sand Community, Husavick: 50.566667, -97.000000, 1 ♂, 3 ♀♀, VII, Little Stony Mountain: 50.083333, -97.233333, 1 ♀, VI, Selkirk: 50.150000, -96.866667, 1 ♀, 49.350000, -100.316667, 3 ♂♂, 4 ♀♀, VII, Sandy Lake: 50.533333, -110.183333, 1 ♀, VI, Selkirk: 50.150000, -96.866667, 1 ♀, VII, Selkirk, 24 km NE, (Beaconia), 50.150000, -96.866667, 1 ♀, VII, Shile, 8 km SW, 49.816667, -99.633333, 1 ♂, VI, Floodplain Community nr. Tamarack Bog, Shoal Lake: 50.433333, -100.583333, 1 ♂, 3 ♀♀, VII, Stonewall: 50.133333, -97.316667, 1 ♂, 1 ♀, V, 2 ♀♀, VII, Stonewall: 50.133333, -97.316667, 1 ♀, V, Victoria Beach: 50.700000, -96.566667, 6 ♂♂, 3 ♀♀, V, 1 ♀, VI, Victoria Beach: (Lake Winnipeg), 50.700000, -96.566667, 1 ♀, VII, Whitewater Lake: (Regent), 5 ♂♂, 4 ♀♀, VI, Winnipeg: 49.883333, -97.150000, 1 ♂, IV, 2 ♀♀, V, 1 ♂, 1 ♀, VI, Woodlands: (Shoal Lake), 50.200000, -97.666667, 1 ♂, 1 ♀, VII, Norfolk: Onah: 49.800000, -99.533333, 2 ♂♂, VII, NEW BRUNSWICK: Saint John: 44.266667, -66.050000, 1 ♂, Nomonth, NOVA SCOTIA: Queens: Greenfield: 44.266667, -64.833333, 1 ♂, VII, ONTARIO: 1 ♂, 2 ♀♀, Nomonth, 1 ♀, IX, (Nipigon), 1 ♀, VI, Alcona, 6.5 km E, 44.316667, -79.533333, 1 ♀, VI, Bell's Corners: 45.316667, -75.833333, 1 ♂, VII, Belleville: 44.166667, -77.383333, 4 ♂♂, 2 ♀♀, VIII, Britannia Bay: 45.366667, -75.816667, 1 ♀, IV, Carp: (Kinburn), 45.350000, -76.033333, 1 ♀, V, Dundas: (Ancaster), 43.300000, -79.966667, 1 ♀, IV, Gravenhurst, 15 km SW, (Severn Falls), 44.916667, -79.366667, 1 ♀, Nomonth, Hurkett: 48.833333, -88.466667, 1 ♀, VI, Lansdowne: (St. Lawrence Island National Park), 44.400000, -79.016667, 1 ♂, VII, Lobo: 43.000000, -81.433333, 1 ♀, V, Muskoka Lake: (Bala), 45.450000, -78.616667, 1 ♀, VII, North Bay: 46.316667, -79.466667, 1 ♂, IX, Ottawa: 45.416667, -75.700000, 2 ♀♀, V, Presqu'île Prov. Park: 44.000000, -77.704000, 1 ♂, 3 unax., VIII, Raimy River: 48.716667, -94.566667, 2 ♀♀, X, Rondeau Park: 42.316667, -81.850000, 1 ♂, IX, Saint Thomas: 42.783333, -81.200000, 1 ♀, IV, Saint Williams: 42.666667, -80.416667, 6 ♂♂, 5 ♀♀, VI, Saint Williams: (Turkey Point), 42.666667, -80.416667, 1 ♀, VI, St. Lawrence Island National Park: 44.316667, -76.100000, 1 ♂, IX, Toronto: 43.666667, -79.383333, 6 ♂♂, 5 ♀♀, Nomonth, 1 ♂, 4 ♀♀, IV, 1 ♀, VI, Trenton: 44.100000, -77.583333, 1 ♂, V, Algoma: Echo Bay: 46.483333, -84.066667, 2 ♂♂, 3 ♀♀, IX, Bancroft: Hastings: 44.300000, -77.950000, 1 ♀, VI, Carleton: Mer Bleu: 45.416667, -75.716667, 1 ♂, IX, Kenora District: Providence Park, Nestor Falls: (Caliper Lake), 49.116667, -93.933333, 1 ♀, VI, vegetation mats, Kent: Tilbury: 42.266667, -82.433333, 1 ♂, 1 ♀, IV, 1 ♂, V, Prince Edward: 44.016667, -77.150000, 1 ♀, IV, 2 ♂♂, 2 ♀♀, V, 1 ♀, VII, 1 ♂, VIII, Renfrew: Pembroke: 45.816667, -77.116667, 6 ♂♂, 3 ♀♀, IX, QUEBEC: 2 ♂♂, V, Montréal: 45.500000, -73.600000, 1 ♀, Nomonth, Amos: 48.583333, -78.116667, 1 ♂, VI, Ancienne-Lorette: 46.800000, -71.350000, 1 ♂, IX, Berthierville: 46.083333, -73.166667, 2 ♂♂, 1 ♀, V, 3 ♂♂, 1 ♀, VI, Boucherville: 45.600000, -73.450000, 1 ♂, VIII, Carillon: 45.566667, -74.383333, 1 ♂, IX, Choisy: 45.470585, -74.279410, 1 ♂, IV, 1 ♀, V, 1 ♀, XI, Clarenceville: 45.066667, -73.250000,

1 ♂, VII. Como: 45.483333, -74.100000, 1 ♀, V. Duparquet: 48.500000, -79.233333, 1 ♂, V. Gatineau: 45.500000, -75.650000, 1 ♀, VI. Hudson: 45.450000, -74.150000, 1 ♂, 1 ♀, VI. Hudson (Hudson Heights): 45.450000, -74.150000, 1 ♂, VIII. Hull: 45.433333, -75.733333, 1 ♂, V, 1 ♀, IX, 1 ♂, X. Hull (Gatineau Park): 45.433333, -75.733333, 1 ♀, IX. Joliette: 46.016667, -73.450000, 1 ♂, 3 ♀♀, X. La Trappe: 45.500000, -74.033333, 1 ♂, 1 ♀, II, 1 ♀, IV, 1 ♂, XI. Lévis: 46.800000, -71.183333, 2 ♂♂, 5 ♀♀, VIII. Magog (Ayer's Cliffs): 45.266667, -72.133333, 1 ♀, VII. Montréal: 45.500000, -73.600000, 1 ♂, Nomonth, 3 ♂♂, 1 ♀, IV, 1 ♂, V, 1 ♂, 1 ♀, VI. Montréal (St-Theresa): 45.500000, -73.600000, 1 ♂, Nomonth. Namur (St-Emile de Suffolk): 45.900000, -74.933333, 1 ♀, VIII. Namur, 10 km, (St-Emile de Suffolk): 45.900000, -74.933333, 1 ♂, VIII. Oka: 45.466667, -74.100000, 2 ♂♂, 2 ♀♀, IV, 1 ♀, IX. Philipsburg: 45.033333, -73.083333, 3 ♂♂, VI. Pointe-Fortune: 45.566667, -74.383333, 2 ♂♂, V, 1 ♀, X. Reneault (Mt. Aiguebelle): 48.466667, -79.033333, 1 ♀, V, 1 ♂, VI. Richelieu River: 45.300000, -73.360000, 1 ♂, IX. Rigaud: 45.483333, -74.300000, 1 ♂, V, 1 ♂, VI, 2 ♂♂, 1 ♀, VIII. Rigaud (Pointe-Fortune): 45.483333, -74.300000, 1 ♂, 1 ♀, V. Saint Henri: 46.420000, -71.040000, 1 ♂, IX. Saint Joachim: 47.066667, -70.833333, 1 ♂, V. Saint-Joachim: 47.066667, -70.833333, 1 ♀, IX. St-Benoît-Labre: 46.066667, -70.800000, 1 ♂, IX. Ste-Foy: 46.783333, -71.283333, 2 ♂♂, VI. Ste-Mathilde: 47.683333, -70.100000, 2 ♂♂, VI. SASKATCHEWAN: Arcola: 49.633333, -102.483333, 1 ♂, 1 ♀, VI. Broadview: 50.366667, -102.583333, 1 ♀, VII. Cypress Hills Provincial Park: 49.650000, -109.500000, 1 ♂, VI, stream margin in forest. Davis Creek: 53.200000, -105.666667, 1 ♂, V. Ekapo Lake (Broadview): 50.366667, -102.516667, 4 ♂♂, 6 ♀♀, VII. Kenosee: 49.833333, -102.316667, 2 ♂♂, 2 ♀♀, VI. Plunkett, 14.5 km, 51.916667, -105.450000, 2 ♀♀, VII, on emergent veg. nr. slough. Prince Albert: 53.200000, -105.766667, 1 ♂, VI. Saskatoon: 52.116667, -106.633333, 3 ♂♂, V, V. Treelon (Rte. 37): 49.000000, -108.383333, 10 ♂♂, 7 ♀♀, IX. Treelon, 6.4 km N, (Rte. 37), 49.000000, -108.383333, 1 ♀, IX. UNITED STATES: No state: NoCo.: 1 ♂, Nomonth, 1 ♀, IV. Nosubd.: NoCo.: (Lake Superior), 1 ♀, Nomonth. CALIFORNIA: NoCo.: 2 ♀♀, Nomonth. COLORADO: NoCo.: 1 ♂, 1 ♀, Nomonth. Boulder Co.: Boulder: 40.015000, -105.270000, 1 ♂, 1 ♀, VI, 1 ♂, VII, 2 ♂♂, VIII, 5 ♂♂, IX. Boulder, 13 km, (Mesa Reservoir), 40.015000, -105.270000, 1 ♂, VII. Boulder, 6.4 km, (Mesa Reservoir), 40.015000, -105.270000, 1 ♂, VII. Wondervu: 39.925556, -105.394444, 1 ♂, VII. Denver Co.: Denver: 39.739167, -104.984167, 1 ♂, Nomonth, 1 ♂, IV. El Paso Co.: Fountain: 38.682222, -104.700278, 1 ♂, 1 ♀, VI. Jefferson Co.: Arvada: 39.802778, -105.086944, 1 ♀, VI. CONNECTICUT: Litchfield Co.: Cornwall: 41.843611, -73.329722, 1 ♂, VII. Tolland Co.: Mansfield City: 41.765833, -72.234167, 1 ♀, V, 1 ♀, X. Storrs: 41.808333, -72.250000, 1 ♀, IV, 1 ♂, XI. ILLINOIS: NoCo.: 3 ♂♂, 5 ♀♀, Nomonth, 1 ♂, V. NoCo.: Millersland: 1 ♀, V. Cook Co.: 41.816667, -87.616667, 1 ♂, 3 ♀♀, Nomonth. Chicago: 41.850000, -87.650000, 1 ♂, III, 1 ♂, 1 ♀, VIII. Evanston: 42.041111, -87.690000, 1 ♂, VII. Will Co.: Braidwood, 1 mi E off rte 113, 41.265000, -88.212222, 1 ♀, V, in sandy area. Braidwood, ca. 1 mi E off rte 113, 41.265000, -88.212222, 2 ♂♂, 1 ♀, V, under debris near pond. INDIANA: NoCo.: 1 ♀, II. Kosciusko Co.: Mineral Springs: 41.326111, -85.744167, 1 ♀, VIII. Lake Co.: Clarke Junction: 41.630000, -87.416389, 1 ♂, V. Hessville: 41.595556, -87.461667, 1 ♂, V. Miller: 41.602222, -87.258333, 1 ♂, IV. Montgomery Co.: Shades State Park: 39.941667, -87.091667, 1 ♀, V. Poner Co.: Indiana Dunes State Park: 41.663056, -87.036944, 1 ♂, VI. Putnam Co.: 39.666667, -86.833333, 1 ♂, III. IOWA: Dickinson Co.: Spirit Lake: 43.422222, -95.101944, 1 ♂, VI. Woodbury Co.: Sioux City (Missouri River): 42.500000, -96.400000, 1 ♂, 2 ♀♀, V. KANSAS: NoCo.: 2 ♀♀, Nomonth. KENTUCKY: Butler Co.: Richelieu: 37.005833, -86.692778, 1 ♀, IX. Richelieu (Richelieu Rv): 37.005833, -86.692778, 1 ♂, IX. MAINE: Kennebec Co.: Monmouth: 44.238611, -70.036111, 1 ♀, VI. Waterville: 44.551944, -69.632222, 1 ♂, VII. Oxford Co.: Bethel: 44.404167, -70.791111, 1 ♀, IV, 1 ♂, V, 2 ♂♂, 1 ♀, IX. Penobscot Co.: Bangor (1.95 at Hogan Rd.), 44.801111, -68.778333, 1 ♀, VI. York Co.: Saco: 43.500833, -70.443333, 1 ♀, VII. ham fat in field. MARYLAND: NoCo.: 1 ♀, III. Baltimore City Co.: Baltimore: 39.290278, -76.612500, 1 ♂, VII. MASSACHUSETTS: NoCo.: 13 ♂♂, 13 ♀♀, Nomonth. NoCo.: Bolster: 42.709722, -72.400000, 1 ♂, V. Barnstable Co.: Craigville: 41.639444, -70.335556, 1 ♂, 2 ♀♀, VII. Bristol Co.: Fall River: 41.701389, -71.155556, 1 ♂, VI, 1 ♀, VII, 1 ♀, XI. North Attleboro: 41.983333, -71.333333, 1 ♂, VI. Essex Co.: Manchester: 42.577778, -70.769444, 2 ♂♂, Nomonth, 1 ♀, V. Newburyport: 42.812500, -70.877778, 1 ♀, VII. Hampden Co.: Chicopee: 42.148611, -72.608333, 1 ♀, IV. Hampshire Co.: Mount Tom State Park, Mount Tom: 42.286111, -72.616667, 1 ♀, X. Middlesex Co.: Arlington: 42.415278, -71.156944, 1 ♀, III, 2 ♂♂, 1 ♀, IV. Billerica: 42.558333, -71.269444, 1 ♀, V. Cambridge: 42.366667, -71.100000, 2 ♂♂, 1 ♀, Nomonth, 1 ♀, IV. Framingham: 42.279167, -71.416667, 1 ♂, IV, 1 ♂, V, 1 ♀, VII. Lexington: 42.447222, -71.225000, 1 ♂, III, 1 ♂, IV, 2 ♂♂, 1 ♀, V, 1 ♀, VI, 4 ♂♂, 1 ♀, VII. Lincoln: 42.425833, -71.304444, 1 ♀, V. Lowell: 42.633333, -71.316667, 2 ♂♂, 2 ♀♀, Nomonth. Natick: 42.283333, -71.350000, 1 ♀, Nomonth: 1 ♂, IV. Dead grass in swamp; 1 ♂, VI. Under Stones. North Lexington (Hwy. 128, 0.5 km SW jet Hwy. 225): 42.463333, -71.237500, 1 ♂, VI. North Lexington (Hwy. 128, 0.5 km SW jet Hwy. 225): 42.463333, -71.237500, 1 ♂, 1 ♀, VI. Sherborn: 42.238889, -71.370278, 1 ♀, II. Sudbury: 42.383333, -71.416667, 4 ♂♂, 1 ♀, V. Waltham: 42.376389, -71.236111, 1 ♂, V. Watertown (Newton Highlands): 42.370833, -71.183333, 2 ♀♀, IV. Wayland: 42.362500, -71.361944, 1 ♂, III, 1 ♂, 2 ♀♀, V. Nantucket Co.: Nantucket: 41.283333, -70.100000, 3 ♂♂, 3 ♀♀, Nomonth, 2 ♀♀, IX. Norfolk Co.: 42.250000, -71.183333, 1 ♂, 2 ♀♀, Nomonth. Brookline: 42.331667, -71.121667, 1 ♂, Nomonth. Needham: 42.283333, -71.233333, 1 ♀, Nomonth. Randolph: 42.162500, -71.041667, 1 ♂, V. Wellesley: 42.296389, -71.293056, 1 ♂, V. Suffolk Co.: Dorchester (subdivision): 42.297222, -71.075000, 2 ♂♂, 5 ♀♀, V. Forest Hills: 42.296667, -71.104167, 1 ♂, 1 ♀, IV. Revere: 42.408333, -71.012500, 1 ♀, X. Roxbury (subdivision): 42.325000, -71.095833, 1 ♂, V. West Roxbury (subdivision): 42.279167, -71.150000, 1 ♂, IV, 1 ♂, V. Worcester Co.: 42.583333, -71.816667, 2 ♀♀, Nomonth. Northborough: 42.319444, -71.641667, 1 ♀, VII. MICHIGAN: NoCo.: 2 ♂♂, 2 ♀♀, Nomonth, 1 ♀, V. NoCo.: Douglas Lake: 1 ♀, VII. Alcona Co.: 44.650000, -83.283333, 1 ♀, VII. Baraga Co.: L'Anse: 46.756667, -88.452778, 1 ♀, VIII. Bay Co.: 43.583333, -83.916667, 1 ♂, V. Charlevoix Co.: Beaver Island: 45.751111, -85.515556, 2 ♂♂, VIII. Cheboygan Co.: 45.666667, -84.500000, 1 ♀, VII. Mackinaw City: 45.783889, -84.727778, 1 ♀, VI, 1 ♀, VII. Clinton Co.: Bath: 42.818611, -84.448611, 1 ♂, IV. Rose Lake St Wildlife Research Stn: 42.805278, -84.392500, 1 ♂, 1 ♀, V, 3 ♂♂, 4 ♀♀, VI; 1 ♂, IX, ex mud edge Typha marsh. Delta Co.: Escanaba: 45.745278, -87.064444, 3 ♂♂, 1 ♀, VI. Eaton Co.: Grand Ledge: 42.753333, -84.746389, 2 ♂♂, IV, Genesee Co.: 43.000000, -83.750000, 2 ♂♂, VI. Davison: 43.034722, -83.518056, 1 ♂, VI. Gratiot Co.: Sumner (Sumner Twp Sec 24): 43.306944, -84.815833, 1 ♂, IX. Sumner (Sumner Type Sec 24): 43.306944, -84.815833, 1 ♀, IX. Ingham Co.: Lansing (Agricultural College of Michigan): 42.732500, -84.555556, 2 ♂♂, IV, 1 ♀, V. Meridian: 42.689722, -84.363611, 1 ♀, V. Kalamazoo Co.: Gull Lake (Gull Lake Biology Station): 42.370833, -85.386667, 1 ♂, VI. Mackinac Co.: 45.850000, -84.650000, 1 ♀, VI. Saint Ignace: 45.868611, -84.727778, 4 ♂♂, 9 ♀♀, VII, 6 ♂♂, 4 ♀♀, VIII. Macomb Co.: 42.600000, -82.866667, 1 ♂, IV, 1 ♂, 4 ♀♀, V. Stoney Creek Park: 42.600000, -82.866667, 1 ♀, VII. Marquette Co.: Huron Mountain (Huron Mountain Club): 46.887222, -87.865278, 1 ♀, VI. Marquette: 46.543611, -87.395278, 1 ♂, Nomonth. Negaunee: 46.499167, -87.611667, 3 ♂♂, VIII. Mason Co.: Ludington State Park: 44.046389, -86.496944, 2 ♂♂, VI. Menominee Co.: 45.133333, -87.666667, 1 ♀, V. Menominee: 45.107778, -87.614167, 2 ♂♂, 4 ♀♀, VI. Montcalm Co.: 43.300000, -85.083333, 1 ♂, V. Six Lakes: 43.425000, -85.150000, 2 ♀♀, VIII. Oakland Co.: Kensington Park: 42.616667, -83.283333, 2 ♂♂, 4 ♀♀, V. Osceola Co.: 43.833333,

-85.583333, 1 ♂, VI. Roscommon Co.: 44.500000, -84.583333, 1 ♀, VII. Saginaw Co.: Saginaw (Shiawassee River at Willing Road), 43.419444, -83.950833, 1 ♂, V. Sanilac Co.: Port Sanilac: 43.430833, -82.542500, 1 ♂, 3 ♀♀, VI. St. Clair Co.: Port Huron: 42.970833, -82.425000, 1 ♂, VI. Snyderville: 42.836667, -82.671389, 1 ♂, 1 ♀, IV. Tuscola Co.: 43.483333, -83.416667, 1 ♂, VI. Washtenaw Co.: 42.283333, -83.750000, 1 ♂, IV. Ann Arbor: 42.283333, -83.745833, 1 ♀, Nomonth, 2 ♂♂, IV. Wayne Co.: Detroit: 42.331389, -83.045833, 1 ♂, Nomonth, 1 ♂, VIII. Wexford Co.: Mesick: 44.405278, -85.713333, 1 ♀, VIII. MINNESOTA: NoCo.: 2 ♂♂, 6 ♀♀, Nomonth, 1 ♀, VI. Anoka Co.: 45.200000, -93.400000, 1 ♀, IV. Coon Rapids (Coon Creek and Hwy 10), 45.120000, -93.287500, 1 ♂, IV. Becker Co.: Audubon: 46.863333, -95.981389, 3 ♂♂, X. Beltrami Co.: Bemidji: 47.473611, -94.880000, 3 ♂♂, 1 ♀, V. Bemidji (Lake Bemidji): 47.473611, -94.880000, 1 ♀, IX. Benton Co.: Sauk Rapids: 45.591944, -94.165833, 1 ♂, V. Big Stone Co.: 45.300000, -96.433333, 1 ♀, Nomonth. Artichoke: 45.399167, -96.157222, 2 ♂♂, VI, 1 ♂, VIII. Odessa: 45.259722, -96.328611, 1 ♂, VIII. Ortonville: 45.304722, -96.444444, 1 ♀, VIII. Chippewa Co.: Milan, 5.63 km SW (Lake Lac Qui Parle), 45.108611, -95.913056, 1 ♂, VI. Chisago Co.: 45.400000, -92.816667, 5 ♀♀, Nomonth. Clay Co.: 46.833333, -96.750000, 1 ♂, V. Moorhead: 46.873889, -96.767222, 1 ♂, ♀, Moorhead, 3.2 km S, 46.873889, -96.767222, 1 ♂, V. Moorhead, 3.22 km S, 46.873889, -96.767222, 1 ♂, 2 ♀♀, V. Clearwater Co.: Lake Itasca: 47.253889, -95.212222, 1 ♂, VI. Itasca State Park, Lake Itasca: 47.253889, -95.212222, 5 ♂♂, VI. Crow Wing Co.: Breezy Point (Pelican Lake), 46.616667, -94.216667, 2 ♀♀, VIII. Mille Lacs Lake, near Garrison, 46.233333, -93.650000, 3 ♀♀, V. Nisswa (Pelican Lake), 46.520556, -94.288333, 2 ♂♂, VIII. Dakota Co.: Nicols: 44.822222, -93.220278, 1 ♀, VI. Hennepin Co.: 44.966667, -93.250000, 1 ♀, IV, 1 ♂, V. Saint Anthony (Saint Anthony Park), 45.020556, -93.217778, 1 ♀, Nomonth. Houston Co.: 43.633333, -91.516667, 1 ♂, V. Hubbard Co.: Horton: 46.811111, -95.096944, 1 ♀, V. Kandiyohi Co.: Sibley State Park, New London, 6.5 km W, 45.301111, -94.943889, 1 ♀, V. Malaise Trap, Mille Lacs Co.: Vineland: 46.163611, -93.757222, 4 ♂♂, 2 ♀♀, VI, on beach. Vineland (Mille Lacs Lake), 46.163611, -93.757222, 1 ♂, VI. Olmsted Co.: 44.016667, -92.500000, 3 ♂♂, Nomonth. Otter Tail Co.: 46.283333, -96.050000, 2 ♂♂, 3 ♀♀, Nomonth. Fergus Falls, 44.900000, -93.083333, 1 ♂, 1 ♀, IV. Lake Vadnais: 45.051111, -93.091667, 1 ♂, V. Saint Paul: 44.944444, -93.093056, 1 ♂, VI. University of Minnesota golf course: 44.992222, -93.195000, 1 ♀, VII, light trap. Red Lake Co.: Plummer: 47.911389, -96.041389, 1 ♂, IX. St. Louis Co.: Rollins: 47.256667, -91.845000, 1 ♂, VII. Traverse Co.: 45.800000, -96.483333, 1 ♀, Nomonth. Washington Co.: 45.066667, -92.800000, 2 ♂♂, 1 ♀, V. Afton: 44.902778, -92.783333, 1 ♀, V. MISSISSIPPI: NoCo.: 2 ♀♀, Nomonth. NEBRASKA: Cherry Co.: Kennedy (Hackberry Lake), 42.547222, -100.816389, 1 ♂, VII. Simeon: 42.613333, -100.719444, 1 ♀, VIII. Kimball Co.: Lodgepole Wayside Area: 41.229722, -103.823889, 2 ♂♂, VIII, on sandy and rocky pond margin. Sioux Co.: 42.683333, -103.883333, 1 ♀, Nomonth. NEW HAMPSHIRE: Carroll Co.: Center Harbor: 43.709722, -71.460833, 1 ♀, VIII. Cheshire Co.: Hinsdale, 1.6 km SW, 42.786111, -72.486944, 1 ♂, Nomonth. Winchester (Rt. 10), 42.773333, -72.383611, 1 ♂, VI. Coos Co.: Colebrook: 44.894444, -71.496389, 1 ♂, 1 ♀, VII. Pitfall trap. Mount Washington: 44.270556, -71.304722, 1 ♂, IX. White Mountains, Pinkham Notch: 44.257500, -71.254167, 1 ♂, VII. Pittsburg, 4.8 km NE (Back Lake), 45.051111, -71.391944, 1 ♂, VI. Grafton Co.: Plymouth (Pemigewasset River S of ref pt), 43.756944, -71.688611, 1 ♀, V. Hillsborough Co.: Hollis: 42.743056, -71.592222, 1 ♀, V, pitfall trap. Hudson, 6.5 km S (Ayers Pond), 42.764722, -71.440278, 2 ♂♂, IV. Litchfield (Mesenkeag Brook), 42.844167, -71.480278, 1 ♀, V, bank. Manchester: 42.995556, -71.455278, 1 ♀, Nomonth. Nashua, 1.6 km N (Merrimack River), 42.765278, -71.468056, 2 ♂♂, V. Pelham (Beaver Brook), 42.734444, -71.325000, 1 ♂, VII. Wilton: 42.843333, -71.735556, 2 ♀♀, V. Merrimack Co.: Hill (Pemigewasset River), 43.524167, -71.701389, 1 ♂, V. Rockingham Co.: Hampton: 42.937500, -70.839444, 1 ♀, IV. Strafford Co.: Rochester: 43.304444, -70.976111, 1 ♂, V. Sullivan Co.: Charlestown: 43.238611, -72.425000, 1 ♂, IX. Claremont, 1.6 km NW (Sugar River), 43.376667, -72.347222, 2 ♂♂, VIII. Washington: 43.175833, -72.097222, 1 ♂, Nomonth. NEW JERSEY: NoCo.: 2 ♀♀, Nomonth, 1 ♂, V. Bergen Co.: Fort Lee: 40.850833, -73.970556, 1 ♀, Nomonth. Palisades Park: 40.848056, -73.998056, 1 ♂, IV. Rivervale: 41.009444, -74.011667, 6 ♀♀, V. Burlington Co.: Chatsworth: 39.817500, -74.535278, 1 ♀, V. Cape May Co.: Avalon: 39.101111, -74.718056, 1 ♂, 1 ♀, VIII. Mercer Co.: Trenton: 40.216944, -74.743333, 2 ♂♂, III. Monmouth Co.: Keyport: 40.433056, -74.200000, 1 ♀, X. Morris Co.: Chester: 40.784167, -74.697222, 1 ♀, Nomonth. Somerset Co.: Meadowdale: 42.670556, -73.984167, 3 ♂♂, 3 ♀♀, V. Bronx Co.: Kings Bridge: 40.878611, -73.905556, 1 ♀, IV. Broome Co.: Binghamton: 42.098611, -75.918333, 1 ♂, Nomonth, 1 ♀, III. Columbia Co.: Maiden Bridge: 42.470556, -73.583333, 3 ♂♂, 2 ♀♀, V. Erie Co.: Buffalo: 42.886389, -78.878611, 2 ♀♀, VI. Essex Co.: Mount Marcy: 44.112500, -73.923889, 1 ♂, VI. Kings Co.: Brooklyn Heights: 40.695278, -73.994167, 1 ♂, V. Livingston Co.: Conesus Lake Junction: 42.855556, -77.705833, 1 ♀, VII. Monroe Co.: Rochester: 43.154722, -77.615833, 3 ♂♂, 1 ♀, Nomonth, 1 ♂, IV, 1 ♀, X. Nassau Co.: Roslyn: 40.799722, -73.651389, 1 ♂, 3 ♀♀, VII. New York Co.: 40.750000, -74.000000, 1 ♀, V. New York: 40.714167, -74.006389, 1 ♂, Nomonth. New York (Staten Island), 40.714167, -74.006389, 1 ♂, 1 ♀, V. Niagara Co.: Olcott: 43.337778, -78.715000, 1 ♂, IV. Orange Co.: West Point: 41.391389, -73.956389, 1 ♀, VI. Queens Co.: 40.750000, -73.833333, 1 ♂, XII. Glendale: 40.701389, -73.887222, 2 ♂♂, 2 ♀♀, Nomonth. Schenectady Co.: Schenectady: 42.814167, -73.940000, 1 ♂, V. Schuyler Co.: Odessa (Cayuta Lake), 42.336667, -76.788889, 1 ♂, VII. St. Lawrence Co.: Cranberry Lake: 44.222500, -74.836667, 2 ♂♂, VII. Suffolk Co.: Calverton: 40.906389, -72.743889, 1 ♂, IX. Tompkins Co.: Ithaca: 42.440556, -76.496944, 2 ♀♀, Nomonth, 1 ♀, 10 ♂♂, 9 ♀♀, IV, 3 ♂♂, 3 ♀♀, V, 1 ♂, VI, 1 ♂, VII, 2 ♂♂, IX, 1 ♂, 1 ♀, X. McLean (Mud Pond), 42.551944, -76.291389, 1 ♀, V. Taughannock Falls: 42.535556, -76.611111, 1 ♂, 1 ♀, VI. Wayne Co.: Sodus Point: 43.271667, -76.989444, 1 ♀, IX. Westchester Co.: Peekskill: 41.290000, -73.920833, 2 ♂♂, Nomonth. Van Cortlandtville: 41.314722, -73.904167, 1 ♀, Nomonth. Wyoming Co.: Pike: 42.556389, -78.153056, 1 ♂, VII. NORTH CAROLINA: Buncombe Co.: Asheville: 35.600833, -82.554167, 1 ♂, Nomonth. NORTH DAKOTA: NoCo.: 3 ♂♂, Nomonth. Benson Co.: York, 15.47 km W, 48.312778, -99.573056, 4 ♂♂, 7 ♀♀, VI. Billings Co.: Elkhorn Ranch State Historic Site: 47.252778, -103.623611, 2 ♂♂, VI. Bottineau Co.: 48.800000, -100.466667, 1 ♀, VII. Burke Co.: Bowbells, 8 km E (Hwy. 52; Upper Des Laes Lk.), 48.803056, -102.245556, 8 ♂♂, 5 ♀♀, V. Upper Des Laes Lake, 8 km E Bowbells (Hwy 52), 48.696111, -102.101389, 9 ♂♂, 2 ♀♀, V. Cass Co.: 46.883333, -96.800000, 1 ♀, IV, 3 ♀♀, VI. Fargo: 46.877222, -96.789444, 1 ♀, IV, 2 ♂♂, 2 ♀♀, V. Dunn Co.: Killdeer, 4.8 km NW, 47.371944, -102.753611, 1 ♀, IX. Killdeer Mountains: 47.445833, -102.932222, 1 ♀, VI. McLean Co.: Turtle Lake: 47.520000, -100.889722, 1 ♂, VII. Ramsey Co.: 48.166667, -98.916667, 1 ♂, 1 ♀, VI. Richland Co.: 46.283333, -96.633333, 1 ♀, VI. Mirror Pool: 46.525833, -97.241389, 3 ♂♂, 6 ♀♀, IV. Walcott, 17.7 km W, 46.548889, -96.936389, 1 ♂, 2 ♀♀, V. Wyndmere (Wyndmere Dump), 46.266667, -97.131944, 1 ♀, VI. Rolette Co.: Turtle Mountains, 48.941944, -100.066111, 1 ♀, V. OHIO: Ashtabula Co.: 41.733333, -80.766667, 1 ♂, 1 ♀, IV. Mahoning Co.: Mill Creek Park: 41.040833, -80.692778, 1 ♀, V. Sandusky Co.: Woodville: 41.451389, -83.365833, 1 ♂, VII. PENNSYLVANIA: NoCo.: 2 ♀♀, Nomonth. Adams Co.: Germantown: 39.769167, -77.148333, 1 ♀, Nomonth. Butler Co.: Slippery Rock: 41.063889, -80.056667, 1 ♂, 1 ♀, V. Centre Co.: Bear Meadows: 40.729167, -77.762500, 1 ♀, V. Delaware Co.:

Castle Rock: 39.974167, -75.440556, 1 ♀, IV. Monroe Co.: Delaware Water Gap: 40.979167, -75.143333, 2 ♀♀, Nomonth. Perry Co.: Wila, 1.6 km W, 40.483889, -77.173889, 1 ♀, V. Philadelphia Co.: Philadelphia: 39.952222, -75.164167, 1 ♂, Nomonth, 1 ♂, IV. Westmoreland Co.: Forbes State Forest: 40.129444, -79.187778, 1 ♀, VII. spruce flats treading. Jeannette: 40.328056, -79.615556, 1 ♂, Nomonth. SOUTH DAKOTA: NoCo.: 1 ♂, Nomonth. Brookings Co.: 44.300000, -96.783333, 2 ♂♂, VI. Brookings: 44.311389, -96.798056, 1 ♂, 3 ♀♀, X. Oak Lake: 44.517222, -96.531111, 2 ♂♂, V, rock. Volga: 44.323611, -96.926111, 3 ♂♂, 3 ♀♀, Nomonth. Brown Co.: Columbia: 45.613056, -98.312222, 1 ♀, VII. Lake Co.: (Oakwood), 44.016667, -97.133333, 1 ♂, V, 1 ♂, VI. Madison: 44.006111, -97.113611, 1 ♀, IV; 1 ♀, VI, beach. Union Co.: Elk Point: 42.683333, -96.683333, 1 ♂, V, log, sod. TENNESSEE: NoCo.: 1 ♀, Nomonth. Sevier Co.: Gallinburg: 35.714167, -83.510278, 1 ♀, V, under stone. VERMONT: NoCo.: 3 ♀♀, Nomonth. Chittenden Co.: Burlington: 44.475833, -73.212500, 2 ♂♂, 1 ♀, VI. Windsor Co.: Hartland: 43.540556, -72.399444, 2 ♂♂, Nomonth. WASHINGTON: Adams Co.: Keystone (Sprague Lake), 47.240833, -118.150278, 4 ♂♂, 1 ♀, VII. Cowlitz Co.: Cougar (Spirit Lake), 46.051667, -122.298333, 3 ♀♀, VII. Grant Co.: Grand Coulee: 47.941667, -119.002222, 1 ♀, IV. Grand Coulee (Dry Falls), 47.941667, -119.002222, 3 ♂♂, 4 ♀♀, IV. Grand Coulee (Meadow Creek), 47.941667, -119.002222, 1 ♂, IV. Lenore Lake, N end (Soap Lake, 14.3 km N on rte 17), 47.523466, -119.484644, 1 ♂, V, at night along flat banks with mats of algae and washed up plant debris and in marshy areas. Moses Lake: 47.130278, -119.276944, 2 ♂♂, 1 ♀, V. King Co.: Seattle: 47.606389, -122.330833, 1 ♀, V. Spokane Co.: Spokane: 47.658889, -117.425000, 2 ♂♂, Nomonth. WISCONSIN: NoCo.: 1 ♂, 1 ♀, Nomonth, 2 ♀♀, VI. Bayfield Co.: 46.683333, -90.916667, 1 ♂, Nomonth. Bayfield: 46.810833, -90.818056, 2 ♀♀, Nomonth. Brown Co.: Green Bay: 44.519167, -88.019722, 1 ♂, IV. Dane Co.: 43.083333, -89.383333, 1 ♀, IV, 1 ♂, 1 ♀, VI. Madison: 43.073056, -89.401111, 1 ♂, Nomonth, 1 ♂, IV. Dodge Co.: Beaver Dam: 43.457778, -88.837222, 2 ♂♂, Nomonth, 1 ♀, IV, 1 ♂, 2 ♀♀, V. Fond du Lac Co.: Eldorado State Wildlife Area (North Fond du Lac, 6.1 km W), 43.814667, -88.565000, 1 ♂, VI, raking dead herbaceous plants along edge of marsh. Kenosha Co.: Kenosha, 3.4 km on rte 50, 2.3 km on rte 31, 42.545500, -87.893000, 1 ♂, 2 ♀♀, V, treading on edge of small marsh, dead and live vegetation, semi-urban countryside, oad savannah. Langlade Co.: Antigo: 45.140278, -89.152222, 1 ♂, V. Milwaukee Co.: Milwaukee: 43.038889, -87.906389, 1 ♀, VII. River Hills (T8N R22E Sec. 12 NW 1/4), 43.174167, -87.924167, 1 ♀, VI, active at night on muddy banks of river, some sand/little vegetation. Ozaukee Co.: Thiensville, 3.9 km N on rte 57 (Mee-Kwon Park), 43.237500, -87.978611, 14 ♂♂, 6 ♀♀, V, Under rocks and debris on margins of small pond. Polk Co.: Saint Croix Falls: 45.410000, -92.639444, 2 ♂♂, 1 ♀, V. Racine Co., Burlington, 9.0 km NE on rtes 83 & 36, 42.678056, -88.276111, 1 ♂, V, by treading. Walworth Co.: 1.9 km E. East Troy, 42.650000, -88.533333, 3 ♀♀, V. East Troy, 0.9 km N, (Jct. 20 & 24 on 24), 42.785278, -88.377447, 2 ♂♂, 3 ♀♀, VI, treading margin of small pond: East Troy, 1.0 km N, Jct. 20 & 24 on 24, 42.785278, -88.377447, 1 ♂, VI. Treading margin of small pond: East Troy, 1.9 km E, (Small pond off Hwy 24), 42.785278, -88.377447, 1 ♂, VI, by treading emergent vegetation. East Troy, 1.9 km E on rte 24, 42.785278, -88.377447, 1 ♂, V, Taken by treading along grassy edges of pond. East Troy, 1.9 km E on rte 24, 42.785278, -88.405000, 1 ♂, VI, from forest grassland at pond's edge with shrubs. East Troy, 1.9 km E on rte 24, 42.785278, -88.377447, 38 ♂♂, 22 ♀♀, VII, Under debris in moist depression by pond: 5 ♂♂, 7 ♀♀, VIII, Under debris in damp depression by pond: 4 ♂♂, 10 ♀♀, IX, Under debris in moist depression by pond. Lyons State Wildlife Area (Lake Geneva, 4.5 km NW on Sheridan Springs Rd.), 42.624333, -88.385667, 1 ♂, V, by treading down grassy vegetation in wet area, sedge meadows, standing water. Washburn Co.: Minong (Gilmore Creek), 46.099444, -91.824722, 1 ♂, V, on sand-gravel bank of creek; 1 ♂, V, on sand-gravel bank of creek at night. Washington Co.: Crooked Lake, S end (West Bend, 22.6 km N), 43.617766, -88.143845, 1 ♂, VI, taken by treading along sides of lake by a boat landing. Jackson, 3.4 km E, (Jackson Marsh), 43.323889, -88.166667, 1 ♂, VI, moist area with dense 30-72 inch vegetation, 1 ♂, VII, moist area with dense 30-72 inch vegetation. Jackson Marsh (Jackson, 3.4 km E, 1.5 km N), 43.333333, -88.122333, 2 ♂♂, 3 ♀♀, VI, by treading mud in Jackson Marsh. Slinger, 3.4 km W, (Pike Lake), 43.333611, -88.286111, 1 ♂, V, by treading emergent vegetation on shore of small pond. West Bend, 16.9 km NW, (Rock River Jct. Hwy. D.), 43.425278, -88.183333, 1 ♀, VI. Waukesha Co.: Dousman, 6.6 km E on rte 18, 43.014167, -88.472500, 1 ♀, VI, in old gravel pit; 1 ♀, VI, Under rocks in old gravel pit. Kettle Moraine St. F., Eagle, 4 km W, 1.1 km S, 42.879444, -88.474167, 1 ♂, IV. Kettle Moraine State Forest, Eagle, 8.2 km N, 42.946166, -88.478166, 1 ♂, IV, Under debris in grassy area by pond. Genesee Lake, N shore Lower Genesee Lake & S shore Middle Genesee Lake, 43.044722, -88.480278, 4 ♀♀, VII, Active at night in sandy and sandy-clay areas. Lower Genesee Lake (N end), 43.044722, -88.480278, 4 ♀♀, VII, Active at night in sandy and sandy-clay areas near lake. Lower Genesee Lake, N end: 43.044722, -88.480278, 1 ♀, X, Under large metal can on lakeshore. Muskego Park, 1.6 km SW, (Jct. Hwys. Y and 24.), 42.905833, -88.138889, 2 ♀♀, VIII, on gravel beach at night. Wood Co.: Cranmoor: 44.314722, -90.032778, 1 ♀, IV, 1 ♀, V. Wisconsin Rapids: 44.383611, -89.817222, 1 ♂, V.

15. *Anisodactylus (A.) californicus* Dejean

NO LOCALITY: 9 ♂♂, 7 ♀♀, Nomonth, 1 ♀, V. Chili: 1 ♂, Nomonth. CANADA: ALBERTA: Bon Accord: 53.833333, -113.416667, 6 ♂♂, 2 ♀♀, Nomonth. Christina Lake: 55.633333, -110.916667, 1 ♀, V. BRITISH COLUMBIA: 1 ♂, Nomonth (Miller), 1 ♀, V. Atbara: 49.600000, -117.166667, 4 ♂♂, 3 ♀♀, IV. Creston: 49.100000, -116.516667, 3 ♂♂, 1 ♀, III, 5 ♂♂, 5 ♀♀, IV, 1 ♂, 2 ♀♀, V; 1 ♀, V, under stone. Cascade Mountains, Hope: 49.383333, -121.450000, 1 ♂, IX. Huntingdon: 49.000000, -122.266667, 7 ♂♂, 6 ♀♀, IV, 1 ♂, V, 1 ♀, X. Keremeos: 49.200000, -119.833333, 1 ♂, I ♀, Nomonth. Langley: 49.100000, -122.650000, 1 ♂, 2 ♀♀, III. Milner: 49.000000, -122.000000, 1 ♀, V. Nanaimo: 49.166667, -123.933333, 4 ♂♂, VII. New Westminster: 49.216667, -122.916667, 2 ♂♂, 1 ♀, VII, 1 ♂, VIII. Okanagan Falls: 49.350000, -119.566667, 1 ♀, V. Okanagan Falls (Ross Lake), 49.350000, -119.566667, 1 ♂, V, 1 ♀, VII. Oliver: 49.183333, -119.550000, 6 ♂♂, 5 ♀♀, V, 1 ♂, X. Oliver (White Mountains), 49.183333, -119.550000, 2 ♂♂, V. Osoyoos: 49.166667, -119.500000, 3 ♂♂, IV, 6 ♂♂, 4 ♀♀, V. Penticton: 49.500000, -119.583333, 4 ♂♂, V. Princeton: 49.466667, -120.516667, 2 ♂♂, Nomonth. Rampart: 49.551020, -116.593750, 1 ♂, VII. Richter Pass: 49.028169, -119.680851, 1 ♂, 1 ♀, Nomonth. Sanca: 49.400000, -116.733333, 1 ♀, IV. Sooke: 48.366667, -123.716667, 1 ♂, VIII. Vancouver: 49.250000, -123.116667, 3 ♂♂, 4 ♀♀, Nomonth, 1 ♂, IV, 1 ♂, V, 1 ♀, VII. Vancouver Island: 48.433333, -123.366667, 1 ♂, 2 ♀♀, Nomonth. Vancouver Island (Goldfield), 48.433333, -123.366667, 1 ♀, VI. Vernon: 50.266667, -119.266667, 4 ♂♂, 1 ♀, V, 1 ♂, X. Vancouver Island, Victoria: 48.433333, -123.366667, 5 ♂♂, 1 ♀, Nomonth, 1 ♂, VIII. Wellington: 49.200000, -124.016667, 1 ♀, V. Westbank: 49.833333, -119.633333, 2 ♂♂, VI. Wynndel: 49.183333, -116.550000, 3 ♂♂, 6 ♀♀, IV. MEXICO: Noshubd.: 2 ♀♀, 1 unsex., Nomonth. BAJA CALIFORNIA: 1 ♂, V, 1 ♂, 2 ♀♀.

♀♀, VI, 1 ♂, VIII. Bahia Concepcion: 26.650000, -111.800000, 2 ♀♀, III. El Rosario, 16 km N, 30.033333, -115.766667, 1 ♂, 2 ♀♀, VII, under seaweed on rocky beach. El Socorro: 31.066667, -115.683333, 1 ♂, VII. Ensenada: 31.883333, -116.633333, 1 ♀, VI, 2 ♀♀, VII. Ensenada, 16 km E, 31.883333, -116.633333, 1 ♂, VII. Guerrero: 30.800000, -116.000000, 1 ♂, VIII. Rosario: 32.333333, -117.033333, 1 ♂, V. BAJA CALIFORNIA, NORTE: El Rosario, 19.3 km E, 30.033333, -115.766667, 1 ♂, IV. JALISCO (Lago de Chapala), 20.200000, -103.000000, 2 ♀♀, VII. Lago de Chapala: 20.200000, -103.000000, 1 ♂, VII. NORTH AMERICA: Nosubd.: 1 ♀, VI. UNITED STATES: No state: NoCo.: Fairfield: 2 ♂♂, V. Nosubd.: NoCo.: Slauscon Hills: 1 ♂, V. ARIZONA: NoCo.: 1 ♀, Nomonth. Coconino Co.: Kaibab Lake: (Williams, 3.5 km NE on N. F. 47 km), 35.249444, -112.190278, 1 ♀, VI, under rocks & washed up plant debris along shore Kaibab Lake where silt to clay soil damp to wet beneath, countryside evergreen forest. Santa Cruz Co.: Patagonia: 31.539444, -110.755556, 1 ♀, VI. CALIFORNIA: NoCo.: 63 ♂♂, 42 ♀♀, Nomonth. NoCo.: Santa Cruz Mts., 1 ♂, Nomonth. NoCo.: Lake Mountain: 2 ♂♂, 1 ♀, VI. NoCo.: Nieder: 1 ♀, Nomonth. NoCo.: Potato, 1 ♂, V. Alameda Co.: 37.800000, -122.266667, 2 ♂♂, 1 ♀, Nomonth, 1 ♂, VI, 1 ♂, XI. Alameda: 37.765278, -122.240556, 1 ♂, 1 ♂, V. Alameda Co.: 37.800000, -122.266667, 2 ♂♂, 1 ♀, Nomonth, 1 ♂, VI, 1 ♂, XI. Alameda: 37.871667, -122.271667, 1 ♂, 2 ♀♀, II, 1 ♀, III, 1 ♀, IV, 1 ♀, V, 1 ♀, VI, 2 ♂♂, 1 ♀, VII, 2 ♀♀, IX, 4 ♂♂, X, 4 ♂♂, XI, 1 ♂, 1 ♀, XII. Hayward: 37.668889, -122.079722, 1 ♂, XI. Livermore: 37.681944, -121.766944, 2 ♂♂, VII. Livermore: (Los Mochos Canyon), 37.681944, -122.079722, 1 ♂, XI. Livermore, 9.7 km S, 37.681944, -121.766944, 1 ♀, IV. Niles District: 37.578889, -121.976667, 1 ♀, VII, -121.766944, 2 ♂♂, IX. Livermore: 37.681944, -121.766944, 1 ♀, IV. Niles District: 37.578889, -121.976667, 1 ♀, VII. Oakland: 37.804444, -122.269722, 1 ♂, IV, 1 ♀, VII, 1 ♂, IX. Oakland: (B.S.A. Camp), 37.804444, -122.269722, 1 ♀, V. Oakland: (Mills College), 37.804444, -122.269722, 2 ♂♂, 1 ♀, III. Pleasanton: 37.662500, -121.873611, 1 ♀, X. Alpine Co.: Monitor Pass: (Loope Ck), 38.675556, -119.619444, 1 ♀, Nomonth. Monitor Pass, 1.9 km E, 38.675556, -119.619444, 1 ♀, VI. Amador Co.: Drytown, 3.2 km SE, 38.441111, -120.853333, 8 ♂♂, 4 ♀♀, IV. Drytown, 3.2 km SE, 38.441111, -120.853333, 2 ♂♂, 2 ♀♀, IV. Jackson, 11.3 km E, (Squaw Lake), 38.348889, -120.773056, 1 ♀, V. Sutter Creek: 38.393056, -120.801389, 1 ♂, VIII. Butte Co.: Chico: 39.728611, -121.836389, 1 ♂, 1 ♀, III, under bark or board. Chico: (Butte Creek Canyon), 39.728611, -121.836389, 1 ♂, IV. Oroville: 39.513889, -121.555278, 1 ♀, VII. Calaveras Co.: Mokelumne Hill: 38.300556, -120.705278, 1 ♀, IV. Colusa Co.: 12.9 km W, (Hwy. 16 and 20), 39.200000, -122.016667, 1 ♀, I, under logs and stones. Colusa: 39.214444, -122.008333, 1 ♂, 1 ♀, VI. Grand Island: 39.066111, -121.867222, 2 ♂♂, 1 ♀, I, 2 ♂♂, II. Contra Costa Co.: Antioch: 38.005000, -121.804722, 1 ♀, XII. Brentwood: 37.931944, -121.694722, 1 ♂, III, 1 ♂, IX. Concord: 37.978056, -122.030000, 3 ♂♂, 2 ♀♀, II, 1 ♀, XI. El Cerrito: 37.915833, -122.310556, 1 ♂, X, 1 ♂, XII. Lafayette: 37.885833, -122.116944, 1 ♀, V. Marsh Creek Reservoir: 37.890278, -121.724444, 1 ♂, I. Martinez: 38.019444, -122.133056, 1 ♂, III. Mount Diablo: 38.862778, -122.930000, 1 ♂, IV. Mount Diablo: 37.881667, -121.912778, 1 ♀, X. Orinda: 37.877222, -122.178611, 1 ♀, II, 2 ♂♂, V, 1 ♂, VII, 2 ♀♀, I, 2 ♂♂, IX. Port Costa: 38.046389, -122.182222, 1 ♀, II. Richmond: 37.935833, -122.346667, 1 ♂, 1 ♀, II, 2 ♂♂, VI. Alhambra Valley, Vine Hill: 38.008611, -122.095000, 4 ♂♂, 2 ♀♀, VI. Walnut Creek: 37.906389, -122.063889, 1 ♂, Nomonth, 2 ♀♀, I, 2 ♂♂, IV, 1 ♂, V. West Pittsburg: 38.026944, -121.936111, 1 ♂, III. Del Norte Co.: Smith River: 41.928611, -124.145278, 1 ♂, VII. Six Rivers National Forest, Stout Grove: (Smith River), 41.790556, -124.081667, 1 ♂, VIII. El Dorado Co.: 38.716667, -120.783333, 1 ♀, VI, 1 ♀, VII. Bridal Veil Camp: (American River, S fork), 38.768611, -120.483056, 1 ♂, VII. Diamond Springs: 38.694722, -120.813889, 1 ♂, V. El Dorado: 38.682778, -120.846667, 1 ♀, IV. El Dorado, 0.48 km NE, 38.682778, -120.846667, 1 ♂, IV, under debris in pasture with pond in it. Georgetown, 20 km E, 38.906944, -120.837500, 3 ♂♂, V. Blodgett Forest, Georgetown, 20.9 km E, 38.906944, -120.837500, 1 ♀, V. Kyburz: (Wrights Lake), 38.774722, -120.295833, 1 ♀, VII. Lathrop: 38.559722, -120.982778, 1 ♀, VII, 1 ♂, XI. Placerville: 38.729722, -120.797500, 1 ♀, VI. Riverton, 4.8 km W., (S Fork American River), 38.771111, -120.448333, 1 ♂, VII. Fresno Co.: Clovis: 36.825278, -119.701944, 2 ♂♂, 1 ♀, III; 1 ♂, V. Blacklight, Fresno: 36.747778, -119.771389, 1 ♂, III, 2 ♂♂, 1 ♀, VI, 1 ♀, VIII. Helm: 36.531667, -120.097222, 1 ♂, IV. Helm, 4.8 km SE, (Fresno Slough), 36.531667, -120.097222, 1 ♀, IV. Kerman: 36.723611, -120.058889, 1 ♀, II, Ethylene glycol pit trap. Kingsburg: 36.513889, -119.553056, 1 ♂, Nomonth. Sanger: 36.708056, -119.555000, 1 ♂, III. Sequoia National Forest, Sequoia Lake: 36.731667, -118.989722, 1 ♀, VI. Sequoia Lake: (General Grant Grove), 36.731667, -118.989722, 1 ♂, Nomonth. Humboldt Co.: 40.750000, -124.166667, 1 ♂, VI. (Between Crescent City and Eureka), 40.750000, -124.166667, 1 ♀, VI. Arcata: 40.866667, -124.081667, 1 ♂, II. Big Lagoon: 41.160556, -124.132500, 1 ♀, Nomonth, 1 ♂, X. Blue Lake: 40.883056, -123.982778, 3 ♂♂, VI. Eureka: 40.802222, -124.162500, 1 ♂, Nomonth, 2 ♂♂, 1 ♀, III, 21 ♂♂, 10 ♀♀, IV, 1 ♂, V, 7 ♂♂, 5 ♀♀, VI. Fieldbrook: 40.965833, -124.034444, 1 ♀, V. Fort Seward: 40.223056, -123.642222, 2 ♂♂, 2 ♀♀, V, 3 ♀♀, VI. Freshwater, 2.1 km N NW, 40.761667, -124.060556, 2 ♂♂, II, 1 ♀, XI. Honeydew: 40.244444, -124.121667, 1 ♂, VIII. Little River: 40.981111, -123.893611, 1 ♂, VII. Rio Dell: 40.499444, -124.105278, 1 ♂, VI. Samoa: 40.818889, -124.185278, 1 ♀, VI. Scotia: 40.482500, -124.099722, 1 ♂, Nomonth, 1 ♂, 1 ♀, VII. Shively: 40.430833, -123.968611, 1 ♂, 1 ♀, Nomonth. Trinidad: 41.059444, -124.141944, 4 ♂♂, 2 ♀♀, VI. Inyo Co.: Panamint Mountains, 36.800000, -118.200000, 1 ♂, IV. Deep Springs Valley, Deep Springs: 37.371667, -117.984167, 1 ♂, II. Inyo National Forest, Diaz Lake: 36.560833, -118.054167, 1 ♂, VI. Fish Springs: 37.075000, -118.252778, 1 ♀, VI. Fish Springs, 8 km S, (Big Pine), 37.075000, -118.252778, 4 ♂♂, VI. Inyo National Forest, Goose Lake: (Owens Valley), 36.888056, -118.181111, 1 ♂, IV. Independence: 36.802778, -118.199167, 1 ♂, III; 1 ♂, V, light. Owens Valley, Keeler: 36.487222, -117.873056, 1 ♀, VI. Little Lake: 35.936667, -117.905833, 1 ♂, 1 ♀, IV. Lone Pine: 36.606111, -118.061944, 2 ♂♂, IV, 4 ♀♀, V, 3 ♂♂, 1 ♀, VI. Owens Valley: 36.835000, -118.166667, 1 ♂, VI. Kern Co.: 35.383333, -119.000000, 1 ♂, 1 ♀, Nomonth. Bakersfield: 35.373333, -119.017778, 2 ♂♂, 2 ♀♀, Nomonth, 1 ♂, 2 ♀♀, I. Caliente Creek: 35.279722, -118.833056, 5 ♂♂, 18 ♀♀, III. Delano: 35.768889, -119.246111, 1 ♀, XII. Fort Tejon State Hist. Park: 34.872778, -118.899167, 2 ♀♀, VIII. Glennville, 11.3 km E, (Alder Creek), 35.728889, -118.702778, 1 ♀, Nomonth. Sequoia National Forest, Isabella Lake: 35.646389, -118.481389, 1 ♀, VI. Kernville: 35.754722, -118.424444, 1 ♀, IV. Kernville, 1.6 km SE, (Lake Isabella), 35.646389, -118.481389, 3 ♂♂, V. Kernville, 1.6 km SE, (Lake Isabella), 35.646389, -118.481389, 3 ♂♂, 1 ♀, V. Lake Isabella: 35.646389, -118.481389, 1 ♂, V. Lebec: 34.836667, -118.863333, 9 ♂♂, 12 ♀♀, IV. Reyes Station, 4.8 km NW, 38.069167, -122.805833, 1 ♂, VI. Muddy edge cattle watering pond, Rosedale: 35.383611, -119.144444, 2 ♂♂, 2 ♀♀, III. Tejon Canyon: 35.050833, -118.673889, 1 ♂, 1 ♀, V. Walker Pass: 35.662500, -118.025833, 1 ♀, IV. Wofford Heights: 35.706944, -118.455278, 1 ♂, Nomonth. Kings Co.: Hanford: 36.327500, -119.644722, 4 ♂♂, 1 ♀, VI. Murray: 36.094167, -120.002500, 2 ♂♂, 4 ♀♀, Nomonth. Lake Co.: Butts Canyon: 38.697222, -122.441389, 1 ♂, IV. Clear Lake: 39.061667, -122.826111, 1 ♀, VII. Lakeport, 4.8 km N, (McNeil's pond), 39.043056, -122.914722, 1 ♀, VIII. Lower Lake: 38.910556, -122.609167, 3 ♂♂, 2 ♀♀, V, 1 ♀, IX. Lower Lake: (Boraz Lake), 38.910556, -122.609167, 1 ♂, V. Lucerne: 39.090278, -122.795278, 2 ♀♀, V. Middletown: 38.752500, -122.613889, 1 ♀, VII. Middletown, 16 km SE, (Butte Canyon), 38.752500, -122.613889, 1 ♂, 3 ♀♀, IV. Lassen Co.: Eagle Lake, E end: 40.645000, -120.742778, 5 ♂♂, 4 ♀♀, V. Eagle Lake, Gallatin Beach at S end: (Susanville, 26.7 km NW on res. 36.44 & A1), 40.556833, -120.779833, 3

♀♀, VII, under rocks (sand damp beneath) on mod. sloped, lakeshore with mod. dense green grass and other herbs, evergreen forest. Eagle Lake, Gallatin Beach, S end: (Susanville, 26.7 km. NW of on rtes. 36, 44 & A1), 40.556833, -120.779833, 8 ♂♂, VII, under rocks (sand damp beneath) on mod. sloped, lake shore w. mod. dense green grass & other herbs., evergreen forest. Plumas National Forest, Hallelujah Junction: 39.775556, -120.038333, 1 ♀, VII, Poison Lake: (Redding, 121 km E on route 44), 40.662222, -121.200278, 1 ♂, VI, along flat banks, soil mostly gravel-silt, loosely packed, sparse grasses and other herbaceous plants. Swains Hole: (Susanville, 64.2 km NW on rtes 36 & 44 & 5.2 km N on N.F. rte 33N13), 40.684167, -121.266333, 1 ♀, VII, Under rocks and dried cow pies (clay to sand-clay damp beneath) near remaining water in mostly dry meadow with sparse grass and other herbaceous plants, pine forest. Los Angeles Co.: 34.000000, -118.250000, 6 ♂♂, 9 ♀♀, Nomonth. San Gabriel Mts., 34.000000, -118.250000, 1 ♂, Nomonth. (Barrel Springs), 34.000000, -118.250000, 4 ♂♂, XI, Burbank: 34.180833, -118.308056, 1 ♂, I, Claremont: 34.096667, -117.718889, 2 ♂♂, 2 ♀♀, Nomonth, 1 ♀, IV, Claremont: (Baldy), 34.096667, -117.718889, 2 ♂♂, 1 ♀, II, Compton: 33.895833, -118.219167, 1 ♂, IX, Downey: 33.940000, -118.131667, 1 ♀, IV, El Monte: 34.068611, -118.026667, 1 ♂, 1 ♀, Nomonth, 1 ♂, II, 1 ♂, 3 ♀♀, III, 1 ♂, 1 ♀, IV, 4 ♂♂, 7 ♀♀, V, 2 ♀♀, VI, Florence: 33.974444, -118.247222, 1 ♂, 2 ♀♀, XII, Glendora: 34.136111, -117.864444, 1 ♂, 1, 36 ♂♂, 11 ♀♀, VIII, Glendora: (Dalton Canyon), 34.136111, -117.864444, 2 ♂♂, VII, Gorman: 34.796111, -118.851667, 4 ♂♂, 3 ♀♀, IV, Hidden Lake: (Pine Canyon), 34.708889, -118.545833, 8 ♂♂, 5 ♀♀, III, 1 ♂, IX, Hynes: 33.868852, -118.202128, 1 ♂, IV, Laguna: 33.976667, -118.138889, 3 ♀♀, Nomonth, 2 ♂♂, 1 ♀, V, 1 ♂, 2 ♀♀, VII, 1 ♂, VIII, Long Beach: 33.766944, -118.188333, 2 ♂♂, 1 ♀, III; 6 ♂♂, 8 ♀♀, V, under rocks on mostly algae covered banks of vernal ponds. Los Angeles: 34.052222, -118.242778, 6 ♂♂, 9 ♀♀, Nomonth, 2 ♀♀, II, 2 ♂♂, 1 ♀, III, 9 ♂♂, 1 ♀, IV, 1 ♀, V, 1 ♀, VI, Griffith Park, Los Angeles: 34.052222, -118.242778, 1 ♀, VII, Los Angeles: (Los Angeles River), 34.052222, -118.242778, 1 ♂, IV, Los Nietos: 33.968333, -118.069722, 3 ♀♀, VIII, Palmdale: 34.579444, -118.115556, 1 ♂, 3 ♀♀, VI, Pasadena: 34.147778, -118.143611, 2 ♂♂, 3 ♀♀, Nomonth, 1 ♂, 1 ♀, I, 1 ♀, III, 2 ♂♂, IV, 1 ♂, V, 3 ♂♂, 1 ♀, VII, Playa del Rey: 33.948889, -118.444722, 1 ♂, IV, 1 ♂, VI, Pomona: 34.055278, -117.751389, 1 ♂, Nomonth Pomona: (Cal Poly Campus), 34.055278, -117.751389, 1 ♂, XI, Redondo Beach: 33.849167, -118.387500, 1 ♂, III, 1 ♀, IV, 1 ♀, V, Reservoir Hill: 34.662500, -118.723611, 2 ♂♂, 1 ♀, Nomonth, 1 ♀, IX, Reservoir Hill, L. A. Grant: 34.662500, -118.723611, 1 ♀, III, Riviera: 34.057778, -118.500556, 5 ♂♂, 6 ♀♀, X, Rosemead: 34.080556, -118.071944, 1 ♂, 1 ♀, IV, San Francisco: 34.097222, -118.032222, 1 ♂, III, San Gabriel: 34.096111, -118.105000, 1 ♂, III, 1 ♀, VIII, San Marino: 34.121389, -118.105556, 1 ♀, II, 2 ♂♂, III, 1 ♀, IV, 1 ♂, V, 2 ♂♂, VII, 1 ♂, 2 ♀♀, IX, Santa Monica: 34.019444, -118.490278, 2 ♂♂, IV, 1 ♀, V, Tejon Pass: 34.801389, -118.874444, 2 ♀♀, VII, Wilmington: 33.780000, -118.261667, 1 ♂, IX, Madera Co.: (Chiquito Creek), 36.950000, -120.066667, 1 ♀, VIII, Chiquito Creek: 37.534167, -119.436389, 3 ♂♂, VII, Coarsegold: 37.262222, -119.700000, 1 ♀, Nomonth, 2 ♂♂, VII, North Fork: 37.229722, -119.508611, 1 ♂, III, Raymond: 37.217222, -119.904444, 1 ♀, VIII, Marin Co.: 37.966667, -122.516667, 1 ♂, 1 ♀, Nomonth, 1 ♂, 1 ♀, 1, 4 ♂♂, 4 ♀♀, II, 1 ♂, VI, 1 ♀, IX, 3 ♂♂, 9 ♀♀, X, 1 ♂, XII, Point Reyes National Seashore, Coast Trail: 38.006389, -122.834167, 1 ♀, V, Copper Mine Gulch, 3 km to 1.6 km E, (Hwy 1), 37.946944, -122.712778, 1 ♂, XI, Dillon Beach: 38.250833, -122.964167, 2 ♂♂, 2 ♀♀, VII, Under decaying kelp at high tide line in Bay, Fort Baker: 37.859167, -122.484167, 1 ♂, Nomonth, Flood Plain of Tomales Bay, Inverness: 38.101111, -122.855833, 1 ♀, IV, Lagunitas Lake: 37.947500, -122.595000, 1 ♂, 2 ♀♀, I, McClure's Beach: 38.209386, -122.963123, 1 ♀, V, Point Reyes National Seashore, McClure's Beach: 38.187500, -122.964167, 1 ♀, V, under driftwood above high tide level, Mill Valley: 37.906111, -122.543889, 1 ♂, III, Nicasio Reservoir: 38.061667, -122.697500, 2 ♂♂, 1 ♀, II, 2 ♀♀, IV, 1 ♂, V, 4 ♀♀, VII; 9 ♂♂, 5 ♀♀, VII, Mud Flats, Nicasio Reservoir (N end): 38.076667, -122.753333, 3 ♂♂, 2 ♀♀, VI, 3 ♂♂, 3 ♀♀, XII, Nicasio Reservoir (W end): 38.076667, -122.753333, 3 ♂♂, 5 ♀♀, XII, Novato: (Novato Creek at Hwy. 101), 38.107500, -122.568611, 1 ♀, V, Olema, 3.2 km S, 38.040833, -122.786944, 1 ♂, IV, Point Reyes National Seashore, Point Reyes: 38.001389, -122.995833, 1 ♀, VIII, under driftwood above high tide level, Point Reyes National Seashore: 38.066667, -122.883333, 2 ♂♂, 1 ♀, V, Point Reyes National Seashore: (Firebreak Camp), 38.066667, -122.883333, 1 ♂, V, Point Reyes National Seashore: (Glen Camp), 38.066667, -122.883333, 5 ♂♂, 4 ♀♀, V, San Rafael: 37.973611, -122.530000, 1 ♀, VI, Tiburon: 37.873611, -122.455556, 10 ♂♂, 2 ♀♀, Nomonth, Tocaloma: (Lagunitas Creek), 38.050278, -122.758333, 2 ♂♂, 4 ♀♀, VII, Maniposa Co.: Yosemite National Park, El Capitan Meadow: 37.724722, -119.637500, 1 ♂, 1 ♀, VIII, Yosemite National Park, Mirror Lake: 37.748611, -119.548056, 2 ♂♂, 1 ♀, Nomonth, Yosemite National Park: 37.850000, -119.566667, 3 ♂♂, V, 2 ♀♀, VI, 2 ♀♀, VII, Yosemite National Park, Yosemite Valley: 37.745278, -119.597222, 1 ♂, 3 ♀♀, VIII, Mendocino Co.: 39.150000, -123.206667, 1 ♀, VI, Big River: 39.317500, -123.371944, 5 ♂♂, 4 ♀♀, VIII, Elk: 39.130278, -123.716667, 1 ♀, VIII, Fort Bragg: 39.445833, -123.804167, 5 ♀♀, VIII, Hardy: 39.712500, -123.801944, 1 ♂, 2 ♀♀, Nomonth, Hopland Field Station Headquarters, Hopland, 1 km SE, 38.973056, -123.115278, 2 ♂♂, IV, pond area, Mendocino National Forest, Howard Lake: 39.680833, -123.294722, 1 ♂, VI, Ryan Creek: 39.476389, -123.379722, 2 ♂♂, III, Ukiah: 39.150278, -123.206667, 1 ♀, III, 2 ♀♀, VI, 2 ♂♂, 1 ♀, IX, 1 ♂, XII, Willits: 39.409722, -123.354444, 1 ♂, 4 ♀♀, III, Merced Co.: (San Joaquin River), 37.283333, -120.500000, 1 ♂, VI, 4 ♂♂, 3 ♀♀, VIII, Dos Palos: 36.986111, -120.625556, 1 ♀, VII, 1 ♀, VIII, Dos Palos: (San Joaquin River at Hwy 152), 36.986111, -120.625556, 1 ♂, 2 ♀♀, II, Hilmar: 37.408611, -120.849167, 2 ♂♂, 2 ♀♀, VI, Merced: 37.302222, -120.481944, 1 ♂, 3 ♀♀, V, Modoc Co.: 41.483333, -120.550000, 1 ♂, VII, Goose Lake, SW end: (Davis Creek, 21.5 km W & N on rte 48), 41.866333, -120.494000, 1 ♀, VII, under rocks, dried cow pies, dried mats aquatic plants (sand, silt damp beneath) in lake basin near remaining water. Mono Co.: 38.250000, -119.216667, 1 ♂, Nomonth, Inyo National Forest, Millner Creek, 3 km SW, (White Mountain Peak), 37.579167, -118.397222, 1 ♀, VII, Monterey Co.: 36.683333, -121.666667, 1 ♀, I, Carmel By The Sea: 36.555000, -121.918333, 1 ♂, I, 3 ♂♂, 4 ♀♀, II, 3 ♀♀, III, 1 ♂, IV, 1 ♀, VI, 1 ♀, VII, 3 ♀♀, X, 1 ♂, XI, Corral de Tierra: 36.532222, -121.713056, 1 ♀, IX, Fort Ord: 36.630278, -121.819722, 2 ♀♀, IV, 1 ♂, 1 ♀, VI, Greenfield, 4.8 km E, (Salinas River), 36.320833, -121.242778, 1 ♀, XII, Harnett College: 36.673611, -121.664444, 1 ♂, V, Monterey: 36.600278, -121.893611, 1 ♂, VI, Moss Landing: 36.804444, -121.785833, 3 ♂♂, 2 ♀♀, VII, Pacific Grove Acres: 36.628889, -121.928889, 1 ♀, Nomonth, 1 ♂, II, 1 ♂, 3 ♀♀, IX, Paraiso Springs: 36.331389, -121.367778, 1 ♀, IV, 1 ♀, V, 2 ♂♂, VII, Soledad, 3.2 km S, (Los Coches Campground), 36.424722, -121.325278, 2 ♂♂, V, Strawberry Canyon: (U. C. Campus), 36.832500, -121.684167, 1 ♀, IV, Napa Co.: Atlas: 38.429167, -122.246944, 2 ♂♂, 1 ♀, V, Collins: 38.165833, -122.251389, 1 ♂, Nomonth, Rutherford: 38.458611, -122.421389, 1 ♂, I, Saint Helena: 38.505278, -122.469167, 1 ♀, Nomonth, Nevada Co.: Crystal Lake: 39.322778, -120.569167, 2 ♀♀, V, Graniteville: (Bear River Bowman Lake), 39.440833, -120.738611, 1 ♂, 3 ♀♀, VIII, Graniteville: (Bear River, Bowman Lake), 39.440833, -120.738611, 4 ♂♂, 3 ♀♀, VIII, Nevada City: 39.261667, -121.015000, 2 ♂♂, IX, Orange Co.: Alamitos Bay, 33.749722, -118.117222, 1 ♂, IV, Costa Mesa: 33.641111, -117.917778, 1 ♀, VI, Cypress: 33.816944, -118.036389, 1 ♂, 4 ♀♀, II, 1 ♂, 1 ♀, IX, 1 ♂, XII, Garden Grove: 33.773889, -117.940556, 5 ♂♂, 3 ♀♀, III, ex trash under orange trees, Huntington Beach: 33.660278, -117.998333, 2 ♀♀, I, 4 ♂♂, 2 ♀♀, IV, 1 ♂, VI; 1 ♀, X, under debris, Laguna Beach: 33.542222, -117.782222, 1 ♀, IX, Laguna Niguel: (San Juan Canyon), 33.522500, -117.706667, 1 ♀, Nomonth, Newport Beach: 33.618889, -117.928056, 1 ♂, IV, 2 ♂♂, V, under boards in wash near

former vernal pool. Newport Beach: (Newport Bay), 33.618889, -117.928056, 2 ♂♂, V, under boards in wash near former vernal pool, Orange: 33.787778, -117.852222, 1 ♂, 2 ♀♀, II, 2 ♀♀, VII, 1 ♂, VIII, 1 ♀, X, San Juan Capistrano: 33.501667, -117.661667, 2 ♂♂, 1 ♀, VIII, San Juan Capistrano: (Doheny Park), 33.501667, -117.661667, 1 ♂, IV, Seal Beach: 33.741389, -118.103889, 1 ♀, III, Smeltzer: 33.730278, -117.993611, 1 ♀, III, Smeltzer: (Stanford University), 33.730278, -117.993611, 1 ♂, XI, Placer Co.: 38.866667, -121.083333, 1 ♂, Nomonth, 4 ♂♂, 1 ♀, VI, Cisco: 39.301667, -120.545833, 1 ♂, Nomonth, 1 ♀, VII, Dutch Flat: (Bear River), 39.206111, -120.836667, 2 ♀♀, VIII, Tahoma: (Lake Tahoe), 39.067500, -120.127222, 1 ♂, V, Plumas Co.: (Big Lake), 39.933333, -120.933333, 1 ♂, X, (Route 36), 39.933333, -120.933333, 1 ♂, VI, Almanor: (Lake Almanor), 40.217500, -121.173056, 1 ♂, VIII, Chester: 40.306389, -121.230833, 1 ♀, IX, Lake Almanor, Canyon Dam Pic. Area: (S end of lake), (Westwood, 3.9 km W on rte. A21, 18.1 km S on rte. 147, 0.6 km), 40.172333, -121.085833, 2 ♂♂, VII, ex. rocks (sand-gravel damp beneath) on artif. lake shore (with sparse-mod. green grass & and herbs.) by dry stream, evergreen forest, Lake Almanor, S end: (Westwood, 3.9 km W on rte A21, 18.1 km S on rte 147, 0.6 km W on rte 89), 40.173167, -121.085833, 1 ♀, VII, rocks (sand-gravel damp beneath) on artif. lake shore (w. sparse-mod. green grass & herbs.) by dry stream, evergreen forest, Quincy: 39.936944, -120.946111, 1 ♀, IV, Collected under rocks along stream, Taylorville: 40.075556, -120.838611, 1 ♂, 1 ♀, XII, Riverside Co.: San Bernardino Valley, 33.983333, -117.350000, 1 ♀, Nomonth, San Bernardino Mts., 33.983333, -117.350000, 1 ♀, VII, Ground, under grass, Alberhill: 33.727222, -117.398889, 2 ♂♂, 3 ♀♀, VI, Banning: 33.925556, -116.875556, 1 ♀, VI, Beaumont: 33.929444, -116.976389, 1 ♂, Nomonth, Corona: 33.875278, -117.565556, 1 ♀, V, Elsinore: 33.668056, -117.326389, 2 ♂♂, 4 ♀♀, IV, Elsinore: (Elsinore Lake), 33.668056, -117.326389, 2 ♂♂, 3 ♀♀, IX, San Jacinto Mountains, Hemet: 33.747500, -116.971111, 2 ♀♀, VIII, Indio: 33.720556, -116.214722, 1 ♀, IV, Palm Desert, 5.6 km S. (P. L. Boyd Des. Res. Center), 33.721389, -116.387500, 1 ♀, V, Palm Springs: 33.830278, -116.544444, 1 ♂, 2 ♀♀, IV, 1 ♀, V, Riverside: 33.953333, -117.395278, 2 ♂♂, 4 ♀♀, Nomonth, 1 ♀, IV, 1 ♀, VI, 1 ♂, XI, 1 ♂, XII, Lake Elsinore, Sedco Hills: 33.641667, -117.290000, 2 ♀♀, IX, Thermal: 33.640278, -116.138611, 11 ♂♂, 4 ♀♀, II, 5 ♀♀, VII, White Water Post Office: 33.925000, -116.635833, 1 ♂, Nomonth, Sacramento Co.: Carmichael: 38.617222, -121.327222, 1 ♀, III, 2 ♂♂, 2 ♀♀, IV, Fair Oaks, Sailor Bar Park, Fair Oaks: 38.644722, -121.271111, 1 ♀, II, Folsom Lake: 38.707500, -121.150000, 3 ♂♂, 2 ♀♀, VIII, Michigan Bar: 38.499444, -121.044444, 4 ♂♂, X, Orangevale: 38.678611, -121.224722, 1 ♂, III, Sacramento: 38.581667, -121.493333, 2 ♂♂, 1 ♀, Nomonth, 4 ♀♀, I, 1 ♂, 1 ♀, I, collected on soil; 1 ♂, IX, berlese compost, Sherman Island: 38.059444, -121.732222, 1 ♀, I, San Benito Co.: Hollister: 36.852500, -121.400556, 1 ♂, VIII, San Juan Bautista: (Pajaro River at Hwy. 101), 36.845556, -121.536944, 1 ♂, V, San Bernardino Co.: 34.116667, -117.316667, 2 ♂♂, 1 ♀, Nomonth, 1 ♂, VI, San Bernardino Mountains, Big Bear Lake: 34.243889, -116.910556, 1 ♂, IV, Colton: 34.073889, -117.312778, 1 ♂, Nomonth, 1 ♀, X, Cucamonga: 34.106389, -117.592222, 1 ♀, VIII, Chicken Manure, Etiwanda: 34.126111, -117.522778, 4 ♂♂, XII, Highland: 34.128333, -117.207778, 1 ♂, 1 ♀, Nomonth, 1 ♂, IV, Old Baldy Council Camp: 34.295278, -116.913056, 1 ♀, VI, Ontario: 34.063333, -117.650000, 2 ♂♂, IX, Oro Grande: 34.598889, -117.333333, 1 ♀, VI, San Bernardino: 34.121389, -117.302222, 2 ♂♂, 2 ♀♀, Nomonth, 1 ♂, 1 ♀, VI, San Bernardino: (Waterman Gardens), 34.121389, -117.302222, 3 ♂♂, Nomonth, Yucaipa: 34.033611, -117.042222, 2 ♂♂, IV, Yucaipa, 4.8 km E., 34.033611, -117.042222, 1 ♀, IV, San Diego Co.: 32.716667, -117.166667, 7 ♂♂, 6 ♀♀, Nomonth, 2 ♂♂, 1 ♀, II, 1 ♂, 2 ♀♀, III, 2 ♂♂, IV, 5 ♂♂, 1 ♀, V, 1 ♀, VI, 2 ♂♂, 2 ♀♀, VII, Alvarado Canyon: 32.781111, -117.087222, 1 ♀, III, Alvarado Canyon: (Alvarado Estates), 32.781111, -117.087222, 1 ♂, Nomonth, 4 ♂♂, 2 ♀♀, IV, Buena: 33.173333, -117.207778, 1 ♂, Nomonth, Carlsbad: 33.158056, -117.349722, 1 ♂, VII, Chula Vista: 32.640000, -117.083333, 4 ♂♂, II, Coronado: 32.685833, -117.182222, 1 ♂, I, Cuyamaca: 32.946111, -116.575278, 1 ♂, IV, Cuyamaca Mountains: 32.941944, -116.603056, 1 ♂, VII, Cuyamaca Peak: 32.946667, -116.605556, 3 ♀♀, Nomonth, Descanso: 32.852778, -116.615000, 1 ♀, IV, 1 ♂, VI, Green Valley Falls: 32.900000, -116.582500, 1 ♀, V, Jacumba: 32.617500, -116.188889, 2 ♀♀, IV, 1 ♂, X, Laguna Mountains: 32.808333, -116.448333, 1 ♂, Nomonth, 1 ♂, VI, Lake Cuyamaca: 32.989444, -116.496111, 1 ♂, V, Mount Laguna: (Laguna Mountains), 32.872222, -116.417500, 1 ♂, Nomonth, 1 ♂, VI, 4 ♂♂, 2 ♀♀, VII, 1 ♂, 2 ♀♀, VIII, 2 ♂♂, 7 ♀♀, IX, Mount Laguna: (Laguna Mts.), 32.872222, -116.417500, 1 ♂, 1 ♀, VII, Ocean Beach: 32.745278, -117.254444, 1 ♂, Nomonth, Oceanside: (San Luis Rey River), 33.195833, -117.378611, 7 ♂♂, V, Pine Valley: 32.821389, -116.528333, 1 ♀, III, Poway: 32.962778, -117.035000, 4 ♂♂, 1 ♀, Nomonth, Poway, 11.3 km SW, (Pomeroy Canyon), 32.962778, -117.035000, 1 ♀, VII, Pond mud flats, San Diego: 32.715278, -117.156389, 11 ♂♂, 9 ♀♀, Nomonth, Balcon Park, San Diego: 32.715278, -117.156389, 1 ♀, I, San Diego: (San Luis Rey River, Rt. 76), 32.715278, -117.156389, 1 ♂, 1 ♀, Nomonth, San Luis Rey Camp, 2.3 km NW on rte 76, (near Lake Henshaw), 33.267857, -116.799107, 29 ♂♂, 18 ♀♀, II, under rocks and logs in shaded areas near shore of San Luis Creek in gully, San Ysidro: 33.255278, -116.565556, 1 ♀, VI, Bovine Manure, Santee: 32.838333, -116.973056, 1 ♀, XI, Valle De San Felipe: (Scissor's Crossing), 33.100833, -116.513889, 2 ♂♂, 2 ♀♀, V, Warner Hot Springs: 33.284167, -116.630278, 1 ♂, VIII, Warner Springs: 33.282222, -116.632778, 1 ♂, VII, San Francisco Co.: 37.750000, -122.433333, 10 ♂♂, 1 ♀, Nomonth, 2 ♂♂, IV, Farallon Islands: 37.733333, -123.033333, 1 ♂, X, San Francisco: 37.750000, -122.418333, 4 ♂♂, 3 ♀♀, Nomonth, 3 ♀♀, III, 2 ♀♀, IV, 3 ♂♂, V, 1 ♂, 2 ♀♀, VII, 2 ♀♀, VIII, 1 ♂, IX, 2 ♂♂, 1 ♀, XI, 1 ♂, XII, San Francisco: (Mountain Lake), 37.750000, -122.418333, 1 ♀, IV, San Joaquin Co.: Escalon: 37.797500, -120.995556, 5 ♂♂, III, 1 ♀, VIII, Lodi: 38.130278, -121.271389, 3 ♂♂, VI, Tracy: 37.739722, -121.424167, 2 ♂♂, III; 1 ♂, V, On ground under oak logs, Vernalis: 37.630833, -121.286111, 1 ♂, 1 ♀, II, San Luis Obispo Co.: 35.300000, -120.666667, 1 ♀, VIII, Arroyo Grande: 35.118611, -120.589722, 1 ♂, III, 1 ♀, X, Atascadero: 35.489444, -120.669722, 1 ♂, VIII, Cambria: 35.564167, -121.079722, 1 ♂, 1 ♀, V, Cayucos: 35.442778, -120.891111, 4 ♂♂, 5 ♀♀, XI, Hazard Canyon, Cuesta-by-the-Sea, 2 km S, 35.318333, -120.845833, 1 ♂, II, Oso Flaco Lake: 35.029444, -120.620833, 1 ♀, VI, Oso Flaco Lake, 8 km S, 35.029444, -120.620833, 1 ♀, VI, Paso Robles: 35.626667, -120.690000, 1 ♀, IV, 4 ♂♂, 3 ♀♀, IX, Pismo Beach: 35.142778, -120.640278, 1 ♂, VII, Santa Margarita: 37.483754, -122.132314, 2 ♂♂, 1 ♀, VI, bay marsh, East Palo Alto: (San Francisco Bay Marsh), 37.468889, -122.140000, 1 ♀, III, 1 ♂, 1 ♀, IV, 1 ♂, VII, 2 ♂♂, 5 ♀♀, IX, 2 ♂♂, X, East Palo Alto: (San Francisco Bay Marsh), 37.528611, -122.361111, 3 ♂♂, 1 ♀, V, 1 ♂, 3 ♀♀, VIII, Millbrae: 37.598611, -122.386111, 2 ♂♂, III, Pescadero: 37.255000, -122.380278, 1 ♀, IV, Pescadero: (Across highway from Pescadero Beach), 37.255000, -122.380278, 1 ♂, I, Redwood City: 37.486111, -122.233333, 1 ♀, VI, San Bruno: 37.630556, -122.410000, 2 ♀♀, III, San Gregorio: 37.327222, -122.385556, 2 ♂♂, VI, San Mateo Co.: 37.563056, -122.324444, 1 ♂, VIII, Thornton Beach: 37.696667, -122.498056, 1 ♂, V, 1 ♀, IX, Woodside: (Pulgas Temple), 37.430000, -122.252778, 1 ♀, XI, Santa Barbara Co.: Carpinteria: 34.398889, -119.517500, 1 ♀, I, Gaviota: 34.471667, -120.213889, 1 ♀, II, Goleta: 34.435833, -119.826667, 3 ♂♂, 1 ♀, VII, Guadalupe: 34.971667, -120.570833, 1 ♂, 1 ♀, V, Los Olivos, 24 km SW, (Lake Cachuma, Hwy 154), 34.667778, -120.113889, 2 ♂♂, 1 ♀, XII, Los Olivos, 24.1 km SW, (Lake Cachuma, Hwy. 154), 34.667778, -120.113889, 1 ♀, XII, Orcutt: 34.865278, -120.435000, 1 ♂, II, under rock, San Marcos Pass:

34.511667, -119.823611, 1 ♀, III. Channel Islands National Park, San Miguel Island: 34.039722, -120.374444, 1 ♂, V. Santa Barbara: 34.423333, -119.703333, 1 ♀, I, 2 ♂♂, 3 ♀♀, V, 1 ♀, VI. Santa Cruz Island: 34.016667, -119.716667, 1 ♂, 2 ♀♀, V. Santa Clara Co.: 37.333333, -121.900000, 2 ♂♂, 3 ♀♀, Nomonth, 1 ♂, X. (Olivas Chicken Rn.), 37.333333, -121.900000, 1 ♂, 1 ♀, X. 10.5 km E, (Mount Hamilton - Lick Observatory), 37.355072, -121.600000, 1 ♂, Nomonth, under rotten logs and pieces of wood in grassy area. 1 ♂, 1 ♀, III, under rotten logs and pieces of wood in grassy area. Alum Rock Park: 37.397778, -121.798611, 1 ♀, VIII. Alviso: 37.426111, -121.974167, 1 ♂, VI. Calaveras Lake: 37.492500, -121.819722, 2 ♂♂, II. Castro City: 37.402500, -122.102500, 1 ♂, I. Cherry Flat Dam: 37.397222, -121.757222, 1 ♀, XI, Under log. Cupertino: (Stevens Creek), 37.323056, -122.031111, 1 ♂, IV, Evergreen: 37.309722, -121.782500, 1 ♂, 1 ♀, IV, Under old rug in creek bed. Lagunita Lake: (Stanford University), 36.775278, -121.601111, 1 ♂, 1 ♀, I, 18 ♂♂, 12 ♀♀, III, 1 ♂, IV, 3 ♂♂, 6 ♀♀, V, 1 ♂, XI, 1 ♂, XII. Lick: 37.287222, -121.844722, 1 ♂, II. Los Gatos: 37.226667, -121.973611, 1 ♀, VI, Mount Hamilton - Lick Observatory, 10.5 km E, 37.355072, -121.600000, 1 ♂, III, under rotten logs & pieces of wood near small pond. Palo Alto: 37.441944, -122.141944, 1 ♀, IV, 2 ♂♂, 1 ♀, VI, 1 ♂, 1 ♀, VII. San Jose: 37.335278, -121.893889, 1 ♀, Nomonth, 1 ♀, II. William St. Park, San Jose: 37.335278, -121.893889, 1 ♂, II. San Tomas Aquinas Creek: 37.388889, -121.967500, 1 ♂, 5 ♀♀, X. Santa Clara: 37.347500, -121.267500, 1 ♂, 2 ♀♀, Nomonth. Santa Clara: (Calero Dam), 37.347500, -121.267500, 1 ♂, I. Stanford University: 37.427222, -122.169167, 2 ♂♂, Nomonth, 3 ♂♂, I, 2 ♂♂, 1 ♀, III, 10 ♂♂, 22 ♀♀, IV, 9 ♂♂, 18 ♀♀, V, 1 ♂, VI, 1 ♂, VIII, 5 ♂♂, 1 ♀, X, 2 ♂♂, 2 ♀♀, XI, 5 ♂♂, 2 ♀♀, XII. Stanford University: (Los Trancos Ck.), 37.427222, -122.169167, 1 ♂, VII, Stanford University: (Los Trancos Creek), 37.427222, -122.169167, 1 ♂, III. Stevens Creek: 37.445833, -122.062500, 10 ♂♂, 2 ♀♀, V. Santa Cruz Co.: 36.983333, -122.033333, 1 ♀, Nomonth, 1 ♀, V, 1 ♂, VIII. Aptos: 36.977222, -121.898333, 1 ♂, X. Davenport: 37.016667, -122.190833, 1 ♂, VII. Felton: 37.051389, -122.072222, 1 ♀, Nomonth. Santa Cruz: 36.974167, -122.029722, 1 ♂, 1 ♀, IV, 2 ♂♂, VI, 1 ♀, IX. Shasta Co.: Anderson: 40.448333, -122.296667, 14 ♂♂, 13 ♀♀, V, assoc. with vernal pool under rocks, 2 ♂♂, 3 ♀♀, VI, assoc. with vernal pool under rocks. Lassen National Forest, Hat Creek, 6.4 km E, (Comez Lake), 40.989722, -121.576322, 1 ♀, V. Hatcher Mountain Pass: 40.852500, -121.765833, 1 ♀, V. Mount Diller: 40.465000, -121.544722, 1 ♂, Nomonth. Redding: 40.586667, -122.390556, 1 ♂, 3 ♀♀, VI, 3 ♀♀, VII, 6 ♂♂, 5 ♀♀, VII. Collected in Ethylene glycol pit trap. Shasta: 40.599444, -122.490833, 3 ♂♂, 1 ♀, IX. Shasta Springs: 41.246944, -122.260000, 2 ♀♀, VI. Shingletown: 40.492500, -121.888056, 1 ♀, V. Siskiyou Co.: 41.716667, -122.600000, 2 ♀♀, Nomonth. Klamath National Forest, Gottsville: (Klamath River Valley), 41.867500, -122.740000, 1 ♂, VI. Grass Lake: 41.635000, -122.190278, 1 ♂, VI. Hilt: (Cottonwood Circle), 41.995000, -122.622222, 1 ♂, VI. Little Shasta River: 41.700000, -122.530000, 1 ♂, VI. Lower Klamath Lake: 41.937500, -121.739583, 1 ♂, 1 ♀, III; 1 ♀, IV, rock outcrop. Lower Klamath Lake: 41.888087, -121.664389, 1 ♂, 2 ♀♀, VI, old cow manure. Lower Klamath Lake: 41.927798, -121.386780, 6 ♂♂, 6 ♀♀, VI. Lower Klamath Lake: 41.937500, -121.739583, 1 ♂, 1 ♀, VI, old cow manure; 1 ♀, VI, grain field; 1 ♂, 1 ♀, VIII, alkalai pond. Ponds: 41.199444, -121.687778, 1 ♀, IX, Collected under rocks and logs. Tulake: 41.956111, -121.476389, 2 ♀♀, IX. Tulake: (W. side), 41.956111, -121.476389, 1 ♀, IV, sump under rock. Solano Co.: (Putah Canyon), 38.250000, -122.033333, 1 ♀, V. Dixon, 13.7 km S, (Ulates Creek flood control ditch), 38.323889, -121.821111, 1 ♂, 1 ♀, III. Dixon, 16 km S, 38.323889, -121.821111, 2 ♂♂, 1 ♀, III, 1 ♂, IV. Dixon, 16 km S on Hwy 113, 38.323889, -121.821111, 1 ♀, IV. Dixon, 19.3 km S, 38.323889, -121.821111, 2 ♂♂, 1 ♀, IV. Dozier: 38.285556, -121.815556, 1 ♂, IV. Fairfield: 38.249444, -122.038889, 1 ♂, V. Green Valley: 38.218889, -122.141111, 3 ♂♂, 5 ♀♀, VIII. Rio Vista: 38.155833, -121.690278, 2 ♂♂, 1 ♀, I. Ryer Island: 38.082778, -122.013333, 1 ♂, 1 ♀, XII. Suisun Bay: 38.066667, -122.033333, 1 ♂, VIII. Vallejo: 38.104167, -122.255556, 1 ♂, X. Sonoma Co.: 38.450000, -122.700000, 2 ♂♂, 1 ♀, Nomonth, 2 ♂♂, 1 ♀, IV. Bennett Mountain: 38.413056, -122.622778, 6 ♂♂, 7 ♀♀, IV, nr. marshy lake. Bodega: (Bodega Head), 38.345278, -122.972778, 2 ♂♂, V. Duncan Mills: 38.453889, -123.053889, 1 ♂, VI. Forestville: 38.473611, -122.889167, 2 ♂♂, V, 2 ♂♂, XI. Geyserville: 38.707778, -122.901389, 3 ♂♂, IV. Guerneville: 38.501944, -122.995000, 1 ♂, VII. Hacienda: 38.511389, -122.926667, 1 ♂, VII. Healdsburg: 38.610556, -122.868056, 1 ♂, V. Laguna de Santa Rosa: 38.470000, -122.839722, 1 ♂, 6 ♀♀, IV. Petaluma: 38.232500, -122.635556, 1 ♀, Nomonth. Petaluma: (Petaluma River), 38.232500, -122.635556, 1 ♂, V. Santa Rosa: 38.440556, -122.713333, 1 ♀, Nomonth, 1 ♂, II, 5 ♂♂, 5 ♀♀, IV. Scheville: 38.246111, -122.438611, 1 ♂, II. Sonoma: 38.291944, -122.456944, 3 ♂♂, 1 ♀, IV. Sonoma State College: 38.340000, -122.675000, 1 ♀, IV. Stanislaus Co.: Frank Raines Park, Del Puerto Canyon, 29.0 km W Patterson, 37.488333, -121.205833, 1 ♂, X. LaGrange: 37.663611, -120.462500, 1 ♀, I. Sutter Co.: 39.133333, -121.633333, 1 ♀, VII. Feather River, S of Nicolaus, 38.790000, -121.625000, 2 ♂♂, 1 ♀, III. Tehama Co.: Mill Creek: 40.326389, -121.521667, 1 ♀, Nomonth. Dog Island Park, Red Bluff, t. 40.178611, -122.234722, 1 ♂, IV, pond, river edge. Red Bluff: (Samson Slough), 40.178611, -122.234722, 2 ♂♂, IV. Sift oak litter on slough margin; 3 ♂♂, IV. Sift leaf litter on slough margin. Trinity Co.: Hayfork, 54.1 km SW on rtes 3 and 36, 40.463768, -123.523146, 1 ♀, VI, on mod. steep to nearly flat hillside with mod. dense in seed but alive grasses and scattered oaks. Mad River: 40.205556, -123.155278, 1 ♂, VIII. Tulare Co.: 36.333333, -119.300000, 1 ♀, II, 1 ♂, I ♀, IX. (Beach Ridge), 36.333333, -119.300000, 1 ♀, VII. (Rivere), 36.333333, -119.300000, 2 ♀♀, X. (Riviere ?), 36.333333, -119.300000, 1 ♂, X. Johnsondale, 7.2 km E Hwy. 190. South Creek at Kern River, 36.333333, -119.300000, 1 ♂, VII. Kaweah, 1.6 km N, (Lemon Cove), 36.469722, -118.917500, 1 ♂, V. Porterville: 36.065278, -119.015833, 1 ♀, III, 2 ♂♂, 1 ♀, V, 2 ♂♂, IX. Redbanks: (Woodlake), 36.422222, -119.143333, 1 ♂, 1 ♀, III, 1 ♂, 1 ♀, IV. Three Rivers: 36.438889, -118.903611, 1 ♂, 1 ♀, X. Tulare: 36.207778, -119.346389, 1 ♀, VIII. Woodlake Junction: 36.413611, -119.144444, 6 ♀♀, III. Tuolumne Co.: Stanislaus National Forest, Long Barn, 6.1 km NE, 38.093056, -120.133333, 1 ♂, VII, under rocks and dried cowpiles in meadow with loam soil, scattered grasses and herb. plants 1450 m. Sweetwater: 37.824444, -120.003333, 1 ♀, V. Ventura Co.: Ojai: 34.448056, -119.241944, 1 ♀, Nomonth. Oxnard: 34.197500, -119.176111, 2 ♂♂, 2 ♀♀, VII, 2 ♂♂, XII. Point Mugu: 34.085556, -119.060000, 1 ♀, VII. Ventura: 34.278333, -119.292222, 2 ♀♀, X. Ventura River: (Mouth of river), 34.275556, -119.306944, 2 ♀♀, IV. Ventura River: (Mouth of river), 34.485278, -119.299722, 1 ♂, 4 ♀♀, IV. Yolo Co.: 38.683333, -121.783333, 1 ♂, 2 ♀♀, Nomonth; 2 ♂♂, IV, Causeway. Davis: 38.545000, -121.739444, 2 ♂♂, 4 ♀♀, Nomonth; 1 ♀, I, Taken in flood debris; 2 ♂♂, I, Taken from flood debris; 1 ♀, II, Taken in flood debris; 1 ♂, III, Ground Trap; 1 ♀, III, Taken in ground trap; 1 ♂, 1 ♀, V, soil surface. West Sacramento: 38.580556, -121.529167, 21 ♂♂, 8 ♀♀, V. Winters, 11.2 km W, (Putah Creek), 38.525000, -121.969722, 1 ♂, III. Winters, 11.3 km E, 38.525000, -121.969722, 1 ♂, 1 ♀, III, on margin of creek. Woodlands: 38.678611, -121.772222, 1 ♀, V. Yuba Co.: Marysville: 39.145833, -121.590278, 1 ♂, XI. COLORADO: NoCo.: 1 ♀, Nomonth. Denver Co.: Denver: 39.739167, -104.984167, 1 ♂, Nomonth. IDAHO: NoCo.: 1 ♂, Nomonth. NoCo.: Fort Sherman: 1 ♂, Nomonth. Ada Co.: Eagle: 43.695556, -116.353056, 1 ♀, V. Bannock Co.: Pocatello: 42.871389, -112.444722, 1 ♂, V. Benewah Co.: Saint Joe River: 47.393056, -116.753056, 1 ♂, VII. Saint Maries: 47.314444, -116.561667, 1 ♀, VIII. Bonner Co.: (Cowlalla), 48.283333, -116.566667, 1 ♀, VI. Sagle: 48.202500, -116.546667, 1 ♂, VI. Sandpoint: 48.276667, -116.552222, 1 ♂, 6 ♀♀, VI. Canyon Co.: Parma: 43.785278, -116.942222, 1 ♂, V. Parma: (Boise River), 43.785278, -116.942222, 1 ♀, IV, Found under a rock. Jerome Co.: Eden: 42.605833, -114.210000, 1 ♀, V. Kootenai Co.: Coeur d'Alene: 47.677778, -116.779444, 1 ♂, Nomonth, 9 ♂♂, 1 ♀, VI,

1 ♂, 1 ♀, VII, 12 ♂♂, 14 ♀♀, VIII. Coeur d'Alene, 1.6 km E, (Ferman Lake), 47.677778, -116.779444, 6 ♂♂, 6 ♀♀, V, active at night in grassy areas near or away from edge of lake; 4 ♂♂, V, active at night in grassy areas near or away from edge of lake. Hayden Lake: 47.758889, -116.755833, 9 ♂♂, 9 ♀♀, IX. Post Falls: 47.718056, -116.950556, 1 ♂, VII, Rose Lake, 4 km NE on route 3, 47.538889, -116.470833, 1 ♂, V, By treading in marshy area. Latah Co.: Moscow: 46.732500, -116.999167, 1 ♂, Nomonth. Lincoln Co.: Shoshone (Shoshone Falls), 42.936111, -114.405000, 1 ♀, V, Nez Perce Co.: Lewiston: 46.416667, -117.016667, 1 ♂, III, Nez Perce National Park, 14.5 km E Lewiston, 46.450833, -116.815278, 1 ♂, III, Spalding: 46.446944, -116.816389, 1 ♂, 1 ♀, V, Owyhee Co.: Homedale: 43.617778, -116.932778, 2 ♂♂, 1 ♀, VII, Shoshone Co.: Enaville: 47.562500, -116.249167, 1 ♀, VII, Twin Falls Co.: Salmon Falls Creek (near Castleford), 42.714444, -114.851944, 1 ♀, IV, Twin Falls: 42.563056, -114.460000, 1 ♂, VI, Twin Falls, 6.5 km N, 3.2 km W, (Snake River), 42.563056, -114.460000, 1 ♂, IV, Washington Co.: Olds Ferry (Snake River), 44.289167, -117.210278, 1 ♀, IV, ILLINOIS: Lake Co.: Lake Forest: 42.258611, -87.840556, 3 ♂♂, VI, MONTANA: Lake Co.: Ninepipe National Wildlife Refuge: 47.441111, -114.120278, 2 ♂♂, 1 ♀, VI, NEBRASKA: NoCo.: 2 ♂♂, 1 ♀, Nomonth. NEVADA: NoCo.: 2 ♀♀, Nomonth. Elko Co.: Carlin (Humboldt River), 40.713889, -116.103056, 1 ♂, 4 ♀♀, VI, Elko: 40.832500, -115.762222, 2 ♂♂, Nomonth, 2 ♂♂, V, Elko: (Humboldt River & 12th Street), 40.835000, -115.749833, 1 ♂, 1 ♀, VII, Under rocks and debris on flat to mod. sloped mostly bare shore of seepage pond (clay soil wet beneath objects). Countryside desert shrubland. Lincoln Co.: Caliente: 37.615000, -114.511111, 2 ♂♂, V, Pahrnagat National Wildlife Refuge: 37.231111, -115.095278, 4 ♂♂, 1 ♀, VI, Pershing Co.: Lovelock: 40.179444, -118.472500, 7 ♂♂, VI, Washoe Co.: Pyramid Lake, SE shore (Wadsworth, 31.5 km N on rtes 447 & 446), 39.843833, -119.446000, 11 ♂♂, VII, under rocks and logs (sand-clay soil damp beneath) in green grassy area near lake shore, countryside desert shrubland & desert grassland. Pyramid Lake, SE shore (Wadsworth, 31.5 km N on rtes. 447 and 446), 39.843833, -119.446000, 11 ♂♂, VII, under rocks and logs (sand-clay soil damp beneath) in green grassy area near lake shore, countryside desert shrubland and desert grassland. Reno: 39.529722, -119.812778, 1 ♀, V, 1 ♀, VI, 1 ♀, IX, Sutcliffe: 39.950278, -119.599444, 1 ♂, VI, NEW JERSEY: NoCo.: 1 ♀, Nomonth. NEW MEXICO: NoCo.: 1 ♂, 7 ♀♀, Nomonth. OREGON: NoCo.: 22 ♂♂, 30 ♀♀, Nomonth, 1 ♂, III, 1 ♂, X, NoCo.: (Koebele), 11 ♂♂, 13 ♀♀, Nomonth, NoCo.: (Saxton and Wilson Greenhouse), 1 ♀, III, NoCo.: (Snake River), 1 ♂, IV, NoCo.: Sauvie Island: 45.716667, -122.800000, 9 ♀♀, IV, 4 ♂♂, 1 ♀, VI, NoCo.: Snake River (Farewell Bend), 44.305278, -117.221667, 1 ♂, 1 ♀, VI, Baker Co.: Durkee: 44.582222, -117.463611, 1 ♂, VII, Haines: 44.911667, -117.937778, 1 ♂, VI, Halfway, 48.4 km N, 44.880833, -117.113611, 1 ♂, X, Richland: 44.769167, -117.167500, 1 ♂, 1 ♀, VI, Benton Co.: Aulse: 44.381667, -123.595278, 1 ♂, 2 ♀♀, III, 1 ♀, IV, Blodgett: 44.597222, -123.518333, 1 ♀, IV, 5 ♂♂, 1 ♀, VI, Corvallis: 44.564722, -123.260833, 13 ♂♂, 34 ♀♀, Nomonth, 1 ♂, II, 10 ♂♂, 8 ♀♀, III, 5 ♂♂, 9 ♀♀, IV, 9 ♂♂, 6 ♀♀, V, 3 ♂♂, 6 ♀♀, VI, 1 ♂, VII, 2 ♀♀, VIII, 1 ♂, 1 ♀, IX, 3 ♂♂, 3 ♀♀, X, Corvallis: (35th St. near Entfarm), 44.564722, -123.260833, 1 ♀, V, Corvallis, 16 km S, (McFadden Pond), 44.564722, -123.260833, 1 ♀, III, Corvallis, 6.4 km SW, (Highway 99 W), 44.391111, -123.296944, 4 ♀♀, V, Philomath: 44.540278, -123.366389, 1 ♀, VII, Summit, 5.6 km NE, 44.638056, -123.577500, 4 ♂♂, X, Clackamas Co.: 45.350000, -122.600000, 1 ♀, VII, Clackamas: 45.407778, -122.569167, 1 ♀, Nomonth. Estacada, 40.3 km E, 45.289722, -122.332500, 1 ♀, IX, Molalla, 20 km SW, (Abiqua Creek on Hwy. 213), 45.147500, -122.575833, 1 ♀, VII, Clatsop Co.: Astoria: 46.188056, -123.830000, 4 ♀♀, Nomonth, 1 ♂, 2 ♀♀, V, Cannon Beach: 45.891944, -123.960278, 5 ♂♂, 2 ♀♀, VI, Olney: 46.100278, -123.756389, 1 ♀, VI, Coos Co.: 43.183333, -124.183333, 1 ♂, 1 ♀, VIII, Bandon, 8 km S, 43.119167, -124.407222, 2 ♂♂, 2 ♀♀, III, Bandon, 1.2 km S, 43.119167, -124.407222, 1 ♂, 1 ♀, III, Bandon, 3/4 mile S, 43.119167, -124.407222, 1 ♂, III, Coos Bay: 43.368056, -124.215833, 1 ♂, VIII, Coquille, 8 km NE, (Fairview), 43.177222, -124.186389, 1 ♂, 3 ♀♀, III, 1 ♂, 1 ♀, IX, under boards, Myrtle Point: 43.065000, -124.137778, 1 ♀, VI, Curry Co.: Brookings: 42.052778, -124.282778, 1 ♀, VI, Gold Beach: 42.407500, -124.420556, 5 ♂♂, 2 ♀♀, VI, Port Orford (Humburg Mountain State Park), 42.745833, -124.496111, 1 ♂, V, Deschutes Co.: Redmond, 8.1 km, (Deschutes River), 45.635556, -120.913333, 1 ♂, 1 ♀, X, Upper Falls Deschutes River: 43.979167, -121.407500, 1 ♂, 1 ♀, V, Douglas Co.: Dunes City, Carter Lake Campground (Rt. 101 S), 43.856667, -124.146111, 1 ♂, VI, Drain: 43.658889, -123.317500, 1 ♀, IX, Gardiner, 16 km E, 43.730278, -124.109167, 1 ♀, IV, Gardiner, 16.1 km E, 43.730278, -124.109167, 1 ♂, IV, Gardiner, 8 km E, (Smith River), 43.730278, -124.109167, 1 ♀, VI, Gardiner, 8 km E, (Smith River Beach), 43.730278, -124.109167, 1 ♂, IV, Beach, Gardiner, 8.1 km E, (Smith R. Beach), 43.730278, -124.109167, 1 ♂, IV, Reedsport: 43.702500, -124.095556, 1 ♀, VIII, Reedsport, 8.8 km NE, (Smith River), 43.702500, -124.095556, 1 ♂, VI, Roseburg: 43.216667, -123.340556, 1 ♂, III, 2 ♂♂, 4 ♀♀, IV, 2 ♀♀, VIII, 2 ♂♂, 1 ♀, IX, Roseburg, 11.3 km NW, 43.216667, -123.340556, 1 ♀, VIII, woodpile, Scottsburg: 43.654167, -123.815556, 1 ♂, 3 ♀♀, IX, Gilliam Co.: Arlington: 45.716944, -120.199722, 1 ♂, 1 ♀, V, Arlington, 8 km W, (Columbia River), 45.716944, -120.199722, 1 ♂, 2 ♀♀, IV, Harney Co.: 43.346570, -118.761311, 2 ♂♂, VI, Burns: 43.586389, -119.053056, 1 ♀, VI, Burns, 48.4 km SE, 43.586389, -119.053056, 1 ♀, V, Under boards, Lawen: (Malheur Lake), 43.443056, -118.800000, 1 ♂, V, Hood River Co.: Dee: 45.588333, -121.625556, 1 ♂, 1 ♀, V, Hood River: 45.705556, -121.520278, 5 ♂♂, 4 ♀♀, Nomonth, 12 ♂♂, 10 ♀♀, V, 3 ♂♂, 2 ♀♀, VI, 2 ♂♂, VII, 1 ♀, IX, 1 ♂, X, Hood River, 0.3 km S, 45.705556, -121.520278, 1 ♀, VII, Jackson Co.: Ashland: 42.194722, -122.708333, 1 ♀, VIII, Klamath Junction: 42.141667, -122.614167, 1 ♂, V, Medford: 42.326667, -122.874444, 1 ♀, II, 2 ♂♂, III, 3 ♂♂, IV, 1 ♀, VI, 1 ♀, VII, 2 ♂♂, IX, Phoenix: 42.275556, -122.816944, 1 ♀, III, under board, Talent: 42.245833, -122.787500, 1 ♂, III, 3 ♂♂, 1 ♀, V, killed by DDT, Jefferson Co.: Fly Lake: 44.540000, -121.430278, 5 ♂♂, 3 ♀♀, IV, Josephine Co.: Golden: 42.682500, -123.330278, 2 ♂♂, 1 ♀, Nomonth, Grants Pass: 42.439167, -123.327222, 4 ♂♂, 3 ♀♀, VIII, Klamath Co.: Algoma: 42.347222, -121.814444, 1 ♂, IV; 1 ♂, V, under rock, Henley: 42.152222, -121.697778, 2 ♂♂, 2 ♀♀, IV, Keno, 9.7 km W, 42.126667, -121.928889, 1 ♂, V, pond, Klamath Falls: 42.225000, -121.780556, 1 ♂, 1 ♀, III; 1 ♂, IV, Under rock, Klamath Falls (Algoma), 42.225000, -121.780556, 1 ♂, 1 ♀, IV; 2 ♀♀, IX, Grain hopper, Klamath Falls: (Geary Ranch), 42.225000, -121.780556, 9 ♂♂, 6 ♀♀, V, Klamath Falls: (Link River), 42.225000, -121.780556, 2 ♂♂, VII, Klamath Falls: (Lower Klamath Lake), 42.225000, -121.780556, 1 ♂, 2 ♀♀, III; 1 ♀, IV, rock outcrop, Klamath Falls: (Upper Klamath Lake), 42.225000, -121.780556, 1 ♀, IV, along shore line, Klamath Falls, 12.9 km NW, 42.225000, -121.780556, 1 ♂, Nomonth, sitting on ground at night in grassy areas, Klamath Falls, 29.4 km NW, 42.225000, -121.780556, 2 ♂♂, VI, under debris along mostly flat edges of road side by water filled ditch, Klamath Falls, 29.4 km NW, 42.399632, -122.049504, 1 ♂, VI, under debris along mostly flat edges of road side by water filled ditch, Langell Valley: 42.009722, -121.227778, 1 ♀, IX, Merrill, 4.8 km W, 42.025278, -121.599444, 1 ♂, V, Miller Island: 42.144167, -121.834167, 1 ♂, VII, Modoc Point: (Upper Klamath Lake), 42.445000, -121.867222, 1 ♀, X, Upper Klamath Lake: 42.398333, -121.881389, 1 ♂, 2 ♀♀, VI, Upper Klamath Lake, Howard Bay: (Klamath Falls, 12.9 km NW on Route 140), 42.293954, -121.924504, 2 ♂♂, VI, under rocks near edge of inlet from Upper Klamath Lake, Worden: 42.045556, -121.865278, 1 ♂, 1 ♀, IV, Lake Co.: 42.183333, -120.350000, 1 ♂, 1 ♀, VI, Lake Abert:

42.626389, -120.232222, 2 ♂♂, 2 ♀♀, IV. Lake Abert: 42.635379, -120.236115, 2 ♂♂, IV. Lake Abert: 42.626389, -120.232222, 2 ♂♂, 3 ♀♀, VI. Lake Abert: 42.635379, -120.236115, 1 ♂, VI. Plush: (Hart Lake), 42.411667, -119.902778, 2 ♂♂, VI. Silver Lake: 43.128056, -121.045000, 3 ♂♂, 1 ♀, V. Lane Co.: Blue River Lake: (N end), 44.172222, -122.327778, 2 ♂♂, 1 ♀, V. Under rocks. Creswell: 43.918056, -123.023333, 2 ♀♀, VI. Eugene: 44.052222, -123.085556, 1 ♂, Nomonth, 2 ♂♂, 2 ♀♀, VIII, 1 ♂, 1 ♀, IX, 1 ♂, X. Eugene, 8 km N, 44.052222, -123.085556, 1 ♂, VI, 1 ♂, VIII. Pleasant Hill: 43.966111, -122.930556, 1 ♀, VI. Black light trap. Rainrock: 44.073889, -123.851389, 1 ♂, IX. Siltcoos: (Siltcoos Lake), 43.889167, -124.062500, 1 ♀, IV, 1 ♂, VI. Springfield: 44.046389, -123.020833, 1 ♀, Nomonth. Swisshome: 44.058056, -123.798056, 1 ♀, VII. Lincoln Co.: Harlan, 3.2 km W, (Big Elk F.S. Camp), 44.540000, -123.691944, 1 ♀, IV. Newport: 44.636944, -124.052222, 1 ♂, V, under board. Waldport: 44.426944, -124.067500, 1 ♂, VI, 1 ♂, VIII. Yachats: 44.311389, -124.103611, 1 ♀, VI. Malheur Co.: 43.983333, -117.233333, 2 ♀♀, IV. Eldorado: (W El Dorado Pass), 44.426389, -117.744722, 1 ♀, VI. Collected by R. O. M. party in mesquite by a pond. Juntura: 43.744722, -118.078611, 7 ♂♂, 2 ♀♀, VI. Nyssa: 43.876944, -116.993889, 1 ♀, IV. Vale: (Farewell Bend State Park), 43.982222, -117.237222, 1 ♂, IX. Marion Co.: Detroit, 4 km E. Detroit, Hwy. 22, (N Santiam River), 44.734167, -122.148611, 1 ♂, VII. Marion: 44.749167, -122.941111, 1 ♀, V. Mehama, 25.7 km NW, 44.790278, -122.618056, 1 ♀, III. Pratum: 44.959167, -122.877500, 1 ♂, VII. Salem: 44.943056, -123.033889, 1 ♂, I, 1 ♂, 2 ♀♀, III, 2 ♀♀, IV. Black light. Stayton, 2.6 km NW, 44.800833, -122.793333, 1 ♂, XI. West Woodburn: 45.155000, -122.894722, 8 ♂♂, 2 ♀♀, V. Woodburn: 45.143889, -122.854167, 1 ♀, VIII. Morrow Co.: Lexington, 31.5 km N, (Butter Creek), 45.445278, -119.683333, 1 ♀, VII. Multnomah Co.: (Blair Reservoir), 45.516667, -123.683333, 1 ♀, V. Horsetail Falls: 45.588889, -122.068611, 1 ♂, V. Multnomah Falls: 45.577222, -122.115556, 2 ♂♂, 2 ♀♀, V. Portland: 45.523611, -122.675000, 4 ♂♂, 3 ♀♀, Nomonth, 1 ♂, 2 ♀♀, III, 1 ♂, IV, 1 ♂, 7 ♀♀, V, 41 ♂♂, 19 ♀♀, VI, 4 ♂♂, 3 ♀♀, VII, 1 ♂, VIII, 5 ♂♂, 1 ♀, IX. Rooster Rock: 45.541111, -122.251944, 1 ♀, V. Swan Island: 45.560833, -122.707778, 2 ♀♀, VI. Polk Co.: Independence: 44.851389, -123.185556, 4 ♀♀, VI, 2 ♀♀, VIII. Tillamook Co.: Little Nestucca River: 45.168333, -123.943333, 2 ♂♂, VI. Manzanita: 45.718611, -123.933889, 1 ♂, IX. Mohler: 45.707500, -123.861667, 1 ♂, 5 ♀♀, X. Pacific City: 45.202500, -123.961667, 1 ♀, V. Tillamook: 45.456389, -123.842778, 1 ♂, 5 ♀♀, III, 2 ♂♂, VIII. Umatilla Co.: Juniper: 45.972778, -119.002778, 1 ♂, V. Milton-Freewater: 45.932778, -118.386667, 1 ♂, I, 1 ♂, IX. Union Co.: Elgin: 45.565000, -117.916389, 1 ♀, VIII. Kamela: 45.434444, -118.392500, 1 ♀, Nomonth. Wasco Co.: Mosier, 4.8 km E, 45.683611, -121.396111, 3 ♂♂, 2 ♀♀, V. The Dalles: 45.594722, -121.177500, 2 ♂♂, V, 26 ♂♂, 21 ♀♀, VI, 1 ♂, VIII. Tygh Valley: 45.247500, -121.171944, 1 ♀, VI. Washington Co.: Beaverton: 45.487222, -122.802500, 1 ♂, V. Cornelius: 45.520000, -123.058611, 1 ♂, 1 ♀, VI. Dilley: 45.490833, -123.122222, 20 ♂♂, 27 ♀♀, Nomonth. Forest Grove: 45.520000, -123.109444, 1 ♂, 1 ♀, III, 2 ♂♂, IV; 1 ♀, V. Carnation Swamp. Forest Grove: (Forest Grove Carnation Swamp), 45.520000, -123.109444, 1 ♀, III. Gales Creek: 45.586667, -123.213611, 1 ♀, VI. Gaston: 45.436389, -123.138333, 15 ♂♂, 20 ♀♀, Nomonth, 1 ♀, VI. North Plains: 45.597222, -122.992222, 1 ♂, II, 1 ♀, V. Yamhill Co.: 45.216667, -123.216667, 2 ♂♂, 1 ♂, 1 ♂, 2 ♀♀, XII. Dayton: 45.220833, -123.075000, 1 ♀, IV, 1 ♂, 2 ♀♀, V, 7 ♂♂, 5 ♀♀, VII. Lafayette: 45.244444, -123.113611, 2 ♂♂, 2 ♀♀, VI. McMinnville: 45.210278, -123.197500, 4 ♂♂, 1 ♀, II, 2 ♂♂, IV, 1 ♂, 6 ♀♀, V, 1 ♂, VI, 3 ♂♂, 1 ♀, VII, 1 ♂, IX. Newberg: 45.300278, -122.971944, 1 ♀, IV. TEXAS: NoCo.: 2 ♂♂, Nomonth. Dallas Co.: Dallas: 32.783333, -96.800000, 3 ♂♂, 2 ♀♀, Nomonth. UTAH: NoCo.: 1 ♂, X. Box Elder Co.: Lakeside: 41.222500, -112.864722, 2 ♂♂, Nomonth. Manua: 41.495833, -111.943056, 1 ♂, IV. Cache Co.: (Green Canyon), 41.766667, -111.850000, 1 ♀, V. Benson: 41.787500, -111.929444, 1 ♂, IV. Blacksmith Fork Canyon: 41.627778, -111.803333, 1 ♀, V. Logan: 41.735556, -111.833611, 2 ♂♂, IV. Piute Co.: Junction: (Piute Reservoir), 38.237500, -112.219167, 1 ♀, VIII. Salt Lake Co.: 40.750000, -111.866667, 1 ♂, VI. Salt Lake City: 40.760833, -111.890278, 4 ♂♂, 4 ♀♀, Nomonth, 1 ♀, V. Spring Run Subdivision: 40.661111, -111.848056, 1 ♀, V. Under rock. Utah Co.: Orem: (Utah Lake), 40.296944, -111.693889, 1 ♂, V. Orem, 2.4 km W of city boundary, (Utah Lake), 40.317000, -111.764167, 10 ♂♂, 13 ♀♀, VI, under rocks & debris (soil damp to wet beneath) along broad, flat sandy shore Utah Lake. Plants absent to consisting of moderately dense grass & other herbaceous plants; 5 ♂♂, VI, under rocks and debris (soil damp to wet beneath) along broad, flat sandy shore Utah Lake. Plants absent to consisting of moderately dense grass and other herbaceous plants. Payson: 40.044444, -111.731389, 1 ♂, Nomonth, 1 ♀, III, 1 ♀, V. Provo: 40.233889, -111.657778, 5 ♂♂, 7 ♀♀, Nomonth, 1 ♀, IV, 1 ♀, V, 6 ♂♂, 4 ♀♀, VI. Provo: (E side Utah Lake), 40.233889, -111.657778, 31 ♂♂, 17 ♀♀, VIII. Under mats of rotting plant debris on flat sandy shores of lake during day. Provo: (Utah Lake), 40.233889, -111.657778, 1 ♀, VI, 20 ♂♂, 6 ♀♀, VIII. Spanish Fork: 40.115000, -111.654167, 1 ♀, Nomonth. Utah Lake, along Lincoln Road: (S end of lake), (Payson, 5 km W on rte 141, 14.7 NW on local roads), 40.134667, -111.825000, 5 ♂♂, 7 ♀♀, VII. Under rocks and debris (soil damp to wet beneath) on broad, flat clay to clay-sand shore Utah Lake. Plants absent to sparse grass and other herbaceous plants, desert grassland. Utah Lake, Lincoln Beach County Pk.: (S end of lake), (Payson, 5 km W on rte 141, 12.5 km NW on local roads), 40.141500, -111.799667, 26 ♂♂, 13 ♀♀, VI. Under rocks (soil damp to wet beneath) on broad, flat sandy to clay shore Utah Lake. Plants absent to sparse grass and other herbaceous plants. Countryside desert grassland. Utah Lake, Lincoln Beach County Pk.: (S end of lake), (Payson, 5 km W on rte 141, 14.7 NW on local roads), 40.134667, -111.833000, 7 ♂♂, 11 ♀♀, VII. Under rocks (soil damp to wet beneath) on broad, flat sandy to clay shore Utah Lake. Plants absent to sparse grass and other herbaceous plants. Countryside desert grassland. Utah Lake, Lincoln Beach County Pk.: (S end of lake), (Payson, 5 km W on local roads), 40.141500, -111.799667, 32 ♂♂, 33 ♀♀, VI. Under rocks (soil damp to wet beneath) on broad, flat sandy to clay shore Utah Lake. Plants absent to sparse grass and other herbaceous plants. Countryside desert grassland. Vineyard: 40.300000, -111.732778, 2 ♀♀, IV, 1 ♂, V. WASHINGTON: NoCo.: 11 ♂♂, 8 ♀♀, Nomonth, 1 ♀, VIII. NoCo.: Stilaquamish River: 48.198556, -122.188033, 1 ♀, VI. NoCo.: Wild-cat L.: 3 ♂♂, IX. Adams Co.: Lake McElroy: 47.012778, -118.453056, 1 ♀, V. Othello: 46.826111, -119.174167, 1 ♀, IV, 1 ♂, 1 ♀, V. Paha: (Lake Paha), 47.023333, -118.488056, 1 ♀, VI, 2 ♂♂, IX. Ritzville: 47.127500, -118.378889, 2 ♀♀, VII, 2 ♂♂, VIII. Asotin Co.: Clarkston: (Mahon Greenhouse), 46.416389, -117.044167, 1 ♂, 1 ♀, IX. Jerry: 46.324444, -117.107500, 1 ♀, IV. Benton Co.: Kennewick: 46.211389, -119.136111, 1 ♂, 1 ♀, III, 1 ♀, V, 6 ♂♂, 3 ♀♀, IX. Richland: 46.285833, -119.283333, 1 ♂, V. Chelan Co.: Manson: 47.885000, -120.157222, 6 ♂♂, 3 ♀♀, V. Monitor: 47.486944, -120.416944, 1 ♂, VII. Wenatchee: 47.423611, -120.309167, 1 ♀, IX. Clark Co.: Bartle Ground: 45.781111, -122.532222, 1 ♀, IV. Lewisville Park: 45.815000, -122.537500, 1 ♂, VI. Vancouver: 45.638889, -122.660278, 1 ♀, IV. Washougal: 45.582778, -122.352222, 4 ♂♂, V, 14 ♂♂, 7 ♀♀, IX. Columbia Co.: Dayton: 46.323889, -117.971389, 1 ♂, V. Cowlitz Co.: Ariel: 45.956944, -122.569722, 2 ♂♂, V. Castle Rock: 46.275278, -122.906389, 2 ♂♂, 2 ♀♀, VII. Kelso: (Silver Lake), 46.146944, -122.907222, 12 ♂♂, 4 ♀♀, VI, 6 ♂♂, 2 ♀♀, VII. Kelso, 11.3 km ESE, (Red Clover), 46.146944, -122.907222, 1 ♀, X. Franklin Co.: Kahloutas: 46.643333, -118.558333, 2 ♂♂, VI. Pasco: 46.228611, -119.099444, 3 ♂♂, 2 ♀♀, IV, 3 ♂♂, 4 ♀♀, V. Sacajaw State Park, Pasco: 46.228611, -119.099444, 2 ♀♀, V. Perry: 46.595833, -118.227778, 1 ♂, IV. Grant Co.: Beverly: 46.836944, -119.931944, 2 ♂♂, V. Coulee City: 47.611389, -119.291111, 6 ♂♂, 4 ♀♀, IV, 6 ♂♂, 1 ♀, V, 3 ♂♂, IX. Coulee City: (Dry Falls), 47.611389, -119.291111, 2 ♀♀, IV, 16 ♂♂, 4 ♀♀, V. Crah Creek: 47.711667, -117.905556, 11 ♂♂, 8 ♀♀, V. Electric City: 47.932500,

-119.036944, 1 ♂, IV, Ephrata (Lenore Lake), 47.317778, -119.552500, 7 ♂♂, 5 ♀♀, V. Grand Coulee: 47.941667, -119.002222, 3 ♂♂, 2 ♀♀, IV, 1 ♂, V. Grand Coulee: (Blue Lake), 47.941667, -119.002222, 1 ♀, IV, 1 ♀, V. Grand Coulee: (Dry Falls), 47.941667, -119.002222, 8 ♂♂, 11 ♀♀, IV, 50 ♂♂, 52 ♀♀, V. Grand Coulee: (Lake Lenore), 47.941667, -119.002222, 1 ♂, 1 ♀, V. Grand Coulee: (Park Lake), 47.941667, -119.002222, 1 ♂, IV, 1 ♀, V. Grand Coulee: (Upper Coulee), 47.941667, -119.002222, 1 ♀, IV, 1 ♀, V. Grand Coulee: (Upper Grand Coulee Steamboat Rock), 47.941667, -119.002222, 1 ♂, 2 ♀♀, IV. Lenore Lake: 47.523466, -119.484644, 1 ♂, V. Lenore Lake. N end: (Soap Lake, 8.5 km N on rte 17), 47.523466, -119.484644, 5 ♂♂, V, AI night along flat banks with mats of algae and washed up plant debris. Potholes Reservoir: 46.982500, -119.290000, 2 ♂♂, 3 ♀♀, IV, Soap Lake: 47.389444, -119.489444, 1 ♂, II, 7 ♂♂, IV, 6 ♂♂, 4 ♀♀, V, 1 ♂, VII. Soap Lake: (Lake Lenore), 47.389444, -119.489444, 1 ♂, V. Grays Harbor Co.: Aberdeen. 12.1 km E, (Wynoochee River), 46.975556, -123.814444, 1 ♂, IV. Cosmopolis: 46.955556, -123.772500, 1 ♂, IX. Hoquiam: 46.981111, -123.888056, 2 ♂♂, 1 ♀, V. Montesano: 46.981389, -123.601389, 2 ♀♀, 47.917778, -122.375000, 1 ♂, VII. Whidbey Island: 48.292778, -122.675000, 1 ♂, Nomonth. King Co.: 47.600000, -122.333333, 47.917778, -122.375000, 1 ♂, VII. Whidbey Island: 48.292778, -122.675000, 1 ♂, Nomonth. King Co.: 47.600000, -122.333333, 1 ♀, Nomonth. (Lichten Springs), 47.600000, -122.333333, 1 ♀, V. (Panther Lake), 47.600000, -122.333333, 1 ♂, 3 ♀♀, V. Auburn: 47.307500, -122.227222, 6 ♂♂, 3 ♀♀, IV. Bothell: 47.760000, -122.204444, 8 ♂♂, 9 ♀♀, IV, 15 ♂♂, 5 ♀♀, V, 1 ♂, 1 ♀, VI, 4 ♂♂, 2 ♀♀, VIII. Bryn Mawr: 47.503611, -122.231667, 1 ♀. VII. Carnation: 47.648056, -121.912778, 1 ♂, IV, 1 ♂, V. Cedar Falls: 47.425556, -121.775556, 1 ♀, V. Cedar Mountain: 47.448333, -122.071944, 6 ♂♂, 7 ♀♀, V. Cedar Mountain: (Cedar), 47.448333, -122.071944, 1 ♀, V. Cedar River: 47.313333, -121.520278, 2 ♀♀, V. Enumclaw: 47.204444, -121.990278, 5 ♂♂, V, 1 ♀, VI. Evans Creek: 47.665833, -122.020000, 1 ♂, 4 ♀♀, IV, 1 ♀, V, 1 ♀, VI, 1 ♂, VII, 14 ♂♂, 24 ♀♀, VIII, 2 ♂♂, 1 ♀, X. Green River: 47.288889, -122.088056, 1 ♀, IX. Green River Gorge: 47.288056, -121.965833, 1 ♀, IV. Hamlin Park: 47.747222, -122.307500, 1 ♀, X. Issaquah: 47.530278, -122.031389, 1 ♀, V. Kent: 47.381111, -122.233611, 2 ♀♀, X. Medina: 47.621111, -122.226389, 1 ♀, V. Redmond: 47.674167, -122.120278, 1 ♂, VI, 1 ♂, 3 ♀♀, VIII. Renton: 47.483056, -122.215833, 1 ♀, V. Seattle: 47.606389, -122.330833, 14 ♂♂, 14 ♀♀, VIII, 3 ♀♀, IX. Renton: (Cedar River), 47.483056, -122.215833, 1 ♀, V. Seattle: 47.606389, -122.330833, 14 ♂♂, 14 ♀♀, Nomonth, 3 ♂♂, 6 ♀♀, III, 23 ♂♂, 17 ♀♀, IV, 1 ♂, IV, near greenhouses: 2 ♂♂, 1 ♀, VII, vacant lot. Seattle: (Golden Gardens), 47.606389, -122.330833, 1 ♂, V. Seattle: (Harbor Island), 47.606389, -122.330833, 1 ♂, 1 ♀, IV, 4 ♂♂, 1 ♀, V, 2 ♂♂, 1 ♀, VII, 1 ♂, VIII. Seattle: (Parkrock Park), 47.606389, -122.330833, 1 ♀, V. Seattle: (Rainier Valley), 47.606389, -122.330833, 2 ♂♂, 1 ♀, VII. Seattle: (Riverton), 47.606389, -122.330833, 1 ♀, IV, 2 ♀♀, V. Seattle: (Seattle Harbor Islands), 47.606389, -122.330833, 1 ♀, IV. Seattle: (U.W. Campus), 47.606389, -122.330833, 10 ♂♂, 6 ♀♀, IV, 6 ♂♂, 2 ♀♀, V, 2 ♀♀, VI. Snoqualmie Falls: 47.540000, -121.808611, 1 ♀, V, 1 ♀, VII. Swamp Creek: 47.874722, -122.256667, 1 ♂, V. Vashon: 47.447500, -122.458611, 1 ♀, V. Kitsap Co.: Bremerton: 47.567500, -122.631389, 1 ♂, V, 1 ♂, VI. Gorst: 47.525556, -122.703611, 1 ♂, V. Port Blakely: (Puget Sound), 47.597500, -122.508889, 1 ♂, 3 ♀♀, III. Seabeck: 47.639722, -122.827222, 1 ♀, IV. Kittitas Co.: Vantage: 46.945556, -119.986111, 1 ♂, IV, 2 ♂♂, 3 ♀♀, V. Klickitat Co.: (Lake Wanna), 45.816667, -120.800000, 1 ♂, VI. Trout Lake, 16 km S, 45.997500, -121.526944, 1 ♂, V, by small creek. Vila: 45.700000, -121.401961, 6 ♂♂, 9 ♀♀, VI. White Salmon: 45.727778, -121.485278, 1 ♀, VI. Lewis Co.: Centralia: 46.716389, -122.953056, 3 ♂♂, IV, 3 ♂♂, 2 ♀♀, VIII. Chehalis: 46.662222, -122.962778, 3 ♂♂, V, 2 ♂♂, VII. Randle: 46.535278, -121.955833, 1 ♂, 2 ♀♀, V. Lincoln Co.: Irby: (Crab Creek), 47.359444, -118.850000, 4 ♂♂, 1 ♀, V. Long Lake: (Long Island William Harbor), 47.836111, -117.847778, 1 ♂, VIII. Sprague: 47.300278, -117.974444, 1 ♂, VI. Mason Co.: Camp Spillman: 47.477500, -122.925556, 5 ♀♀, V. Dayton: (Shelton), 47.226944, -123.223889, 6 ♂♂, 1 ♀, VII. Lake Cushman State Park: 47.470556, -123.222222, 2 ♂♂, VIII. Shelton: 47.215278, -123.099444, 1 ♀, V. Stimson Bay Creek: 47.449444, -122.909444, 1 ♂, V. Okanogan Co.: Chopaka: 48.999444, -119.723611, 1 ♀, Nomonth. Pacific Co.: Bay Center: 46.631667, -123.953611, 1 ♂, VII. Nahcotta: 46.498611, -124.032222, 2 ♂♂, VIII. Naselle River: 46.465278, -123.938611, 1 ♂, 1 ♀, VI, 1 ♂, VII. Raymond: (South Bend), 46.686667, -123.731667, 5 ♂♂, IX. Seaview: 46.334722, -124.053333, 2 ♂♂, 3 ♀♀, V, 1 ♀, VII. Seaview: (Ilwaco), 46.334722, -124.053333, 1 ♂, Nomonth, 1 ♀, VI. Seaview: (Ilwaco, North Jetty Beach), 46.334722, -124.053333, 1 ♀, VIII. Pierce Co.: (Camp Lewis), 47.093333, -122.607843, 2 ♂♂, 1 ♀, VII. Greenwater: (junction White & Green Rivers), 47.156111, -121.649167, 1 ♀, VIII. Lake Kapowsin: 46.975278, -122.225833, 1 ♀, IV. Lakebay: 47.257222, -122.757222, 5 ♂♂, 4 ♀♀, V. McKenna: 46.935000, -122.555278, 1 ♂, VI. Parkland: 47.155556, -122.432778, 1 ♂, III, 1 ♂, 1 ♀, IV. Puyallup: 47.191111, -122.289444, 1 ♀, V, 1 ♀, VI. Silver Springs: 46.996389, -121.529722, 1 ♂, VI. Sumner: 47.203333, -122.239167, 5 ♂♂, 2 ♀♀, IV. Tacoma: 47.253056, -122.443056, 1 ♂, IV, 1 ♀, VI, 1 ♂, 1 ♀, IX. Tacoma, 5.6 km NE, 47.379167, -122.641389, 2 ♂♂, V, 1 ♂, VI. Skagit Co.: Fidalgo Island: 48.453889, -122.647222, 2 ♂♂, III. Mount Vernon: 48.421389, -122.332778, 2 ♂♂, 1 ♀, Nomonth, 1 ♀, IV, 1 ♂, 2 ♀♀, V, 4 ♂♂, VII, 2 ♂♂, XI. Summit Park: 48.458611, -122.559167, 2 ♀♀, XII. Van Horn: 48.516667, -121.704167, 2 ♂♂, 1 ♀, IV. Skamania Co.: Carson: (Stevenson), 45.725556, -121.818056, 5 ♂♂, 2 ♀♀, Nomonth. Cook: 45.711191, -121.654296, 2 ♂♂, 1 ♀, V. Index: 47.820833, -121.553889, 1 ♂, IV, -121.654296, 2 ♀♀, VIII. Cook, 7 km W Hood, 45.711191, -121.654296, 6 ♂♂, 1 ♀, VIII. Snohomish Co.: Chase Lake: 47.797778, -122.346111, 1 ♂, V. Granite Falls: (Lake Stevens), 48.084167, -121.967500, 1 ♀, V. Index: 47.820833, -121.553889, 1 ♂, IV, Monroe: 47.855556, -121.969722, 4 ♂♂, VII. Sultan: 47.862778, -121.815278, 1 ♂, V. Spokane Co.: Cheney: 47.487500, -117.574722, 1 ♂, Nomonth, 2 ♂♂, 2 ♀♀, IV, 3 ♂♂, 3 ♀♀, V, 1 ♂, 3 ♀♀, VI, 1 ♀, VII. Dead Mans Lake: 47.989167, -117.369722, 1 ♂, 1 ♀, IV, 1 ♂, V. Granite Lake: 47.550556, -117.627500, 1 ♂, V. Medical Lake: 47.573056, -117.681111, 2 ♂♂, 1 ♀, V. Newman Lake: 47.776944, -117.093889, 9 ♂♂, 4 ♀♀, V, 1 ♂, 1 ♀, VIII. Spokane: 47.658889, -117.425000, 2 ♀♀, Nomonth, 4 ♂♂, 1 ♀, V. Stevens Co.: Black Lake: 48.563056, -117.624167, 1 ♂, IV. Loon Lake: 48.061667, -117.631667, 2 ♂♂, V. Thurston Co.: Millersylvania State Park: 46.912778, -122.909722, 1 ♂, V. Olympia: 47.038056, -122.899444, 3 ♂♂, 2 ♀♀, Nomonth, 7 ♂♂, 4 ♀♀, IV, 1 ♂, V, 8 ♂♂, 3 ♀♀, VII, 1 ♂, 2 ♀♀, X. Saint Clair: 47.024167, -122.723056, 2 ♀♀, X. Saint Clair Lake: 47.003056, -122.716389, 1 ♂, 1 ♀, VI. Tenino: 46.856944, -122.851667, 2 ♂♂, Nomonth, 2 ♂♂, 1 ♀, V. Vail: 46.845278, -122.655000, 13 ♂♂, 8 ♀♀, VI. Walla Walla Co.: 46.050000, -118.333333, 1 ♂, IV. Burbank: 46.200000, -119.011944, 63 ♂♂, 26 ♀♀, V. College Place: 46.049444, -118.387222, 1 ♂, Nomonth, 1 ♂, III, 2 ♂♂, IV, 1 ♂, IX, 1 ♀, X. Walla Walla: 46.064722, -118.341944, 1 ♂, 1 ♀, IV. Wallula: 46.085556, -118.904167, 1 ♂, III. Wallula Junction, 3.2 km W, 46.058611, -118.908611, 1 ♂, IV. Whatcom Co.: Custer: 48.917500, -122.636667, 1 ♀, XII. Deming: 48.825833, -122.214722, 4 ♂♂, 1 ♀, Nomonth. Neptune Beach: (Neppel), 48.816111, -122.706389, 3 ♂♂, 5 ♀♀, IV, 1 ♀, V. Sumas: 49.000000, -122.263611, 1 ♀, VI. Whitman Co.: Alnota: 46.703056, -117.468333, 1 ♂, 1 ♀, Nomonth, 1 ♂, IV. Alnota, 3 km NE, (Wawawai Canyon), 46.703056, -117.468333, 1 ♀, VII. Alnota, 1.4 km E, (Wawawai Canyon), 46.703056, -117.468333, 2 ♂♂, V. Glenwood: 46.927778, -117.278889, 1 ♂, IV. Pullman: 46.731389, -117.178611, 1 ♂, 1 ♀, II, 1 ♂, III; 1 ♀, IV, on bank of Missouri Flat Creek through. Pullman: (Wawawai), 46.731389, -117.178611, 1 ♂, III. Pullman, 12.9 km SW, (Lyle Grove Biological Area), 46.731389, -117.178611, 1 ♂, 1 ♀, X. Pullman, 24.2

km SW, (Wawawai Canyon), 46.731389, -117.178611, 1 ♂, IV. Smoot Hill: 46.818333, -117.236944, 2 ♂♂, XII. Snake River: 46.424444, -117.124722, 2 ♀♀, VI. Steptoe Canyon: 46.451111, -117.205278, 2 ♀♀, IV. Steptoe Canyon, ca. 4.8 km SW Uniontown, 46.451111, -117.205278, 7 ♂♂, 9 ♀♀, VI, ex pitfall trap between mile ma. Uniontown, ca. 4.8 km SW, (Steptoe Canyon), 46.539444, -117.086667, 3 ♂♂, 3 ♀♀, VI, ex pitfall t. Uniontown, ca. 4.8 km SW, (Steptoe Canyon), 46.539444, -117.086667, 1 ♀, VI, ex pitfall trap between mile ma. 12 between: 4 ♂♂, VI, ex pitfall trap between mile ma. Yakima Co.: Grandview: 46.251111, -119.900556, 1 ♂, III, 1 ♂, V. Toppenish: 46.377500, -120.307500, 3 ♂♂, III. Yakima: 46.602222, -120.504722, 1 ♀, VII, 1 ♀, IX. WASHINGTON-OREGON TERRITORY: NoCo.: 1 ♀, Nomonth. NoCo.: (Morrison), 1 ♂, Nomonth. WYOMING: NoCo.: 1 ♀, X.

16. *Anisodactylus (A.) similis* LeConte

NO LOCALITY: 3 ♂♂, 3 ♀♀, Nomonth, 1 ♀, V, 1 ♀, X. Elys Park: 1 ♂, III. Fields Springs: 1 ♂, 1 ♀, IX. Glenbrook: 1 ♀, VII. Goldstream: 1 ♂, IV. Jesse Is.: 1 ♀, V. Northfork: 1 ♀, Nomonth. Rosa Mt.: 1 ♂, 1 ♀, V. Soda Springs: 1 ♀, Nomonth. CANADA: BRITISH COLUMBIA: 1 ♂, Nomonth. Bear Hill: 48.516667, -123.366667, 1 ♀, V. Blind Bay: (S shore of Shuswap Lake), 50.883333, -119.383333, 1 ♀, VIII. Chase, 6.4 km W, 49.166667, -121.950000, 1 ♀, VIII. Chase, 6.4 km W, 50.816667, -119.683333, 1 ♀, VIII. Cowichan Bay: 48.733333, -123.616667, 2 ♂♂, 1 ♀, Nomonth, 1 ♂, IV, 8 ♂♂, 2 ♀♀, V. Creston: 49.100000, -116.516667, 1 ♂, IX, 3 ♂♂, 3 ♀♀, IV, 2 ♂♂, 2 ♀♀, V, 1 ♂, 1 ♀, X, 4 ♂♂, 1 ♀, XI. Creston: (Goat River), 49.100000, -116.516667, 1 ♂, IX, river edge. Creston, 20 km NE, 49.100000, -116.516667, 2 ♂♂, 1 ♀, VIII. Departure Bay: 49.166667, -123.933333, 2 ♀♀, IV, 1 ♀, V, 3 ♂♂, 3 ♀♀, VI, 4 ♂♂, 4 ♀♀, VII, 1 ♂, X. Duncan: 48.783333, -123.700000, 1 ♀, VII. Duncan: (Genoa Bay), 48.783333, -123.700000, 3 ♂♂, V. Gabriola: 49.200000, -123.833333, 1 ♂, VI. Hazelton: 55.250000, -127.666667, 2 ♂♂, Nomonth. Kelowna: 49.883333, -119.483333, 1 ♀, IX. Kingsgate: 49.000000, -116.183333, 1 ♂, Nomonth. Langley: 49.100000, -122.650000, 1 ♂, III. Mission City: 49.133333, -122.300000, 1 ♂, VI. South Vancouver Island, Mt. Benson: 49.216667, -123.100000, 1 ♂, 1 ♀, V. Nanaimo: 49.166667, -123.933333, 1 ♂, 3 ♀♀, VI, 1 ♂, 1 ♀, VII, 1 ♂, VIII. Nanaimo: (Yellow Point), 49.166667, -123.933333, 2 ♂♂, VI, 5 ♂♂, 5 ♀♀, VIII. Oliver: (Meyer Flats), 49.183333, -119.550000, 1 ♂, V. Oliver, 17.7 km E, 49.183333, -119.550000, 1 ♀, VI. Vaseux Lake Provincial Park, Oliver, 3.2 - 4.8 km E, 49.183333, -119.550000, 1 ♂, 1 ♀, V. Peachland: 49.766667, -119.733333, 1 ♂, III. Robson: 49.333333, -117.683333, 1 ♀, V. Saanich: 48.466667, -123.350000, 2 ♂♂, 1 ♀, IV, 1 ♂, 3 ♀♀, V, 2 ♂♂, VIII. John Deane Provincial Park, Saanichton: 48.650000, -123.416667, 3 ♂♂, 1 ♀, VIII. Salmo, 12 km S, 49.033333, -117.383333, 1 ♀, Nomonth. Salmon Arm: (Horrington), 50.683333, -119.283333, 1 ♀, V. Sidney: 48.650000, -123.400000, 3 ♂♂, 3 ♀♀, VI, 1 ♂, VII. Tod Inlet: 48.583333, -123.450000, 1 ♂, 2 ♀♀, III. Vancouver: 49.250000, -123.116667, 2 ♂♂, 1 ♀, Nomonth, 1 ♂, III, 1 ♀, VII, 2 ♂♂, IX. Vancouver Island: 48.433333, -123.366667, 1 ♂, Nomonth, 1 ♂, III, 1 ♀, VII, 1 ♂, 2 ♀♀, X. Vemon: 50.266667, -119.266667, 2 ♂♂, X. Vancouver Island, Wellington: 49.200000, -124.016667, 1 ♂, V. Wynndel: 49.183333, -116.550000, 2 ♂♂, III, 1 ♀, V. Vancouver Island: Departure Bay: 49.166667, -123.933333, 1 ♂, VI. Saanich: 48.466667, -123.350000, 2 ♂♂, V. UNITED STATES: No state: NoCo.: 2 ♂♂, Nomonth, 1 ♂, II. Noslud.: NoCo.: (Elys Pk.), 1 ♀, XI. No state: NoCo.: Paradise Valley: (Kings River), 41.189167, -117.577778, 1 ♂, VII. ARIZONA: NoCo.: 1 ♂, Nomonth. CALIFORNIA: NoCo.: 36 ♂♂, 31 ♀♀, Nomonth, 3 ♂♂, 1 ♀, VI, 3 ♂♂, 2 ♀♀, VII. NoCo.: Col. Desert: 1 ♀, Nomonth. NoCo.: Colline: 1 ♀, Nomonth, 1 ♀, IX. NoCo.: Devils Gate Dam: 1 ♀, Nomonth. NoCo.: Grant Park, Rt. 180 E of Sequoia National Park, 34.141944, -118.124167, 1 ♂, 1 ♀, VI. NoCo.: Lake Gatos: 1 ♂, VI. NoCo.: Lampoons Ro. R. R. Flat: 1 ♂, VII. NoCo.: Lampoons Ro. R. R. Flat: 1 ♂, 2 ♀♀, VII. NoCo.: Potato: 5 ♂♂, 4 ♀♀, V. NoCo.: Probably Southern California: 1 ♀, Nomonth, NoCo.: Rear R. Bowman L. Rd.: 1 ♂, VIII. NoCo.: Sand Flat: 1 ♂, VI. NoCo.: Sylvian: 2 ♂♂, VIII. Alameda Co.: 37.800000, -122.266667, 1 ♀, Nomonth. Arroyo Mocho, 32.2 km SW, 37.676944, -121.911111, 1 ♀, III. Berkeley: 37.871667, -122.271667, 2 ♀♀, Nomonth, 1 ♀, II, 2 ♂♂, 1 ♀, III, 3 ♂♂, 3 ♀♀, IX, 1 ♂, XII. Berkeley: (Berkeley Hills), 37.871667, -122.271667, 1 ♀, VII. Hayward: 37.668889, -122.079722, 1 ♀, XI. Oakland: 37.804444, -122.269722, 1 ♀, II, 1 ♀, X, 1 ♂, XI. Oakland: (hills in back of city), 37.804444, -122.269722, 1 ♀, VIII. Oakland: (Mills College), 37.804444, -122.269722, 1 ♀, Nomonth. Alpine Co.: Bloods Meadow: 38.458333, -120.045278, 3 ♀♀, VII. Amador Co.: Horse Creek: 38.414722, -120.912500, 4 ♂♂, III. Butte Co.: Chico: 39.728611, -121.836389, 1 ♂, II, in underground moist burrows. Oroville: 39.513889, -121.555278, 1 ♀, II, 1 ♀, III, 1 ♂, VII. Calaveras Co.: Angels Camp: 38.076944, -120.552222, 1 ♂, VI. Avery: 38.204444, -120.368889, 2 ♂♂, 5 ♀♀, VI. Big Meadow: 38.415000, -120.114167, 5 ♂♂, 4 ♀♀, VI. Big Trees: 38.277500, -120.309444, 1 ♂, V, 1 ♂, 1 ♀, VIII. Mokelumne Hill: 38.300556, -120.705278, 1 ♂, Nomonth, 1 ♂, III, 1 ♀, VI, 1 ♂, 1 ♀, XI. Muirphys: 38.137500, -120.458611, 2 ♂♂, V, 1 ♀, IX. West Point: 38.399167, -120.526389, 1 ♀, VII. Contra Costa Co.: 38.016667, -122.133333, 1 ♂, XI. Alhambra Valley: 38.019444, -122.128333, 1 ♀, XI. Diablo: 37.835000, -121.956944, 1 ♀, Nomonth, 1 ♂, IV, 3 ♂♂, 5 ♀♀, IX. Martinez: 38.019444, -122.133056, 1 ♂, 1 ♀, III, 1 ♂, 1 ♀, IV. Redwood Peak: 37.818056, -122.175000, 1 ♂, XII. Rock City: 37.849722, -121.934444, 1 ♀, III. Vine Hill: 38.008611, -122.095000, 1 ♂, 1 ♀, VI, 2 ♂♂, 2 ♀♀, VII. Walnut Creek: 37.906389, -122.063889, 2 ♀♀, Nomonth, 1 ♂, I, 1 ♂, 4 ♀♀, IV. Del Norte Co.: Crescent City: 41.756111, -124.200556, 1 ♂, VIII. Crescent City: (Gilbert Creek), 41.756111, -124.200556, 1 ♀, IX. Gasquet, 1.6 km W, 41.845556, -123.968333, 5 ♂♂, 9 ♀♀, X. Smith River: 41.928611, -124.145278, 1 ♂, 2 ♀♀, VII. El Dorado Co.: 38.716667, -120.783333, 1 ♂, II. El Dorado: 38.682778, -120.846667, 1 ♀, Nomonth. Fallen Leaf: 38.883056, -120.071667, 1 ♂, 2 ♀♀, VII. Placerville: 38.729722, -120.797500, 1 ♂, VI. Riverton: 38.771111, -120.448333, 1 ♀, VII. Riverton: (Ice House), 38.771111, -120.448333, 1 ♀, VII. Riverton, 12.9 km NE, 38.771111, -120.448333, 1 ♀, VIII. Riverton, 12.9 km NE, (Ice House), 38.771111, -120.448333, 2 ♂♂, VII. Riverton, 12.9 km NE, (S.F.K. Silver Cr.), 38.771111, -120.448333, 1 ♀, VIII. Riverton, 12.9 km NE, (South Fork Silver Creek), 38.771111, -120.448333, 1 ♂, 1 ♀, VIII. Riverton, 12.9 NE, 38.771111, -120.448333, 1 ♀, VII. Riverton, 12.9 NE, (South Fork Silver Creek), 38.771111, -120.448333, 1 ♂, VIII. Riverton, 16 km NE, (South Fork Silver Creek), 38.771111, -120.448333, 2 ♂♂, 2 ♀♀, VII. South Lake Tahoe: 38.945833, -119.970278, 1 ♂, 2 ♀♀, VIII. Tallac Village: 38.921944, -120.020833, 1 ♂, 3 ♀♀, VII. Fresno Co.: Auberry, 5.6 km NE, (Redinger Lake Rd.), 37.080833, -119.484444, 1 ♂, III. Antifreeze pit trap near Arcostaphylos. Baird Ranch: (Redwood Creek), 36.872500, -119.510000, 2 ♂♂, 1 ♀, VI. Clovis: 36.825278, -119.701944, 1 ♂, III. Fresno: 36.747778, -119.771389, 2 ♂♂, 1 ♀, VI, 2 ♂♂, VIII. Huckleberry Meadows: 40.647500, -121.668611, 1 ♀, VII. Hume Lake: 36.791389, -118.905000, 1 ♀, V. Huntington Lake: 37.231667, -119.235000, 1 ♀, VII. Sierra National Forest, Huntington Lake: 37.215000, -119.235000, 1 ♂, VII. Huntington Lake: 37.231667, -119.235000, 1 ♂, VIII: 1 ♀, IX. Meadow by logs sirews. Kings Canyon: 36.794444, -118.683333, 2 ♂♂, 1 ♀, VI, 1 ♂, 1 ♀, VII. Piedra: 36.810278, -119.381111, 1 ♂, V. Shaver Lake:

37.104167, -119.316667, 23 000, 31 000, VIII. Sierra National Forest, Shaver Lake, 5.3 km E on road to Dinkley Creek, 37.104167, -119.316667, 4 000, 3 000, VII. under dried pieces of wood and cowpits in Swanson Meadow with mostly dense green grasses and herb. plants. Humboldt Co.: Blockburg: 40.276111, -123.635278, 13 000, 15 000, V, 6 000, 8 000, VI. Fort Seward: 40.223056, -123.642222, 24 000, 20 000, V, 7 000, 3 000, VI. Six Rivers National Forest, Green Point Ridge: 40.924167, -123.848611, 1 000, VI, I 000, VII. Harris: 40.084167, -123.657500, 1 000, V. Whitehorn: 40.023889, -123.941944, 2 000, 2 000, V. Willow Creek: 40.939722, -123.630278, 2 000, 4 000, VI. Imperial Co.: Watermans Corner: 32.781111, -115.446944, 2 000, 3 000, Nomonth. Kern Co.: Arvin, 17.7 km E, 35.209167, -118.827500, 1 000, IV. Edwards: 34.926111, -117.934167, 1 000, I 000, Nomonth. Evans Flat P.C.: 35.644167, -118.587778, 1 000, IX, beneath pieces of wood in moist to dry meadow with grasses and other herbaceous plants. Evans Flat P.C.: (Greenhorn Mountains), 35.644167, -118.587778, 35 000, 17 000, VI. beneath pieces of wood in moist to dry meadow with grasses and other herbaceous plants. Tehachapi: 35.132222, -118.448056, 1 000, Nomonth. Lake Co.: (Butte Canyon), 38.752500, -122.613889, 1 000, IV. Los Angeles Co.: 34.000000, -118.250000, 3 000, 3 000, Nomonth, 1 000, II, 1 000, IV, 1 000, VIII, 1 000, 4 000, IX: 1 000, 1 000, X, cold water. (Coquillet), 34.000000, -118.250000, 1 000, 1 000, Nomonth. Claremont: 34.096667, -117.718889, 12 000, 11 000, Nomonth, 1 000, II, 2 000, III. Evey Canyon (San Gabriel Mountain), 34.162778, -117.681389, 1 000, V. Laguna: 33.976667, -118.138889, 4 000, 3 000, Nomonth, 3 000, III, 1 000, VII, 2 000, 2 000, VIII. Los Angeles: 34.052222, -118.242778, 2 000, 1, 2 000, III, 1 000, VII, 7 000, 7 000, XII. Monrovia: 34.148056, -117.998056, 1 000, I 000, I 000, V, 2 000, I 000, VIII, 2 000, IX, 1 000, 2 000, IX, 1 000, X. Pasadena: 34.147778, -118.143611, 3 000, 3 000, Nomonth, 1 000, I 000, I 000, V, 2 000, I 000, VIII, 2 000, IX, 1 000, X. Pomona: 34.055278, -117.751389, 1 000, I 000, Nomonth. San Gabriel: 34.096111, -118.105000, 1 000, VI. San Gabriel Mountains (Cold Brook St.), 34.300000, -117.916667, 1 000, IV. San Marino: 34.121389, -118.105556, 1 000, VI, 1 000, 2 000, VIII. Sierra Madre: 34.161667, -118.051944, 1 000, I. Madera Co.: Bass Lake: 37.320000, -119.556667, 1 000, Nomonth, 1 000, IV, 2 000, 2 000, VII, 1 000, VIII. Bass Lake, 11.3 km NE. (The Pines), 37.320000, -119.556667, 1 000, VII. Coarsegold: 37.262222, -119.700000, 1 000, V. Cold Spring Meadow: 37.283333, -119.396111, 4 000, 1 000, VII. North Fork, 16 km E, 37.229722, -119.508611, 1 000, VIII. Marin Co.: 37.966667, -122.516667, 1 000, 1, 4 000, 3 000, VIII, 3 000, IX. (Carson Ridge), 37.966667, -122.516667, 1 000, XI. (Cypress Ridge), 37.966667, -122.516667, 1 000, IV. Alpine Lake: 37.940278, -122.636944, 1 000, III. Copper Mine Gulch: 37.946944, -122.712778, 1 000, VII. Fairfax: 37.987222, -122.587778, 1 000, IV. Tiburon: 37.873611, -122.455556, 1 000, Nomonth. Mariposa Co.: El Portal: 37.674722, -119.783056, 1 000, VII. Fish Camp: 37.478611, -119.639444, 1 000, 3 000, VII. Fish Camp, 11.2 km NW, 37.478611, -119.639444, 1 000, Nomonth. Fish Camp, 11.3 km NW, 37.478611, -119.639444, 2 000, 1 000, VII. Gin Flat: 37.765556, -119.773611, 1 000, VI. Miami Ranger Station: 37.419722, -119.744444, 3 000, V, 2 000, 2 000, VI. Piney Creek: 37.690278, -120.317500, 1 000, I. Piney Creek: 37.700361, -120.329509, 1 000, II. Under stones. Wawona: 37.536944, -119.655278, 1 000, VI. Wawona: 37.536944, -119.655278, 1 000, V. Yosemite National Park: 37.850000, -119.566667, 1 000, VII. Yosemite National Park, Yosemite Village: 37.745278, -119.597222, 1 000, V, 1 000, VI, 5 000, 2 000, VII. Mendocino Co.: Eel River, 40.067778, -123.789722, 1 000, VIII. Mendocino National Forest, Howard Lake: 39.883213, -122.990480, 1 000, VI. Ukiah: 39.150278, -123.206667, 1 000, XII. Merced Co.: Snelling: 37.519167, -120.436389, 1 000, XI. Modoc Co.: 41.483333, -120.550000, 1 000, V. Adin Pass: 41.346667, -120.920278, 1 000, VI. assoc. with vernal pool under rocks. Camp Roberts: 41.262222, -121.168056, 1 000, VII. Davis Creek: 41.733333, -120.370833, 1 000, VII. Lake City: 41.642778, -120.215833, 1 000, VII. Monterey Co.: 36.683333, -121.666667, 1 000, Nomonth. Big Sur: 36.270278, -121.806389, 17 000, 12 000, XI. Carmel By The Sea: 36.555000, -121.918333, 1 000, III, 2 000, V, 2 000, X. Jamesburg: 36.369722, -121.589167, 1 000, IV. Jolon: 35.970833, -121.175000, 1 000, IV. King City, 14.4 km E, 36.212778, -121.125000, 1 000, III. Monterey: 36.600278, -121.668611, 1 000, VIII. Salinas: 36.677778, -121.654444, 1 000, VI. Soledad (Paraiso Springs), 36.424722, -121.325278, 1 000, V. Napa Co.: 38.333333, -122.283333, 1 000, VI, 2 000, VIII. Nevada Co.: Bear River Pines: 39.169444, -120.966944, 2 000, 2 000, VIII. Bowman Lake (Rt. 20), 39.449444, -120.651667, 1 000, VIII. Cedar Ridge (Greenhorn Creek), 39.198889, -121.020000, 6 000, 6 000, VIII. Nevada City: 39.261667, -121.015000, 1 000, Nomonth, 1 000, VIII. Truckee: 39.328056, -120.182222, 1 000, VI, 2 000, 4 000, VIII. Orange Co.: San Juan Guard Station, 1.1 km NE on rte 74, 33.591667, -117.513333, 1 000, I, in dry, shaded canyon. Trabuco Canyon: 33.663889, -117.589444, 1 000, VI. Yorba Linda: 33.886111, -117.812222, 1 000, X. Placer Co.: 38.866667, -121.083333, 1 000, Nomonth. Dutch Flat: 39.206111, -120.836667, 1 000, 2 000, X. Foresthill: 39.020278, -120.816944, 1 000, VII. Plumas Co.: Chester: 40.306389, -121.230833, 1 000, VI. Clover Valley: 39.975000, -120.550000, 3 000, VI. Lake Almanor, Canyon Dam Pic. Area: (S end of lake), (Westwood, 3.9 km W on rte. A21, 18.1 km S on rte. 147, 0.6 km W on rte. 8), 40.173167, -121.085833, 1 000, VII. ex. rocks (sand-gravel damp beneath) on artif. lake shore (with sparse-mod. green grass & and herbs.) by dry stream, evergreen forest. Meadow Valley: 39.929722, -121.059722, 23 000, 14 000, VI. Portola: 39.810556, -120.468056, 2 000, VIII. Quincy: 6.4 km W, 39.936944, -120.946111, 7 000, 9 000, VI. Quincy, 6.5 km W, 39.936944, -120.946111, 1 000, VI. Riverside Co.: Banning: 33.925556, -116.875556, 1 000, VI. Cajalco Canyon: 33.826111, -117.498333, 1 000, Nomonth. San Bernardino National Forest, Herkey Creek: (San Jacinto Mountains), 33.664167, -116.679444, 1 000, V, 1 000, VI. Idyllwild: 33.740000, -116.718056, 1 000, V, 4 000, VI. Riverside: 33.953333, -117.395278, 1 000, VI. San Jacinto: 33.783889, -116.957778, 1 000, Nomonth. Santa Rosa Mountains: 33.431389, -116.226944, 2 000, VI. Sacramento Co.: 38.583333, -121.500000, 1 000, II. Folsom: 38.678056, -121.175000, 1 000, III. Orangevale: 38.678611, -121.224722, 1 000, I, 1 000, III. Sacramento: 38.581667, -121.493333, 1 000, Nomonth. 1 000, VIII. San Bernardino Co.: 34.116667, -117.316667, 2 000, Nomonth. (San Bernardino Valley), 34.116667, -117.316667, 1 000, Nomonth. Big Bear Lake: 34.243889, -116.910556, 1 000, VII. Colton: 34.073889, -117.312778, 1 000, Nomonth. Etiwanda: 34.126111, -117.522778, 1 000, 2 000, XII. San Bernardino Mountains, Lake Arrowhead (Cold Creek Ranch), 34.248333, -117.188333, 3 000, 4 000, VII. ground under grass: 1 000, 2 000, VII. under apple tree. Mill Creek Canyon: 34.088333, -117.038611, 12 000, 19 000, IX. Old Baldy Council Camp: 34.295278, -116.913056, 5 000, VI, 3 000, 4 000, VII. Redlands: 34.061944, -117.181667, 1 000, 2 000, I; 1 000, I, under home. San Antonio Canyon: 34.160000, -117.676944, 1 000, VII. San Bernardino: 34.121389, -117.302222, 1 000, VI. Summit: 34.328333, -117.426667, 1 000, 1 000, VII. Warner: 34.060833, -117.145556, 1 000, I 000, II, 3 000, 3 000, VII. Yucaipa: 34.033611, -117.042222, 1 000, V. San Diego Co.: 32.716667, -117.166667, 9 000, 7 000, Nomonth, 1 000, II. Borrego: 33.221111, -116.333333, 1 000, VII. Colman Lantern, Boulder Oaks: 32.731667, -116.483889, 1 000, V. Descanso (Descanso Ranger Station), 32.852778, -116.615000, 1 000, III. Escondido: 33.119167, -117.085556, 1 000, VI, collected from ground; 1 000, 3 000, VI. Collected from Range; 1 000, VI, collected from ground. Escondido (Lake Wohlford), 33.119167, -117.085556, 1 000, III. Escondido (San Vicente), 33.119167, -117.085556, 1 000, II. Julian: 33.078611, -116.601111, 3 000, Nomonth, 1 000, 3 000, III. Laguna Mountains: 32.808333, -116.448333, 1 000, Nomonth, 1 000, VI, 4 000, 7 000, VII, 3 000, 5 000, VIII. Lyons Valley: 32.711944, -116.746389, 1 000, Nomonth, 1 000, V. Lyons Valley: 32.717222,

-116.773889, 3 ♂♂, 3 ♀♀, V. Lyons Valley: (Ramona), 32.711944, -116.746389, 1 ♀, V. Mount Laguna: 32.872222, -116.417500, 1 ♀, II. Oceanside: 33.195833, -117.378611, 1 ♀, X. Palomar Mountain (post Office): 33.322778, -116.877778, 1 ♂, VIII. Potrero: 32.604722, -116.612222, 1 ♀, VII. Poway: 32.962778, -117.035000, 1 ♂, Nomonth. Ramona: 33.041667, -116.867222, 1 ♀, VII. Ramona (San Vicente), 33.041667, -116.867222, 1 ♂, II. San Diego: 32.715278, -117.156389, 1 ♂, Nomonth. Valley Center: (Lake Wohlford), 33.218333, -117.033333, 2 ♂♂, III. San Francisco Co.: 37.750000, -122.433333, 1 ♂, 1 ♀, Nomonth, 1 ♀, II. San Francisco: 37.775000, -122.418333, 3 ♀♀, Nomonth, 1 ♂, V. Golden Gate Park, San Francisco: 37.775000, -122.418333, 1 ♂, V. San Joaquin Co.: Escalon: 37.797500, -120.995556, 1 ♀, VII. San Luis Obispo Co.: Cayucos: 35.442778, -120.891111, 1 ♂, XI. Nipomo: 35.042778, -120.475000, 1 ♂, XI. Paso Robles: 35.626667, -120.690000, 1 ♀, V, 1 ♂, 2 ♀♀, VI, 5 ♂♂, IX, 1 ♀, X. Simmler: 35.351389, -119.986111, 1 ♀, III. San Mateo Co.: 37.483333, -122.216667, 1 ♀, III, 1 ♂, VII, 1 ♀, XI. Corte Madera Creek: 37.400833, -122.237222, 2 ♂♂, 3 ♀♀, Nomonth. Corte Madera Creek: (Stanford University), 37.427222, -122.169167, 1 ♂, 2 ♀♀, VI. La Honda: 37.319167, -122.273056, 1 ♂, IV. Millbrae: 37.598611, -122.386111, 1 ♀, III, Redwood City: 37.486111, -122.233333, 2 ♂♂, II. San Carlos: 37.496389, -122.257500, 1 ♂, 1 ♀, V. San Mateo: 37.563056, -122.324444, 1 ♂, 3 ♀♀, Nomonth. Woodside: 37.430000, -122.252778, 1 ♀, VI, 2 ♀♀, XI. Santa Barbara Co.: Carpinteria: 34.398889, -119.517500, 2 ♂♂, 1 ♀, I. Guadalupe: 34.971667, -120.570833, 1 ♂, VI. Hope Ranch: 34.421944, -119.770000, 1 ♂, V. Orcutt: 34.865278, -120.435000, 1 ♂, II, Under stone; 2 ♂♂, XI. Under rock. Santa Barbara: 34.423333, -119.703333, 2 ♂♂, Nomonth, 3 ♂♂, 1 ♂, 1 ♀, II, 1 ♀, IV, 4 ♂♂, 2 ♀♀, V; 10 ♂♂, 3 ♀♀, VI, F hills. Sierra Madre Mountains: 34.916667, -119.916667, 1 ♂, I. Sunset Valley: 34.754167, -119.946389, 1 ♂, VII. Surf: 34.684444, -120.602500, 1 ♂, 3 ♀♀, VI. Santa Clara Co.: 37.333333, -121.900000, 1 ♂, 2 ♀♀, Nomonth. (King Mountain Road), 37.333333, -121.900000, 1 ♂, Nomonth. Alma Fire Control Station: 37.183611, -121.990000, 1 ♀, VI. Alum Rock Park: 37.397778, -121.798611, 1 ♀, IV, Under rock on dry S facing slope. Black Mountain: 37.318889, -122.146111, 1 ♀, X. Stanford University, Corte Madera Creek: (Jasper Ridge Biological Preserve), 37.323889, -122.188889, 1 ♂, VIII. Cupertino: 37.323056, -122.031111, 1 ♀, VIII. Los Gatos: 37.226667, -121.973611, 1 ♂, V. Madrone: (Madrone Springs), 37.150556, -121.670556, 1 ♀, IV. Milpitas: (Hills East), 37.428333, -121.905556, 1 ♀, X. Mountain View: 37.386111, -122.082778, 1 ♀, V. Palo Alto: 37.441944, -122.141944, 1 ♀, II, 1 ♂, VI. Palo Alto: (Stanford University), 37.441944, -122.141944, 1 ♀, IX. San Jose: 37.335278, -121.893889, 1 ♀, II, 2 ♂♂, VI. Saratoga: 37.263889, -122.021944, 1 ♂, VI. Stanford University: 37.427222, -122.169167, 3 ♂♂, 3 ♀♀, Nomonth, 14 ♂♂, 6 ♀♀, III, 1 ♂, IV, 3 ♂♂, 2 ♀♀, V. Santa Cruz Co.: 36.983333, -122.033333, 1 ♂, IV. Ben Lomond: 37.089167, -122.085278, 3 ♀♀, V. Santa Cruz: 36.974167, -122.029722, 1 ♀, II, 6 ♂♂, 1 ♀, IV, 1 ♂, XI. Santa Cruz Mountains: 37.116111, -121.901111, 1 ♂, 1 ♀, Nomonth, 1 ♂, VI. Watsonville: 36.910278, -121.755833, 1 ♂, VIII. Shasta Co.: 40.600000, -122.416667, 1 ♂, Nomonth. Burney Spring: 40.780556, -121.622778, 1 ♂, VI. Cayton: 41.061944, -121.632778, 3 ♂♂, 2 ♀♀, VII. Dry Lake: 40.806667, -121.701667, 1 ♂, VI. Hat Creek, 17.7 km SE, 40.989722, -121.576389, 1 ♂, VIII. Hatchet Mountain Pass: 40.852500, -121.765833, 1 ♂, V. Lassen National Forest, Old Station: (Little Bunchgrass Meadows), 40.675278, -121.429722, 9 ♂♂, 11 ♀♀, VI, under rocks. Redding: 40.586667, -122.390556, 2 ♂♂, VII, Collected in Ethylene Glycol pit trap. Shasta: (Shasta Lake/Salt Creek), 40.599444, -122.490833, 1 ♂, IV. Summit City, 11.2 km N, 40.686111, -122.400556, 1 ♂, 1 ♀, VIII. Summit City, 11.2 km W, 40.686111, -122.400556, 1 ♂, VIII. Sierra Co.: Sattley: 39.616111, -120.426111, 1 ♂, VII. Sierraville: 39.589722, -120.366389, 1 ♀, VI. Siskiyou Co.: 41.716667, -122.600000, 1 ♂, Nomonth. Bray, 6.4 km NE, 41.644167, -121.969722, 2 ♂♂, VIII. Klamath National Forest, Dock Well: 41.649444, -121.722222, 5 ♂♂, 2 ♀♀, V, Collected under rocks and logs. Klamath National Forest, Gotsville: 41.867500, -122.740000, 1 ♀, IX. Macdoel, 4.8 km S, 41.826944, -122.004167, 1 ♂, 1 ♀, III. Macdoel, 9.7 km S, 41.826944, -122.004167, 1 ♂, III, 2 ♂♂, IV. Sisson Lake: 41.410000, -122.215833, 1 ♀, Nomonth. Klamath National Forest, Sylva: 41.816667, -122.374167, 1 ♂, VIII. Solano Co.: Dixon: 38.323889, -121.821111, 2 ♂♂, 2 ♀♀, Nomonth. Fairfield: 38.249444, -122.038889, 1 ♀, VII. Sonoma Co.: 38.450000, -122.700000, 2 ♂♂, 1 ♀, Nomonth. Bennett Mountain: 38.413056, -122.700000, 1 ♂, IV, nr. marshy lake. Duncan Mills: 38.453889, -123.053889, 1 ♀, VII. Forestville: 38.473611, -122.889167, 1 ♂, V. Keawood: (Mount Hood), 38.413889, -122.545000, 4 ♂♂, 1 ♀, II. Petaluma: 38.232500, -122.635556, 7 ♂♂, 5 ♀♀, Nomonth, 4 ♂♂, 4 ♀♀, IV. Santa Rosa: 38.440556, -122.713333, 5 ♂♂, 4 ♀♀, Nomonth, 1 ♂, 2 ♀♀, II. Sebastopol: 38.402222, -122.822778, 1 ♂, 1 ♀, VII. Tehama Co.: Deer Creek Meadow: (Chico-Chester Road), 40.269444, -122.418611, 2 ♂♂, 3 ♀♀, VI. Deer Creek Meadow: (Chico-Chester Road), 40.269444, -122.418611, 1 ♂, 2 ♀♀, VI. Mineral: 40.347778, -121.593889, 1 ♀, VI. Trinity Co., Carrville: 41.065000, -122.703056, 1 ♂, 1 ♀, VI. Fawn Lodge: 40.676389, -122.829444, 3 ♂♂, 1 ♀, VI. Hayfork: 40.554444, -123.181944, 1 ♀, IV. Ruth Lake: (8.8 km NW Ruth Dam), 40.370833, -123.435278, 1 ♀, IV, under rocks on sandy banks Ruth Lake. Zenia: 40.205556, -123.490833, 1 ♂, VI. Tulare Co.: 36.333333, -119.300000, 1 ♂, 1 ♀, X. (Lemon Cove), 36.333333, -119.300000, 1 ♀, VI. Badger: 36.631389, -119.012222, 2 ♂♂, 1 ♀, V. Camp Nelson: 36.142778, -118.608333, 1 ♀, Nomonth, 1 ♀, IX. Giant Forest: 36.562500, -118.750556, 1 ♂, V, 1 ♂, 5 ♀♀, VII. Sequoia National Park, Huckleberry Meadow, 12 km S, 36.554722, -118.757222, 2 ♀♀, V. Johnsondale, 2.4 km E, 35.974722, -118.540000, 1 ♂, X, under log by stream. Kaweah: 36.469722, -118.917500, 1 ♂, Nomonth, 1 ♂, V. Mineral King: 36.450833, -118.593889, 1 ♂, VIII. Porterville, 66.6 km E on rte 190, 36.150000, -118.571428, 1 ♂, 1 ♀, VII, under debris in meadow or along edges of meadow. Sequoia National Park, Potwisha: 36.517500, -118.798889, 1 ♂, V. Quaker Meadow: (Porterville, 69.3 km E on rte 190), 36.106584, -118.556122, 4 ♂♂, 1 ♀, VII, under logs & debris in mostly damp meadow with lush green grasses and herbaceous plants. Quaking Aspen P.C.: (Porterville, 67.9 km E on rte 190), 36.000000, -118.556122, 1 ♂, VII, under debris in dry to moist meadow with mostly dense grasses. rtes 190 and US For. 21806: (Porterville, 75.1 km E), 36.100000, -118.506377, 1 ♂, 1 ♀, VII, under bark on cleared hill with tree stumps and scattered grasses. Sequoia National Forest: 36.000278, -118.500278, 1 ♂, 1 ♀, IX. Sequoia National Park: 36.447653, -118.590772, 1 ♀, VI, 2 ♂♂, 2 ♀♀, VII, 1 ♀, VIII. Three Rivers: 36.438889, -118.903611, 3 ♂♂, X. Three Rivers: (Giant Forest), 36.438889, -118.903611, 1 ♂, 1 ♀, VII. Three Rivers: (Lemon Cove), 36.438889, -118.903611, 1 ♀, VII. Three Rivers, 16.09 km SE, (S Fork Kaweah), 36.438889, -118.903611, 1 ♀, V. Lower Sierra Nevada, Tule River: 36.138056, -118.805556, 1 ♀, Nomonth. Tuolumne Co.: (Gardners), 37.966667, -120.366667, 3 ♂♂, 2 ♀♀, VII. Dodge Ridge: 38.139444, -120.021389, 1 ♂, 3 ♀♀, IX. Groveland: 37.838333, -120.231667, 2 ♂♂, VIII. Harden Flat: 37.811111, -119.946389, 1 ♀, V. Leland Meadow: 38.093056, -120.133333, 8 ♂♂, 5 ♀♀, IX. Stanislaus National Forest, Long Barn, 6.1 km NE, 38.093056, -120.133333, 10 ♂♂, 13 ♀♀, VII, under rocks and dried cowpies in meadow with loam soil, scattered grasses and herb. plants. Marble Quarry: (Marble Quarry Rd. at South Fork Sta), 38.063056, -120.383333, 2 ♂♂, 3 ♀♀, III. Mi-Wuk Village: (Sugar Pine), 38.065833, -120.183889, 2 ♂♂, Nomonth, 3 ♀♀, VIII. Pinecrest: 38.188611, -119.989722, 3 ♂♂, IX. Stanislaus National Forest, Pinecrest, 37 km NE, on rte 108, 38.340072, -119.778037, 2 ♂♂, 2 ♀♀, VII, under rocks, pieces of wood, bark in area with sparse mostly dry herb. plants and grasses. Strawberry: 38.198333, -120.008333, 1 ♀, VI, 5 ♂♂, VIII, 1 ♂, 2 ♀♀, IX. Sugar Pine Gap: 38.248056, -120.249167, 2 ♂♂, VIII. Twain Harte: 38.039722, -120.231667, 1 ♂, VII. Ventura Co.: Frazier Mountain: 34.775000, -118.968056, 1 ♀, V. Ojai: 34.448056, -119.241944, 4 ♂♂, 1 ♀, Nomonth,

3 ♂♂, 1 ♀, III. Sespe: (Sespe Canyon), 34.400000, -118.949444, 1 ♂, VII. Ventura: 34.278333, -119.292222, 1 ♀, VI. weed field; 3 ♂♂, 1 ♀, VI, on ground; 3 ♂♂, 1 ♀, VI. Weedfield. Yolo Co.: Berryessa Peak, 4.8 km NNE in Taylor Canyon, 38.663889, -122.188889, 1 ♂, II. Davis: 38.545000, -121.739444, 3 ♀♀, III, 1 ♂, VI. Putah Creek: 38.543056, -121.697500, 1 ♂, III. Winters, 11.3 km W, (Putah Ck.), 38.525000, -121.969722, 1 ♀, III. Yuba Co.: Challenge: 39.487500, -121.222500, 1 ♂, VIII. Smartville, 8 km N., (Sierra Foothill Field Sta.), 39.207500, -121.297500, 1 ♂, V. Strawberry Valley: 39.564167, -121.105833, 2 ♂♂, Nomonth. COLORADO: NoCo.: 3 ♂♂, 1 ♀, Nomonth. Weld Co.: Auburn: 40.368056, -104.636111, 3 ♂♂, III. IDAHO: NoCo.: (Port Falls), 1 ♀, VII. NoCo.: Robinson Lake: 1 ♀, X. Ada Co.: Boise, 29.0 km NE, (Grimes Creek), 43.613611, -116.202500, 1 ♀, IX. Bannock Co.: Pocatello: 42.871389, -112.444722, 1 ♂, VII. Benewah Co.: Fernwood: 47.112222, -116.391667, 2 ♂♂, 3 ♀♀, IV. Bingham Co.: Rose: 43.254444, -112.325278, 1 ♂, VII. Boise Co.: Garden Valley: 44.090000, -115.951111, 1 ♂, VI. Bonner Co.: Sagle: 48.202500, -116.546667, 2 ♂♂, 2 ♀♀, X. Sandpoint: 48.276667, -116.552222, 3 ♂♂, 1 ♀, Nomonth, 1 ♀, V, 4 ♂♂, 1 ♀, VI, 5 ♂♂, 1 ♀, VII, 1 ♂, VIII, 1 ♂, 2 ♀♀, IX, 2 ♂♂, 3 ♀♀, XII. Elmore Co.: 43.133333, -115.716667, 1 ♂, V. Idaho Co.: Grangeville: 45.926667, -116.121389, 3 ♂♂, 3 ♀♀, IX. Harpster: (Harpster Grade), 45.986667, -115.962500, 1 ♂, IV. White Bird: 45.761667, -116.299722, 1 ♂, VI. Kootenai Co.: Chilco: 47.863889, -116.745556, 1 ♀, V. Coeur d'Alene: 47.677778, -116.779444, 1 ♀, Nomonth, 1 ♂, VI. Coeur d'Alene: (Coeur d'Alene Lake), 47.677778, -116.779444, 1 ♂, 1 ♀, V. Driftwood bark, *Pinus ponderosa*; 1 ♂, V, driftwood bark *pinus ponderosa*. Post Falls: 47.718056, -116.950556, 3 ♂♂, 7 ♀♀, VII. Worley: 47.400833, -116.916111, 4 ♀♀, V. Latah Co.: Bovill: 46.858889, -116.392500, 1 ♀, IV. Harvard: (Laird Park), 46.917500, -116.728611, 1 ♀, III. Harvard, 4.8 km N., 10.5 km E., (Bluejacket Creek), 46.917500, -116.728611, 1 ♂, IX. Harvard, 4.8 km SE, -116.728611, 1 ♀, III. Harvard, 4.8 km N., 10.5 km E., (Bluejacket Creek), 46.917500, -116.728611, 1 ♀, VIII. Joel: (Laird Park), 46.917500, -116.728611, 1 ♀, Nomonth: Harvard, 6.5 km NE, (Lost Creek), 46.917500, -116.728611, 1 ♀, VIII. Joel: (Laird Park), 46.917500, -116.728611, 1 ♂, IV. Juliaetta: 46.578889, -116.705000, 2 ♂♂, 2 ♀♀, Nomonth, 1 ♂, IV. Moscow: 46.732500, -116.999167, 1 ♂, 1 ♀, Nomonth, 1 ♀, II, 2 ♂♂, 1 ♀, III, 6 ♂♂, 1 ♀, IV, 6 ♂♂, 2 ♀♀, IX. Moscow: (Cedar Mountain), 46.732500, -116.999167, 2 ♂♂, 1 ♀, VII. Moscow Mountain: 46.803611, -116.867778, 1 ♂, 2 ♀♀, II, 1 ♂, IX. Moscow Mountain: (N slope), 46.803611, -116.867778, 1 ♂, 1 ♀, V. Moscow Mountain, 12.9 km NW, 46.803611, -116.867778, 1 ♀, II. Moscow Mountain, 12.9 km NW Moscow, 46.803611, -116.867778, 1 ♂, Nomonth, 1 ♂, III, 1 ♀, VI, 1 ♀, IX. Moscow Mountains, 12.9 km NW Moscow, (E twin peak), 46.803611, -116.867778, 1 ♂, 3 ♀♀, VII. Troy: 46.736944, -116.768611, 1 ♀, IV. Lewis Co.: Nezperce: 46.235000, -116.239722, 2 ♀♀, IV. Nez Perce Co.: Gifford: 46.443333, -116.555556, 1 ♀, V. Hatwai: (Hatwai Creek Central Grade), 46.436389, -116.967222, 1 ♀, IV. Lenore: 46.508611, -116.550000, 1 ♂, VI. Lewiston: 46.416667, -117.016667, 2 ♂♂, Nomonth, 2 ♂♂, III, 1 ♀, V, 1 ♂, VI, 1 ♂, VII, 1 ♀, X. Spalding: 46.446944, -116.816389, 1 ♂, 1 ♀, V. Waha: 46.213333, -116.851111, 2 ♂♂, VII. Waha: (Waha Lake), 46.213333, -116.851111, 3 ♂♂, 4 ♀♀, VII. Twin Falls Co.: Rogerson, 3.2 km, 42.218056, -114.593333, 1 ♂, V. MONTANA: Flathead Co.: Bigfork: 48.063333, -114.071667, 1 ♂, VI. Lake Co.: National Bison Range, Moiese: 47.370556, -114.265000, 4 ♂♂, 2 ♀♀, VII. Ninepipe National Wildlife Refuge: 47.441111, -114.120278, 3 ♂♂, VI. Saint Ignace, 8.8 - 9.7 km E in Mission Creek Canyon, 47.320000, -114.093056, 1 ♂, IX. Missoula Co.: Clinton, 14.5 km S., (Elkhorn Ranch), 46.769167, -113.711667, 1 ♂, VI. Missoula: 46.872222, -113.993056, 1 ♂, Nomonth. Ravalli Co.: Mills Ranch: 47.424167, -112.457222, 1 ♀, III. Sanders Co.: Thompson Falls: 47.597222, -115.343333, 2 ♂♂, 1 ♀, IX. NEVADA: NoCo.: 1 ♂, 1 ♀, Nomonth. OREGON: NoCo.: 27 ♂♂, 15 ♀♀, Nomonth. NoCo.: (Koebele), 1 ♂, 3 ♀♀, Nomonth. NoCo.: Wallowa Mountains: 45.194946, -117.370519, 1 ♂, VII. Baker Co.: Halfway: (Melhorn's Mill), 44.880833, -117.113611, 5 ♂♂, 4 ♀♀, VII. Spring Creek: 44.836667, -118.028611, 1 ♂, IV. Benton Co.: Corvallis: 44.564722, -123.260833, 1 ♀, Nomonth, 1 ♀, III, 3 ♂♂, 1 ♀, IV, 4 ♂♂, 1 ♀, V, 3 ♂♂, 3 ♀♀, VI, 3 ♂♂, 3 ♀♀, VII. Corvallis, 6.4 km N, 44.564722, -123.260833, 1 ♀, IV. Mary's Peak: 44.504444, -123.550000, 1 ♂, Nomonth. Monroe: 44.314167, -123.295556, 2 ♂♂, 2 ♀♀, VIII. Philomath: 44.540278, -123.366389, 1 ♀, IX. Philomath, 1.6 km W, 44.540278, -123.366389, 1 ♀, III, loose bark. Clackamas Co.: Colton: 45.172222, -122.436667, 1 ♀, 1 ♂, Clatsop Co.: Cannon Beach Junction: 45.941667, -123.917500, 1 ♂, VI. Douglas Co.: 6.4 km S, (London), 43.216667, -123.333333, 1 ♂, III. Riddle: 42.951111, -123.363056, 1 ♂, 1 ♀, III. Roseburg: 43.216667, -123.340556, 2 ♂♂, IV. Roseburg, 11.3 km NW, 43.216667, -123.340556, 1 ♂, 2 ♀♀, 1 ♀, III. Grant Co.: Prairie City: (John Day River), 44.463333, -118.708889, 3 ♂♂, 7 ♀♀, IX. Ritter: (Pine Creek), 44.892500, -119.142500, 1 ♂, 1 ♀, IV. Harney Co.: Ochoco National Forest, Ochoco National Forest: (Snow Mountain District), 44.376389, -120.116667, 2 ♂♂, 1 ♀, VII. Hood River Co.: Hood River: 45.705556, -121.520278, 1 ♀, Nomonth, 1 ♀, II, 1 ♀, IV, 1 ♀, V. Jackson Co.: Applegate: (Little Applegate River), 42.257222, -123.167222, 1 ♀, VIII, 1 ♀, IX. Ashland: 42.194722, -122.708333, 1 ♀, V. Butte Falls: (Little Butte Creek), 42.543333, -122.564444, 2 ♂♂, 1 ♀, III. Dead Indian Soda Springs: 42.332222, -122.447778, 1 ♀, V, 1 ♀, V, under rocks at Stress Bank. Hyatt Reservoir: 42.171944, -122.466111, 3 ♂♂, 4 ♀♀, IX. Hyatt Reservoir, N end: 42.171944, -122.466111, 4 ♂♂, 4 ♀♀, VIII, Under logs in a meadow near reservoir: Jacksonville, 32.2 km S, 42.313611, -122.965833, 1 ♀, III. Lower Table Rock: 42.455278, -122.947500, 1 ♂, 1 ♀, IV. Medford: 42.326667, -122.874444, 1 ♂, Nomonth, 1 ♀, IV, 1 ♂, VI. Pinehurst: 42.117778, -122.365000, 7 ♂♂, 12 ♀♀, X. Pinehurst, 35.2 km E, on rte 66, 42.117778, -122.365000, 1 ♂, IV. Rogue River: 42.436111, -123.170833, 1 ♀, V. Jefferson Co.: Fly Lake: 44.540000, -121.430278, 1 ♀, IV. Josephine Co.: Cave Junction, 24.1 km S, 42.163056, -123.646944, 1 ♀, III, under board. Golden: 42.682500, -123.330278, 1 ♂, Nomonth, 1 ♂, V. Williams: (Grayback Creek), 42.218889, -123.272778, 1 ♂, VI. Klamath Co.: Beatty: 42.441944, -121.269722, 1 ♂, IV, deer guts. Bly: 42.397778, -121.040556, 2 ♂♂, V. Bly, 17.7 km NE, 42.397778, -121.040556, 6 ♂♂, 2 ♀♀, V. Keno: 42.126667, -121.928889, 6 ♂♂, 13 ♀♀, III, under rock. Keno: (Spencer Creek), 42.126667, -121.928889, 1 ♂, VI. Keno, 11.3 km W, (Klamath River), 42.126667, -121.928889, 1 ♂, V. Keno, 8 km W, (Klamath River), 42.126667, -121.928889, 2 ♂♂, 1 ♀, III, under rock. Keno, W, (Klamath River), 42.126667, -121.928889, 1 ♂, IV, under rock. Keno, west of, (Klamath River), 42.126667, -121.928889, 1 ♂, 1 ♀, IV, under rock. Klamath Falls: (Old Fort Road), 42.225000, -121.780556, 1 ♂, V, rocks near water; 9 ♂♂, 1 ♀, V, under rocks near water. Klamath Falls, 38.5 km NW on rte 140 and US For 3456, 42.073256, -122.108909, 1 ♂, 4 ♀♀, VI, under debris in wet to dry pasture, 1260 m. Klamath Falls, 39.1 km NW on rte 140 & US For 3456, 42.081497, -122.108909, 35 ♂♂, 13 ♀♀, VI, under rocks and pieces of wood in wet meadow near road, Worden: 42.045556, -121.865278, 1 ♂, VI. Lake Co.: Lakeview: (Warner Mountains), 42.188889, -120.344722, 1 ♂, VI. Lakeview, 37 km W on rte 140, 42.188889, -120.344722, 1 ♂, VI, under rocks in field wet by seepage water, with very small sagebrushes and clumps of bunch grass, many bare spots 1530 m. Lakeview, 39.4 km W on rte 140, 42.188889, -120.344722, 1 ♂, VI, under rocks in damp grassy area along road by wet pasture. Quartz Mountain: 42.322500, -120.814444, 1 ♂, V, under rock, Lane Co.: Bear Creek: 44.215833, -123.288333, 6 ♂♂, 1 ♀, IV, 1 ♀, VII. Cottage Grove: 43.797778, -123.058333, 6 ♂♂, VI. Creswell: (Lane 6), 43.918056, -123.023333, 1 ♀, VI. Eugene: 44.052222, -123.085556, 1 ♀, V, 1 ♂, VII, 3 ♀♀, VIII. Deschutes National Forest, Goose Lake: 43.940556, -121.906944, 1 ♀, Nomonth. Linn Co.: Albany: 44.636667, -123.104722, 1 ♂, Nomonth, 1 ♂, 1 ♀, VII. Dever: 44.719167, -123.089722, 1 ♂, VII. Marion Co.: 3.2 km W, (Maham), 44.916667, -123.050000, 1 ♀, V.

Detroit, 8 km E., (Santiam River), 44.734167, -122.148611, 1 ♀, VIII. Hubbard: 45.182500, -122.806667, 1 ♂, VIII. Multnomah Co.: Multnomah Falls: 45.577222, -122.115556, 1 ♂, V. Portland: 45.523611, -122.675000, 2 ♂♂, Nomonth, 2 ♀♀, IX. Polk Co.: Rickreall: 44.930833, -123.227222, 2 ♂♂, VII. Tillamook Co.: Sandlake (Sand Lake), 45.303333, -123.922222, 1 ♂, XI. Umatilla Co.: Blue Mountain: 45.868611, -118.401667, 1 ♀, VIII. Blue Mountain: (Blue Mountains Hot Springs), 45.868611, -118.401667, 1 ♂, V. Meacham: 45.506667, -118.420278, 1 ♂, 2 ♀♀, V, 1 ♂, 1 ♀, VI. Milton-Freewater: 45.932778, -118.386667, 1 ♂, IV, 1 ♀, V, 2 ♂♂, IX. Milton-Freewater (Freewater), 45.932778, -118.386667, 1 ♂, V. Milton-Freewater (Milton), 45.932778, -118.386667, 4 ♂♂, 2 ♀♀, IV. Ukiah: 45.134167, -118.931389, 1 ♂, 2 ♀♀, X. Weston: (Toll Gate Rd. Blue Mountains), 45.813889, -118.423611, 3 ♂♂, VI. Weston, 21.0 km E. 45.813889, -118.423611, 1 ♀, VIII. Union Co.: La Grande: 45.324722, -118.086667, 1 ♀, VII. Wallowa Co.: Wallowa National Forest, Enterprise: (E Eagle Creek), 45.426389, -117.277778, 2 ♂♂, 1 ♀, VII. Grizzly Ridge: 45.451111, -116.730556, 1 ♂, VIII. Minam: 45.621944, -117.722222, 1 ♂, VII. Wasco Co.: The Dalles: 45.594722, -121.177500, 1 ♂, 3 ♀♀, VI. Mount Hood National Forest, Wapinitia Pass: (Bear Springs District), 45.226667, -121.696389, 4 ♂♂, 1 ♀, IV. Washington Co.: Dilley: 45.490833, -123.122222, 2 ♂♂, 2 ♀♀, Nomonth. Gaston: 45.436389, -123.138333, 2 ♂♂, 3 ♀♀, Nomonth. Wayne Co.: Oregon Agricultural Experiment Sta.: 43.519167, -119.020278, 1 ♂, 1 ♀, Nomonth. Yamhill Co.: 45.216667, -123.216667, 1 ♀, II. McMinnville: 45.210278, -123.197500, 2 ♀♀, III, 1 ♂, IV, 1 ♀, V. TEXAS: NoCo.: 1 ♂, Nomonth. Dallas Co.: Dallas: 32.783333, -96.800000, 1 ♀, Nomonth. UTAH: NoCo.: 1 ♂, 3 ♀♀, Nomonth. Cache Co.: (Green Canyon), 41.766667, -111.850000, 1 ♀, III. Logan: 41.735556, -111.833611, 1 ♂, 1 ♀, III, 1 ♂, V. Salt Lake Co.: Salt Lake City: 40.760833, -111.890278, 1 ♂, 1 ♀, Nomonth. WASHINGTON: NoCo.: 48 ♂♂, 29 ♀♀, Nomonth. NoCo.: (Eastern Washington), 3 ♂♂, 2 ♀♀, Nomonth. NoCo.: Blue Mountains: 46.137184, -117.823371, 1 ♂, V. NoCo.: Blue Mountains: 46.137184, -117.823371, 1 ♂, V. NoCo.: Blue Mountains: (Lewis Peak), 46.137184, -117.823371, 1 ♂, VI. NoCo.: Old Elur: 1 ♀, IV. Asotin Co.: Fields Spring State Park, Anatone: 46.135000, -117.131389, 1 ♀, IV. Asotin: 46.339444, -117.047222, 1 ♀, IV. Fields Spring State Park: 46.081389, -117.169444, 2 ♂♂, IX, 1 ♂, X. Clark Co.: Vancouver: 45.638889, -122.660278, 1 ♂, Nomonth. Washougal: 45.582778, -122.352222, 2 ♂♂, IX. Columbia Co.: Blue Mountains, 46.300000, -117.983333, 2 ♂♂, 1 ♀, VII. Dayton: 46.323889, -117.971389, 2 ♂♂, VI. Dayton: (Blue Mountains), 46.323889, -117.971389, 1 ♂, VIII. Tucannon: (Blue Mountains), 46.489167, -117.959167, 3 ♂♂, 4 ♀♀, VIII. Cowlitz Co.: Ariel: 45.956944, -122.569722, 1 ♂, V. Toutle: 46.328056, -122.690278, 1 ♂, 1 ♀, IX. Franklin Co.: Pasco: 46.228611, -119.099444, 1 ♂, V. Garfield Co.: Colton, 14.5 km, (Steptoe Canyon), 46.472924, -117.193253, 1 ♂, III. Colton, 16.1 km SW, (Steptoe Canyon), 46.472924, -117.193253, 3 ♂♂, III. Pomeroy: (Abel's Ridge), 46.475000, -117.601667, 2 ♂♂, 1 ♀, VI. Grant Co.: Grand Coulee: (Dry Falls), 47.941667, -119.002222, 1 ♂, V. Warden: (Soda Lake), 46.967778, -119.038611, 1 ♂, III, 1 ♀, VI. King Co.: Seattle: 47.606389, -122.330833, 2 ♂♂, 2 ♀♀, Nomonth. Seattle: (Hawthorne Hill), 47.606389, -122.330833, 1 ♀, IX. Kitsap Co.: Keyport: 47.702222, -122.619722, 2 ♂♂, 1 ♀, VII. Rollingbay: 47.664722, -122.508889, 1 ♀, IV, 2 ♀♀, V. Kittitas Co.: Easton: 47.237222, -121.177778, 1 ♂, Nomonth. Klickitat Co.: Goldendale: 45.820833, -120.820556, 1 ♂, IV. Lewis Co.: Chehalis: 46.622222, -122.962778, 1 ♂, V. Okanogan Co.: Okanogan: 48.361389, -119.582222, 1 ♂, VIII. Pacific Co.: Nahcotta: 46.498611, -124.032222, 1 ♂, VIII. Pend Oreille Co.: Ione: 48.741111, -117.416111, 1 ♀, VIII. Pierce Co.: Loveland: 47.064167, -122.407778, 1 ♀, IV. Puyallup: 47.191111, -122.289444, 1 ♀, VI. Spanaway: 47.104167, -122.433333, 1 ♂, VII, 1 ♀, XI. Tacoma: 47.253056, -122.443056, 1 ♂, VIII, 1 ♂, IX. San Juan Co.: San Juan Islands, Argyle: 48.509025, -123.016200, 1 ♂, VII. Deadman Bay: 48.512500, -123.143889, 1 ♂, VII. Flattop Island: 48.647222, -123.081667, 1 ♂, 2 ♀♀, VII. Friday Harbor: 48.534444, -123.015833, 1 ♀, Nomonth, 1 ♀, VI, 1 ♀, VII. Lopez Island, Lopez: 48.523889, -122.913333, 1 ♂, VII. San Juan Island, Roche Harbor: 48.610000, -123.147500, 1 ♀, V. San Juan Island: (Lime Kiln Rd.), 48.484167, -123.042222, 1 ♂, VII. Spokane Co.: Cheney: 47.487500, -117.574722, 3 ♂♂, 7 ♀♀, IV, 4 ♂♂, 1 ♀, V, 2 ♂♂, 1 ♀, VII. Cheney: (Turnbull Slough), 47.487500, -117.574722, 1 ♀, V. Colbert: 47.826667, -117.340833, 4 ♂♂, 2 ♀♀, V. Deep Creek: 47.643056, -117.711111, 1 ♂, V. Mount Spokane State Park, Mount Spokane: (Deadman Creek), 47.921389, -117.113056, 2 ♀♀, VI. Newman Lake: 47.776944, -117.093889, 8 ♂♂, 4 ♀♀, V, 1 ♂, VI. Spokane: 47.658889, -117.425000, 1 ♂, Nomonth, 2 ♂♂, IV, 1 ♂, 1 ♀, V, 1 ♂, VI, 1 ♂, VII, 7 ♂♂, 6 ♀♀, VIII. Spokane, 22.5 km S., 47.658889, -117.425000, 3 ♂♂, VI. Turnbull National Wildlife Refuge: 47.423056, -117.565278, 1 ♂, VII. Stevens Co.: Chewelah: (Deer Lake), 48.276389, -117.714444, 1 ♀, IX, 5 ♂♂, 2 ♀♀, X. Thurston Co.: Grand Mound: 46.788056, -123.010000, 1 ♂, Nomonth. Hawks Prairie: 47.066389, -122.758333, 2 ♂♂, 4 ♀♀, IX. Olympia: 47.038056, -122.899444, 3 ♂♂, 6 ♀♀, Nomonth, 1 ♂, VI. Walla Co.: Eastman: 46.134722, -118.139167, 7 ♀♀, Nomonth. Kooskooskie: 46.010278, -118.119167, 1 ♂, IV. Lewis Peak: (Blue Mountains), 46.061667, -117.997222, 1 ♀, VII. Walla Walla: 46.064722, -118.341944, 2 ♂♂, II, 3 ♂♂, 3 ♀♀, IV, 1 ♂, V, 1 ♀, VII, 4 ♂♂, VIII, 4 ♂♂, 4 ♀♀, IX. Walla Walla: (Mill Creek), 46.064722, -118.341944, 1 ♂, VII. Wallula Junction, 3.2 km, 46.058611, -118.908611, 1 ♂, IV. Whitman Co.: Almota: 46.703056, -117.468333, 1 ♀, IV, 1 ♀, V. Almota: (Wawawai), 46.703056, -117.468333, 1 ♂, 1 ♀, III, 1 ♀, VII. Altota, 3 km NE, (Wawawai Canyon), 46.703056, -117.468333, 2 ♀♀, VII. Endicott: 46.925833, -117.681944, 3 ♂♂, 1 ♂, VIII. Johnson: 46.631667, -117.136944, 4 ♀♀, Nomonth. Johnson: (Wawawai), 46.631667, -117.136944, 1 ♂, 1 ♀, Nomonth. Kamiak Butte: 46.862500, -117.165833, 1 ♀, III, 1 ♂, 4 ♀♀, IV. Kamiak Butte, 15 km N Pullman, 46.862500, -117.165833, 1 ♀, IV. Palouse, 8.1 km NW, (Palouse River), 46.910278, -117.074722, 1 ♂, IV. Pullman: 46.731389, -117.178611, 19 ♂♂, 24 ♀♀, Nomonth, 2 ♂♂, 3 ♀♀, II, 14 ♂♂, 13 ♀♀, III, 49 ♂♂, 31 ♀♀, IV, 36 ♂♂, 36 ♀♀, V, 16 ♂♂, 11 ♀♀, VI, 1 ♂, VII, 5 ♂♂, 2 ♀♀, VIII, 8 ♂♂, 1 ♀, IX, 2 ♂♂, 5 ♀♀, X, 1 ♂, XI. Steptoe Canyon: 46.451111, -117.205278, 1 ♂, VI. Steptoe Canyon, SW Colton, 46.451111, -117.205278, 1 ♂, 3 ♀♀, II. Wawawai: 46.636667, -117.378333, 9 ♂♂, 2 ♀♀, Nomonth, 3 ♂♂, IV, 1 ♂, 1 ♀, V. Yakima Co.: (Soda Springs), 46.583333, -120.500000, 1 ♀, Nomonth. Toppenish: 46.377500, -120.307500, 1 ♀, VI. White Swan: 46.383056, -120.730000, 1 ♂, IV. WASHINGTON TERRITORY: NoCo.: 2 ♂♂, 2 ♀♀, Nomonth. WASHINGTON-OREGON TERRITORY: NoCo.: Morrison: 2 ♂♂, Nomonth.

17. *Anisodactylus (A.) furvus* LeConte

NO LOCALITY: 3 ♂♂, 3 ♀♀, Nomonth, 1 ♂, III. Lake Erie: 1 ♂, Nomonth. CANADA: ONTARIO: Atherley: 44.600000, -79.366667, 1 ♂, VI. Muskoka: Lake Joseph: 45.200000, -79.140000, 1 ♀, VI. UNITED STATES: No state: NoCo.: 2 ♂♂, 1 ♀, Nomonth. ALABAMA: Chambers Co.: Langdale: 32.820278, -85.172222, 1 ♂, 1 ♀, Nomonth. Lee Co.: Auburn: 32.609722, -85.480833, 1 ♀, Nomonth. Mobile Co.: Creola: 30.891667, -88.039722, 1 ♀, IV. Mobile: 30.694167, -88.043056, 1 ♀, IV. Tuscaloosa Co.: Tuscaloosa: 33.209722, -87.569167, 1 ♂, VI, 1 ♂, XI. ARIZONA: Santa Cruz Co.: Nogales: 31.340278, -110.933611, 1 ♀, Nomonth. ARKANSAS: Bradley Co.: 33.616667, -92.050000, 1 ♀, V. Franklin Co.: 35.483333, -93.816667,

1 ♀, IV, Garland Co.: Hot Springs National Park: 34.516667, -93.052778, 1 ♂, VII, Hot Springs National Park, 8 km W, 34.516667, -93.052778, 1 ♀, VII, Hempstead Co.: Hope: 33.666944, -93.591389, 1 ♂, IV, Pulaski Co.: Little Rock: 34.746389, -92.289444, 1 ♂, IV, Sevier Co.: 34.033333, -94.350000, 7 ♀♀, VII, Washington Co.: 36.050000, -94.133333, 1 ♂, 1 ♀, II, sage grassy; 1 ♂, VI, under rocks; 1 ♂, VI, karmax grassy; 1 ♂, 2 ♀♀, VI, treflon disked; 2 ♂♂, VII, karmax grassy; 4 ♂♂, 2 ♀♀, VII, amiban grassy; 1 ♂, VII, light trap. (Cove Creek Valley). 36.050000, -94.133333, 4 ♂♂, Nomonth, COLORADO: NoCo.: 1 ♀, Nomonth, DELAWARE: Kent Co.: Camden: 39.113333, -75.542222, 1 ♂, IV, FLORIDA: Jefferson Co.: 30.533333, -83.883333, 1 ♂, 1 ♀, IX, pitfall trap. (Big Bend Laboratories), 30.533333, -83.883333, 1 ♀, IV, pitfall trap. Monticello: (Big Bend Hort. Lab), 30.545000, -83.870278, 1 ♂, III, pitfall in pecan grove. Leon Co.: Tall Timber Res. Sta., 30.416667, -84.283333, 2 ♀♀, IV, pitfall. Tall Timbers Res. Sta., 30.416667, -84.283333, 5 ♀♀, IV, pitfall trap. 1 ♂, 5 ♀♀, VI, pitfall trap. Tall Timber Res. Sta., 30.416667, -84.283333, 1 ♂, X, pitfall. Tall Timbers Res. Sta.: 30.666667, -84.208333, 1 ♀, III, pitfall trap. Tallahassee: 30.438056, -84.280833, 1 ♀, III, Tallahassee, 4.8 km N, 30.438056, -84.280833, 1 ♂, 2 ♀♀, VI, Under pine logs. GEORGIA: Dade Co.: Flintstone: 34.941667, -85.343611, 1 ♂, VIII, Head River: 34.656944, -85.507500, 1 ♂, VII, Fulton Co.: Atlanta: 33.748889, -84.388056, 2 ♂♂, III, Lamar Co.: Barnesville: 33.054444, -84.155833, 1 ♀, V, Milner: 33.116667, -84.196667, 1 ♂, IV, Rockdale Co.: Conyers: 33.667500, -84.017778, 1 ♀, V, Thomas Co.: Thomasville: 30.836389, -83.978889, 1 ♂, IV, Walker Co.: Flintstone: 34.941667, -85.343611, 1 ♂, VIII, ILLINOIS: NoCo.: 1 ♂, 2 ♀♀, Nomonth, NoCo.: (Falina), 1 ♀, Nomonth, Alexander Co.: 36.983333, -89.183333, 1 ♂, V, McClure: 37.317778, -89.431389, 1 ♂, V, Jackson Co.: Carbondale: 37.727222, -89.216667, 1 ♂, V, Pulaski Co.: 37.100000, -89.216667, 1 ♂, IV, INDIANA: Morgan Co.: 39.416667, -86.416667, 1 ♀, IV, population study, asafetida and molasses trap. Posey Co.: 37.916667, -87.833333, 1 ♀, V, LOUISIANA: NoCo.: 4 ♂♂, 2 ♀♀, Nomonth, Evangeline Co.: Saint Landry: 30.844167, -92.257778, 2 ♀♀, V, tall grass, pitfall trap. Jefferson Co.: Harahan: 29.940278, -90.203056, 1 ♀, VI, Orleans Co.: New Orleans: 29.954444, -90.075000, 1 ♀, IV, 1 ♂, VI, Pointe Coupee Co.: Morrison: 30.712500, -91.528611, 1 ♀, Nomonth, Pointe Coupee Co.: 30.734167, -91.433056, 1 ♀, III, Webster Co.: Lake Bistineau State Park: 32.443889, -93.380278, 1 ♂, IV, black light. MASSACHUSETTS: NoCo.: 1 ♂, Nomonth, MISSISSIPPI: NoCo.: 4 ♂♂, Nomonth, Forrest Co.: Hattiesburg: 31.326944, -89.290278, 2 ♀♀, IV, Lincoln Co.: 31.583333, -90.433333, 1 ♂, VII, on soil of peach orchard. Monroe Co.: 33.816667, -88.550000, 1 ♀, VI, Oktibbeha Co.: Craig Springs: 33.315000, -88.922778, 7 ♂♂, 10 ♀♀, IV, pitfall trap peripheral to cult. cotton; 2 ♀♀, VII, Pitfall trap peripheral to cultivated cotton; 1 ♂, X, pitfall trap peripheral to cultivated cotton. Starkville: 33.450278, -88.818333, 1 ♀, IV, White pan trap underground; 1 ♀, IV, White pan trap under blacklight; 4 ♂♂, IV, white pan trap on ground; 1 ♂, IV, blacklight trap edge of deciduous woods; 2 ♀♀, V, White pan trap under blacklight; 1 ♀, V, in carport; 1 ♀, VI, porch light. Pontotoc Co.: Ecu, 1.6 km SE, 34.353056, -89.023056, 1 ♀, IV, pitfall trap in soybean field; 1 ♂, V, Pitfall trap in cultivated cotton; 1 ♂, V, pitfall trap in cultivated cotton field. Washington Co.: Leland, 3 km SSE of Leland, (Old Field Habitat Pitfall Trap Cntr), 33.405278, -90.897500, 1 ♂, IV, 1 ♀, V, 1 ♀, VII, 2 ♂♂, XII, Leland, 3 km SE, 33.405278, -90.897500, 1 ♀, IV, old field habitat, pitfall trap. Leland, 3 km SSE, 33.405278, -90.897500, 1 ♂, IV, Old Field Habitat Pitfall Trap Cntr. Leland, 3 km SSE of Leland, 33.405278, -90.897500, 1 ♀, IV, Old Field Habitat Pitfall Trap East. Leland, 3 km SSE of Leland, (Old Field Habitat Pitfall Trap West), 33.405278, -90.897500, 1 ♂, III, 6 ♂♂, 8 ♀♀, V, Leland, 3.0 km SSE, 33.405278, -90.897500, 1 ♂, V, Old-Field habitat pitfall trap east. Stoneville: 33.423889, -90.915000, 1 ♀, II, collected in pitfall trap. MISSOURI: NoCo.: 1 ♂, 7 ♀♀, Nomonth, Buchanan Co.: Saint Joseph: 39.768611, -94.846389, 1 ♀, VI, Jefferson Co.: 38.233333, -90.566667, 1 ♂, IV, McDonald Co.: Anderson: 36.650556, -94.443333, 1 ♂, VI, Stone Co.: Marvel Cave: 36.699722, -93.336667, 2 ♂♂, V, NEW JERSEY: Camden Co.: 39.933333, -75.100000, 1 ♂, VI, Ocean Co.: Long Beach: 39.685556, -74.145278, 1 ♀, V, NORTH CAROLINA: NoCo.: 1 ♀, Nomonth, Brunswick Co.: Seaside: (Ocean Isle Beach), 33.889444, -78.485556, 1 ♂, IV, Buncombe Co.: Asheville: 35.600833, -82.554167, 1 ♀, Nomonth, 1 ♂, V, 2 ♂♂, VI, Black Mountain: 35.617778, -82.321389, 3 ♀♀, VI, Edgecombe Co.: Tarboro, 12.9 km WSW, 35.896667, -77.536111, 2 ♂♂, 2 ♀♀, VI, Pitfall trap peripheral to cultivated cotton; 1 ♀, VI, Pitfall trap in cultivated cotton; 1 ♂, 1 ♀, VII, Pitfall trap peripheral to cultivated cotton; 3 ♂♂, 2 ♀♀, VII, pitfall trap peripheral cult. cotton. Tarboro, 4.8 km W, 35.896667, -77.536111, 1 ♀, VI, Pitfall trap in cultivated cotton. Haywood Co.: Mount Sterling: 35.761944, -83.103889, 1 ♂, 1 ♀, V, Macon Co.: Highlands, 13.7 km N on Hwy 28, 35.052500, -83.196944, 1 ♀, IV, clay road cut next to woods. Madison Co.: Hot Springs: 35.892222, -82.829167, 1 ♂, 1 ♀, Nomonth, Orange Co.: Chapel Hill: 35.913056, -79.056111, 1 ♂, 1 ♀, Nomonth, 4 ♂♂, V, 1 ♂, 1 ♀, VI, Wake Co.: Raleigh: 35.771944, -78.638889, 1 ♂, 2 ♀♀, V, OKLAHOMA: Canadian Co.: 35.516667, -97.950000, 1 ♂, V, Comanche Co.: Wichita Mts. Nat. Wildlife Refuge: (Cache), 34.732500, -98.713333, 1 ♀, VI, Payne Co.: Stillwater: 36.115556, -97.058056, 1 ♂, III, 1 ♀, IV, Tulsa Co.: Tulsa: 36.153889, -95.992500, 1 ♀, IV; 1 ♂, IV, under stone in weedy place. OREGON: Lane Co.: Eugene, 8 km N, 44.052222, -123.085556, 1 ♂, VI, SOUTH CAROLINA: NoCo.: 2 ♀♀, Nomonth, Oconee Co.: Walhalla: 34.764722, -83.064167, 1 ♂, 1 ♀, IV, Pickens Co.: Clemson: 34.683333, -82.837500, 1 ♀, III, flood light. Clemson: (Clemson University campus), 34.683333, -82.837500, 1 ♂, V, Clemson: (Fant's Grove), 34.683333, -82.837500, 1 ♀, IV, alfalfa field. TENNESSEE: NoCo.: 1 ♂, 4 ♀♀, Nomonth, Hamilton Co.: 35.016667, -85.250000, 4 ♂♂, 3 ♀♀, VII, Knox Co.: Knoxville: 35.960556, -83.920833, 1 ♀, IV, Roane Co.: 35.866667, -84.516667, 1 ♂, 1 ♀, Nomonth, under litter on soil of peach orchard. Sevier Co.: Great Smoky Mountain N.P., Gatlinburg: 35.714167, -83.510278, 1 ♂, VII, Gatlinburg: (Mt. Leconte), 35.714167, -83.510278, 1 ♂, Nomonth, Shelby Co.: 35.116667, -90.050000, 1 ♀, IV, on trash. TEXAS: NoCo.: 1 ♂, 1 ♀, Nomonth, Harris Co.: Houston: 29.763056, -95.363056, 1 ♀, III, Panola Co.: 32.150000, -94.333333, 1 ♀, V, Tarrant Co.: Fort Worth: 32.725278, -97.320556, 2 ♀♀, IV, Travis Co.: Austin: 30.266944, -97.742778, 1 ♀, V, Victoria Co.: Victoria: 28.805000, -97.003333, 1 ♀, II, under bark willow. VIRGINIA: NoCo.: Alexandria: 38.804722, -77.047222, 1 ♂, VI, NoCo.: Black Pond: 1 ♀, V, 1 ♂, VI, Augusta Co.: Staunton: 38.149444, -79.071944, 1 ♀, VI, James City Co.: Jamestown: 37.208056, -76.774444, 1 ♂, V, Montgomery Co.: Christiansburg, 8.1 km NE, 37.129722, -80.409167, 1 ♀, Nomonth, Norfolk Co.: Ocean View: 36.949722, -76.246667, 1 ♀, IX, Prince Edward Co.: Farmville: 37.301944, -78.392222, 1 ♀, VI, Farmville: (Cumberland), 37.301944, -78.392222, 1 ♀, V,

18. *Anisodactylus (A.) nigerrimus* Dejean

NO LOCALITY: 5 ♂♂, 8 ♀♀, Nomonth, 1 ♀, V, 1 ♂, VIII, 1 ♀, X, Andover: 1 ♂, V, N Roxby: 1 ♂, IV, Orleans: 1 ♂, V, Schenley Park: 1 ♂, IV, Sigamore: 1 ♂, IV, St. Jerome: 1 ♂, V, CANADA: ALBERTA: Brooks: 50.583333, -111.883333, 1 ♂, VIII, NEWFOUNDLAND: Harmon Field: 48.550000, -58.583333, 2 ♀♀, V, NOVA SCOTIA: Halifax: 44.650000, -63.600000, 3 ♂♂, V, Yarmouth: 43.833333, -66.116667, 1 ♂, VII, ONTARIO: 1 ♂, Nomonth, Britannia Bay

45.366667, -75.816667, 1 ♂, V. Greely: 45.266667, -75.550000, 1 ♂, V. Malachi: 49.866667, -94.950000, 1 ♂, I ♀, VII. Prince Edward Point: 43.933333, -76.866667, 1 ♂, 6 ♀♀, V. Sioux Lookout: 50.100000, -91.916667, 1 ♂, Nomonth. Wetland: 42.983333, -79.250000, 1 ♀, VI. Algoma: Sowerby: 46.300000, -83.400000, 1 ♀, Nomonth. Kenora: Hawk Lake: 49.800000, -93.983333, 1 ♀, Nomonth. QUEBEC: 2 ♂♂, 2 ♀♀, IX. Blandford (Anka): 46.250000, -72.000000, 1 ♂, V. Cowansville: 45.200000, -72.750000, 1 ♂, VIII. Georgeville (Lake Memphrémagog): 45.133333, -72.250000, 1 ♀, VI. Grandes-Bergeronnes: 48.250000, -69.533333, 1 ♀, VI. Hemmingford: 45.050000, -73.583333, 1 ♀, V, 1 ♀, VI. Hull: 45.433333, -75.733333, 1 ♂, V. Knowlton: 45.216667, -72.516667, 1 ♂, VI. Lanoraie: 45.966667, -73.216667, 1 ♂, VI. Montréal: 45.500000, -73.600000, 1 ♀, Nomonth. 2 ♂♂, IV. Pointe-du-Lac: 46.283333, -72.700000, 2 ♂♂, 1 ♀, 1 unsx., V. Pointe-du-Lac (Sabièrre): 46.283333, -72.700000, 1 ♂, V. Port-au-Saumon: 47.766667, -69.950000, 1 ♀, VI. Rigaud: 45.483333, -74.300000, 1 ♂, IV, 1 ♂, 1 ♀, V, 1 ♂, X. Saint-Fidèle: 47.733333, -69.983333, 1 ♂, VII. Ste-Foy: 46.783333, -71.283333, 1 ♀, VII. SASKATCHEWAN: Cypress Hills Provincial Park: 49.650000, -109.500000, 1 ♀, V. NORTH AMERICA: Nosubd.: 1 ♂, Nomonth. UNITED STATES: No state: NoCo.: 2 ♂♂, 1 ♀, Nomonth. Nosubd.: NoCo.: (New England), 1 ♂, Nomonth. ALABAMA: Mobile Co.: Mobile: 30.694167, -88.043056, 1 ♂, III. Tuscaloosa Co.: Tuscaloosa: 33.209722, -87.569167, 1 ♀, III, 3 ♂♂, 5 ♀♀, VII. ARKANSAS: Crawford Co.: 35.433333, -94.333333, 1 ♀, V. Collected on vetch. Washington Co.: 36.050000, -94.133333, 1 ♂, VI. Collected under rocks. CALIFORNIA: NoCo.: 2 ♂♂, Nomonth. CONNECTICUT: Fairfield Co.: New Canaan: 41.146667, -73.495278, 1 ♂, IX. Litchfield Co.: Cornwall: 41.843611, -73.329722, 1 ♀, I, 1 ♂, 1 ♀, III, 3 ♂♂, IV, 1 ♀, VI, 2 ♂♂, 4 ♀♀, IX, 1 ♀, XI. Litchfield: 41.747222, -73.189167, 1 ♀, IX. New Haven Co.: Bethany: 41.421667, -72.997500, 1 ♂, III. Cheshire: 41.498889, -72.901111, 1 ♂, IV, under stone in moist field. South Meriden: 41.516111, -72.834167, 1 ♀, VI. Stony Creek: 41.264444, -72.746667, 1 ♀, IX. Waterbury: 41.558056, -73.051944, 1 ♀, IV. New London Co.: 41.333333, -72.083333, 1 ♂, V. (Lyme): 41.333333, -72.083333, 1 ♀, VII. East Lyme: (Latimer Brook): 41.367778, -72.219167, 1 ♂, IV. Norwich: 41.524167, -72.076389, 3 ♀♀, VI. Tolland Co.: Coventry: (Near Eagleville Dam): 41.770000, -72.305556, 1 ♀, V. Mansfield City: 41.765833, -72.234167, 2 ♂♂, 2 ♀♀, IV, 1 ♂, 3 ♀♀, V, 3 ♀♀, X, 1 ♂, XII. Storrs: 41.808333, -72.250000, 1 ♂, I, 4 ♂♂, 1 ♀, IV, 1 ♂, 3 ♀♀, V, 1 ♀, VI, 1 ♂, IX, 1 ♀, X. Windham Co.: Hampton: 41.783889, -72.055278, 1 ♂, V. DELAWARE: New Castle Co.: Newark: 39.683611, -75.750000, 1 ♂, III, under log. DISTRICT OF COLUMBIA: NoCo.: Washington: 38.895000, -77.036667, 5 ♂♂, 6 ♀♀, Nomonth. NoCo.: Woodridge: 38.931111, -76.971389, 2 ♂♂, 1 ♀, IV. Fairfax Co.: Little Falls Church: 38.925000, -77.106944, 1 ♂, IX. GEORGIA: Fulton Co.: Atlanta: 33.748889, -84.388056, 1 ♂, VII. Rabun Co.: 34.883333, -83.383333, 1 ♂, 1 ♀, VII. Clayton: 34.878056, -83.401111, 1 ♀, VI. ILLINOIS: NoCo.: 2 ♂♂, 1 ♀, Nomonth. Champaign Co.: Urbana: 40.110556, -88.207222, 1 ♂, Nomonth. Cook Co.: Chicago: 41.850000, -87.650000, 2 ♂♂, IV. INDIANA: NoCo.: 1 ♂, 2 ♀♀, Nomonth. 1 ♀, V, 1 ♂, VI. Clark Co.: Henryville: 38.541667, -85.767778, 1 ♂, III. Crawford Co.: 38.250000, -86.416667, 1 ♀, V, 1 ♀, VI. Jackson Co.: Houston (Hoosier National Forest): 39.016389, -86.190833, 1 ♀, IV. Jennings Co.: 39.000000, -85.666667, 1 ♀, V. Knox Co.: 38.666667, -87.500000, 1 ♂, VII. Lagrange Co.: 41.666667, -85.416667, 1 ♀, X. Marion Co.: 39.766667, -86.150000, 1 ♂, VI. Indianapolis: 39.768333, -86.158056, 1 ♂, 2 ♀♀, V, 1 ♀, VI. Parke Co.: Grange Corner (Turkey Run State Park): 39.940000, -87.185833, 1 ♀, VII. Perry Co.: 37.916667, -86.750000, 1 ♀, V. Porter Co.: Indiana Dunes Park, Beverly Shores: 41.692500, -86.977500, 1 ♂, V. Indiana Dunes State Park: 41.663056, -87.036944, 1 ♀, V. Posey Co.: 37.916667, -87.833333, 1 ♂, IV, 1 ♂, V. Putnam Co.: 39.666667, -86.833333, 1 ♂, IV, 1 ♂, X. Vigo Co.: 39.416667, -87.416667, 1 ♂, 1 ♀, VI. IOWA: Johnson Co.: Iowa City: 41.661111, -91.530000, 1 ♂, Nomonth. 1 ♂, V. KANSAS: NoCo.: 2 ♂♂, Nomonth. Leavenworth Co.: Leavenworth: 39.311111, -94.922222, 1 ♂, Nomonth. Wyandotte Co.: Argentine: 39.075000, -94.672222, 1 ♂, IV, 1 ♂, 2 ♀♀, V. KENTUCKY: NoCo.: 1 ♂, Nomonth. Greenup Co.: Caroline Cemetery: 38.528056, -82.746667, 1 ♂, IX. Rowan Co.: Morehead: 38.183889, -83.432778, 1 ♀, VI. LOUISIANA: Caddo Co.: Hart: 32.392500, -93.727222, 1 ♂, Nomonth. MAINE: Lincoln Co.: Boothbay (Isle of Springs): 43.876389, -69.634167, 1 ♀, VIII. Oxford Co.: Paris: 44.259722, -70.501111, 1 ♂, VI. Penobscot Co.: Bangor (and vicinity): 44.801111, -68.778333, 1 ♀, Nomonth. Newport: 3.2 km E, (Route 2), 44.835278, -69.274444, 1 ♀, VI. MARYLAND: NoCo.: 6 ♂♂, 4 ♀♀, Nomonth. 1 ♀, X. NoCo.: (Edgewood), 1 ♀, VIII. Baltimore Co.: Sparrows Point: 39.219167, -76.476389, 1 ♀, IX. Baltimore City Co.: Baltimore: 39.290278, -76.612500, 3 ♂♂, VI, 1 ♂, 2 ♀♀, VII. Calvert Co.: Chesapeake Beach: 38.886111, -76.535000, 1 ♂, IV, 1 ♂, VII. Harford Co.: Edgewood: 39.418611, -76.294722, 1 ♂, 1 ♀, VII, 1 ♂, IX. Montgomery Co.: 39.083333, -77.183333, 1 ♀, IX. Bethesda: 38.980556, -77.100556, 1 ♀, VI. Cabin John (Minnie Island): 38.975278, -77.158333, 1 ♀, Nomonth. Prince Georges Co.: Beltsville: 39.034722, -76.907778, 1 ♀, VI. Bladensburg: 38.939167, -76.934167, 1 ♂, Nomonth. 1 ♀, XI. Bowie: 39.006667, -76.779444, 2 ♂♂, VI. Bowie, 0.1 mi NW jet. rte 301, 39.006667, -76.779444, 1 ♀, V. North Englewood Playground: 38.912778, -76.918611, 1 ♀, V. MASSACHUSETTS: NoCo.: 8 ♂♂, 14 ♀♀, Nomonth. NoCo.: (Hathaway Pond), 1 ♀, Nomonth. Barnstable Co.: Elizabeth Islands: 41.479167, -70.812500, 1 ♂, V. Bristol Co.: Dartmouth (Mount Holyoke): 42.325000, -72.641667, 1 ♀, III. Middlesex Co.: Arlington: 42.415278, -71.156944, 1 ♂, I, 1 ♂, III, 1 ♂, 2 ♀♀, IV, 1 ♂, V, 1 ♂, VII. Billerica: 42.558333, -71.269444, 2 ♂♂, 1 ♀, IV, 1 ♂, V. Cambridge: 42.366667, -71.100000, 3 ♂♂, Nomonth. 1 ♂, IV. Cambridge (Fresh Pond): 42.366667, -71.100000, 1 ♀, IV. Concord: 42.460278, -71.349444, 1 ♀, IV. Framingham: 42.279167, -71.416667, 1 ♂, 1 ♀, V. Lexington: 42.447222, -71.225000, 1 ♀, IV, 1 ♀, VI. Lowell: 42.633333, -71.316667, 1 ♂, 1 ♀, Nomonth. Malden: 42.425000, -71.066667, 1 ♂, V. Natick: 42.283333, -71.350000, 1 ♂, IV. Tyngsboro: 42.676667, -71.425000, 3 ♂♂, 2 ♀♀, Nomonth. Tyngsboro (Merrimack River): 42.676667, -71.425000, 1 ♂, IV, Drift. Wayland: 42.362500, -71.361944, 1 ♀, Nomonth. 1 ♂, III, 3 ♂♂, 1 ♀, V. Nantucket Co.: Nantucket: 41.283333, -70.100000, 1 ♀, VII, under board on grassy ground. Norfolk Co.: Brookline: 42.331667, -71.121667, 1 ♂, 1 ♀, Nomonth. Dover: 42.245833, -71.283333, 1 ♀, V. Wellesley: 42.296389, -71.293056, 1 ♀, V. Plymouth Co.: Hingham: 42.241667, -70.890278, 1 ♂, IV. Humarock: 42.136111, -70.690556, 1 ♂, V. Marion: 41.700000, -70.763333, 1 ♂, VI, 1 ♀, VII. Suffolk Co.: Boston: 42.358333, -71.060278, 1 ♂, 1 ♀, Nomonth. Hyde Park (subdivision): 42.255556, -71.125000, 1 ♂, V. Revere: 42.408333, -71.012500, 1 ♂, 1 ♀, V. Worcester Co.: Petersham: 42.487500, -72.187500, 1 ♂, V. MICHIGAN: NoCo.: Newell's Camp: 1 ♀, IX. NoCo.: Newell's Cayek: 1 ♂, IX. Barry Co.: 42.666667, -85.333333, 1 ♂, IV. Gogebic Co.: 46.483333, -90.066667, 1 ♂, V. Keweenaw Co.: Isle Royale: 48.000000, -88.833333, 1 ♀, VII. Mackinac Co.: Saint Ignace: 45.868611, -84.727778, 3 ♂♂, 2 ♀♀, VIII. Oakland Co.: Clarenceville: 42.448333, -83.337222, 1 ♂, VIII. Osceola Co.: 43.833333, -85.583333, 1 ♂, Nomonth. Van Buren Co.: Grand Junction: 42.404167, -86.073056, 1 ♂, VI, 1 ♀, VII. South Haven: 42.403056, -86.273611, 1 ♀, VI. Wayne Co.: Detroit: 42.331389, -83.045833, 1 ♀, V. MINNESOTA: Mower Co.: Ramsey: 43.709722, -92.969444, 1 ♂, Nomonth. MISSISSIPPI: NoCo.: 2 ♀♀, Nomonth. George Co.: Lucedale: 30.925000, -88.590000, 1 ♂, 1 ♀, III, 1 ♂, IV. Greene Co.: Leakesville: 31.155556, -88.557778,

1 ♂, IV. MISSOURI: NoCo.: Waltham: 1 ♂, III. Boone Co.: Columbia: 38.951667, -92.333889, 1 ♀, III. Phelps Co.: Rolla: 37.951389, -91.771111, 1 ♂, IV. St. Louis City Co.: Saint Louis: 38.627222, -90.197778, 1 ♂, 1 ♀, Nomonth. NEBRASKA: Douglas Co.: Omaha: (Child's Point), 41.258611, -95.937500, 1 ♂, X. NEW HAMPSHIRE: Carroll Co.: Chocoria: 43.878889, -71.220278, 1 ♀, VI. Cheshire Co.: Hinsdale: (Connecticut River), 42.786111, -72.486944, 1 ♀, VIII. Swanzy Pond: 42.845000, -72.303611, 1 ♀, VII. West Swanzy: 42.870000, -72.322222, 2 ♂♂, VII. Westmoreland, 4.8 km S, 42.961944, -72.442778, 1 ♂, V. Coos Co.: (Patuxent wildlife refuge), 44.416667, -71.500000, 1 ♂, VI, Sift leaf litter in sandy area. Errol: 44.781389, -71.138333, 1 ♂, IX. White Mountains National Forest, Mount Washington: 44.270556, -71.304722, 1 ♂, Nomonth. Pittsburg: 45.051111, -71.391944, 1 ♂, IX. White Mountains: 44.379167, -71.050556, 1 ♀, Nomonth. Grafton Co.: Campton: 43.855596, -71.644161, 1 ♀, Nomonth. Cardigan Station: 43.571111, -71.972222, 1 ♂, Nomonth. Hanover: 43.702222, -72.290000, 1 ♀, Nomonth. Lincoln: 44.045556, -71.670556, 1 ♀, Nomonth. Rumney: 43.805278, -71.813056, 1 ♀, IV, 1 ♀, VII, 1 ♂, 1 ♀, IX. Hillsborough Co.: Nashua, 1.6 km N Massachusetts state line, (Merrimack River), 42.765278, -71.468056, 1 ♂, V. Pelham: 42.734444, -71.325000, 1 ♀, VI. Wilton: 42.843333, -71.735556, 1 ♀, VI. Rockingham Co.: Exeter: 42.981389, -70.948333, 1 ♂, IV, 1 ♀, VI. Hampton: 42.937500, -70.839444, 1 ♂, I, 1 ♀, IV, 1 ♂, V. Seabrook, 1.6 km N, (Dodge Ponds), 42.894722, -70.871667, 1 ♂, VIII. Strafford Co.: Durham: 43.133889, -70.926944, 1 ♂, Nomonth, 1 ♀, IV. Sullivan Co.: Cornish Flat: 43.497222, -72.280000, 1 ♀, V. NEW JERSEY: NoCo.: 8 ♂♂, 2 ♀♀, Nomonth, 1 ♂, IV. NoCo.: Garrett Rock: 1 ♂, V. NoCo.: Macnair Cove: 2 ♂♂, VI. NoCo.: Snake Hill: 40.890833, -74.505000, 1 ♂, 1 ♀, Nomonth. Atlantic Co.: Atlantic City: 39.364167, -74.423333, 1 ♂, Nomonth. Mays Landing: 39.452222, -74.728056, 1 ♀, VI. Bergen Co.: Alpine: 40.955833, -73.931667, 2 ♂♂, V. Emerson: 40.976111, -74.026667, 1 ♂, Nomonth, 2 ♂♂, IV, 2 ♂♂, 4 ♀♀, V. Englewood: 40.892778, -73.973056, 1 ♂, 1 ♀, IX. Palisade, Fairview: 40.812500, -73.999444, 1 ♂, IX. Fort Lee: 40.850833, -73.970556, 1 ♂, Nomonth, 1 ♀, XI. Hillsdale: 41.002500, -74.040833, 2 ♂♂, Nomonth. Rivervale: 41.009444, -74.011667, 1 ♂, V. Burlington Co.: Martins Beach: 40.008333, -74.887778, 1 ♀, IV, 1 ♂, IX. Mount Holly: 39.992778, -74.788056, 1 ♂, IX. Riverton: 40.011389, -75.015278, 1 ♀, V. Camden Co.: 39.933333, -75.100000, 2 ♀♀, IV, 1 ♀, V, 1 ♀, VII. Cape May Co.: Anglesea: 39.018611, -74.795278, 1 ♂, 1 ♀, VII. Five Mile Beach: 38.988889, -74.805000, 1 ♀, VII. Ocean City: 39.277500, -74.575000, 1 ♂, XI. Cumberland Co.: Bridgeton: 39.427222, -75.234444, 1 ♀, III, 1 ♀, V. Essex Co.: Caldwell: 40.839722, -74.276944, 1 ♂, V. Orange: 40.770556, -74.233056, 1 ♀, IV, 1 ♂, X. Gloucester Co.: Almonesson: 39.818889, -75.098889, 1 ♀, VII. Westville: 39.867778, -75.131944, 2 ♂♂, Nomonth. Hudson Co.: Arlington: 40.777500, -74.138611, 1 ♀, Nomonth. Hoboken: 40.743889, -74.032778, 1 ♂, 2 ♀♀, V. Jersey City: 40.728056, -74.078056, 1 ♀, Nomonth. Mercer Co.: Mercerville: 40.236944, -74.686944, 2 ♂♂, Nomonth. Middlesex Co.: Avenel: 40.580278, -74.285556, 1 ♀, V. Colonia: 40.574444, -74.302500, 2 ♂♂, 1 ♀, IV. Dunellen: 40.589167, -74.472222, 1 ♂, Nomonth. Milltown: 40.456111, -74.443611, 1 ♀, IV. Runyon: 40.434167, -74.332500, 1 ♀, X. Morris Co.: Boonton: 40.902500, -74.407500, 1 ♂, 1 ♀, IV. Chester: 40.784167, -74.697222, 1 ♂, Nomonth. Morris Plains: 40.821667, -74.481389, 1 ♂, V. Sand Pit. Morristown: 40.796667, -74.481944, 1 ♂, IV. Mount Arlington: 40.925833, -74.635278, 1 ♂, VIII. Riverdale: 40.993889, -74.433333, 1 ♂, IV. Passaic Co.: Little Falls: 40.868889, -74.208611, 1 ♀, Nomonth, 1 ♂, 2 ♀♀, IV. Oak Ridge: 41.046111, -74.486389, 1 ♂, V. Paterson: 40.916667, -74.172222, 1 ♂, 3 ♀♀, IV. Midvale. Wanaque: 41.038056, -74.294444, 1 ♂, X. Somerset Co.: Watchung: 40.637778, -74.451389, 1 ♀, VII. Running. Sussex Co.: Hopatcong: 40.932778, -74.659722, 3 ♂♂, 2 ♀♀, Nomonth. Swartswood: 41.086944, -74.827500, 1 ♂, IV. Warren Co.: Phillipsburg: 40.693611, -75.190556, 1 ♀, Nomonth. Sand Pond: 41.061944, -74.946944, 1 ♂, V. NEW YORK: NoCo.: 8 ♂♂, 1 ♀, Nomonth, 2 ♂♂, 3 ♀♀, IV. NoCo.: (Gunwoods 2), 2 ♂♂, 1 ♀, IV. NoCo.: (Manyunk), 1 ♀, IV. NoCo.: (Slide Mountain), 1 ♂, V. NoCo.: Newport: 2 ♂♂, Nomonth. Bronx Co.: Bronx: 40.850000, -73.866667, 2 ♂♂, IV. Van Cortlandt Park: 40.897778, -73.883889, 1 ♂, V. Cattaraugus Co.: Limestone (Allegheny State Park), 42.027222, -78.629722, 1 ♀, VII. Cayuga Co.: Aurora: 42.753889, -76.702778, 2 ♀♀, V. Columbia Co.: Malden Bridge: 42.470556, -73.583333, 1 ♂, V. Cortland Co.: McLean: (McLean Bogs Reserve), 42.551944, -76.291389, 2 ♂♂, IV. Dutchess Co.: Clove Valley: (Staten Island), 41.635278, -73.688889, 1 ♀, V. Erie Co.: Chaffee: 42.568056, -78.479167, 1 ♂, V. East Aurora: 42.767778, -78.613611, 1 ♂, V. Hamburg: 42.715833, -78.829722, 1 ♂, 1 ♀, IV. Essex Co.: Mount Marcy: 44.112500, -73.923889, 1 ♀, VI. Franklin Co.: Saranac Lake: 44.329444, -74.131667, 1 ♂, VII. Greene Co.: Catskill Mountains: 42.250278, -74.250278, 1 ♂, Nomonth. Hunter: 42.213611, -74.219167, 1 ♀, V. Kings Co.: Brooklyn Heights: 40.695278, -73.994167, 1 ♂, 1 ♀, Nomonth, 1 ♂, V, 1 ♂, VII. New York Co.: New York: 40.714167, -74.006389, 2 ♂♂, 2 ♀♀, Nomonth, 1 ♂, IV, 1 ♂, V. New York: (Vicinity of New York), 40.714167, -74.006389, 1 ♀, Nomonth. Orange Co.: Greenwood Lake: 41.222500, -74.294722, 1 ♂, Nomonth. West Point: 41.391389, -73.956389, 5 ♂♂, 2 ♀♀, IV, 4 ♂♂, 3 ♀♀, V. Oswego Co.: Oswego: 43.455278, -76.510833, 1 ♂, IV. Queens Co.: Long Island, 40.750000, -73.833333, 1 ♀, IV. Far Rockaway: 40.605278, -73.755556, 1 ♂, V. Hammel: 40.587778, -73.810556, 1 ♀, V. Jamaica: 40.691389, -73.806111, 1 ♀, Nomonth. Long Island City: 40.744722, -73.949167, 1 ♂, 2 ♀♀, Nomonth. Long Island City: (Three Mile Harbor), 40.744722, -73.949167, 1 ♀, IX, under log in swampy ground. Long Island, Rockaway Beach: 40.571389, -73.851944, 1 ♀, Nomonth. Rockaway Park, Rockaway Beach: 40.571389, -73.851944, 1 ♀, V. Richmond Co.: Graniteville: (Staten Island), 40.624722, -74.148889, 4 ♂♂, 1 ♀, IX, 1 ♂, XI. Richmond: 40.573889, -74.130833, 1 ♂, 2 ♀♀, IV, 1 ♂, 3 ♀♀, V, 2 ♂♂, VI, 1 ♂, 1 ♀, IX. Rockland Co.: Piermont: 41.041944, -73.918611, 1 ♀, Nomonth. Ramapo: 41.141111, -74.168889, 1 ♂, IV. Sterlington: (Skylands Farm), 41.145278, -74.189167, 1 ♀, V. Suffolk Co.: East Hampton: 40.963333, -71.183333, 1 ♀, V. Long Island, Hauppauge: (Newton Heights), 40.825556, -73.203056, 1 ♀, V. Montauk: 41.035833, -71.955000, 1 ♀, V. Long Island, Orient: 41.138889, -72.303889, 1 ♀, VII. Long Island, Southold: 41.064722, -72.426667, 1 ♀, VIII. Tompkins Co.: Ithaca: 42.440556, -76.496944, 1 ♂, 1 ♀, III, 2 ♀♀, IV, 1 ♀, V. Staterville Springs: 42.395556, -76.350833, 1 ♂, 1 ♀, V. Ulster Co.: 42.000000, -74.000000, 1 ♀, Nomonth. Kingston: 41.926944, -73.997778, 1 ♀, IV. West Shokan: 41.967222, -74.287500, 1 ♂, V. Warren Co.: Bolton: 43.536389, -73.668056, 1 ♀, Nomonth. Westchester Co.: Chappaqua: 41.159444, -73.765278, 2 ♀♀, V, 1 ♀, VI, on shore of muddy pond under cover. Peekskill: 41.290000, -73.920833, 3 ♂♂, 3 ♀♀, Nomonth. Pelham: 40.909722, -73.808333, 1 ♀, V. White Plains: 41.033889, -73.763333, 1 ♂, V. Yonkers: 40.931111, -73.899167, 1 ♂, 1 ♀, IV, 2 ♀♀, X. Wyoming Co.: Pike: 42.556389, -78.153056, 1 ♂, Nomonth. NORTH CAROLINA: Bladen Co.: White Lake: 34.640278, -78.484167, 2 ♂♂, III. Buncombe Co.: Asheville: 35.600833, -82.554167, 1 ♂, 6 ♀♀, Nomonth, 3 ♂♂, 1 ♀, IV, 2 ♂♂, 1 ♀, V, 4 ♂♂, VI. Black Mountain: 35.617778, -82.321389, 1 ♀, Nomonth, 1 ♂, 3 ♀♀, V, 14 ♂♂, 3 ♀♀, VI, 1 ♀, VII. Burke Co.: Tablerock: 35.838056, -81.804722, 1 ♀, VII. Cumberland Co.: Fayetteville: 35.052500, -78.878611, 1 ♀, VII. Haywood Co.: Mount Sterling: 35.761944, -83.103889, 1 ♀, V. Jackson Co.: Balsam: 35.426667, -83.085278, 1 ♀, Nomonth, 2 ♂♂, VII. Macon Co.: Highlands: 35.052500, -83.196944, 1 ♀, V, 1 ♂, VI. Highlands, 0.8 km S. (Hwy. 2), 35.052500, -83.196944, 1 ♀, IV, under railroad ties on ground next to upland woods. Madison Co.: Hot Springs: 35.892222, -82.829167, 1 ♂, Nomonth. Moore Co.: Southern Pines: 35.173889, -79.392500, 1 ♂, 1 ♀, IV. Swain Co.: Cherokee: 35.474167, -83.315000, 1 ♀, V. Smokeout: 35.548736, -83.315357, 2 ♀♀, VI. Transylvania Co.: Lake Toxaway: 35.132222,

-82.934167, 1 ♂, Nomonth. OHIO: Ashtabula Co.: 41.733333, -80.766667, 1 ♂, 2 ♀♀, IV. Conneaut: 41.947500, -80.554444, 1 ♂, VII. Rock Creek: 41.660278, -80.860833, 1 ♂, III, 1 ♀, V. Athens Co.: 39.333333, -82.166667, 1 ♂, V. Athens: 39.329167, -82.101389, 1 ♂, IV. Mineral (Waterloo): 39.323889, -82.264722, 1 ♂, IV, 1 ♀, V. Waterloo State Forest: 39.311111, -82.290556, 1 ♀, VII. Columbiana Co.: Elkton (Elk Run Township, Beaver River), 40.761944, -80.698889, 1 ♀, Nomonth. Cuyahoga Co.: Cleveland: 41.499444, -81.695556, 1 ♀, VI, 1 ♂, VII. Franklin Co.: Georgesville: 39.890833, -83.221944, 1 ♀, V. Hocking Co.: 39.583333, -82.416667, 1 ♀, VI, 1 ♀, X. (Fish Cove), 39.583333, -82.416667, 1 ♀, V. (Neotoma), 39.583333, -82.416667, 1 ♀, VI. Holmes Co.: Holmesville: 40.629444, -81.924444, 1 ♀, IV. Millersburg: 40.554444, -81.918056, 1 ♀, V. Knox Co.: Gambier: 40.375556, -82.397222, 1 ♀, V. Montgomery Co.: Vandalia: 39.890556, -84.198889, 1 ♂, 1 ♀, IV. Morgan Co.: Pennsville: 39.575278, -81.855556, 1 ♂, VI. Stark Co.: Massillon: 40.796667, -81.521667, 1 ♀, VI. PENNSYLVANIA: NoCo.: 7 ♂♂, 8 ♀♀, Nomonth, 1 ♀, VI. NoCo.: (Bethlehem), 1 ♀, Nomonth. NoCo.: (Easton), 1 ♂, IV. NoCo.: (Oak Hill), 1 ♀, III. Allegheny Co.: 40.433333, -80.016667, 11 ♂♂, 6 ♀♀, Nomonth, 2 ♂♂, V, 1 ♀, VI, 2 ♀♀, VII, 1 ♂, 2 ♀♀, VIII, 2 ♂♂, 1 ♀, IX, 1 ♀, X. Aspinwall: 40.491389, -79.905000, 1 ♀, VIII. Ingram: 40.446111, -80.067778, 1 ♂, IV. Pittsburgh: 40.440556, -79.996111, 2 ♂♂, 3 ♀♀, Nomonth, 1 ♀, III, 7 ♂♂, 3 ♀♀, IV, 1 ♂, 1 ♀, V, 3 ♂♂, 6 ♀♀, VI, 4 ♂♂, 2 ♀♀, VII, 1 ♂, 5 ♀♀, VIII, 4 ♂♂, 1 ♀, IX, 1 ♀, X, 1 ♂, XI. Wilmerding: 40.390833, -79.810278, 5 ♂♂, Nomonth. Armstrong Co.: Rockville: 40.733056, -79.441944, 1 ♂, II, 2 ♂♂, 2 ♀♀, III, 2 ♂♂, IV, 1 ♂, V. Bedford Co.: Rockville: 39.930833, -78.671389, 1 ♂, II. Blair Co.: Greenwood: 40.535833, -78.357778, 1 ♂, Nomonth. Carbon Co.: Lehighton: 40.833611, -75.714167, 1 ♀, VII. Centre Co.: Boalsburg: 40.775556, -77.792778, 2 ♂♂, 1 ♀, IV. Clarion Co.: Mount Airy: 41.094167, -79.522222, 3 ♂♂, IV. Columbia Co.: Germantown: 40.786944, -76.363611, 1 ♀, IV. Janison City: (North East Janison City), 41.306389, -76.361111, 1 ♂, IX. Cumberland Co.: Enola: 40.290000, -76.934167, 1 ♂, 1 ♀, III. Dauphin Co.: Harrisburg: 40.273611, -76.884722, 1 ♂, V. Delaware Co.: Castle Rock: 39.974167, -75.440556, 2 ♀♀, IV, 1 ♂, 2 ♀♀, VI. Darby: 39.918333, -75.259444, 1 ♂, X. Upper Darby: 39.928333, -75.274167, 1 ♀, VIII. Franklin Co.: Pen Mar: 39.720278, -77.506944, 1 ♂, Nomonth. Indiana Co.: Indiana: 40.621389, -79.152778, 3 ♂♂, 2 ♀♀, Nomonth. Juniata Co.: McCullochs Mills: 40.423611, -77.586389, 1 ♀, VI. Lancaster Co.: 40.083333, -76.333333, 1 ♂, Nomonth, 1 ♂, V, 1 ♀, X. Lehigh Co.: Hillside: 40.609444, -75.595556, 2 ♂♂, IV. Monroe Co.: Cresco: 41.153889, -75.280833, 2 ♂♂, VIII. Delaware Water Gap: 40.979167, -75.143333, 2 ♂♂, Nomonth. Pocono Lake: 41.105278, -75.476389, 1 ♀, VII, 2 ♂♂, VIII. Montgomery Co.: Abington: 40.120556, -75.118333, 1 ♂, Nomonth. Arcola: 40.152500, -75.456944, 2 ♂♂, 2 ♀♀, Nomonth. Ardmore: 40.006667, -75.285833, 1 ♀, V. Norstown: (Wissahickon Village), 40.121389, -75.340278, 1 ♀, Nomonth. Wissahickon Creek: 40.242778, -75.254722, 1 ♂, Nomonth. Northampton Co.: Easton: 40.688333, -75.221111, 1 ♂, IV, 2 ♂♂, 2 ♀♀, Nomonth. West Park: 40.043889, -75.139722, 2 ♀♀, IV, 2 ♂♂, V. Philadelphia Co.: (West Park), 40.000000, -75.216667, 1 ♂, Nomonth. Fern Rock: 40.043889, -75.139722, 2 ♂♂, IV. Lawndale: 40.050278, -75.091944, 2 ♀♀, IV. Manayunk: 40.024444, -75.214444, 1 ♂, Nomonth, 2 ♂♂, 1 ♀, IV. Philadelphia: 39.952222, -75.164167, 1 ♂, 2 ♀♀, Nomonth, 1 ♀, III, 1 ♂, 2 ♀♀, IV, 1 ♀, V, 1 ♀, VII. West Park: 39.999722, -75.208889, 1 ♂, V. Pike Co.: Greentown: 41.321667, -75.305833, 1 ♂, Nomonth. Somerset Co.: Somerset: 40.008333, -79.078333, 1 ♀, VI. Windber: 40.239722, -78.835278, 1 ♂, XI. Washington Co.: Avelta: 40.275000, -80.460833, 1 ♀, Nomonth. Canonsburg: 40.262500, -80.187500, 1 ♀, IV. Westmoreland Co.: 40.333333, -79.500000, 1 ♂, VII. Jeannette: 40.328056, -79.615556, 1 ♀, III, 1 ♂, 2 ♀♀, IV, 1 ♀, V, 2 ♂♂, 1 ♀, VI, 1 ♂, 3 ♀♀, VII, 4 ♂♂, 1 ♀, VIII, 1 ♂, 1 ♀, IX. Rector, 3 mi S. (Powdermill Nature), 40.196667, -79.238889, 1 ♂, V, pitfalls. SOUTH CAROLINA: Beaufort Co.: Beaufort: 32.431389, -80.670000, 1 ♂, Nomonth. Florence Co.: Florence: 34.195278, -79.762778, 1 ♂, II, rainwater. Oconee Co.: (CCC Camp F2), 34.750000, -83.066667, 1 ♀, IV, 1 ♀, V. Tamasse: 34.880278, -83.019722, 1 ♂, III. Walhalla: (Tunnel), 34.764722, -83.064167, 1 ♂, IV. Walhalla: (Tunnel Walhalla), 34.764722, -83.064167, 1 ♀, V. Pickens Co.: Clemson: 34.683333, -82.837500, 1 ♀, V. Sumter Co.: Sumter: 33.920278, -80.341667, 1 ♂, III. SOUTH DAKOTA: NoCo.: 1 ♀, Nomonth. TENNESSEE: NoCo.: 1 ♀, Nomonth. Monroe Co.: Unicoi Mountains: 35.400278, -84.018889, 1 ♀, X. Sevier Co.: Great Smoky Mts. N. P., Gatlinburg, 4.8 km S. (W Prong Little Pigeon R. Hwy. 441), 35.714167, -83.510278, 1 ♂, V. TEXAS: NoCo.: 2 ♀♀, Nomonth. VERMONT: Lamoille Co.: Stowe: 44.465278, -72.685000, 1 ♀, IX. Orange Co.: Union Village: 43.788611, -72.255833, 1 ♀, Nomonth. Windham Co.: Brattleboro: 42.850833, -72.558333, 1 ♂, 1 ♀, Nomonth. VIRGINIA: NoCo.: Alexandria: 38.804722, -77.047222, 1 ♂, VI. NoCo.: Black Pond: 1 ♂, VI. Fairfax Co.: 38.850000, -77.333333, 1 ♂, 1 ♀, Nomonth, 1 ♀, VI. Great Falls, 5.6 km NE, 38.998056, -77.288611, 1 ♂, IV. Mount Vernon: 38.707778, -77.086389, 1 ♀, IX. Page Co.: Shenandoah: (Big Meadows), 38.485000, -78.625278, 1 ♀, VII. Smyth Co.: Mount Rogers: 36.659722, -81.544722, 2 ♀♀, IX. Mount Rogers: (S slope), 36.659722, -81.544722, 1 ♂, IX. Tazewell Co.: Burkes Garden: 37.098056, -81.341111, 1 ♀, III. Washington Co.: Blacksburg: 37.227437, -80.418248, 1 ♀, IV. WEST VIRGINIA: NoCo.: 1 ♂, 1 ♀, Nomonth. Boone Co.: 38.066667, -81.816667, 1 ♀, IX. Gilmer Co.: Normantown: 38.851667, -80.936667, 1 ♂, IV. Greenbrier Co.: White Sulphur Springs: 37.796389, -80.297778, 2 ♀♀, IV. Harrison Co.: Bristol: 39.287778, -80.524167, 1 ♀, IV. Salem: 39.282778, -80.559167, 1 ♂, IV. Pendleton Co.: Spruce Knob: 38.699722, -79.533056, 1 ♂, Nomonth. Randolph Co.: Cheat Mountains: 38.609167, -79.941389, 2 ♀♀, Nomonth. Cheat Mountains: (Cheat Mountains), 38.609167, -79.941389, 3 ♂♂, Nomonth. Taylor Co.: Grafton: 39.340833, -80.019167, 1 ♀, Nomonth, 1 ♂, III. Tucker Co.: (Shaver's Fork), 39.083333, -79.666667, 1 ♂, Nomonth. WISCONSIN: Dodge Co.: Beaver Dam: 43.457778, -88.837222, 1 ♂, 1 ♀, Nomonth. Kenosha Co.: Kenosha: 42.584722, -87.821111, 1 ♂, V, under logs and debris meste pr. Waukesha Co.: 0.3 km S. Jct. Rte. 5&59 on 5, 43.016667, -88.216667, 1 ♀, V.

19. *Anisodactylus (A.) loedingi* Schaeffer

NOLOCALITY: 1 ♂, 2 ♀♀, Nomonth. **UNITED STATES:** ALABAMA: NoCo.: Spring Hill: 1 ♂, IV, 2 ♂♂, XI. Mobile Co.: Mobile: 30.694167, -88.043056, 1 ♂, 2 ♀♀, Nomonth, 12 ♂♂, 7 ♀♀, III, 5 ♂♂, 2 ♀♀, IV, 1 ♂, V, 3 ♀♀, VI. Theodore: 30.547500, -88.175278, 1 ♀, Nomonth. FLORIDA: St Johns Co.: Saint Augustine: 29.894444, -81.314722, 2 ♂♂, 1 ♀, XI. GEORGIA: Habersham Co.: Cornelia: 34.511389, -83.527222, 1 ♂, IV. Union Co.: Pilot Mountain: 34.723056, -84.045000, 1 ♂, IX. MASSACHUSETTS: NoCo.: 1 ♀, Nomonth. MISSISSIPPI: George Co.: Lucedale: 30.925000, -88.590000, 1 ♀, VI. NEW YORK: Queens Co.: Long Island, Rockaway Beach: 40.571389, -73.851944, 1 ♀, X. NORTH CAROLINA: Beaufort Co.: 35.533333, -77.016667, 2 ♀♀, Nomonth.

20. *Anisodactylus (A.) carbonarius* Say

NO LOCALITY: 14 ♂♂, 13 ♀♀, 1 unsex., Nomonth. 1 ♂, IV, 1 ♀, V, 1 ♀, 1 unsex., IX. CANADA: ONTARIO: 1 ♀, Nomonth, 1 ♀, IV. Lake Abitibi: 48.700000, -79.750000, 1 ♂, Nomonth. Point Edward: 43.000000, -82.400000, 1 ♂, Nomonth, 2 ♀♀, IV, 2 ♂♂, 3 ♀♀, V, Toronto: 43.666667, -79.383333, 1 ♂, Nomonth. Trenton: 44.100000, -77.583333, 1 ♀, V. Glenrose: Hastings: 44.300000, -77.950000, 1 ♂, V. Prince Edward: 44.000000, -77.250000, 1 ♀, V. QUEBEC: Pointe-du-Lac: (St. Maurice River): 46.283333, -72.700000, 2 ♀♀, VII. NORTH AMERICA: Nosubd.: 1 ♂, 2 ♀♀, Nomonth. UNITED STATES: No state: NoCo.: Packard: 1 ♂, Nomonth. Nosubd.: Douglas Co.: Mount Cheaha: 33.485278, -85.809167, 1 ♂, VI. De Kalb Co.: Lookout Mountain: (Valley Head): 34.983333, -85.350000, 1 ♂, VII. Lauderdale Co.: Florence: (Wilson Dam): 34.799722, -87.677222, 1 ♀, VI. Tuscaloosa Co.: Tuscaloosa: 33.209722, -87.569167, 2 ♀♀, Nomonth, 1 ♀, VI. ALASKA: NoCo.: 1 ♀, Nomonth. ARKANSAS: Carroll Co.: Eureka Springs: (Ouachita Mts.): 36.401111, -93.737778, 1 ♀, IX. Greene Co.: Paragould: 36.058333, -90.500000, 1 ♂, VI. Washington Co.: Fayetteville: 36.062500, -94.157222, 1 ♀, VI. Collected at light trap. Mount Sequoyah: 36.066667, -94.145833, 1 ♂, IV; 2 ♂♂, 1 ♀, VI. Collected At Lights: 1 ♂, 2 ♀♀, VI. Collected at light; 1 ♂, VII. Collected At Lights. CONNECTICUT: Fairfield Co.: Stamford: 41.053333, -73.539167, 1 ♀, Nomonth. Litchfield Co.: Cornwall: 41.843611, -73.329722, 1 ♀, IV, 1 ♀, IX, 1 ♀, XI. New Haven Co.: Branford: 41.279444, -72.815556, 1 ♂, VII. DELAWARE: New Castle Co.: Glasgow: 39.604722, -75.745556, 1 ♂, Nomonth. Sussex Co.: Rehoboth Beach: 38.720833, -75.076389, 1 ♀, VIII. DISTRICT OF COLUMBIA: NoCo.: Washington: 38.895000, -77.036667, 3 ♂♂, 2 ♀♀, Nomonth, 1 ♂, III, 1 ♀, VI; 1 ♂, 1 ♀, VI, Electric Light. NoCo.: Washington D. C.: 38.895000, -77.036667, 1 ♀, VI. FLORIDA: Duval Co.: Jacksonville: 30.331944, -81.655833, 1 ♂, 1 ♀, Nomonth. Polk Co.: Lakeland: 28.039167, -81.950000, 1 ♀, Nomonth. GEORGIA: Crawford Co.: Roberts: 32.721667, -84.013333, 1 ♂, VI. Dade Co.: Head River: 34.656944, -85.507500, 1 ♂, 2 ♀♀, VI, 1 ♂, VII, 1 ♀, VIII. Fulton Co.: Atlanta: 33.748889, -84.388056, 1 ♂, IV, 1 ♂, 1 ♀, VI. Lamar Co.: Milner: 33.116667, -84.196667, 2 ♂♂, VI. Rabun Co.: Clayton: 34.878056, -83.401111, 1 ♂, 2 ♀♀, VI. SATOLAH: 34.990278, -83.193056, 1 ♀, III. Upson Co.: 32.850000, -84.283333, 1 ♂, III, on soil under grass in peach orchard. ILLINOIS: NoCo.: 12 ♂♂, 15 ♀♀, Nomonth, 1 ♂, III, 1 ♂, VII. Champaign Co.: Champaign: 40.110556, -88.207222, 1 ♂, III, 4 ♂♂, 1 ♀, VII, 1 ♀, VIII. At light. Cook Co.: 41.816667, -87.616667, 1 ♂, 3 ♀♀, III, 1 ♀, IV. Chicago: 41.850000, -87.650000, 1 ♂, 2 ♀♀, Nomonth, 4 ♀♀, VII. Evanston: 42.041111, -87.690000, 1 ♀, VII, 2 ♀♀, VIII. Willow Springs: 41.740833, -87.860278, 1 ♂, VII, 5 ♂♂, 8 ♀♀, VIII. Fayette Co.: Farm: 38.834167, -88.772222, 3 ♀♀, IV, 1 ♂, V. Gallatin Co.: Omaha: 37.890278, -88.303056, 1 ♂, IV. Collected light. Jackson Co.: Carbondale: 37.727222, -89.216667, 1 ♂, 2 ♀♀, VII, at light. Johnson Co.: Goreville: 37.554444, -88.972222, 1 ♂, VI. Knox Co.: Galesburg: 40.947778, -90.371111, 1 ♀, Nomonth. Lake Co.: 42.366667, -87.850000, 3 ♂♂, VII. Macon Co.: 39.833333, -88.983333, 2 ♂♂, IV, 1 ♀, VI, 1 ♀, IX. Decatur: 39.840278, -88.954722, 1 ♂, III. Mason Co.: Havana: 40.300000, -90.060833, 1 ♀, VIII. Peoria Co.: Peoria: 40.693611, -89.588889, 1 ♀, VII, At light Main St. Pike Co.: Pittsfield: 39.607778, -90.805000, 2 ♂♂, VI. Putnam Co.: 41.250000, -89.350000, 1 ♂, IV, 1 ♀, VIII. St. Clair Co.: 38.516667, -89.983333, 1 ♂, 3 ♀♀, V, 1 ♂, X. Washington Park: (Cahokia Mounds Historical Site): 38.635000, -90.092778, 1 ♂, Nomonth. St. Clair Co.: 38.516667, -89.983333, 1 ♂, 2 ♀♀, Nomonth. Union Co.: Jonesboro, 11.3 km W, 37.451667, -89.268056, 2 ♀♀, VI. INDIANA: NoCo.: 1 ♂, Nomonth. Clark Co.: State Forest, 38.283333, -85.733333, 1 ♂, VII. Indiana State Forest, 38.283333, -85.733333, 1 ♂, 5 ♀♀, VIII. The male and a female were found on the ground. Two females were captured by light. Another female's label read "night light." Crawford Co.: 38.250000, -86.416667, 2 ♂♂, VI. Grantsburg: 38.288056, -86.469444, 4 ♂♂, 1 ♀, VI. Blacklight trap. Knox Co.: 38.666667, -87.500000, 1 ♂, 2 ♀♀, VII. Kosciusko Co.: Mineral Springs: 41.326111, -85.744167, 1 ♀, VIII, 1 ♂, 13 ♀♀, IX. Lake Co.: 41.416667, -87.366667, 1 ♀, V. Marion Co.: Indianapolis: 39.768333, -86.158056, 1 ♂, V. Newton Co.: Thayer: 41.173333, -87.333611, 2 ♀♀, IV. Porter Co.: Indiana Dunes State Park: 41.663056, -87.036944, 1 ♂, VI. Posey Co.: 37.916667, -87.833333, 1 ♀, IV. Hovey, 9.7 km S, (Hovey Lake): 37.892222, -87.941944, 1 ♂, V, Black light trap, Tippecanoe Co.: 40.416667, -86.916667, 1 ♂, III. Lafayette: 40.416667, -86.875000, 1 ♀, VI, on ground. Vigo Co.: 39.416667, -87.416667, 2 ♂♂, IV. IOWA: NoCo.: 1 ♂, 2 ♀♀, Nomonth, 1 ♂, V, 1 ♀, X. Johnson Co.: Iowa City: 41.661111, -91.530000, 1 ♂, 2 ♀♀, IV, 1 ♂, V, 4 ♀♀, VII. Lee Co.: Keokuk: 40.397222, -91.384722, 1 ♂, V. Story Co.: Ames: 42.034722, -93.619722, 1 ♂, V. KANSAS: NoCo.: 3 ♂♂, 1 ♀, Nomonth. Brown Co.: Brown County State Park: 39.845278, -95.376667, 1 ♂, IV. Clay Co.: 39.383333, -97.133333, 2 ♂♂, 1 ♀, IV. Dickinson Co.: Abilene: 38.917222, -97.213611, 1 ♂, 1 ♀, VI. Doniphan Co.: Wathena: 39.759167, -94.949444, 1 ♂, 1 ♀, VI. Douglas Co.: Lawrence: 38.971667, -95.235000, 1 ♂, 1 ♀, III, 1 ♂, 2 ♀♀, V, 1 ♂, VII, 1 ♀, IX, 2 ♂♂, X. Lone Star: 38.866667, -95.355000, 1 ♂, 1 ♀, IV. Franklin Co.: Ottawa: 38.615556, -95.267500, 4 ♀♀, VII. Johnson Co.: 38.883333, -94.816667, 1 ♂, Nomonth. Lyon Co.: Emporia: 38.403889, -96.181389, 1 ♀, VII. Riley Co.: 39.183333, -96.566667, 6 ♀♀, IV. Manhattan: 39.183611, -96.571389, 1 ♀, III, 5 ♂♂, 8 ♀♀, IV, 5 ♀♀, V, 1 ♀, VI, 1 ♂, XI. Sedgwick Co.: Mount Hope: 37.868611, -97.664722, 1 ♀, IV. Shawnee Co.: Topeka: 39.048333, -95.677778, 1 ♂, IV, 1 ♂, VII. Woodson Co.: Yates Center: 37.881111, -95.733056, 3 ♀♀, VI. Wyandotte Co.: Bee Spring: 37.313827, -86.301369, 1 ♀, Nomonth. Fayette Co.: Lexington: 38.049167, -84.500278, 1 ♂, VI. Henderson Co.: Henderson: 37.836111, -87.590000, 1 ♂, VI. Kenton Co.: Georgetown: 38.207445, -84.547944, 3 ♂♂, 5 ♀♀, VI, 1 ♂, VI. Laurel Co.: London: 37.128889, -84.083333, 3 ♂♂, VI. Scott Co.: Georgetown: 38.083611, -84.508611, -76.600000, 1 ♀, Nomonth. Baltimore City Co.: Baltimore: 39.290278, -76.612500, 1 ♂, 1 ♀, Nomonth, 8 ♂♂, 15 ♀♀, VII. Calvert Co.: Plum Point: 38.614167, -76.512500, 1 ♂, IV. Harford Co.: Edgewood: 39.418611, -76.294722, 1 ♀, IX. Montgomery Co.: Cabin John: 38.975278, -77.158333, 1 ♂, VII. At light. Fairland: 39.076111, -76.958056, 1 ♀, IV. Glen Echo: 38.968889, -77.142778, 1 ♂, VII. Prince Georges Co.: Suitland: 38.848611, -76.924167, 1 ♀, VI. MASSACHUSETTS: NoCo.: 2 ♂♂, 6 ♀♀, Nomonth. Dukes Co.: Chilmark: 41.343056, -70.745278, 1 ♂, VII. Hampden Co.: Springfield: 42.101389, -72.590278, 1 ♀, Nomonth. Middlesex Co.: Cambridge: 42.366667, -71.100000, 1 ♂, Nomonth. MICHIGAN: NoCo.: 1 ♀, Nomonth, 2 ♀♀, V. Ingham Co.: East Lansing: 42.736944, -84.483889, 1 ♀, III. Kalamazoo Co.: Augusta: 42.336389, -85.352222, 1 ♀, VII. Washtenaw Co.: 42.283333, -83.750000, 4 ♂♂, 2 ♀♀, VII. Cavanaugh Lake: 42.689444, -84.555278, 1 ♀, IV. Wayne Co.: Detroit: 42.331389, -83.045833, 1 ♂, Nomonth. MINNESOTA: Clay Co.: Moorhead: 46.873889, -96.767222, 1 ♀, V. MISSISSIPPI: NoCo.: 3 ♂♂, 6 ♀♀, Nomonth, 1 ♀, VI. MISSOURI: NoCo.: 6 ♂♂, 3 ♀♀, Nomonth, 1 ♀, IV, 1 ♀, VII. Barry Co.: Roaring River State Park: 36.585556, -93.815556, 1 ♂, VI. Boone Co.: Columbia: 38.951667, -92.333889, 1 ♂, 2 ♀♀, III, 1 ♀, IV, 2 ♀♀, V, 1 ♀, VI, 3 ♂♂, VII. Buchanan Co.: Saint Joseph: 39.768611, -94.846389, 1 ♀, VI. Jefferson Co.: Barnhart: 38.344167, -90.393333, 1 ♀, VII, 1 ♂, VIII. Lawrence Co.: Marionville: 37.003056, -93.637222, 1 ♂, 1 ♀, IV, on ground. Phelps Co.: Rolla: 37.951389, -91.771111, 1 ♀, VI. Pike Co.: Clarksville: 39.370556, -90.905000, 1 ♂, 1 ♀, VI. St. Charles Co.: Saint Charles: 38.783889,

-90.481111, 1 ♀, Nomonth. St Louis City Co.: Ranken: 38.534722, -90.511944, 4 ♂♂, 1 ♀, VII, 1 ♂, IX, 1 ♂, 2 ♀♀, X. Saint Louis: 38.627222, -90.197778, 1 ♂, 1 ♀, Nomonth; 8 ♂♂, 2 ♀♀, VI, USDA Traps, 1 ♂, 2 ♀♀, VII, USDA Traps. Vernon Co.: Nevada: 37.839167, -94.354444, 1 ♀, VI, 1 ♀, VII. NEBRASKA: NoCo.: 2 ♀♀, Nomonth. Douglas Co.: Omaha: 41.258611, -95.937500, 1 ♂, X. Furnas Co.: Cambridge: 40.281944, -100.165278, 1 ♂, VII. Lancaster Co.: Lincoln: 40.800000, -96.666667, 1 ♀, Nomonth. Malcolm: 40.906667, -96.862500, 1 ♀, IV. NEW HAMPSHIRE: Grafton Co.: Rumney: 43.805278, -71.813056, 1 ♂, V. Hillsborough Co.: Pelham: 42.734444, -71.325000, 1 ♀, Nomonth. Rockingham Co.: Hampton: 42.937500, -70.839444, 1 ♂, IV. On beach. NEW JERSEY: NoCo.: 6 ♂♂, 1 ♀, Nomonth, 1 ♀, III, 2 ♀♀, XII. NoCo.: (Bronton), 1 ♀, IX. Atlantic Co.: Atlantic City: 39.364167, -74.423333, 1 ♂, Nomonth. Burlington Co.: Atsion: 39.742500, -74.726389, 3 ♂♂, 2 ♀♀, VI. Cape May Co.: (Highland), 39.083333, -75.000000, 1 ♂, 1 ♀, VII. Anglesea: 39.018611, -74.795278, 3 ♀♀, Nomonth, 1 ♂, VII. Avalon: 39.101111, -74.718056, 1 ♀, VII. Five Mile Beach: 38.988889, -74.805000, 1 ♀, VII. Essex Co.: South Orange Village, Township of: 40.790556, -74.259722, 1 ♀, IV. Gloucester Co.: 39.833333, -75.233333, 1 ♂, IV. Iona: 39.601389, -75.067500, 1 ♀, X. Westville: 39.867778, -75.131944, 1 ♀, IV. Middlesex Co.: New Brunswick: 40.486111, -74.452222, 1 ♀, VI. Monmouth Co.: Asbury Park: 40.220278, -74.012500, 1 ♀, VIII. Morris Co.: Boonton: 40.902500, -74.407500, 1 ♀, IV, 1 ♂, V. Ocean Co.: Beach Haven: 39.559167, -74.243611, 1 ♀, VII. Lakehurst: 40.014444, -74.311667, 1 ♀, VI, 1 ♂, VII. Manchester: 39.950000, -74.433333, 1 ♂, IV. NEW YORK: NoCo.: 5 ♂♂, 7 ♀♀, Nomonth, 1 ♂, IV. Albany Co.: Albany: 42.652500, -73.756667, 1 ♂, V. Cayuga Co.: Spring Lake: 43.125556, -76.688333, 1 ♂, VII. Erie Co.: Buffalo: 42.886389, -78.878611, 1 ♀, Nomonth. Fulton Co.: Gloversville: 43.052778, -74.344167, 10 ♂♂, IV. Kings Co.: Brooklyn Heights (Prospect Park West), 40.695278, -73.994167, 1 ♂, II. Long Island, Flatbush: 40.651944, -73.959444, 1 ♀, IV. Water Works. Madison Co.: Eaton: 42.849722, -75.612222, 1 ♀, Nomonth. Monroe Co.: Rochester: 43.154722, -77.615833, 1 ♂, 1 ♀, Nomonth. Nassau Co.: Long Island, Long Beach: 40.588333, -73.658333, 1 ♂, IV. New York Co.: New York: 40.714167, -74.006389, 1 ♂, 1 ♀, Nomonth, 3 ♀♀, VII. Orange Co.: West Point: 41.391389, -73.956389, 2 ♀♀, IV, 1 ♂, V. Suffolk Co.: Long Island, East Hampton: 40.963333, -71.183333, 1 ♀, VII. Fire Island Pines: 40.665278, -73.068611, 1 ♀, VII. Long Island, Mattituck: 40.991111, -72.534722, 1 ♂, VIII. Fire Island, Ocean Beach: 40.646667, -73.157500, 2 ♂♂, 1 ♀, VI. Long Island, Orient: 41.138889, -72.303889, 1 ♀, VII. Westchester Co.: Peekskill: 41.290000, -73.920833, 1 ♂, Nomonth. Van Cortlandtville: 41.314722, -73.904167, 1 ♀, Nomonth. White Plains: 41.033889, -73.763333, 1 ♀, V. NORTH CAROLINA: NoCo.: 2 ♂♂, 3 ♀♀, Nomonth. Buncombe Co.: (Glen Inghis), 35.583333, -82.583333, 1 ♂, VII. Asheville: 35.600833, -82.554167, 1 ♂, V. Haywood Mountain: 35.617778, -82.321389, 3 ♂♂, 2 ♀♀, VI, 1 ♂, IX. Waymont Co.: Cove Creek: 35.606389, -83.011389, 1 ♀, VI. Mount Sterling: 35.761944, -83.103889, 1 ♀, V, 1 ♀, X. Sunburst: 35.410556, -82.932222, 1 ♀, V. Jackson Co.: Balsam: 35.426667, -83.085278, 3 ♂♂, VII. Orange Co.: Chapel Hill: 35.913056, -79.056111, 4 ♂♂, 3 ♀♀, VI. Light. Richmond Co.: 34.900000, -79.750000, 1 ♂, II, on soil under grass in peach orchard. Swain Co.: Cherokee: 35.474167, -83.315000, 1 ♂, VI. Great Smoky Mts. Nat. Park, Clingmans Dome: 35.562778, -83.498611, 1 ♂, V. Indian Gap: 35.610833, -83.438611, 1 ♂, V. Transylvania Co.: Lake Toxaway: 35.124167, -82.931944, 1 ♂, Nomonth. Wake Co.: Raleigh: 35.771944, -78.638889, 1 ♂, V, 1 ♂, VII. OHIO: Adams Co.: Winterstein Run: 38.786389, -83.320556, 1 ♂, VII. Athens Co.: Athens: 39.329167, -82.101389, 1 ♀, IV, 1 ♂, V, 1 ♂, VII, 1 ♂, X. Carroll Co.: Camp Muskingum: 40.495278, -81.169444, 1 ♀, VII. Champaign Co.: 40.083333, -83.833333, 1 ♂, 1 ♀, V. Clark Co.: Springfield: 39.924167, -83.808889, 1 ♂, V. Clermont Co.: 39.083333, -84.166667, 1 ♂, X. Erie Co.: Sandusky: 41.448889, -82.708056, 1 ♀, VI. Franklin Co.: Columbus: 39.961111, -82.998889, 3 ♂♂, IV, 1 ♂, V, 1 ♀, X. Holmes Co.: 40.583333, -81.916667, 1 ♀, VI. Millersburg: 40.554444, -81.918056, 1 ♂, V. Knox Co.: 40.416667, -82.500000, 1 ♀, VI. Licking Co.: Hebron: 39.961667, -82.491389, 1 ♂, Nomonth. Logan Co.: 40.416667, -83.833333, 1 ♀, VII. Mercer Co.: 40.500000, -84.583333, 1 ♀, VIII. Preble Co.: 39.750000, -84.666667, 1 ♂, VIII. Summit Co.: Hudson: 41.240000, -81.440833, 1 ♂, 1 ♀, Nomonth. Warren Co.: Fort Ancient State Memorial: 39.407778, -84.090278, 2 ♂♂, 2 ♀♀, VII. Light trap. Washington Co.: Marietta: 39.415278, -81.455000, 1 ♀, VI. Williams Co.: 41.416667, -84.500000, 1 ♂, VII. river. OKLAHOMA: Adair Co.: Bunch: 35.682500, -94.760833, 1 ♂, VII. Watts: 36.109167, -94.570000, 4 ♂♂, 2 ♀♀, VI. Westville: 35.992500, -94.567778, 3 ♀♀, VI. Alfalfa Co.: 36.733333, -98.366667, 1 ♀, VIII. Caddo Co.: Hinton: 35.471389, -98.355278, 1 ♂, VI. Cherokee Co.: Tahlequah: 35.915278, -94.969722, 2 ♂♂, 1 ♀, VI. Comanche Co.: Wichita Mts. Nat. Wildlife Refuge: 34.732500, -98.713333, 3 ♂♂, 2 ♀♀, VI. Craig Co.: 36.633333, -95.150000, 1 ♂, VI. Bluejacket: 36.799722, -95.070833, 2 ♀♀, VI. Centralia: 36.796667, -95.353056, 3 ♂♂, 2 ♀♀, VI. Delaware Co.: 36.416667, -94.800000, 2 ♂♂, 2 ♀♀, VII. Flint: 36.187222, -94.707778, 1 ♂, VI. Jay: 36.421111, -94.796667, 3 ♂♂, 1 ♀, VII. Mayes Co.: Strang: 36.410556, -95.130556, 2 ♂♂, 6 ♀♀, VI. Pittsburg Co.: Kiowa: 34.720556, -95.898889, 1 ♀, VI. Rogers Co.: Claremore: 36.312500, -95.615833, 1 ♀, VI. Sequoyah Co.: 35.450000, -94.800000, 1 ♂, VII. PENNSYLVANIA: NoCo.: 7 ♂♂, 6 ♀♀, Nomonth, 1 ♂, X. NoCo.: (Rockville), 2 ♂♂, III, 1 ♀, X. NoCo.: (The Barenis), 2 ♀♀, III. Allegheny Co.: 40.433333, -80.016667, 4 ♂♂, 7 ♀♀, Nomonth, 1 ♀, V, 1 ♀, VI, 3 ♂♂, 1 ♀, VII. Dormont: 40.395833, -80.033333, 1 ♀, X. Pittsburgh: 40.440556, -79.996111, 1 ♂, 5 ♀♀, Nomonth, 1 ♂, 1 ♀, IV, 9 ♂♂, 14 ♀♀, VII, 5 ♀♀, VIII. Centre Co.: State College: 40.793333, -77.860278, 1 ♂, 2 ♀♀, IV, 1 ♂, V, 1 ♀, VI. Cumberland Co.: New Cumberland: 40.232222, -76.885000, 1 ♀, X. Dauphin Co.: Harrisburg: 40.273611, -76.884722, 1 ♂, 2 ♀♀, VII. Inglenook: 40.413056, -76.981389, 1 ♂, VII. Erie Co.: Erie (Presque Isle), 42.129167, -80.085278, 1 ♂, X. Fayette Co.: Ohioyle: 39.871667, -79.492500, 1 ♀, VII. Lancaster Co.: 40.083333, -76.333333, 1 ♂, V. Lehigh Co.: Allentown: 40.606498, -75.491537, 1 ♂, IV. Monroe Co.: Delaware Water Gap: 40.979167, -75.143333, 1 ♀, Nomonth, 1 ♀, VI. Montgomery Co.: Arcola: 40.152500, -75.456944, 1 ♀, Nomonth. Edge Hill: 40.103333, -75.163611, 1 ♀, V, 1 ♀, VI. Northampton Co.: Easton: 40.688333, -75.221111, 2 ♂♂, 1 ♀, Nomonth. Philadelphia Co.: Philadelphia: 39.952222, -75.164167, 1 ♀, Nomonth, 1 ♀, IV, 2 ♂♂, 3 ♀♀, VII, 1 ♂, X. Westmoreland Co.: 40.333333, -79.500000, 1 ♂, 1 ♀, VII. Crisp: 40.250000, -79.666667, 3 ♂♂, 3 ♀♀, VII. Jeannette: 40.328056, -79.615556, 3 ♂♂, Nomonth, 3 ♂♂, 3 ♀♀, IV, 3 ♀♀, VI, 4 ♂♂, 8 ♀♀, VII, 1 ♂, 1 ♀, VIII, 1 ♀, XII. York Co.: New Market: 40.223056, -76.852500, 1 ♀, X. RHODE ISLAND: Washington Co.: Watch Hill: 41.314167, -71.846667, 1 ♀, VII. SOUTH CAROLINA: Florence Co.: Florence: 34.195278, -79.762778, 1 ♀, VI. Kershaw Co.: Camden: 34.246389, -80.607222, 1 ♀, Nomonth, 1 ♂, II. Lee Co.: Meredith: 34.141935, -80.277307, 1 ♂, VI. Prekens Co.: Clemson: 34.683333, -82.837500, 1 ♂, 1 ♀, III, 2 ♀♀, VI, 2 ♂♂, X, 1 ♂, XI. Dacusville: 34.935278, -82.558889, 1 ♂, IV. Richland Co.: Columbia: 34.000556, -81.035000, 1 ♀, V. TENNESSEE: NoCo.: 2 ♂♂, 1 ♀, Nomonth. NoCo.: Great Smoky Mountains National Park, 1 ♂, 1 ♀, XI. Anderson Co.: Oak Ridge: 36.010278, -84.269722, 1 ♂, Nomonth. Cumberland Co.: Grassy Cove: 35.840556, -84.918056, 1 ♀, VI. Knox Co.: Knoxville: 35.960556, -83.920833, 1 ♀, V. Lawrence Co.: Loretto: 35.077778, -87.439722, 1 ♂, VI. Light trap. Morgan Co.: Deer Lodge: 36.201389, -84.759167, 1 ♂, VI. Rhea Co.: Dayton: 35.493889, -85.012500, 3 ♂♂, VI. Smith Co.: Elmwood: 36.225833, -85.884722, 2 ♂♂, Nomonth. Warren Co.: McMinnville: 35.683333, -85.770000, 1 ♂, VI. Morrison: 35.602778, -85.919722, 1 ♀, IV. TEXAS: NoCo.: 1 ♀, Nomonth. Dallas Co.: Dallas: 32.783333, -96.800000, 1 ♀, Nomonth. VIRGINIA: NoCo.: 2 ♂♂, 3 ♀♀, Nomonth. NoCo.: Richmond: 37.553611, -77.460556, 1 ♀, Nomonth. Arlington Co.: Rosslyn: 38.896667, -77.072778, 1 ♂, III. Fairfax Co.: Great Falls, 3.2 km SW, 38.990566, -77.288611, 1 ♀, IV.

Lee Co.: Pennington Gap: 36.758333, -83.027222, 1 ♂, Nomonth. 1 ♀, III. WASHINGTON: Garfield Co.: Colton: 16.1 km SW, (Steptoe Canyon), 46.472924, -117.193253, 1 ♂, IV. King Co.: Seattle: 47.606389, -122.330833, 1 ♀, IX. Walla Walla Co.: Waitsburg: 46.270556, -118.152222, 1 ♀, Nomonth. WEST VIRGINIA: Berkeley Co.: Berkeley: 39.503056, -77.927500, 1 ♀, IV. Greenbrier Co.: White Sulphur Springs: 37.796389, -80.297778, 1 ♀, IV. Randolph Co.: Cheat Mountains: 38.609167, -79.941389, 2 ♂♂, 4 ♀♀, Nomonth, 23 ♂♂, 36 ♀♀, VI. Summers Co.: Talcott: 37.651389, -80.754444, 1 ♀, VII. WISCONSIN: NoCo.: 2 ♂♂, 3 ♀♀, III. Grant Co.: Platteville: 42.734167, -90.478333, 1 ♂, III. Milwaukee Co.: Milwaukee: 43.038889, -87.906389, 1 ♀, VI.

21. *Anisodactylus (A.) harrisii* LeConte

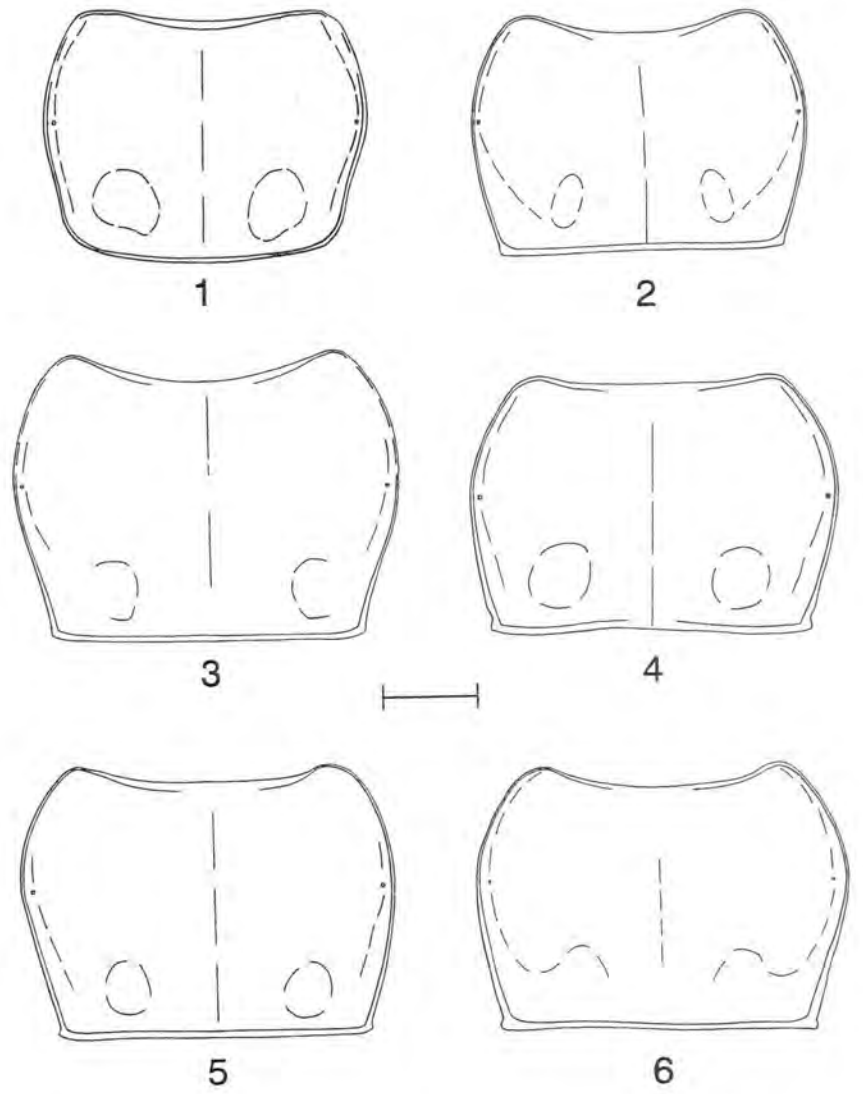
NO LOCALITY: 10 ♂♂, 5 ♀♀, Nomonth, 1 ♂, IV, 1 ♂, IX. 1 ♂, Nomonth. Bridge Bastin: 1 ♀, Nomonth. Brownsville: 1 ♂, IV. Churchill: 1 ♂, Nomonth. Humarock Beach: 1 ♂, VII. Litchfield Cr.: 1 ♀, VI. Longmount: 1 ♀, VI. Mt. Washington: 1 ♂, Nomonth. Orleans: 1 ♀, V. Paris Lake: 1 ♂, IV. Readville: 2 ♀♀, IV. Rockaway: 1 ♀, IV. Sawmill Run: 1 ♀, IV. White: 1 ♂, Nomonth. Gila Valley: 1 ♂, Nomonth. Chiric Mountains: 2 ♂♂, Nomonth. Oliver: 1 ♂, V. Britannia Hs.: 1 ♂, IX. Soap Lake, 1 ♀, V, at night along flat banks with mats of algae and washed up plant debris. CANADA: Nosubd.: 1 ♂, Nomonth. ALBERTA: (Twnsp. 14 Rge. 25 W. 4 Mer. Alberta), 1 ♀, VIII. Boucherville: 45.600000, -73.450000, 1 ♂, VIII. Consort, 14.5 km N, (Gooseberry Lake), 52.016667, -110.766667, 1 ♂, VI. Consort, 14.5 km N, (Gooseberry Lake), 52.016667, -110.766667, 1 ♂, VI. Consort, 14.5 km N, 52.333333, -112.883333, 1 ♀, VI. Ekapo Lake: (Broadview), 50.366667, -102.516667, 1 ♂, VII. Erskine, 12.8 km N, 52.333333, -112.883333, 1 ♀, VI. Medicine Hat, 29 km N, (Chappice Lake), 50.050000, -110.666667, 2 ♀♀, VI. Medicine Hat, 29.0 km E, 50.050000, -110.666667, 1 ♀, VI. Milk River: (32.2 km E Writing on Stone Provincial Park), 49.150000, -112.083333, 1 ♂, V. Rolling Hills: 50.216667, -111.766667, 2 ♂♂, 1 ♀, IV. Tyrell's Lake: 1 ♂, V. BRITISH COLUMBIA: Marron Valley: (Ye Hou Valley), 49.366667, -119.666667, 1 ♂, III. McIntyre Creek: (Oliver), 1 ♂, VI. Oliver: 49.183333, -119.550000, 25 ♂♂, 13 ♀♀, V, 1 ♀, VI. Oliver: (McIntyre Creek), 49.183333, -119.550000, 1 ♀, VI. Oliver: (White Lake), 49.183333, -119.550000, 1 ♀, V. Oliver, 11.2 km N, (McIntyre Creek), 49.183333, -119.550000, 1 ♀, V, 1 ♂, VI. Oliver, 14.5 km NW, (White Lake), 49.183333, -119.550000, 1 ♂, V. Oliver, 17.7 km E, 49.183333, -119.550000, 2 ♀♀, VI. Osoyoos: 49.166667, -119.500000, 1 ♀, VI. Osoyoos: (Rt. 3 E), 49.166667, -119.500000, 1 ♀, V. Osoyoos: (Spotted Lake), 49.166667, -119.500000, 4 ♂♂, 3 ♀♀, V. Sawmill Lake: (Oliver), 2 ♂♂, 1 ♀, V. Vancouver: 49.250000, -123.116667, 1 ♂, Nomonth. Vernon: 50.266667, -119.266667, 1 ♂, IV, 1 ♂, VIII. MANITOBA: Aweme: 49.716667, -99.600000, 1 ♀, V. Shoal Lake: (Woodlands), 50.433333, -100.583333, 1 ♀, VII. William Lake: 49.033333, -99.966667, 2 ♂♂, 1 ♀, IX. Winnipeg: 49.883333, -97.150000, 1 ♀, Nomonth, 1 ♀, IV, 1 ♀, VII. Canada: Baldu: 49.383333, -99.250000, 1 ♀, VII. NEW BRUNSWICK: Saint John: 44.266667, -66.050000, 1 ♀, Nomonth. NOVA SCOTIA: Halifax: 44.650000, -63.624444, 1 ♀, V. Canada: Yarmouth: 43.833333, -66.116667, 1 ♂, VI. ONTARIO: 2 ♂♂, 1 ♀, Nomonth. Bell's Corners: 45.316667, -75.833333, 1 ♂, X. Belleville: 44.166667, -77.383333, 1 ♂, I ♀, Nomonth, 2 ♂♂, 1 ♀, VI, 1 ♂, I ♀, VII, 1 ♂, 2 ♀♀, VIII, 1 ♀, X. Britannia: 45.300000, -79.066667, 1 ♀, IV, 1 ♂, VIII. Fort Erie: 42.900000, -78.933333, 1 ♂, VI. Hastings: 44.300000, -77.950000, 1 ♂, Nomonth. Orono: 43.983333, -78.616667, 1 ♂, IV. Osgoode: 45.133333, -75.600000, 1 ♀, VI. Ottawa: 45.416667, -75.700000, 1 ♂, V. Richmond: (Manotick), 45.183333, -75.833333, 2 ♂♂, 1 ♀, V. Rondeau Park: 42.316667, -81.850000, 1 ♂, VII. Saint Thomas: 42.783333, -81.200000, 1 ♂, IV. Severn Bridge: 44.766667, -79.333333, 1 ♂, IV. Simcoe: (Delhi), 42.833333, -80.300000, 2 ♂♂, 1 ♀, VI. Simcoe: (Normandale, Lake Erie), 42.833333, -80.300000, 1 ♀, VI. Toronto: 43.666667, -79.383333, 4 ♂♂, 3 ♀♀, Nomonth, 7 ♂♂, 7 ♀♀, IV, 3 ♂♂, 1 ♀, V, 1 ♀, IX, 1 ♀, X, 1 ♀, XI, 1 ♀, XII. Toronto: (Cedarvale), 43.666667, -79.383333, 1 ♀, VI. Toronto: (West Hill), 43.666667, -79.383333, 1 ♂, V. Trenton: 44.100000, -77.583333, 1 ♀, V. Canada: Belleville: 44.166667, -77.383333, 2 ♂♂, Nomonth. Carleton Place: 45.250000, -75.750000, 2 ♂♂, 5 ♀♀, Nomonth. Mer Bleue: 45.416667, -75.716667, 1 ♂, 1 ♀, Nomonth. Kent: Tilbury: 42.266667, -82.433333, 1 ♂, 1 ♀, IV. Peel: Port Credit: 43.554878, -79.598361, 1 ♂, 1 ♀, V. Russell: Casselman: 45.316667, -75.083333, 1 ♂, VI, Moist ditch. Toronto: Cedar Vale: 43.700000, -79.416667, 1 ♂, 1 ♀, IV, 1 ♂, VI, 1 ♂, X. QUEBEC: 3 ♂♂, V. Amos: 48.583333, -78.116667, 1 ♂, 1 ♀, VI. Beloeil: 45.566667, -73.200000, 1 ♀, V. Boucherville: 45.600000, -73.450000, 1 ♀, VI. Cap-Rouge: 46.750000, -71.350000, 1 ♂, 1 ♀, VI, 1 ♂, IX. Carillon: 45.566667, -74.383333, 2 ♂♂, IX. Choisy: 45.470585, -74.279410, 2 ♂♂, IV. Como: 45.483333, -74.100000, 1 ♂, Nomonth, 2 ♂♂, V, 1 ♂, IX. Cowansville: (SE Montreal), 45.200000, -72.750000, 1 ♀, VIII. Hull: 45.433333, -75.733333, 1 ♂, V. Hull: (Hull Gatineau Park), 45.433333, -75.733333, 1 ♀, Nomonth. Joliette: 46.016667, -73.450000, 1 ♀, IV. La Trappe: 45.500000, -74.033333, 6 ♂♂, 8 ♀♀, IV. Labelle: 46.283333, -74.733333, 1 ♀, VIII. Montréal: 45.500000, -73.600000, 4 ♂♂, 2 ♀♀, Nomonth, 1 ♂, III, 7 ♂♂, 2 ♀♀, IV, 4 ♂♂, 3 ♀♀, V, 1 ♀, VII, 2 ♂♂, 4 ♀♀, IX, 1 ♀, X. Montréal: (Beaulieu), 45.500000, -73.600000, 1 ♂, V. Montréal: (Cowansville), 45.500000, -73.600000, 1 ♂, VIII. Montréal: (Montreal Airport), 45.500000, -73.600000, 1 ♀, VI. Nominatingue: 46.400000, -75.033333, 1 ♀, V. Oka: 45.466667, -74.100000, 1 ♂, 1 ♀, IV, 1 ♀, IX. Pointe-Fortune: 45.666667, -74.383333, 1 ♂, V. Rigaud: 45.483333, -74.300000, 1 ♀, IV, 5 ♂♂, 8 ♀♀, V, 1 ♂, VI, 1 ♀, X. Saint Augustin: (Port), 48.800000, -71.950000, 1 ♂, V. Saint Cyrille: 45.933333, -72.433333, 2 ♂♂, 2 ♀♀, V. Saint Julie: 45.583333, -73.333333, 1 ♀, VI. Saint Thérèse de Blainville: 45.638655, -73.845238, 1 ♂, Nomonth, 1 ♀, VI. Ste-Foy: 46.783333, -71.283333, 1 ♂, IV, 3 ♂♂, 3 ♀♀, VI. SASKATCHEWAN: 1 ♀, Nomonth. Broadview: 50.366667, -102.583333, 1 ♂, VII. Ekapo Lake: (Broadview), 50.366667, -102.516667, 2 ♂♂, 2 ♀♀, VII. Prince Albert: 53.200000, -105.766667, 1 ♂, VI. Saskatchewan: 52.116667, -106.633333, 2 ♂♂, V. UNITED STATES: No state: NoCo.: 1 ♂, 5 ♀♀, Nomonth. ARIZONA: NoCo.: 7 ♂♂, 2 ♀♀, Nomonth. Coconino Co.: Sedona, 24.2 km N, (Oak Cr., Hwy 175), 34.869722, -111.760278, 1 ♂, VI. Santa Cruz Co.: Patagonia: (Sonoita Creek Sanctuary), 31.539444, -110.755556, 3 ♂♂, VI. ARKANSAS: NoCo.: Chiric Mountains: 1 ♂, 1 ♀, Nomonth. CALIFORNIA: NoCo.: 1 ♂, 1 ♀, Nomonth. Los Angeles Co.: Pasadena: 34.147778, -118.143611, 1 ♀, Nomonth. COLORADO: NoCo.: 1 ♂, 4 ♀♀, Nomonth. Boulder Co.: Boulder: 40.015000, -105.270000, 2 ♂♂, VI, 2 ♂♂, 1 ♀, VI. Pasture under boards. Leggett Reservoir, Boulder: 40.015000, -105.270000, 1 ♀, VI. Teller Lake, Boulder: 40.015000, -105.270000, 1 ♀, VI. Boulder: (City Limits), 40.015000, -105.270000, 1 ♀, VI. Wet pasture: Boulder: (W City Limits), 40.015000, -105.270000, 1 ♂, VI. Pasture: Boulder: (Wet Pasture), 40.015000, -105.270000, 1 ♂, VI. Longmont: 40.167222, -105.101389, 3 ♂♂, 1 ♀, III. Gravelly pasture: 1 ♂, IV. Roadside debris. Bellmire Reservoir, Longmont: 40.167222, -105.101389, 1 ♂, VI. McCall Lake, Lyons: 40.224722, -105.270833, 3 ♂♂, VI. Weld Co.: Platteville: (St. Vrain Nuclear Power Plant Site), 40.215000, -104.822222, 1 ♀, V.

Roggen: 40.167500, -104.371667, 1 ♀, VIII. CONNECTICUT: NoCo.: Marshfield: 1 ♀, IV. NoCo.: Norton: 2 ♂♂, Nomonth. Fairfield Co.: Fairfield: 41.141111, -73.264167, 1 ♀, V. New Canaan: 41.146667, -73.495278, 1 ♂, IV, 1 ♀, 1 ♀, V. Shelton: 41.316389, -73.093611, 1 ♀, IV. Hartford Co.: Bristol: 41.671667, -72.949722, 1 ♀, V. East Hartford: 41.782222, -72.612500, 3 ♂♂, 3 ♀♀, IV. Enfield: 41.976111, -72.592222, 1 ♀, V. Hartford: 41.763611, -72.685556, 1 ♀, IV. Manchester: 41.775833, -72.521944, 1 ♂, IV. New Britain: 41.661111, -72.780000, 1 ♂, IV. South Windsor: 41.823611, -72.621667, 2 ♂♂, 4 ♀♀, VII. Litchfield Co.: Cornwall: 41.843611, -73.329722, 1 ♂, 1 ♀, 3 ♂♂, 1 ♀, V, 1 ♀, VI, 1 ♂, 1 ♀, IX. Litchfield: 41.747222, -73.189167, 1 ♀, VII; 1 ♀, VIII. In ground: 1 ♀, XI, under stone in high field. Litchfield: (White Memorial Fdm. near Bantam), 41.747222, -73.189167, 2 ♂♂, 1 ♀, X. Middlesex Co.: Middletown: 41.562222, -72.651111, 1 ♂, 1 ♀, V. New Haven Co.: Guilford: 41.288889, -72.682222, 1 ♂, 1 ♀, IV. Milford: 41.222222, -73.056944, 1 ♂, 1 ♀, V. South Meriden: 41.516111, -72.834167, 1 ♀, IV, 1 ♂, V. New London Co.: 41.333333, -72.083333, 1 ♂, IV. Groton: 41.350000, -72.078889, 3 ♂♂, IV. Norwich: 41.524167, -72.076389, 1 ♂, VI. Tolland Co.: Coventry: (Eagleville Dam), 41.770000, -72.305556, 1 ♂, IV. Mansfield City: 41.765278, -72.198611, 4 ♂♂, 1 ♀, X. Mansfield Center: (Storrs), 41.765278, -72.198611, 1 ♂, 2 ♀♀, IV. Mansfield City: 41.765833, -72.234167, 1 ♀, V, 1 ♀, X. Storrs: 41.808333, -72.250000, 1 ♂, 1 ♀, Nomonth, 1 ♂, III, 6 ♀♀, IV, 3 ♂♂, 6 ♀♀, V, 2 ♂♂, X, 1 ♂, XI. Union: (Mashapaug Lake), 41.990833, -72.157778, 1 ♂, V. DELAWARE: New Castle Co.: Wilmington: 39.745833, -75.546944, 2 ♂♂, Nomonth. GEORGIA: NoCo.: 1 ♀, Nomonth. IDAHO: Canyon Co.: Parma: 43.785278, -116.942222, 1 ♂, II. ILLINOIS: NoCo.: 13 ♂♂, 13 ♀♀, Nomonth, 1 ♂, IV. Cook Co.: 41.816667, -87.616667, 1 ♂, IV. Chicago: 41.850000, -87.650000, 1 ♂, 2 ♀♀, Nomonth, 1 ♂, IV, 2 ♂♂, 3 ♀♀, V, 3 ♂♂, 3 ♀♀, IX. Northfield: (West Northfield), 42.099722, -87.780833, 1 ♂, Nomonth. Palos Park: 41.667222, -87.830278, 1 ♀, X. Summit: 41.88056, -87.810278, 1 ♂, IV. Hancock Co.: Webster: 40.431035, -90.997196, 1 ♂, Nomonth. Knox Co.: Galesburg: 40.947778, -90.371111, 2 ♂♂, Nomonth. McHenry Co.: Algonquin: 42.165556, -88.294167, 4 ♂♂, 1 ♀, Nomonth. Rock Island Co.: Rock Island: 41.509444, -90.578611, 1 ♂, VII. Will Co.: Braidwood: 41.265000, -88.212222, 2 ♀♀, V. Braidwood, 1.6 km E Braidwood off rte. 113, 41.265000, -88.212222, 1 ♂, 2 ♀♀, V, under debris near pond. Braidwood, 1.6 km off rte 113, 41.265000, -88.212222, 1 ♂, 2 ♀♀, V, under debris near pond. INDIANA: NoCo.: 1 ♀, Nomonth. Grant Co.: Matthews: 40.388611, -85.499444, 2 ♂♂, IX. La Porte Co.: 41.583333, -86.750000, 1 ♂, X. Ohio Co.: Buffalo: 39.020556, -84.883889, 1 ♀, IV. Porter Co.: 41.416667, -87.083333, 1 ♂, V. Tippecanoe Co.: (Throckmorton Farm), 40.416667, -86.916667, 1 ♂, 1 ♀, IV, 4 ♂♂, 2 ♀♀, VI. IOWA: NoCo.: 2 ♂♂, 2 ♀♀, Nomonth. Des Moines Co.: Burlington: 40.807500, -91.112778, 1 ♂, Nomonth. Henry Co.: Mount Pleasant: 40.963611, -91.557778, 1 ♂, IV. Johnson Co.: Iowa City: 41.661111, -91.530000, 2 ♂♂, 1 ♀, Nomonth, 2 ♂♂, V, 1 ♀, VI. O'Brien Co.: Sutherland: 1 ♂, V. Pottawattamie Co.: Council Bluffs: 41.261944, -95.860833, 1 ♂, X. Story Co.: Ames: 42.034722, -93.619722, 1 ♀, V. Woodbury Co.: Sioux City: (Missouri R.), 42.500000, -96.400000, 1 ♀, V. KA AND NE: NoCo.: 1 ♂, Nomonth. KANSAS: NoCo.: 1 ♀, Nomonth. MAINE: Kennebec Co.: Monmouth: 44.238611, -70.036111, 1 ♂, VI. Lincoln Co.: Monhegan: (Monhegan Island), 43.762222, -69.320833, 2 ♀♀, IX. Oxford Co.: Bethel: 44.404167, -70.791111, 1 ♂, VI. Penobscot Co.: Orono: 44.883056, -68.672500, 1 ♂, 1 ♀, V. York Co.: Wells: 43.321944, -70.581389, 1 ♂, IV. MARYLAND: Calvert Co.: Chesapeake Beach: 38.686111, -76.535000, 1 ♀, V. MASSACHUSETTS: NoCo.: 7 ♂♂, 11 ♀♀, Nomonth, 1 ♂, 1 ♀, X. NoCo.: Bejawan: 1 ♀, Nomonth. NoCo.: Waldoboro: 1 ♂, Nomonth. Barnstable Co.: Barnstable: 41.700000, -70.300000, 2 ♂♂, V. Woods Hole: 41.526389, -70.673611, 1 ♂, VIII. Berkshire Co.: Lenox: 42.356389, -73.285278, 1 ♂, 1 ♀, V. Williamstown: 42.711944, -73.204167, 1 ♂, V. Bristol Co.: Dartmouth: 41.616667, -70.983333, 1 ♀, V. Fall River: 41.701389, -71.155556, 3 ♂♂, 1 ♀, V, 1 ♀, VII. Somerset: 41.769444, -71.129167, 9 ♂♂, 16 ♀♀, Nomonth, 1 ♀, VII. Dukes Co.: Martha's Vineyard: 41.388889, -70.613333, 1 ♂, V. Naushon Island: 41.483333, -70.758333, 2 ♀♀, V. Penikese Island: 41.450000, -70.923611, 1 ♂, VII. Essex Co.: Beverly: 42.558333, -70.880556, 1 ♂, Nomonth. Danvers: 42.575000, -70.930556, 1 ♀, VI. Hampden Co.: Chicopee: 42.148611, -72.608333, 1 ♀, Nomonth, 3 ♀♀, IV. Hampshire Co.: Amherst: 42.373611, -72.520833, 1 ♂, IV, 1 ♂, 1 ♀, V. Mount Tom: 42.286111, -72.616667, 1 ♂, Nomonth. Middlesex Co.: Arlington: 42.415278, -71.156944, 1 ♂, 1, 1 ♀, III, 1 ♂, XII. Cambridge: 42.366667, -71.100000, 2 ♂♂, 1 ♀, Nomonth, 1 ♀, V. Concord: 42.460278, -71.349444, 1 ♂, IV, 1 ♂, V. Framingham: 42.279167, -71.416667, 2 ♀♀, III; 1 ♀, III. Under stones. Lexington: 42.447222, -71.225000, 2 ♂♂, 2 ♀♀, V, 2 ♂♂, 4 ♀♀, VI. Lincoln: 42.425833, -71.304444, 1 ♂, IV. Lowell: 42.633333, -71.316667, 3 ♀♀, Nomonth. Malden: 42.425000, -71.066667, 1 ♀, V. Melrose Highlands: 42.470833, -71.061944, 1 ♂, 1 ♀, IV. Natick: 42.283333, -71.350000, 1 ♀, IV, under stones, 1 ♂, 1 ♀, VI, under stones; 1 ♂, X. Sitting hay pile. Sherborn: 42.238889, -71.370278, 1 ♀, V. Sudbury: 42.383333, -71.416667, 1 ♂, 1 ♀, VI. Tyngsboro: 42.676667, -71.425000, 1 ♀, Nomonth, 1 ♀, V. Waltham: 42.376389, -71.236111, 1 ♂, 1 ♀, V. Wayland: 42.362500, -71.361944, 1 ♀, IV, 1 ♂, 2 ♀♀, V. Nantucket Co.: Nantucket: 41.283333, -70.100000, 2 ♂♂, 1 ♀, Nomonth. Norfolk Co.: 42.250000, -71.183333, 1 ♀, Nomonth. Blue Hills: 42.243056, -71.098611, 2 ♀♀, Nomonth. Brookline: 42.331667, -71.121667, 1 ♂, Nomonth. Milton. Town of: 42.241667, -71.095833, 1 ♂, IV. Needham: 42.283333, -71.233333, 1 ♂, Nomonth. Plymouth Co.: Marion: 41.700000, -70.763333, 1 ♀, VI, 1 ♂, IX. Plymouth: 41.958333, -70.667778, 1 ♀, V. Suffolk Co.: Dorchester (subdivision): 42.297222, -71.075000, 2 ♂♂, V. Forest Hills: 42.296667, -71.104167, 1 ♀, IV, 1 ♂, 1 ♀, VI. Revere: 42.408333, -71.012500, 4 ♂♂, 1 ♀, V. Worcester Co.: 42.583333, -71.816667, 1 ♂, 2 ♀♀, Nomonth. Barre: 42.422778, -72.105556, 1 ♂, VI. Berlin: 42.381111, -71.637500, 1 ♂, VI. Northborough: 42.319444, -71.641667, 1 ♀, IX, grass pile. Southborough: 42.305556, -71.525000, 1 ♂, IV, 1 ♀, V. MICHIGAN: NoCo.: 1 ♂, Nomonth. NoCo.: Gentner: 1 ♂, IV. Clinton Co.: Rose Lake Sr Wildlife Research Stn: 42.805278, -84.392500, 1 ♂, V, 1 ♀, VI. Eaton Co.: Grand Ledge: 42.753333, -84.746389, 1 ♂, 1 ♀, Nomonth. Gratiot Co.: Saint Louis: 43.408333, -84.606667, 1 ♀, Nomonth. Ingham Co.: East Lansing: 42.736944, -84.483889, 1 ♂, 1 ♀, IV, 2 ♀♀, V. Lansing: 42.732500, -84.555556, 1 ♀, V. Lansing: (Agricultural College of Michigan), 42.732500, -84.555556, 1 ♂, V. Lansing: (Agriculture College of Michigan), 42.732500, -84.555556, 1 ♀, V, 1 ♂, XII. Lake Co.: 43.900000, -85.850000, 1 ♀, IV. Macomb Co.: Memphis: 42.896389, -82.768889, 1 ♀, IV, 1 ♀, V. Marquette Co.: Marquette: 46.543611, -87.395278, 1 ♂, Nomonth. Midland Co.: 43.666667, -84.333333, 1 ♂, IV, 1 ♂, VI. Montcalm Co.: 43.300000, -85.083333, 1 ♂, V. Sanilac Co.: Port Sanilac: 43.430833, -82.542500, 1 ♂, VI. Washtenaw Co.: 42.283333, -83.750000, 1 ♂, IV. Ann Arbor: 42.283333, -83.745833, 1 ♂, 3 ♀♀, Nomonth, 2 ♂♂, 1 ♀, IV. Ann Arbor: (Huron River), 42.283333, -83.745833, 1 ♀, IV. Wayne Co.: Detroit: 42.331389, -83.045833, 1 ♀, Nomonth, 1 ♂, 1 ♀, IV, 3 ♂♂, 1 ♀, V, 1 ♂, VIII. Wexford Co.: 44.250000, -85.416667, 1 ♂, VI. MINNESOTA: NoCo.: 1 ♂, 4 ♀♀, Nomonth, 1 ♂, IX. Anoka Co.: 45.200000, -93.400000, 1 ♀, V. Cedar Creek Bog: 45.200000, -93.400000, 1 ♀, IV. Big Stone Co.: Arichoke: 45.399167, -96.157222, 1 ♂, Nomonth. Blue Earth Co.: Garden City: 44.047222, -94.164722, 1 ♀, IX. Clay Co.: 46.833333, -96.750000, 1 ♂, VI. Hitterdal, 12.8 km W, 46.977500, -96.258889, 1 ♂, IX. Moorhead: 46.873889, -96.767222, 6 ♂♂, V. Goodhue Co.: Frontenac: 44.511111, -92.356389, 1 ♀, V. Frontenac: (Lake Pepin), 44.511111, -92.356389, 1 ♂, IV. Hennepin Co.: 44.966667, -93.250000, 1 ♀, Nomonth. Minneapolis: (Mississippi River near 'U'), 44.980000, -93.263611, 1 ♀, V. Minneapolis: (Saint Anthony Park), 44.980000, -93.263611, 1 ♀, Nomonth. Olmsted Co.: 44.016667, -92.500000, 3 ♀♀, Nomonth, 1 ♀, IV. Pennington Co.: Saint Hilaire: (Reoville), 48.013889, -96.214444, 1 ♂, Nomonth. Polk Co.: 47.733333, -96.583333, 1 ♀, V.

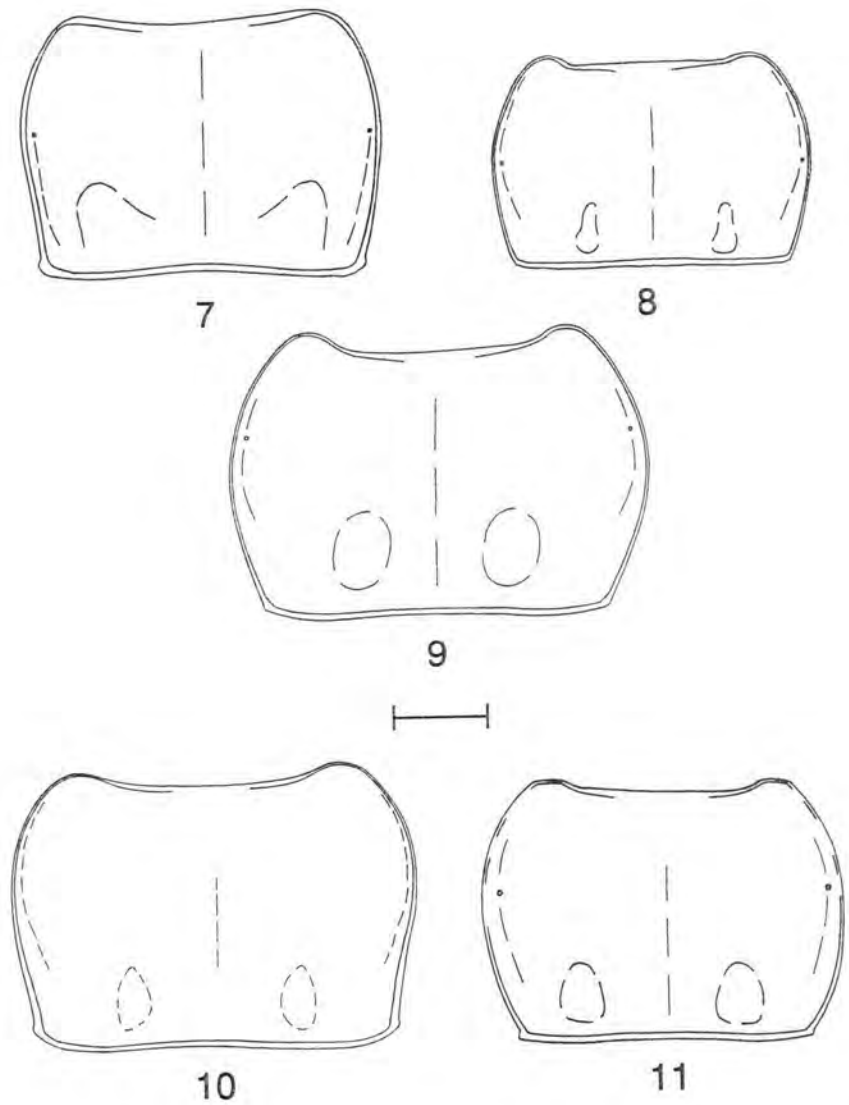
Ramsey Co.: 44.900000, -93.083333, 1 ♂, IV, 1 ♀, V; 1 ♀, VII, pit trap. (Army Amm.), 44.900000, -93.083333, 1 ♀, VI, 1 ♀, VIII
 Superior National Forest, Lake Omega: 48.007778, -90.641667, 1 ♀, Nomonth. New Brighton: 45.065556, -93.201667, 1 ♀, VII.
 North Oaks: (Lake Owassa), 45.102778, -93.078889, 1 ♂, 1 ♀, IV. Stearns Co.: Saint Cloud: 45.560833, -94.162222, 1 ♀.
 Nomonth. Traverse Co.: 45.800000, -96.483333, 1 ♀, Nomonth. Wabasha Co.: Wabasha, 11.2 km SW, 44.383889, -92.032778,
 1 ♀, V. Wabasha, 11.3 km SW, 44.383889, -92.032778, 1 ♀, V. Washington Co.: Marine on Saint Croix: (St. Croix River),
 45.366667, -92.770833, 1 ♀, V. MISSISSIPPI: NoCo.: 2 ♀♀, Nomonth. Newton Co.: Newton: 32.321111, -89.163333, 1 ♂, IV.
 MISSOURI: NoCo.: 2 ♂♂, Nomonth. St Louis City Co.: Saint Louis: 38.627222, -90.197778, 1 ♀, IV. MONTANA: Rosebud Co.:
 Forsyth: 46.266389, -106.677222, 1 ♀, VII. Forsyth, 19.5 km W, 46.266389, -106.677222, 2 ♂♂, 4 ♀♀, V. Under debris where
 soil moist or saturated in intermittent waterway with stagnant pools. Silver Bow Co.: Butte: 46.003889, -112.533889, 1 ♀, IX.
 NEBRASKA: NoCo.: 5 ♂♂, 1 ♀, Nomonth. Douglas Co.: Omaha (Child's Point), 41.258611, -95.937500, 1 ♂, X. Scotts Bluff
 Co.: Scottsbluff: 41.866667, -103.666667, 1 ♀, Nomonth. NEW HAMPSHIRE: NoCo.: 1 ♂, V. Belknap Co.: Barnstead:
 43.333889, -71.293333, 1 ♂, IX. Coos Co.: Lancaster: 44.488889, -71.569722, 2 ♂♂, IV. Grafton Co.: Hanover: 43.702222,
 -72.290000, 1 ♂, Nomonth. Rumney: 43.805278, -71.813056, 3 ♂♂, IV, 1 ♀, VI. Hillsborough Co.: Wilton: 42.843333,
 -71.735556, 1 ♀, V. Rockingham Co.: Hampton: 42.937500, -70.839444, 1 ♂, IV. Hampton Beach: 42.907222, -70.812500, 1 ♂,
 1 ♀, V. NEW JERSEY: NoCo.: 8 ♂♂, 8 ♀♀, Nomonth, 1 ♂, IX. NoCo.: Boratou: 1 ♀, III. Atlantic Co.: Atlantic City: 39.364167,
 -74.423333, 1 ♀, VII. Mays Landing: 39.452222, -74.728056, 1 ♂, IX. Bergen Co.: Alpine: 40.955833, -73.931667, 2 ♀♀, V.
 Emerson: 40.976111, -74.026667, 1 ♂, V. Hackensack: 40.885833, -74.043889, 1 ♀, IV. Oradell: 40.958611, -74.037222, 1 ♀,
 Nomonth, 1 ♂, 2 ♀♀, V. Rivervale: 41.009444, -74.011667, 1 ♂, V. Cape May Co.: Angelsea: 39.018611, -74.795278, 1 ♀, V.
 Sea Isle City: 39.153333, -74.693333, 2 ♂♂, VI. Essex Co.: Caldwell: 40.839722, -74.276944, 5 ♂♂, 5 ♀♀, V. Hudson Co.:
 Arlington: 40.777500, -74.138611, 2 ♂♂, 1 ♀, Nomonth, 1 ♂, X, 1 ♂, XI. Middlesex Co.: Avenel: 40.580278, -74.285556, 3 ♂♂,
 2 ♀♀, Nomonth. Monmouth Co.: Homerstown: 40.106111, -74.514444, 1 ♂, V. Morris Co.: Boonton: 40.902500, -74.407500,
 1 ♂, 1 ♀, III. Budd Lake: 40.871111, -74.734444, 1 ♂, V. Riverdale: 40.993889, -74.303889, 4 ♂♂, 1 ♀, Nomonth, 2 ♂♂, 3 ♀♀,
 V. Snake Hill: 40.890833, -74.505000, 1 ♂, IV. Ocean Co.: Surf City: 39.661944, -74.165556, 2 ♂♂, 2 ♀♀, III, 2 ♂♂, X. Passaic
 Co.: Clifton: 40.858333, -74.164167, 1 ♂, VI. Paterson: 40.916667, -74.172222, 1 ♀, V. Somerset Co.: 40.566667, -74.616667,
 2 ♀♀, IV. Union Co.: Watchung Reservation: 40.701111, -74.362500, 1 ♀, VII. Warren Co.: Phillipsburg: 40.693611, -75.190556,
 3 ♂♂, 2 ♀♀, V. NEW YORK: NoCo.: 4 ♂♂, 8 ♀♀, Nomonth, 1 ♂, IV. NoCo.: Ludus: 1 ♂, V. NoCo.: Newport: 1 ♂, IV. NoCo.:
 Shavertown: 42.087500, -74.820278, 1 ♀, IX. Albany Co.: Albany: 42.652500, -73.756667, 1 ♂, IV, 1 ♀, V, 1 ♀, VI,
 Meadowdale: 42.670556, -73.984167, 1 ♂, 2 ♀♀, V. Bronx Co.: Bronx: 40.850000, -73.866667, 3 ♂♂, IV. Bronx Park: 40.856667,
 -73.875833, 2 ♀♀, IV. Kings Bridge: 40.878611, -73.905556, 1 ♀, IV. Van Cortlandt Park: 40.897778, -73.883889, 1 ♂, Nomonth
 Cattaraugus Co.: Limestone: (Allegany State Park), 42.027222, -78.629722, 1 ♀, VII. Chautauqua Co.: Jamestown: 42.096944,
 -79.235556, 1 ♀, IV. Clinton Co.: Peru: 44.578333, -73.527222, 1 ♂, VII. Columbia Co.: Malden Bridge: 42.470556, -73.583333,
 1 ♀, V. Valatie: 42.413333, -73.673611, 2 ♂♂, 1 ♀, IV. Cortland Co.: Cincinnatus: 42.542222, -75.896111, 1 ♂, 1 ♀, VI. McLean
 (McLean Bogs Reserve), 42.551944, -76.291389, 1 ♂, VII, 1 ♂, VIII. Dutchess Co.: Poughkeepsie: 41.700278, -73.921389, 1 ♀,
 III, 3 ♂♂, 1 ♀, IV. Wingdale: 41.646944, -73.568611, 1 ♀, Nomonth. Erie Co.: Buffalo: 42.886389, -78.878611, 3 ♂♂, Nomonth,
 1 ♀, IV, 2 ♂♂, 1 ♀, V. Colden: 42.644167, -78.685000, 1 ♂, IX. Hamburg: 42.715833, -78.829722, 1 ♂, 1 ♀, IV. Lancaster
 42.900556, -78.670556, 1 ♀, IV. Genesee Co.: 43.000000, -78.250000, 1 ♀, IV. Greene Co.: 42.250000, -73.833333, 1 ♀,
 Nomonth, 1 ♂, III. Catskill: 42.217222, -73.865000, 2 ♀♀, IX. Catskill Mountains: 42.250278, -74.250278, 1 ♂, V. Herkimer Co.:
 Ilion: 43.015000, -75.035833, 1 ♂, Nomonth. Newport: 43.185833, -75.014722, 1 ♂, Nomonth, 1 ♂, V. Kings Co.: Bergen Beach
 40.620278, -73.907222, 1 ♂, V, 1 ♂, VI. Brooklyn Heights: 40.695278, -73.994167, 3 ♂♂, 1 ♀, Nomonth, 4 ♂♂, 1 ♀, IV, 4 ♂♂,
 2 ♀♀, V. Canarsie: 40.643611, -73.901111, 1 ♀, Nomonth. Monroe Co.: Rochester: 43.154722, -77.615833, 2 ♂♂, 2 ♀♀,
 Nomonth, 5 ♂♂, 1 ♀, IX; 1 ♀, IX. Under stones, logs, etc. Spencerport: 43.186389, -77.804167, 1 ♀, VIII. Nassau Co.: Centre
 Island: 40.901667, -73.520278, 2 ♂♂, V. Long Island. Long Beach: 40.588333, -73.658333, 1 ♀, Nomonth, 1 ♀, IV. Roslyn
 40.799722, -73.651389, 1 ♀, VII. New York Co.: New York: 40.714167, -74.006389, 4 ♂♂, 1 ♀, Nomonth, 1 ♀, V. New York
 (Staten Island), 40.714167, -74.006389, 1 ♂, 3 ♀♀, V. Niagara Co.: Long Island, Highland Park: 43.196111, -78.674444, 1 ♂, 1
 ♀, IV. La Salle: 43.082500, -78.968333, 1 ♂, X. Olcott: 43.337778, -78.715000, 2 ♂♂, 6 ♀♀, IV, 1 ♀, VI, 1 ♂, VII. Onondaga
 Co.: 43.066667, -76.183333, 3 ♂♂, 3 ♀♀, IV, 1 ♀, V. Ontario Co.: Geneva: 42.868889, -76.978056, 1 ♀, V. Orange Co.: West
 Point: 41.391389, -73.956389, 3 ♂♂, 1 ♀, IV, 2 ♂♂, 1 ♀, V. Queens Co.: Long Island, Corona: 40.746944, -73.860556, 2 ♀♀, VII,
 1 ♀, VIII. Douglaston: 40.768611, -73.747500, 2 ♂♂, 2 ♀♀, Nomonth. Long Island, Flushing: 40.765278, -73.817778, 5 ♂♂, 4
 ♀♀, Nomonth, 1 ♀, IV. Long Island, Hollis: 40.713333, -73.767500, 5 ♂♂, IV. Long Island, Jamaica: 40.691389, -73.806111, 1
 ♂, Nomonth. Jamaica Bay: 40.603889, -73.835833, 2 ♂♂, IV. Little Neck: 40.761944, -73.738611, 1 ♂, XII. Long Island:
 40.588333, -73.658333, 3 ♀♀, Nomonth. Long Island City: 40.744722, -73.949167, 4 ♂♂, 2 ♀♀, Nomonth. Long Island, North
 Beach: 40.765833, -73.876389, 1 ♂, 1 ♀, IV. Richmond Co.: Staten Island: 41.635278, -73.688889, 1 ♀, IV. Rockland Co.: New
 City: 41.147500, -73.989722, 1 ♀, IV. Schenectady Co.: Long Island, Aqueduct: 42.848056, -73.889444, 1 ♀, V. Suffolk Co.: Long
 Island, East Hampton: 40.963333, -71.183333, 1 ♂, V. Great Gull Island: 41.202222, -72.119167, 1 ♀, V. Long Island, Hauppauge:
 (Newton Heights), 40.825556, -73.203056, 1 ♀, V. Long Island, Mattituck: 40.991111, -72.534722, 1 ♂, VII. Orient: 41.138889,
 -72.303889, 2 ♂♂, 1 ♀, V. Long Island, Orient: 41.138889, -72.303889, 2 ♂♂, 1 ♀, V, 1 ♀, VI, 2 ♂♂, VII. Riverhead: 40.916944,
 -72.662500, 1 ♀, IV. Washed up on beach. Long Island, Sag Harbor: 40.997778, -72.293056, 1 ♂, Nomonth, 1 ♂, V. Great Gull
 Island, Sound Beach: 40.956111, -72.968333, 2 ♂♂, VI. Long Island, Wyandanch: 40.753889, -73.360833, 1 ♀, II. Tompkins Co.:
 Amot For: 1 ♀, VI. Connecticut Hill: 42.386389, -76.669444, 1 ♀, V. Ithaca: 42.440556, -76.496944, 2 ♂♂, III, 11 ♂♂, 7 ♀♀, IV,
 2 ♀♀, V. upper fall creek bed. McLean: (McLean Bogs), 42.551944, -76.291389, 1 ♂, IV. Ulster Co.: 42.000000, -74.000000, 1
 ♂, Nomonth. Wayne Co.: 43.083333, -77.000000, 1 ♀, Nomonth, 3 ♀♀, VI, 1 ♀, IX. Newark: 43.046667, -77.095556, 2 ♂♂,
 Nomonth. Sodus: 43.237778, -77.061667, 1 ♂, 1 ♀, Nomonth, 1 ♀, V. Sodus Bay: 43.257222, -76.966944, 1 ♂, 1 ♀, V.
 Westchester Co.: 41.033333, -73.783333, 1 ♂, IV. Nepperham: 40.955556, -73.866944, 1 ♂, V. Peekskill: 41.290000, -73.920833,
 5 ♂♂, 3 ♀♀, Nomonth. Rye: 40.980556, -73.684167, 1 ♀, VI, 1 ♂, 2 ♀♀, VII. Tarrytown: 41.076111, -73.859167, 1 ♂, V.
 Wyoming Co.: Pike: 42.556389, -78.153056, 1 ♂, 1 ♀, Nomonth. NORTH CAROLINA: Buncombe Co.: Asheville: 35.600833,
 -82.554167, 1 ♂, VI. Jackson Co.: Balsam: 35.426667, -83.085278, 1 ♀, VII. Qualla: 35.435278, -83.323056, 1 ♀, VI. Mitchell
 Co.: 36.016667, -82.166667, 1 ♀, Nomonth. Watauga Co.: Blowing Rock: 36.135000, -81.677778, 1 ♀, Nomonth. NORTH
 DAKOTA: Billings Co.: Elkhorn Ranch State Historic Site: 47.252778, -103.623611, 3 ♂♂, VI. Burke Co.: Bowbells, 8 km E,
 (Hwy. 52), (Upper Des Lac Lk.), 48.803056, -102.245556, 1 ♂, V. Burleigh Co.: McKenzie: 46.824167, -100.413056, 1 ♀, VII.
 Cass Co.: 46.883333, -96.800000, 3 ♂♂, 4 ♀♀, VI. Fargo: 46.877222, -96.789444, 1 ♂, V, 2 ♂♂, 1 ♀, VIII. Dunn Co.: Killdeer,
 4.8 km NW, 47.371944, -102.753611, 1 ♂, IX. Grand Forks Co.: University of North Dakota: 47.920556, -97.070000, 1 ♂, VI.

Richland Co.: 46.283333, -96.633333, 1 ♀, VI, 1 ♀, VII. OHIO: Ashland Co.: Loudonville: (15 Clear Fork Circle), 40.635278, -82.233333, 1 ♀, V. Ashtabula Co.: Rock Creek: 41.660278, -80.860833, 3 ♂♂, IV. Saybrook Park, Saybrook: 41.827500, -80.871944, 1 ♂, VI. Athens Co.: Athens: 39.329167, -82.101389, 1 ♀, IV. Hocking: (Canaan Township), 39.367778, -82.265833, 1 ♂, IV. Clark Co.: Springfield: 39.924167, -83.808889, 1 ♀, IV. Cuyahoga Co.: Bay Village: (Huntington Beach), 41.484722, -81.922222, 1 ♂, V, 1 ♀, VI. Franklin Co.: Columbus: 39.961111, -82.998889, 1 ♂, 1 ♀, Nomonth, 1 ♂, 2 ♀♀, IV, 3 ♂♂, 1 ♀, V. Columbus: (Alum Creek), 39.961111, -82.998889, 1 ♂, III. Lucas Co.: 41.666667, -83.583333, 1 ♀, V. Toledo: 41.663889, -83.555278, 1 ♀, V. Vinton Co.: Zaleski: 39.282222, -82.395000, 1 ♂, V. OREGON: NoCo.: 1 ♂, 2 ♀♀, Nomonth, NoCo.: Extension Station: 3 ♂♂, 1 ♀, Nomonth. Benton Co.: Corvallis: 44.564722, -123.260833, 1 ♀, VI. PENNSYLVANIA: NoCo.: 4 ♂♂, 4 ♀♀, Nomonth. NoCo.: (Bethlehem), 1 ♀, Nomonth. Under stones, rubbish etc. NoCo.: Raccoon Creek: 1 ♂, V. Allegheny Co.: 40.433333, -80.016667, 8 ♂♂, 3 ♀♀, Nomonth, 2 ♂♂, V, 2 ♀♀, VII. Pittsburgh: 40.440556, -79.996111, 2 ♂♂, 1 ♀, Nomonth, 6 ♂♂, 1 ♀, IV, 1 ♀, V, 2 ♂♂, VI, 1 ♂, 2 ♀♀, VII, 1 ♂, 1 ♀, VIII, 1 ♀, IX. Pittsburgh: (Sawmill Run), 40.440556, -79.996111, 1 ♀, V. Armstrong Co.: Glade Run: 40.904722, -79.573611, 1 ♀, Nomonth. Rockville: 40.733056, -79.441944, 1 ♀, III. Berks Co.: Alleghenyville: 40.234167, -75.988889, 2 ♀♀, Nomonth. Butler Co.: Slippery Rock, 1.6 km N, 41.063889, -80.056667, 1 ♀, V. Centre Co.: Bellefonte: 40.913333, -77.778611, 1 ♂, III. Sunset Park, State College: 40.793333, -77.860278, 1 ♀, IV. Flying in alfalfa. Dauphin Co.: Harrisburg: 40.273611, -76.884722, 1 ♀, Nomonth, 2 ♀♀, V. Delaware Co.: Villanova: 40.037222, -75.349444, 1 ♂, 1 ♀, IV. Indiana Co.: Indiana: 40.621389, -79.152778, 1 ♂, Nomonth. Lancaster Co.: Bethesda: 39.845833, -76.304167, 3 ♂♂, Nomonth. Monroe Co.: Cresco: 41.153889, -75.280833, 1 ♂, VIII. Northampton Co.: Bethlehem: 40.625833, -75.370833, 1 ♂, 1 ♀, III, 2 ♂♂, 2 ♀♀, IV. Easton: 40.688333, -75.221111, 1 ♂, 4 ♀♀, IV, 2 ♂♂, 1 ♀, V, 2 ♂♂, VI, 3 ♂♂, 3 ♀♀, VII. Schuylkill Co.: Rock: 40.541944, -76.304722, 1 ♀, IV. Westmoreland Co.: Jeannette: 40.328056, -79.615556, 1 ♂, 4 ♀♀, VI, 2 ♀♀, VII, 1 ♀, VIII, 1 ♂, X. Saint Vincent Shaft: 40.283889, -79.400000, 1 ♂, Nomonth. RHODE ISLAND: NoCo.: 1 ♀, Nomonth. Newport Co.: Tiverton: 41.625833, -71.213889, 1 ♂, VI. SOUTH DAKOTA: Brookings Co.: Brookings: 44.311389, -96.798056, 1 ♀, IV, 1 ♀, V, 1 ♀, VI. Volga: 44.323611, -96.926111, 1 ♂, Nomonth. Fall River Co.: Hot Springs: 43.431667, -103.473889, 1 ♀, VI. UTAH: NoCo.: 1 ♀, Nomonth. Box Elder Co.: 41.516667, -112.016667, 1 ♂, IV. Salt Lake Co.: 40.750000, -111.866667, 1 ♂, V. Uintah Co.: 40.483333, -109.666667, 1 ♀, Nomonth. Utah Co.: Provo: (Provo environs), 40.233889, -111.657778, 1 ♀, IV. VERMONT: NoCo.: Point Pleasant: 1 ♂, V. Bennington Co.: Dorset: 43.254722, -73.099167, 1 ♀, IV. Manchester: 43.163611, -73.072778, 1 ♂, V. Chittenden Co.: Jonesville, 3.2 km S, (Gillette Pond), 44.383889, -72.938056, 1 ♂, VI. Middlesex Co.: Cambridge: 42.366667, -71.100000, 1 ♀, III. Tompkins Co.: Ithaca: 42.440556, -76.496944, 4 ♀♀, IV. VIRGINIA: Giles Co.: Pembroke, 6.5 km NE, 37.319444, -80.639167, 1 ♂, IV. Montgomery Co.: Blacksburg: 37.229444, -80.414167, 1 ♀, III, 1 ♂, 2 ♀♀, IV, 1 ♂, 1 ♀, V. WASHINGTON: Benton Co.: Kennewick: 46.211389, -119.136111, 4 ♂♂, IX. Franklin Co.: Pasco: 46.228611, -119.099444, 1 ♀, V. Grant Co.: Grand Coulee: (Dry Falls), 47.941667, -119.002222, 12 ♂♂, 4 ♀♀, IV, 3 ♂♂, 1 ♀, V. Grand Coulee: (Park Lake), 47.941667, -119.002222, 2 ♀♀, V. Lenore Lake: 47.523466, -119.484644, 2 ♂♂, 1 ♀, V. Moses Lake: 47.130278, -119.276944, 1 ♀, V. Soap Lake: 47.389444, -119.489444, 1 ♂, V. Lincoln Co.: Sprague: 47.300278, -117.974444, 1 ♂, IV. Spokane Co.: Medical Lake: 47.573056, -117.681111, 1 ♂, V. Walla Walla Co.: College Place: 46.049444, -118.387222, 1 ♂, X. Whatcom Co.: Neptune Beach: (Neppel), 48.816111, -122.706389, 2 ♂♂, 1 ♀, IV. Yakima Co.: Toppenish: 46.377500, -120.307500, 2 ♂♂, III. Yakima: 46.602222, -120.504722, 1 ♀, IV, 1 ♂, V. WEST VIRGINIA: Randolph Co.: Cheat Mountains: 38.609167, -79.941389, 1 ♀, Nomonth. WISCONSIN: NoCo.: 4 ♂♂, 2 ♀♀, Nomonth, 1 ♂, X. Brown Co.: Green Bay: 44.519167, -88.019722, 1 ♀, V. Crawford Co.: Ferryville: 43.350556, -91.101944, 1 ♂, V, under railroad ties on moist gravelly soil; 1 ♂, V, on moist gravelly ground under railroad ties. Dane Co.: 43.083333, -89.383333, 1 ♀, IV, 1 ♂, VI, 1 ♂, VII. Madison: 43.073056, -89.401111, 2 ♀♀, Nomonth, 2 ♂♂, IV, 1 ♀, V. Dodge Co.: Beaver Dam: 43.457778, -88.837222, 1 ♂, 1 ♀, Nomonth, 1 ♀, IV, 2 ♂♂, 1 ♀, V, 1 ♂, X. Fox Lake: 43.565556, -88.906389, 4 ♂♂, VIII. Fond du Lac Co.: Forest Lake: (West Bend, 21.0 km N), 43.607500, -88.166667, 3 ♂♂, 1 ♀, VI, active on lake banks at night. Grant Co.: Platteville: 42.734167, -90.478333, 1 ♀, VII. Milwaukee Co.: Lincoln Park, 43.050000, -87.916667, 1 ♀, V. Gordon Park, Milwaukee: (At Locust and Dousman), 43.038889, -87.906389, 1 ♂, VII, along shores of Milwaukee River. Ozaukee Co.: (County Line Road 4 km N; and Hwy. 57, 1.1 km W), 43.400000, -87.866667, 1 ♀, VIII, under rocks on banks of stream. Saukville, 7.9 km W on rte 33, 3.7 km S on Bluegoose Rd., (University of Wisc. Field Station), 43.385000, -88.020167, 1 ♂, V, under rocks and under plant leaves which grew against surface of almost pure sand-gravel, moist ground, in old gravel pit. Polk Co.: Saint Croix Falls: 45.410000, -92.639444, 1 ♂, 1 ♀, V. Walworth Co.: East Troy, 1.9 km E, 42.785278, -88.377447, 1 ♀, VII, Turned over debris on ground near pond. Pond was in the middle of a depression, all of ground in depression was wet, all debris seemed to have carabids under it. Pond received sun during most the day. East Troy, 1.9 km E, 42.785278, -88.405000, 1 ♀, IX, under debris in depressed area which contained a pond.

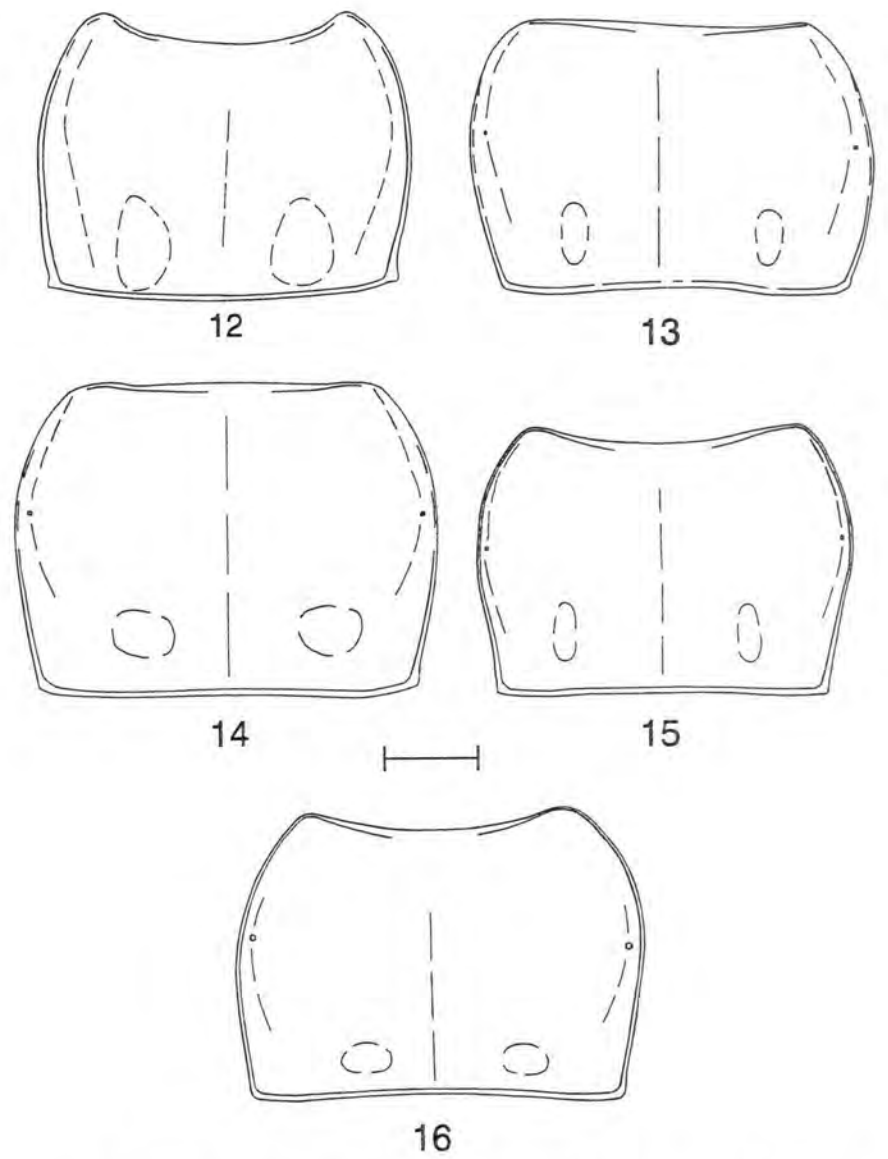
Figures



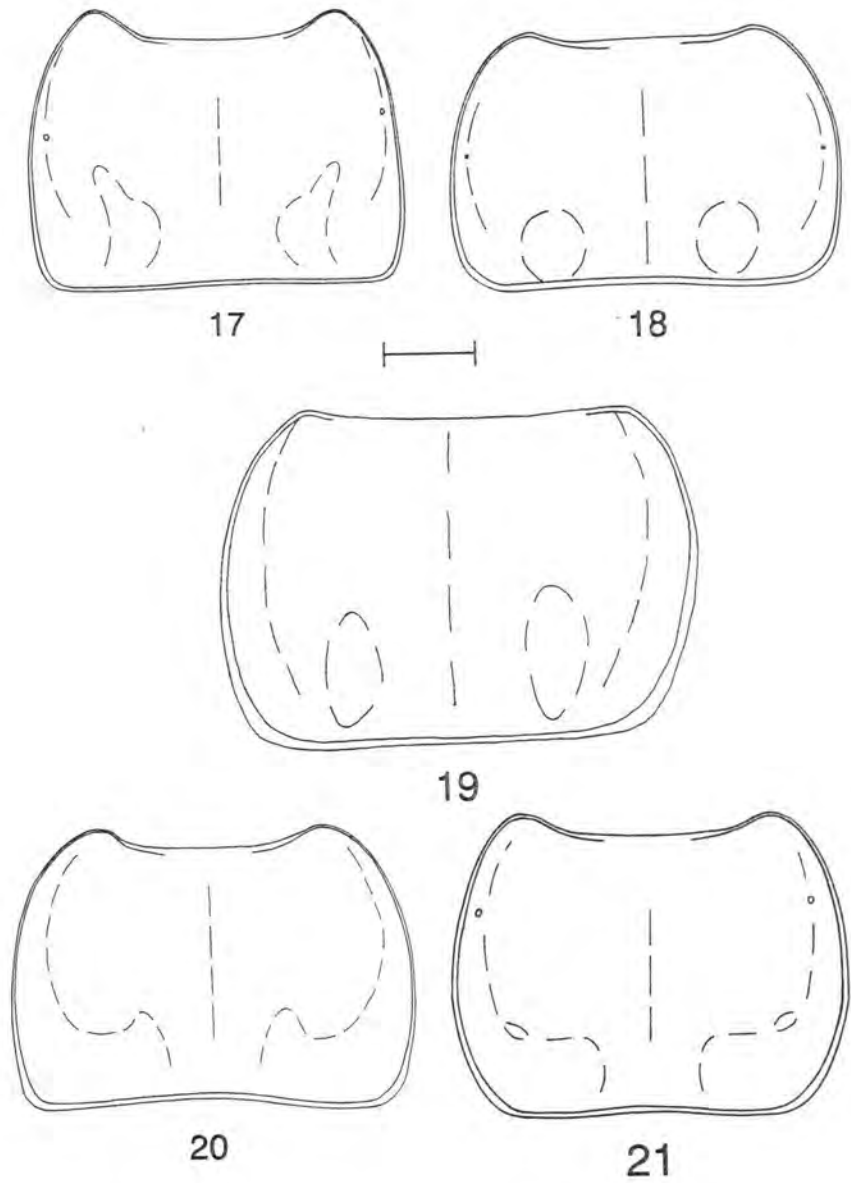
Figs. 1-6. Pronota. (1) *A. heros*. (2) *A. nemorivagus*. (3) *A. consobrinus*. (4) *A. hispanus*. (5) *A. pueli*. (6) *A. binotatus*.



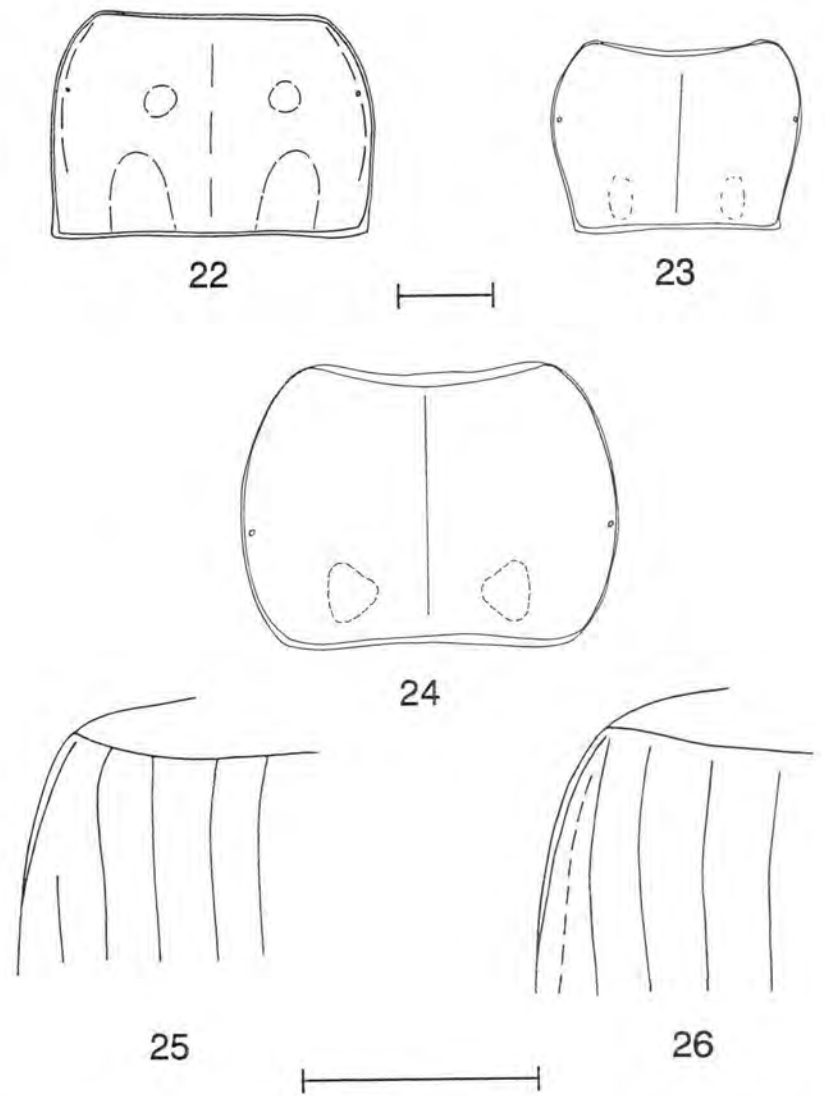
Figs. 7-11. Pronota. (7) *A. antoinei*. (8) *A. karennius*. (9) *A. tricuspидatus*. (10) *A. agricola*. (11) *A. pseudagricola*.



Figs. 12-16. Pronota. (12) *A. melanopus*. (13) *A. kirbyi*. (14) *A. nigrita*. (15) *A. californicus*. (16) *A. similis*.

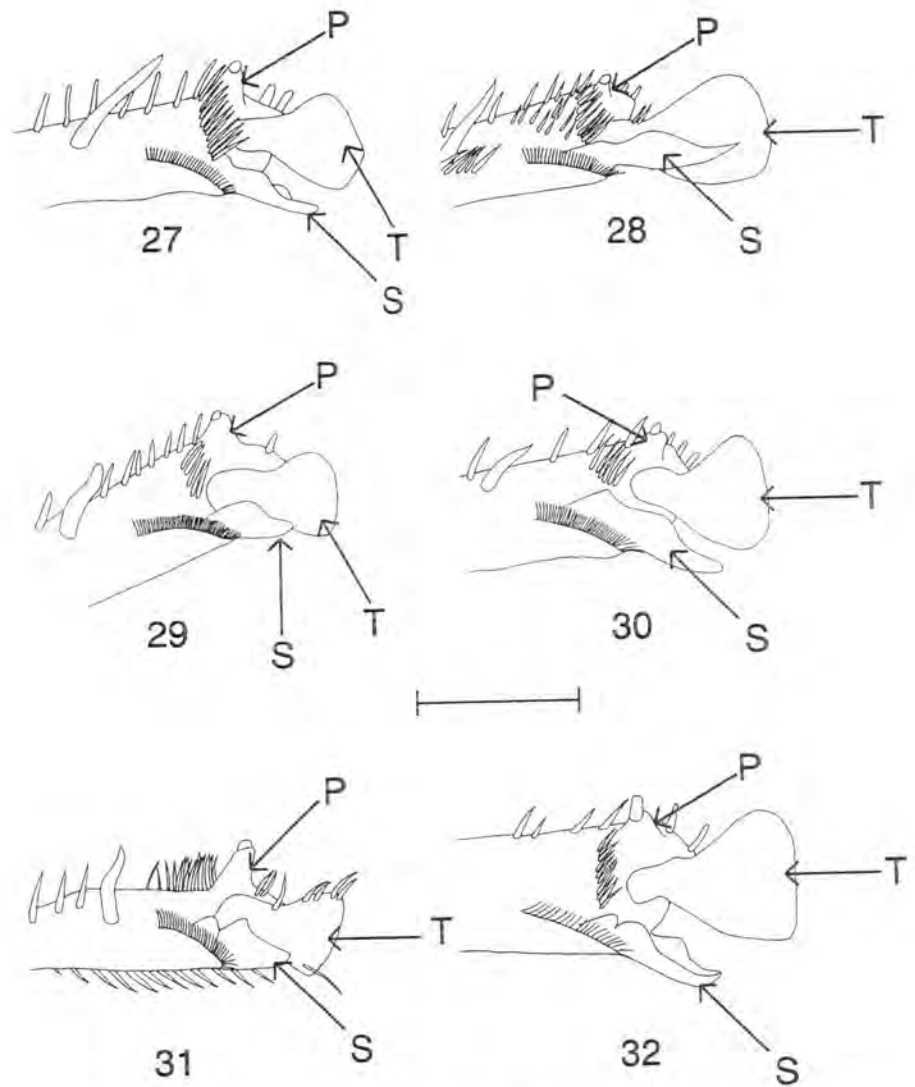


Figs. 14-21. Pronota. (17) *A. furvus*. (18) *A. nigerrimus*. (19) *A. loedingi*. (20) *A. carbonarius*. (21) *A. harrisii*.



Figs. 22-24. Pronota. (22) *A. (Pseudaplocentrus) amaroides*. (23) *A. (Anadaptus) nivalis*. (24) *A. (Anadaptus) rotundangulus*.

Figs. 25-26. Humeri of elytra. (25) *A. nemorivagus*. (26) *A. binotatus*.



Figs. 27-32. Ventral views of apices of male front tibiae showing ventro-apical protuberances (P = ventro-apical protuberance, S = apical spur, T = first tarsomere). (27) *A. nemorivagus*. (28) *A. consobrinus*. (29) *A. hispanus*. (30) *A. californicus*. (31) *A. similis*. (32) *A. furvus*.

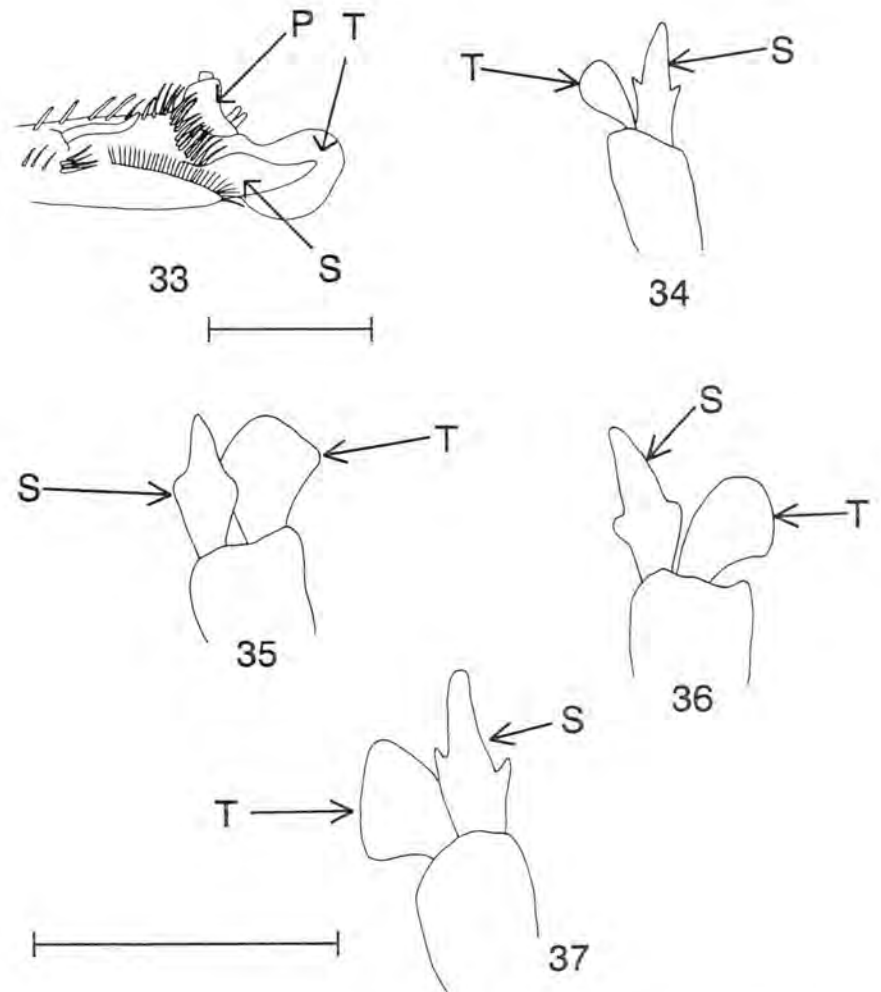
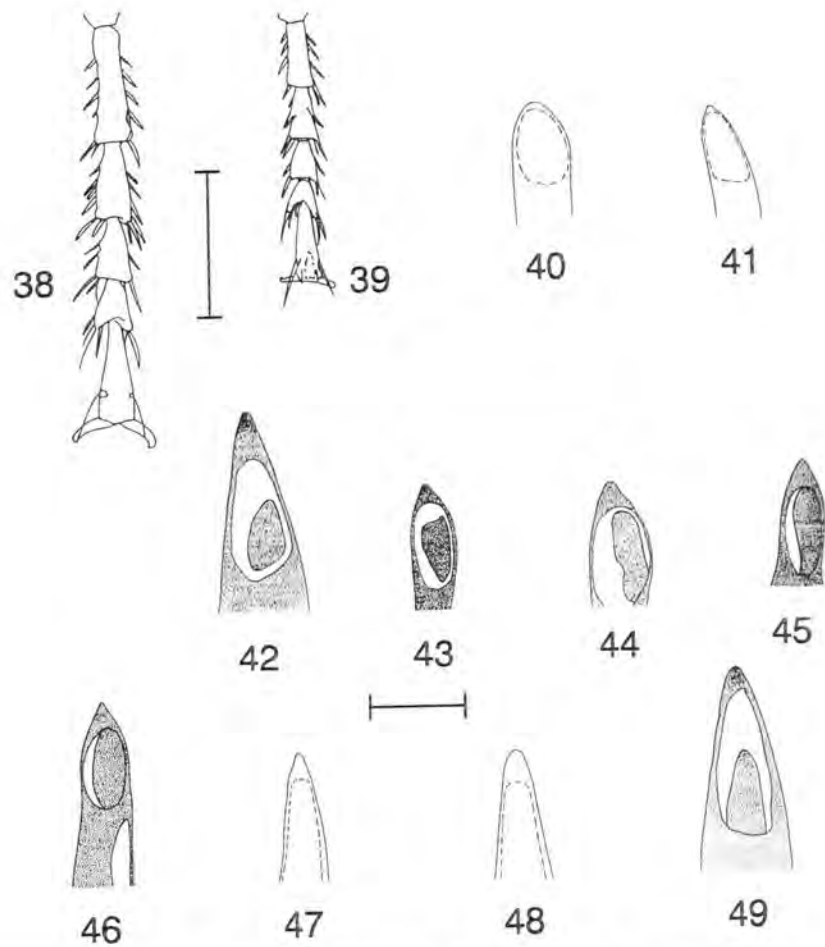


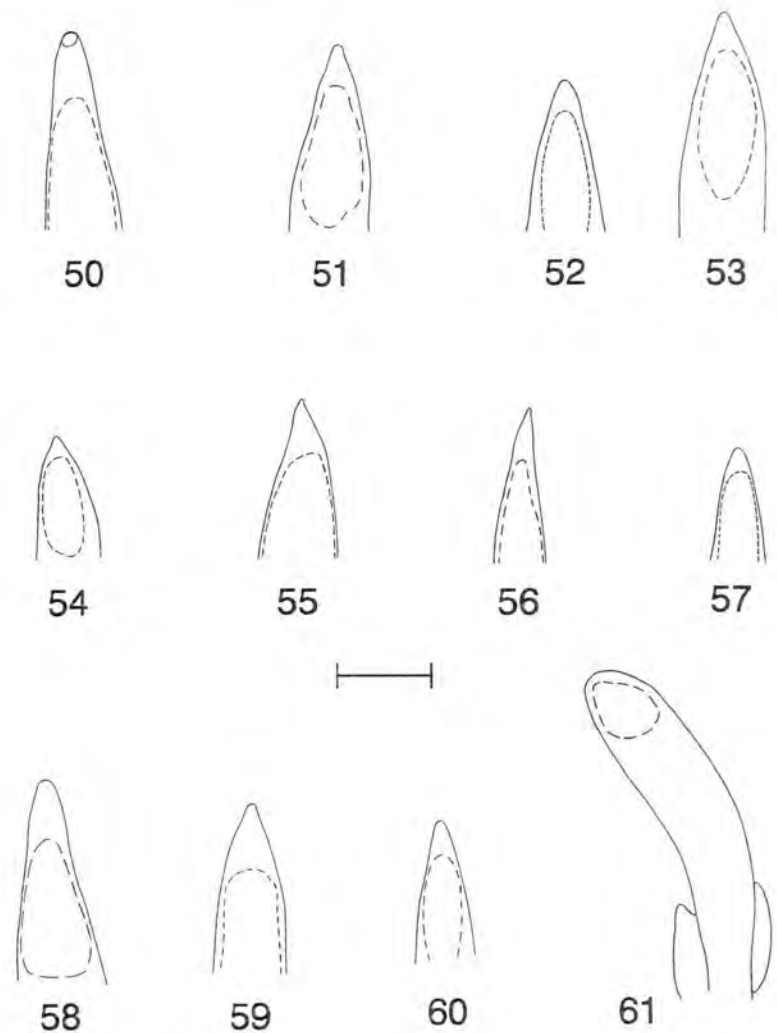
Fig. 33. Ventral view of apex of male front tibiae showing ventro-apical protuberance (P = ventro-apical protuberance, S = apical spur, T = first tarsomere). (33) *A. carbonarius*.

Figs. 34-37. Dorso-lateral view of apices of front tibiae showing apical spurs (S = apical spur, T = first tarsomere). (34) *A. karennius*, showing trifid apical spur. (35) *A. californicus*, showing apical spur angulate basally but not trifid. (36) *A. similis*, showing apical spur widened basally. (37) *A. carbonarius*, showing trifid apical spur.



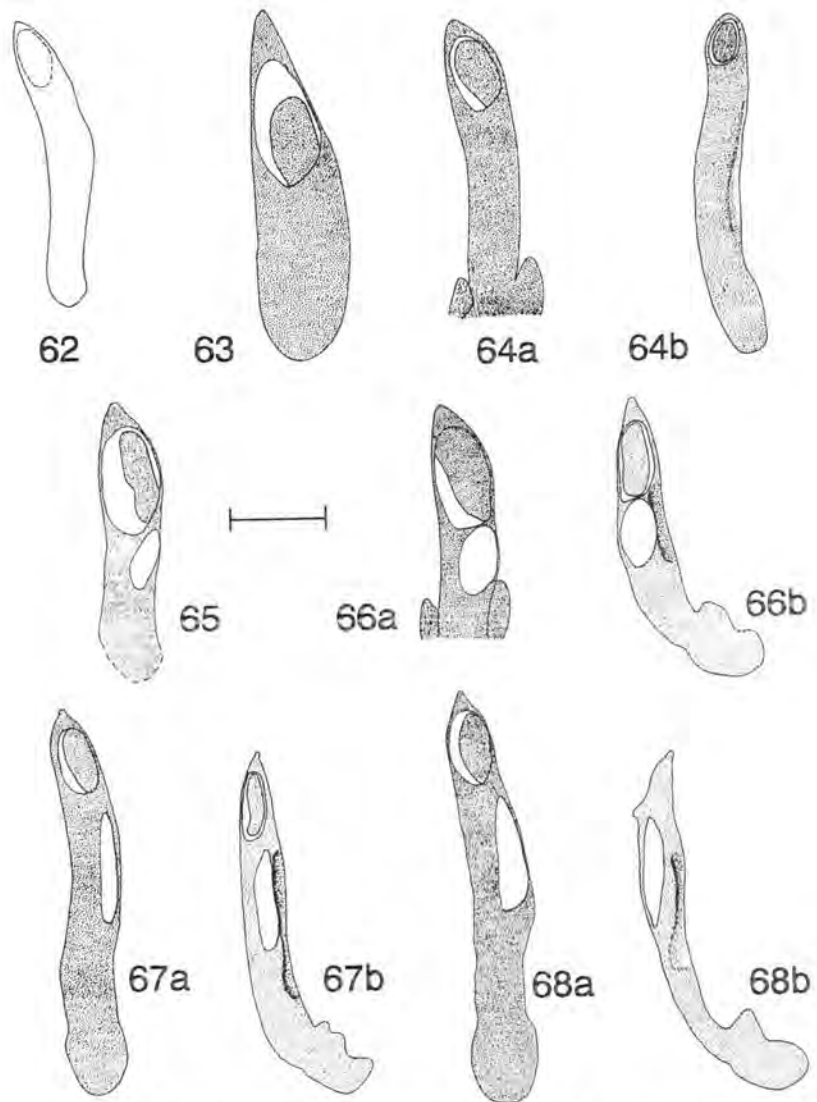
Figs. 38-39. Dorsal view of hind tarsi. (38) *A. californicus*, showing somewhat elongated tarsi. (39) *A. (Anadaptus) viridescens*, showing shorter tarsi found in subgenus *Anadaptus*.

Figs. 40-49. Dorsal view of distal portion of aedeagi (Figs. 40-41, 47-48 with dorsal membraneous areas outlined by dashed lines; Figs. 42-46 and 49 with sclerotized portions stippled and dorsal membraneous areas blank). (40) *A. heros*. (41) *A. nemorivagus*. (42) *A. consobrinus*. (43) *A. hispanus*. (44) *A. pueli pueli*. (45) *A. binotatus*. (46) *A. antoinei*. (47) *A. karennius*. (48) *A. tricuspidatus*. (49) *A. agricola*.

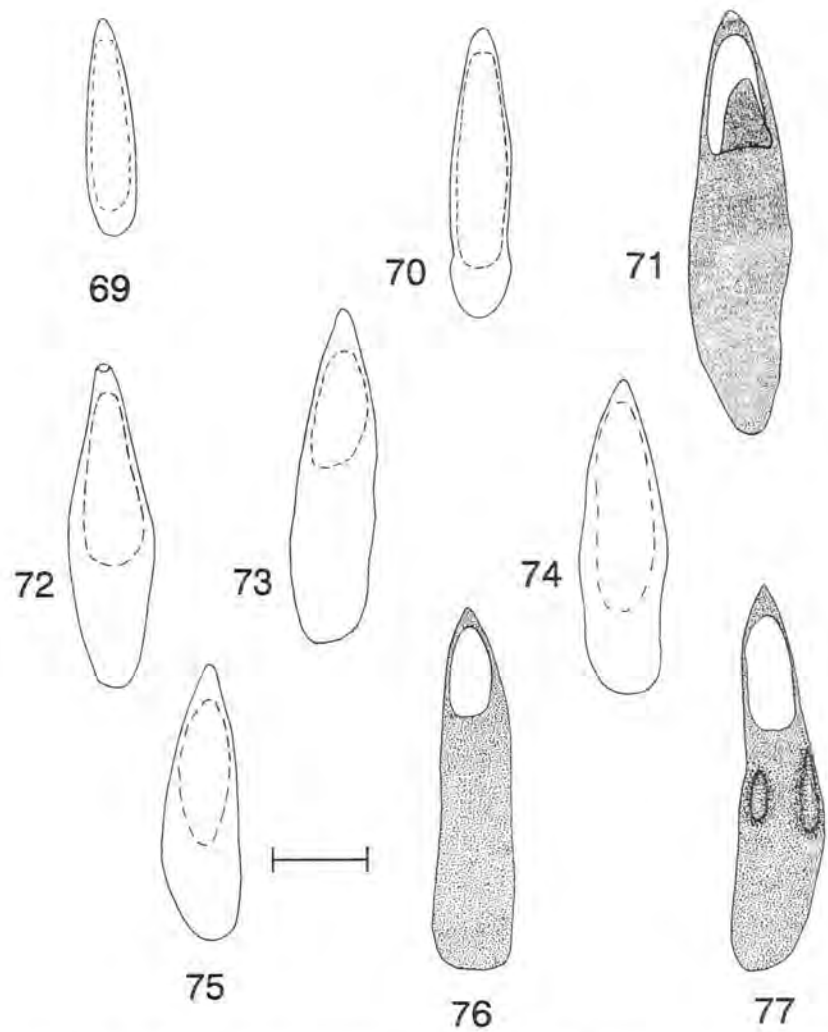


Figs. 50-60. Dorsal view of distal portion of aedeagi (dorsal membranous area outlined by dashed lines). (50) *A. pseudagricola*. (51) *A. melanopus*. (52) *A. kirbyi*. (53) *A. nigrita*. (54) *A. californicus*. (55) *A. similis*. (56) *A. furvus*. (57) *A. nigerrimus*. (58) *A. loedingi*. (59) *A. carbonarius*. (60) *A. harrisii*.

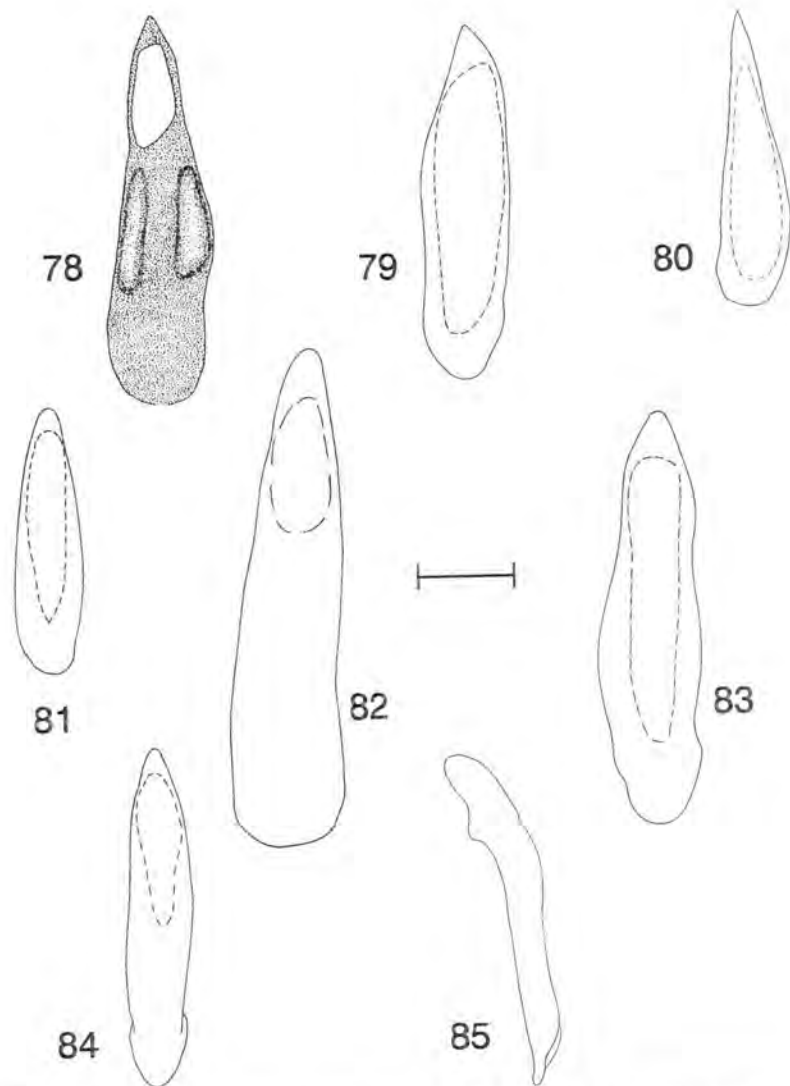
Fig. 61. Dorsal view of aedeagus of *A. heros* with dorsal membranous area outlined by dashed lines.



Figs. 62-68. Dorsal and dorso-lateral views of aedeagi (Fig. 62 with dorsal membranous area outlined by dashed lines; Figs. 63-68 with sclerotized portions stippled and dorsal membranous areas blank). **Figs. 62, 63, 64a, 65, 66a, 67a, 68a.** Dorsal view. **Figs. 64b, 66b, 67b, 68b.** Dorso-lateral view. (62) *A. nemorivagus*. (63) *A. consobrinus*. (64 a & b) *A. hispanus*. (65) *A. pueli pueli* (holotype, Valona, Albania). (66 a & b) *A. pueli bucciarellii* (Sicily). (67 a & b) *A. binotatus*. (68 a & b) *A. antoinei*.

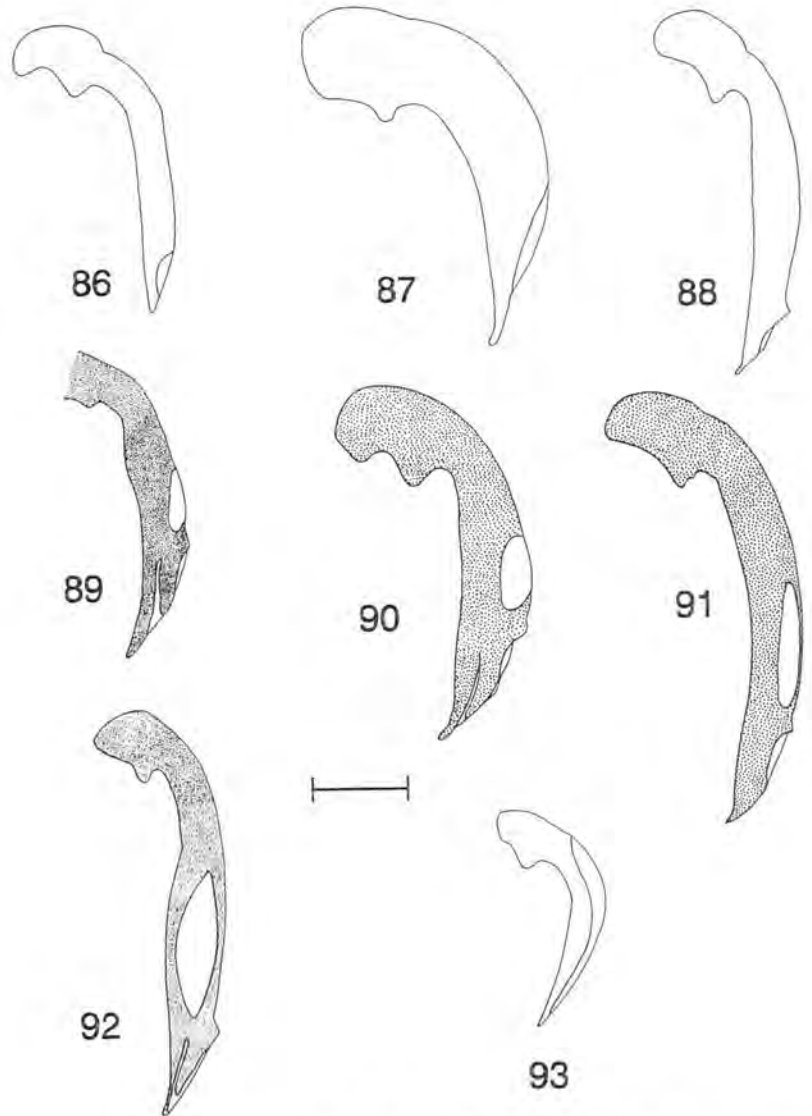


Figs. 69-77. Dorsal view of aedeagi (Figs. 69-70 and 72-75 with dorsal membranous area outlined by dashed lines; Figs. 71, and 76-77 with sclerotized portions stippled and dorsal membranous areas blank). (69) *A. karennius*. (70) *A. tricuspидatus*. (71) *A. agricola*. (72) *A. pseudagricola*. (73) *A. melanopus*. (74) *A. kirbyi*. (75) *A. nigrita*. (76) *A. californicus* (Corvallis, Oregon), showing unmodified aedeagus. (77) *A. californicus* (Lenore Lake, Washington), showing sides somewhat projected outward and dorsum with moderate size depressions.

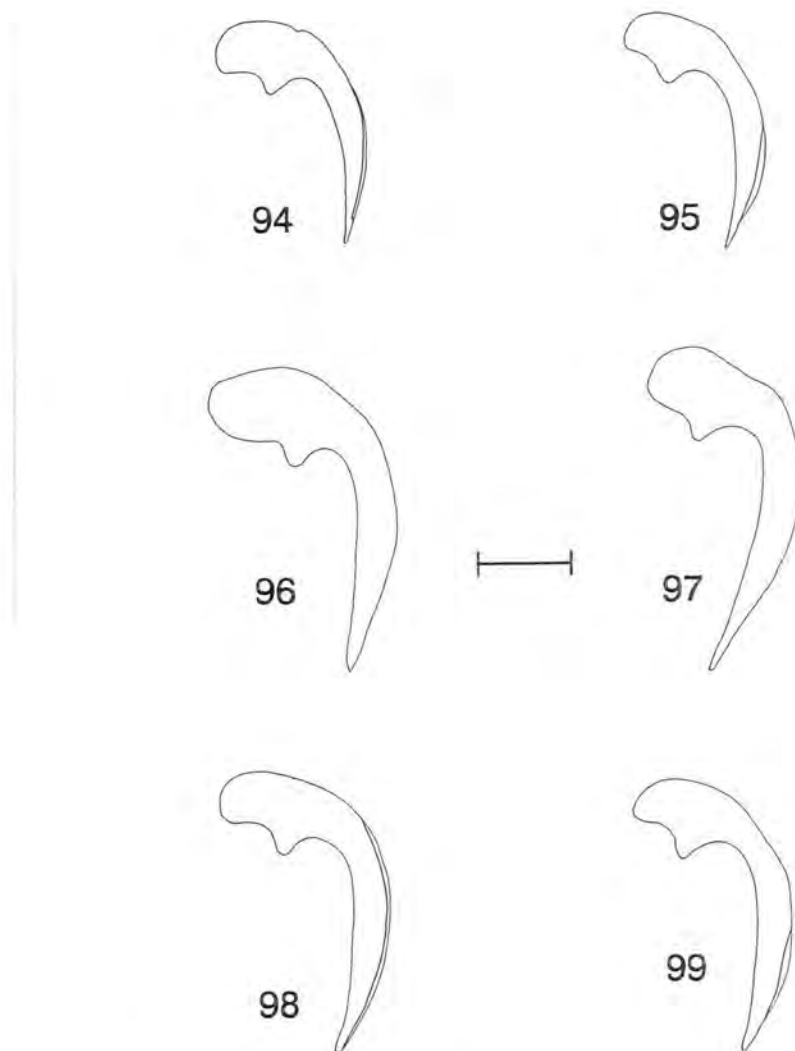


Figs. 78-84. Dorsal view of aedeagi (Fig. 78 with sclerotized portions stippled and dorsal membranous areas blank; Figs. 79-84 with dorsal membranous area outlined by dashed lines). (78) *A. californicus* (Provo at E. side of Utah Lake, Utah), showing sides prominently projected outward and dorsum with large depressions. (79) *A. similis*. (80) *A. furvus*. (81) *A. nigerrimus*. (82) *A. loedingi*. (83) *A. carbonarius*. (84) *A. harrisii*.

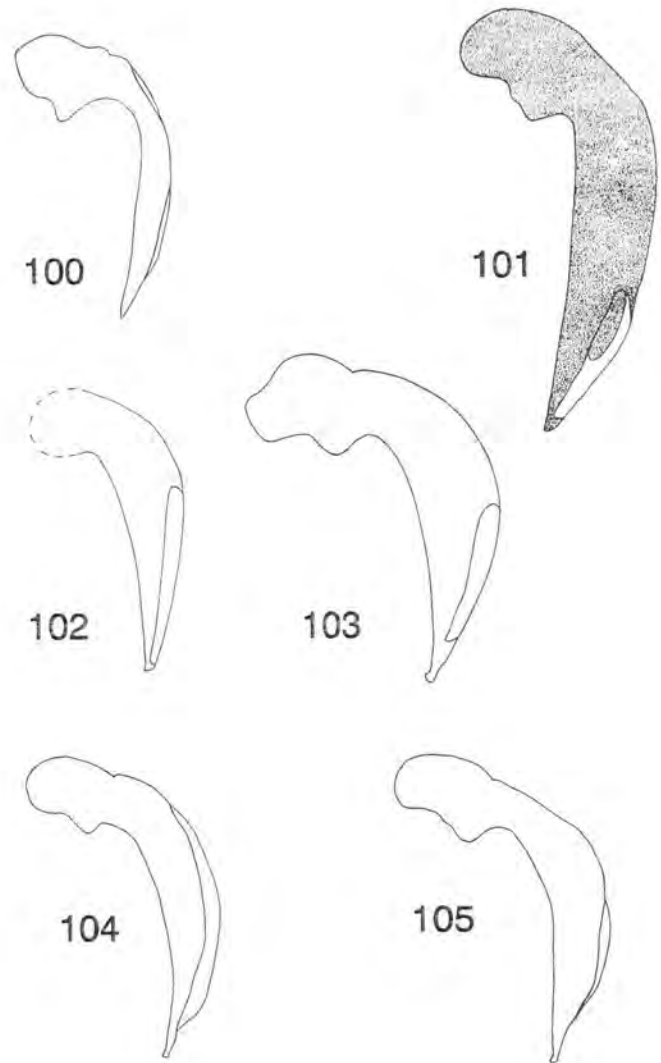
Fig. 85. Left view of aedeagus of *A. heros* (dorsal membranous area between solid lines on dorsum).



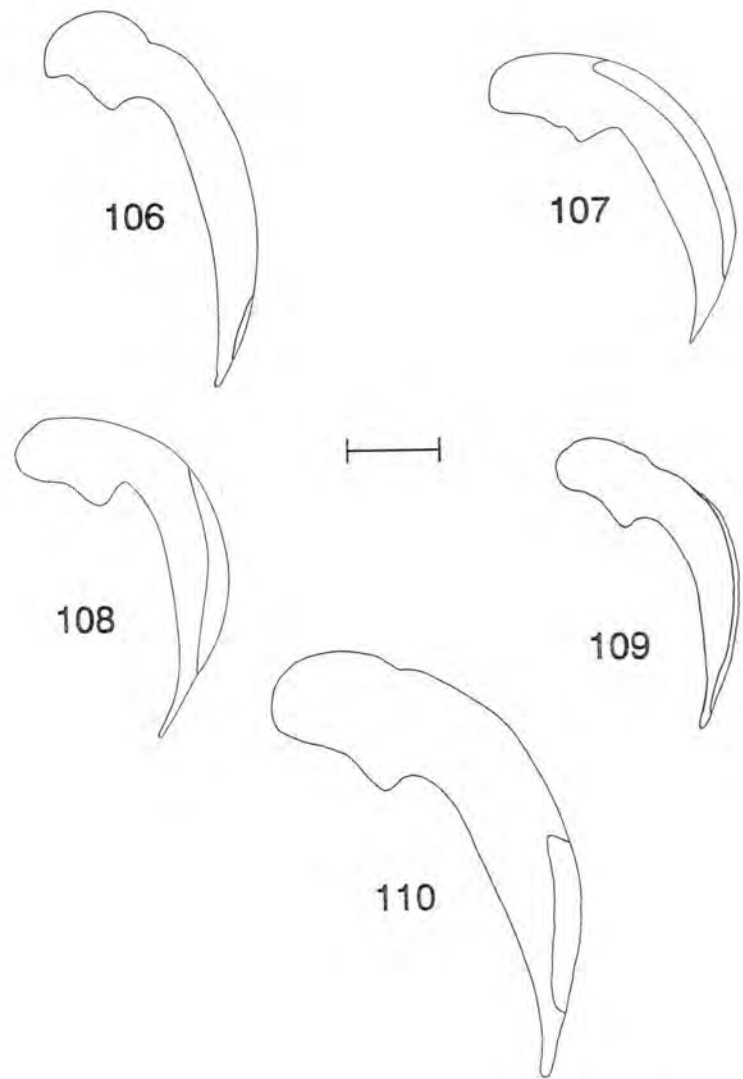
Figs. 86-93. Left view of aedeagi (Figs. 86-88 and 93 with dorsal membranous area situated between solid lines on dorsum; Figs. 88-92 with sclerotized portions stippled and dorsal membranous areas blank, surface sculpture on left side not shown). (86) *A. nemorivagus*. (87) *A. consobrinus*. (88) *A. hispanus*. (89) *A. pueli pueli*. (90) *A. pueli bucciarellii*. (91) *A. binotatus*. (92) *A. antoinei*. (93) *A. karennius*.



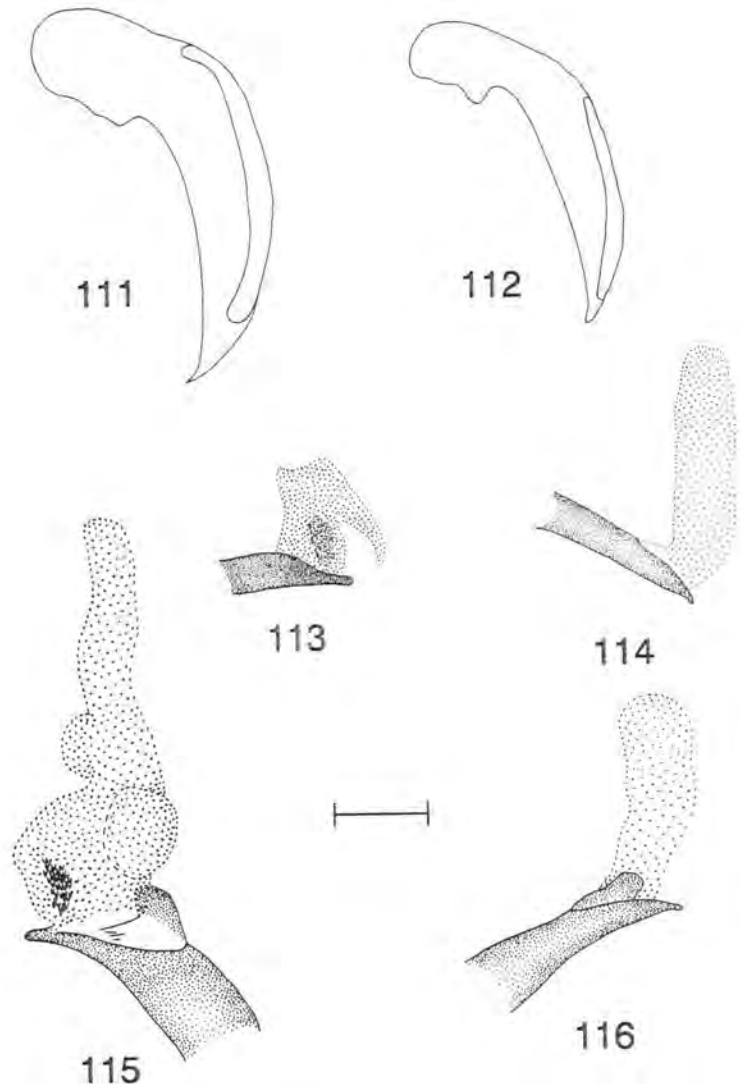
Figs. 94-99. Left view of aedeagi of *A. tricuspoidatus* showing variation in size and in arcuation (when visible from left side, dorsal membranous area situated between solid lines on dorsum). (94) Holotype of the synonym *A. formosanus*. (95) Chekiang Prov., China. (96) Nikko, Japan. (97) Onuma, Japan. (98) Onuma, Japan. (99) Chekiang Prov., China. (See Fig. 100 on next page for additional variation in aedeagi.)



Figs. 100-105. Left view of aedeagi (Figs. 100 and 102-105 with dorsal membranous area, when visible, situated between solid lines of dorsum; Fig. 101 with sclerotized portions stippled and dorsal membranous area blank). (100) *A. tricuspидatus* (Shanghai, China). (101) *A. agricola*. (102) *A. pseudagricola*. (103) *A. melanopus*. (104) *A. kirbyi*. (105) *A. nigrita*.

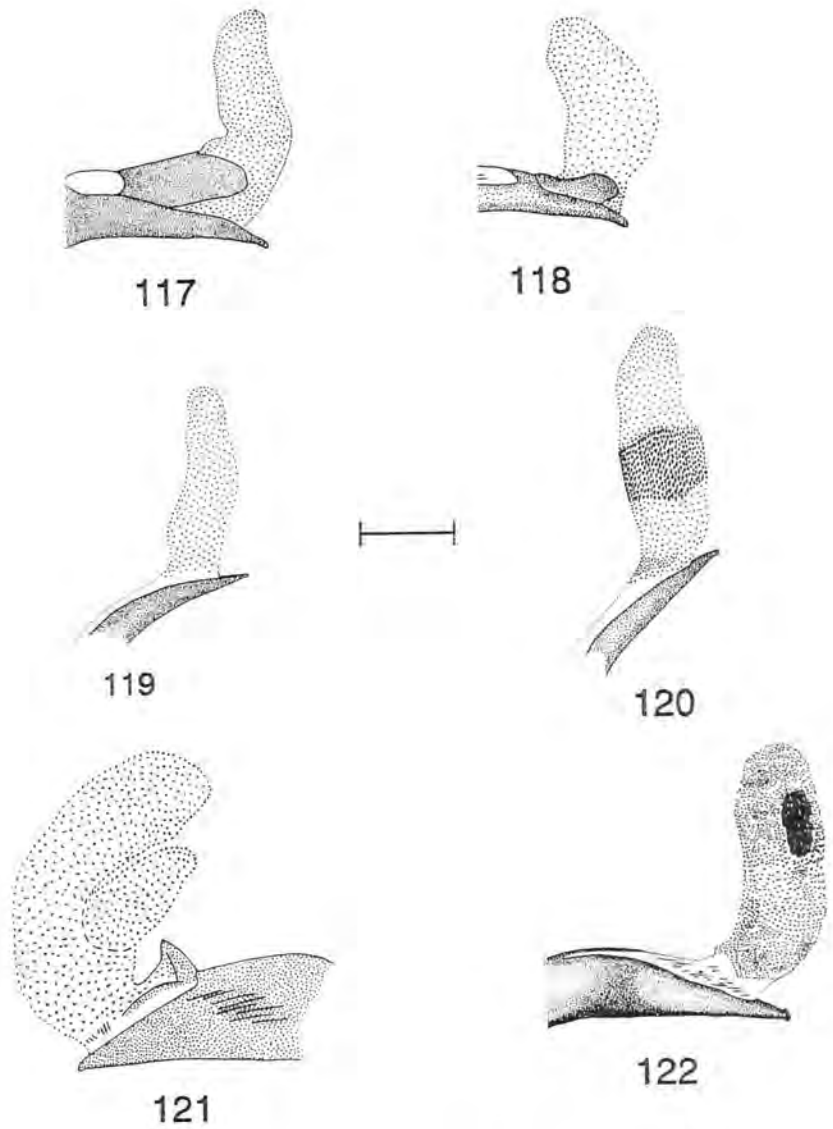


Figs. 106-110. Left view of aedeagi (with dorsal membranous area situated between solid lines on dorsum). (106) *A. californicus*. (107) *A. similis*. (108) *A. furvus*. (109) *A. nigerrimus*. (110) *A. loedingi*.

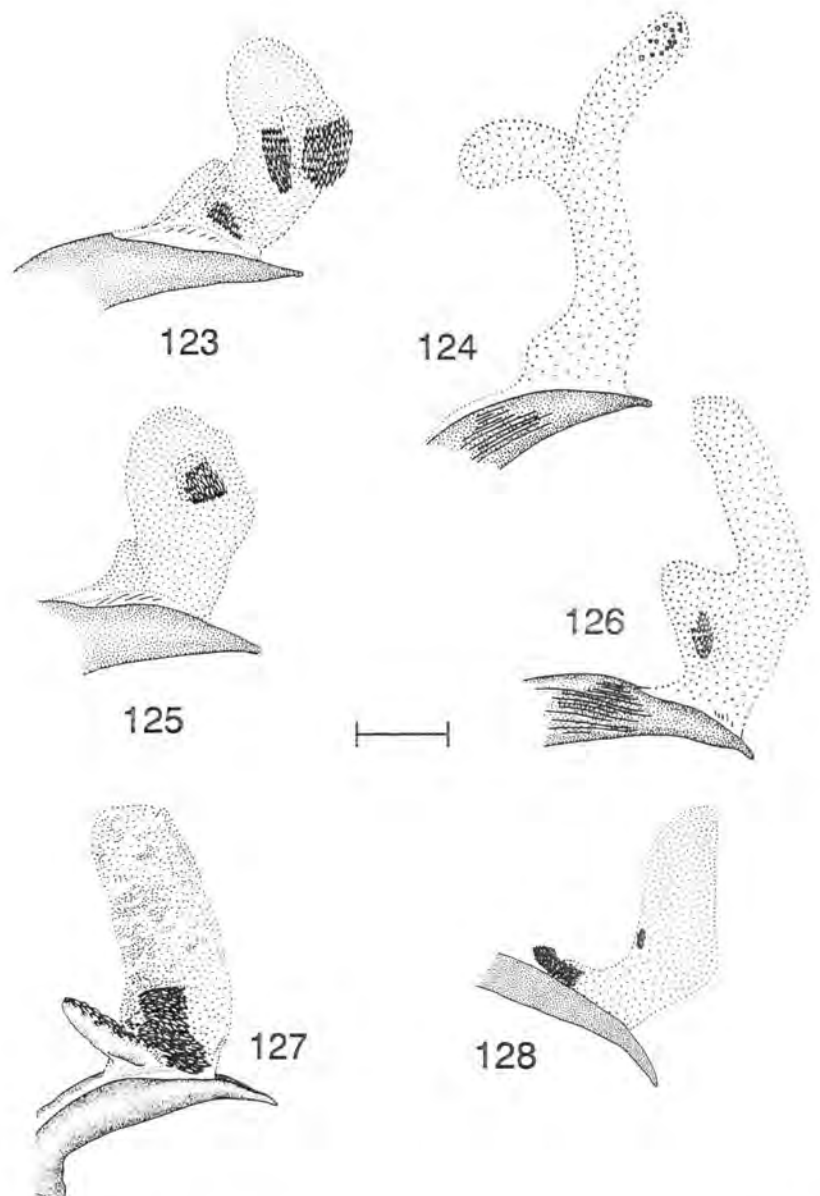


Figs. 111-112. Left view of aedeagi (with dorsal membranous area situated between solid lines on dorsum), (111) *A. carbonarius*. (112) *A. harrisii*.

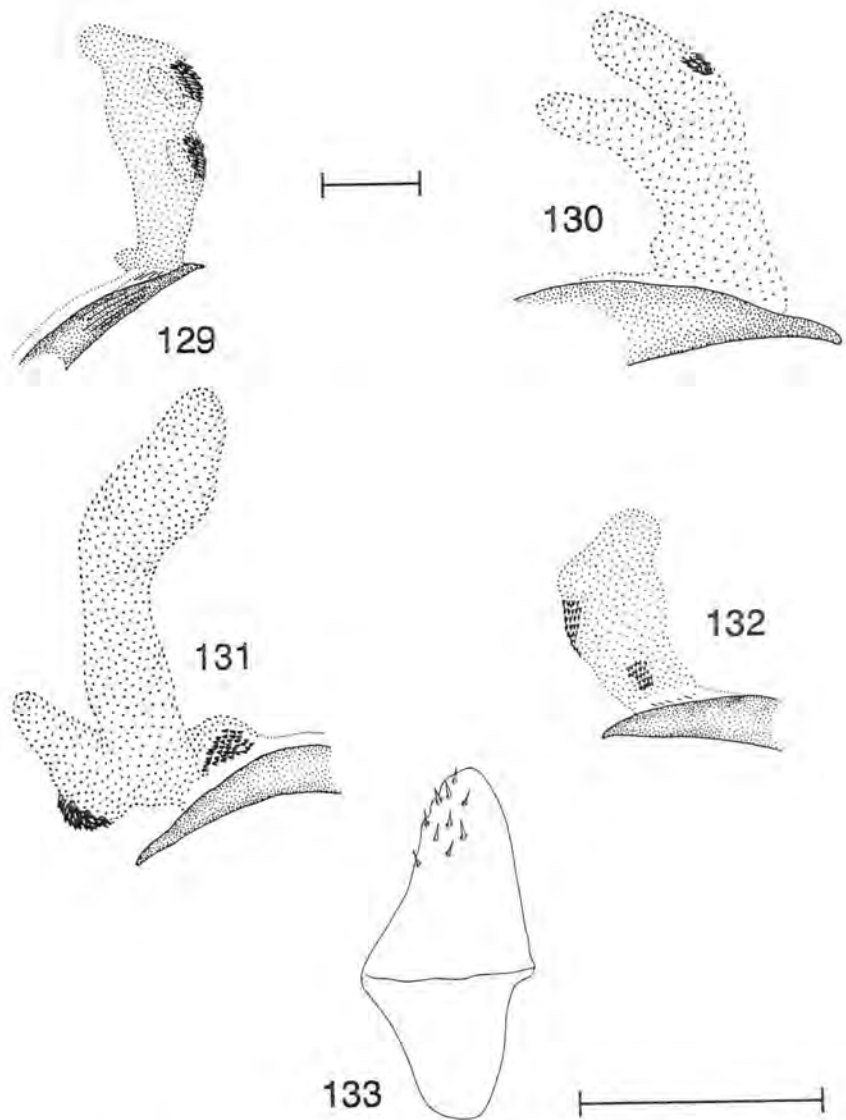
Figs. 113-116. Everted internal sacs of males. (Figs. 113-114 and 116, left view; Fig. 115, right view). (113) *A. heros*. (114) *A. nemorivagus*. (115) *A. consobrinus*. (116) *A. hispanus*.



Figs. 117-122. Everted internal sacs of males. (Fig. 121, right view; remainder left view). (117) *A. pueli*. (118) *A. binotatus*. (119) *A. karennius*. (120) *A. tricuspidatus*. (121) *A. agricola*. (122) *A. pseudagircola*.



Figs. 123-128. Everted internal sacs of males, left view. (In Figs. 123 & 125 dashed lines indicate fields of macrotrichia on right side.) (123) *A. melanopus*. (124) *A. kirbyi*. (125) *A. nigrita*. (126) *A. californicus*. (127) *A. similis*. (128) *A. furvus*.



Figs. 129-132. Everted internal sacs of males (Figs. 129-130, left view; Figs. 131-132, right view). (129) *A. nigerrimus* (dashed lines indicate fields of macrotrichia on right side). (130) *A. loedingi*. (131) *A. carbonarius*. (132) *A. harrisii*.

Fig. 133. Right valvifer of female genitalia. (133) *A. heros*.

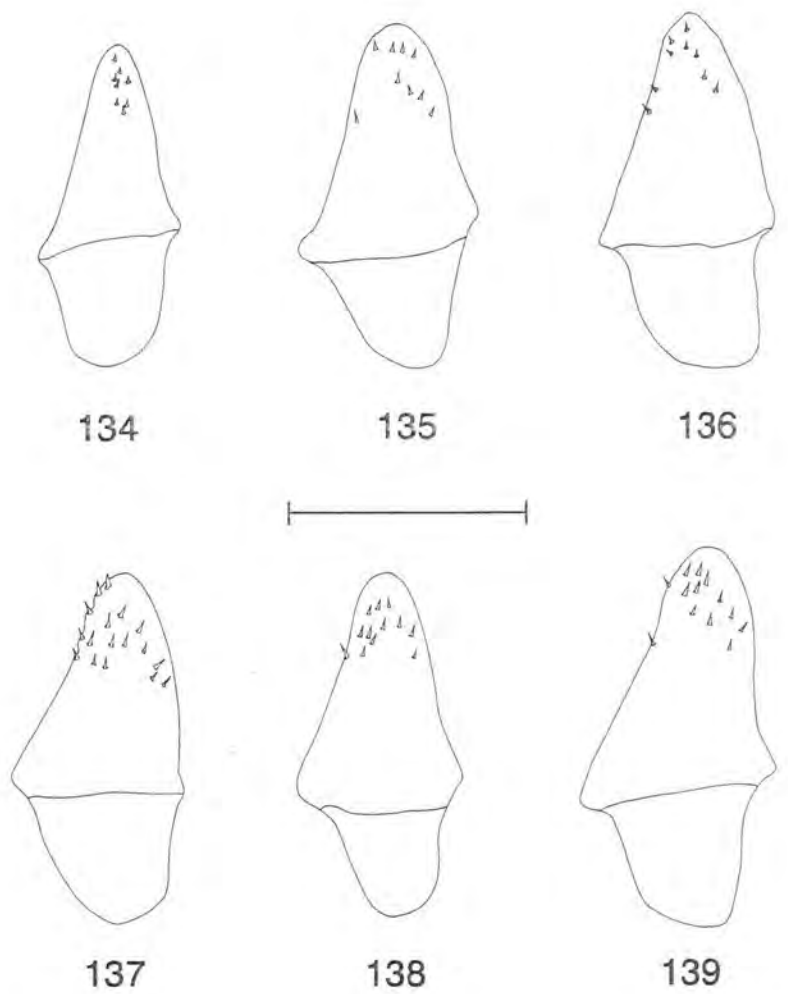
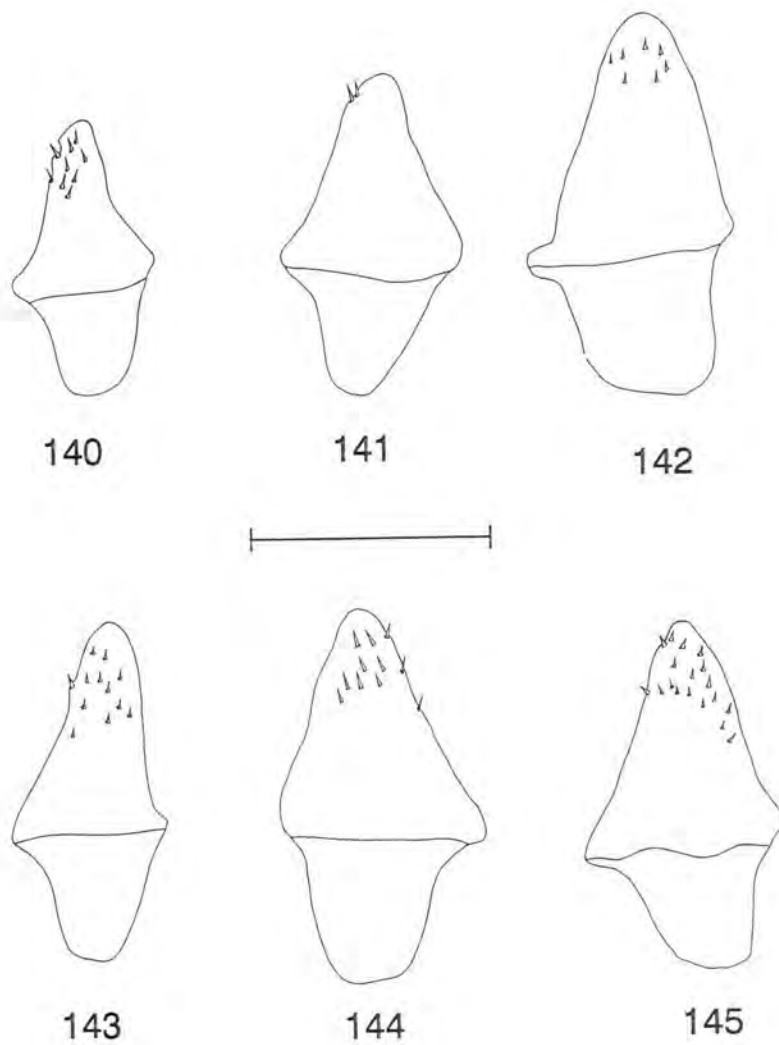


Fig. 134-139. Right valvifers of female genitalia. (134) *A. nemorivagus*. (135) *A. consobrinus*. (136) *A. hispanus*. (137) *A. pueli*. (138) *A. binotatus*. (139) *A. antoinei*.



Figs. 140-145. Right valvifers of female genitalia. (140) *A. karennius*. (141) *A. tricuspидatus*. (142) *A. agricola*. (143) *A. pseudagricola*. (144) *A. melanopus*. (145) *A. kirbyi*.



146



147



148



149

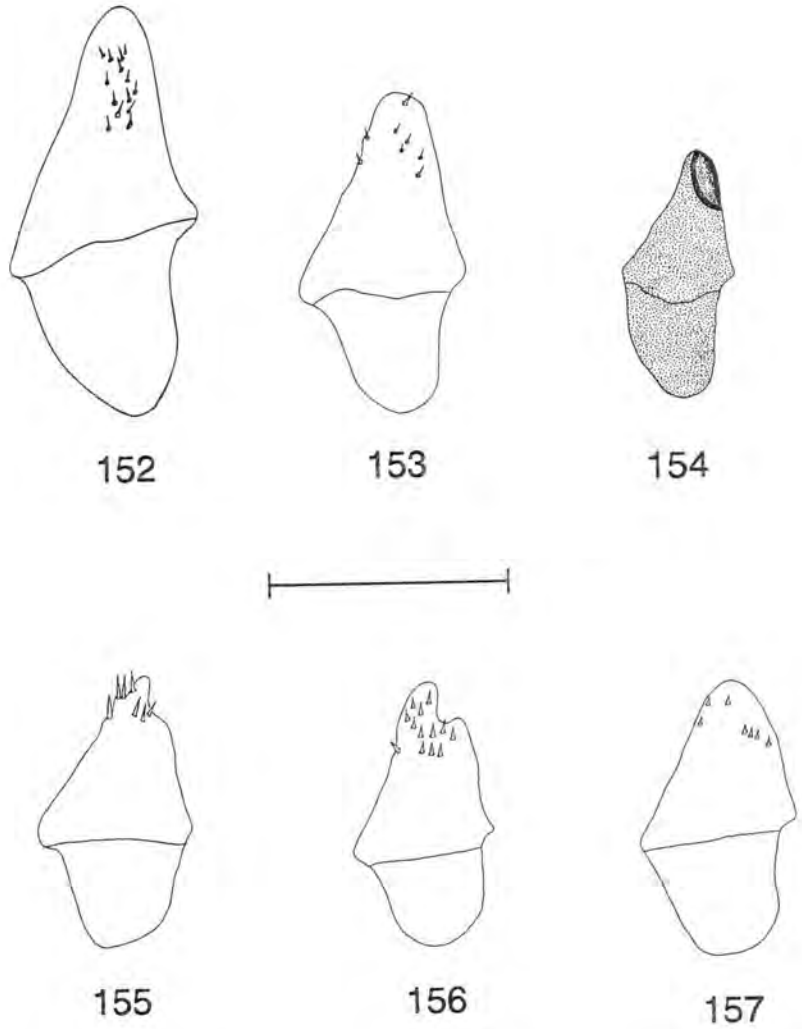


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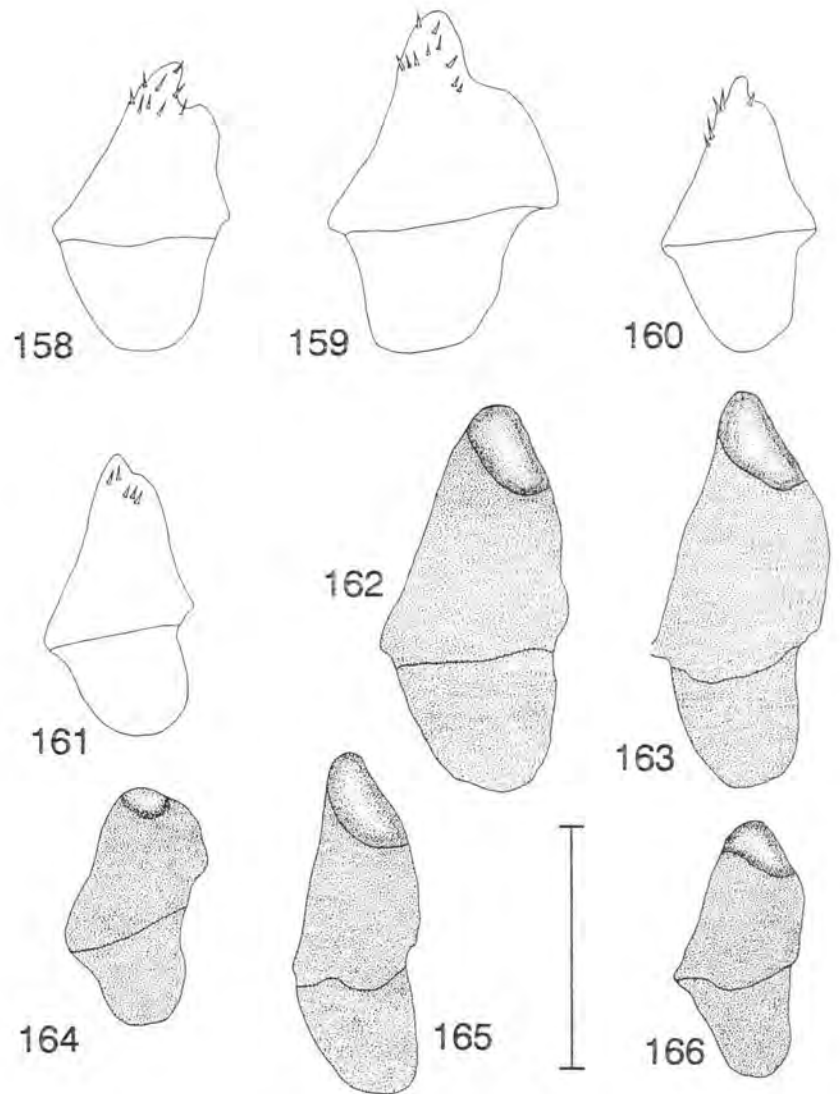


151

Figs. 146-151. Right valvifers of female genitalia. (146) *A. nigrita*. (147) *A. californicus*. (148) *A. similis*. (149) *A. furvus*. (150) *A. nigerrimus*. (151) *A. loedingi*.

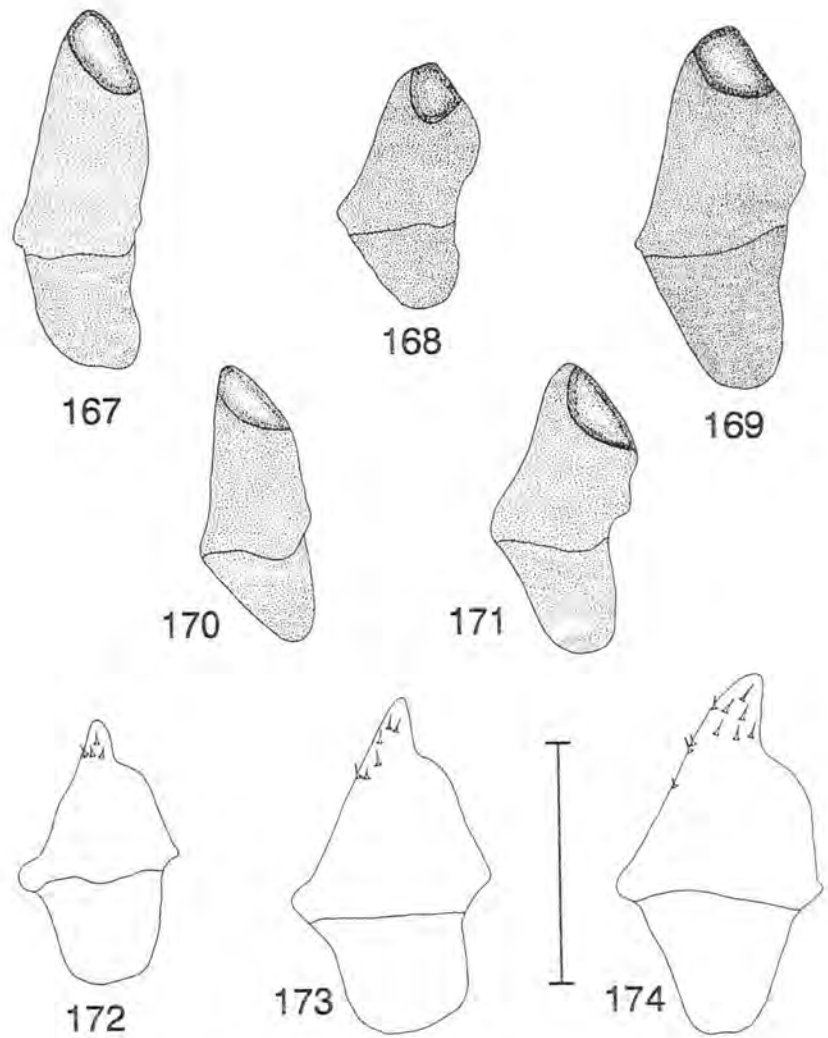


Figs. 152-157. Right valvifers of female genitalia. (152) *A. carbonarius*. (153) *A. harrisii*. (154) *A. (Pseudaplocentrus) laetus*. (155) *A. (Anadaptes) discoideus*. (156) *A. (Anadaptes) nivalis*. (157) *A. (Anadaptes) ptychrous*.



Figs. 158-161. Right valvifers of female genitalia of subgenus *Anadaptus*. (158) *A. porosus*. (159) *A. rotundangulus*. (160) *A. sanctaecrucis*. (161) *A. viridescens*.

Figs. 162-166. Right valvifers of female genitalia of subgenus *Gynandrotarsus*. (162) *A. anthracinus*. (163) *A. darlingtoni*. (164) *A. dulcicollis*. (165) *A. haplomis*. (166) *A. harpaloides*.



Figs. 167-171. Right valvifers of female genitalia of subgenus *Gynandrotarsus*. (167) *A. merula*. (168) *A. opaculus*. (169) *A. ovularis*. (170) *A. rusticus*. (171) *A. texanus*.

Figs. 172-174. Right valvifers of female genitalia of subgenus *Pseudanisodactylus*. (172) *A. punctatipennis*. (173) *A. sadoensis*. (174) *A. signatus*.

Fig. 175 Tarsal width ratio as related to total body length in *A. tricuspoidatus*

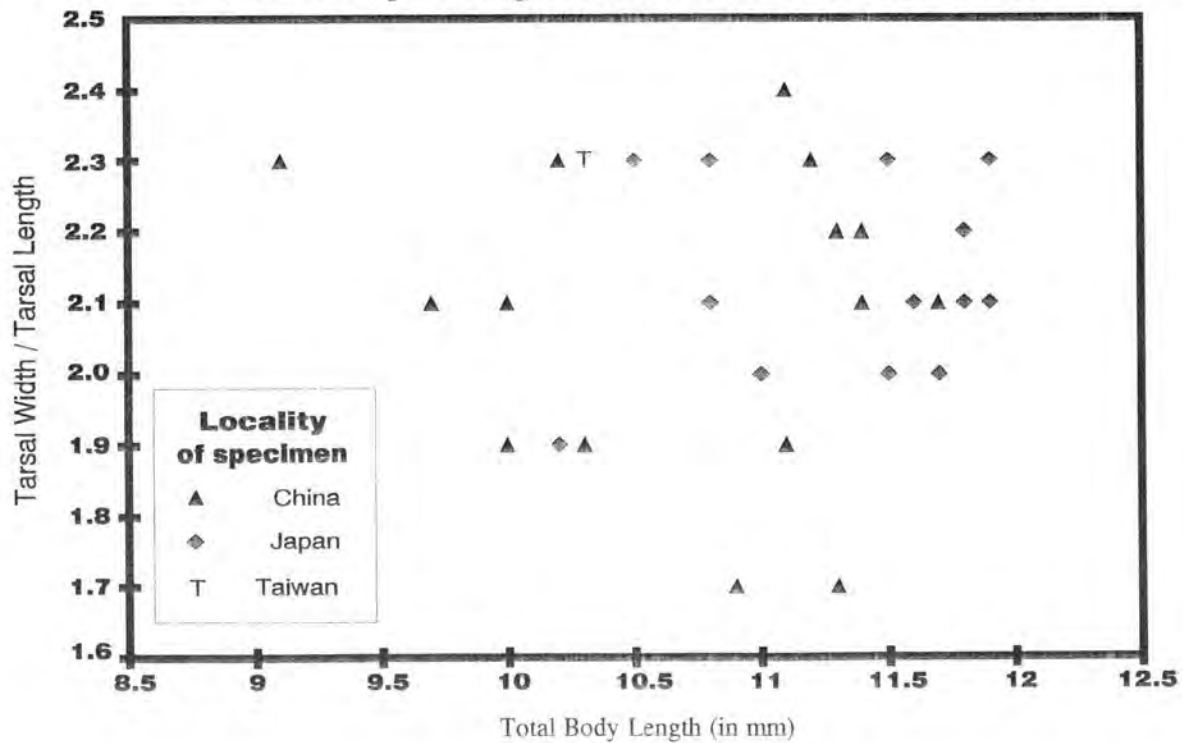
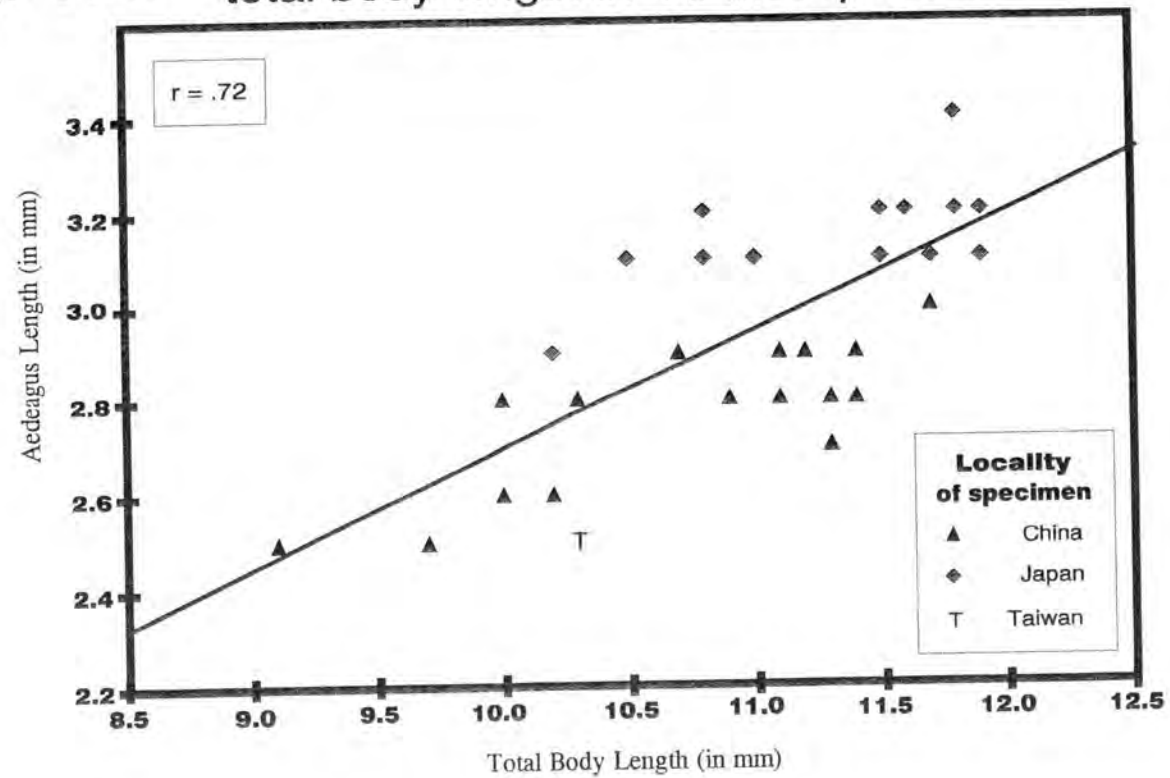
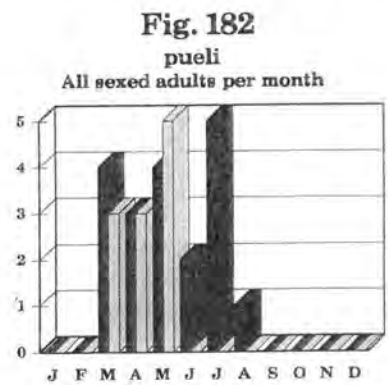
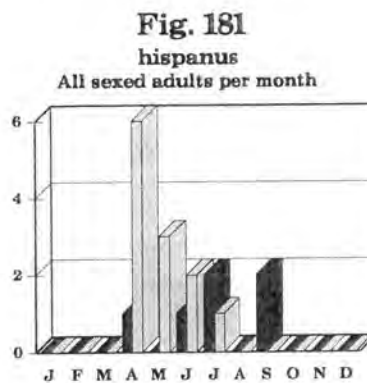
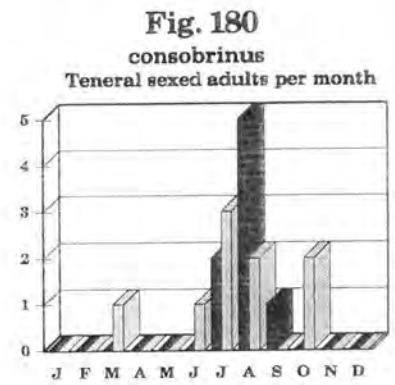
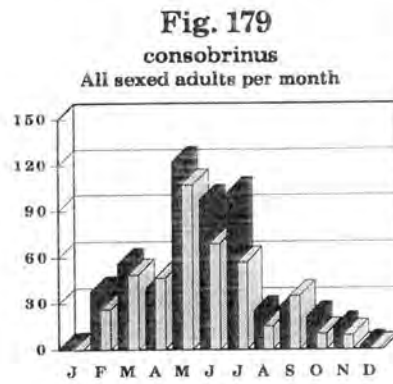
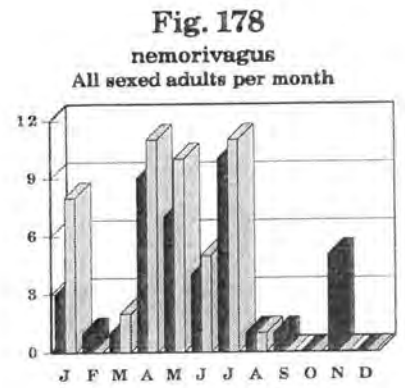
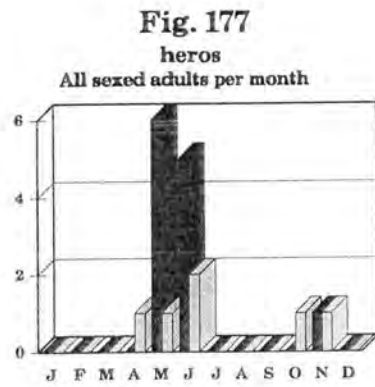


Fig. 176 Aedeagus length as related to total body length in *A. tricuspидatus*





Figs.177-182. Captures of adult males (solid bars) and females (stippled bars) of *Anisodactylus* spp. per month; see text for analysis.

Fig. 183
binotatus

All sexed adults per month

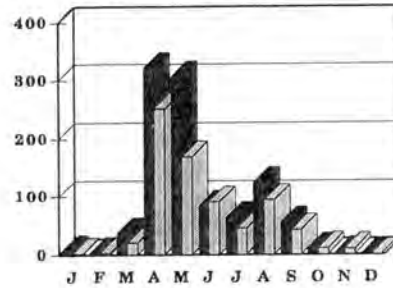


Fig. 184
binotatus

Teneral sexed adults per month

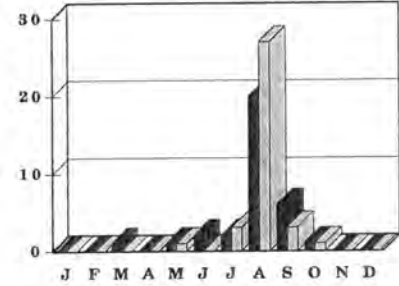


Fig. 185
binotatus

All sexed adults per month/Palaeartic

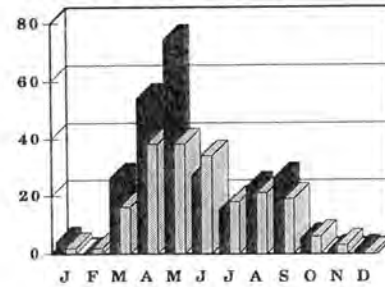


Fig. 186
binotatus

Teneral sexed adults per month/Palaeartic

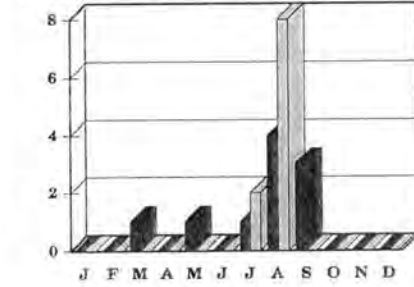


Fig. 187
binotatus

All sexed adults per month/Nearctic

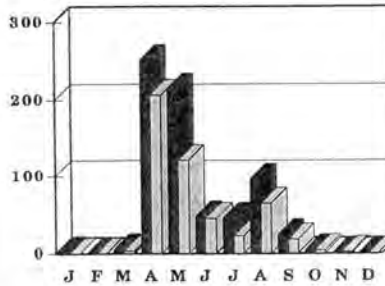
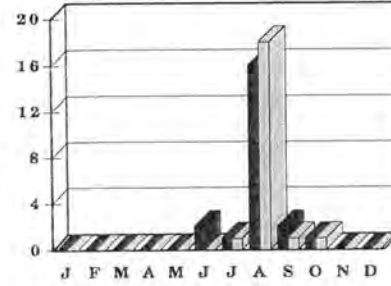
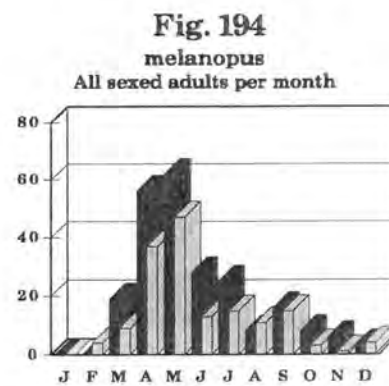
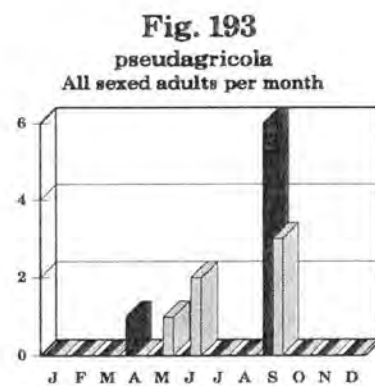
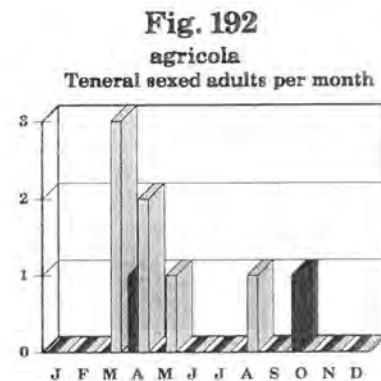
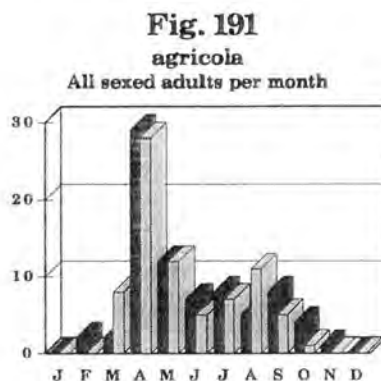
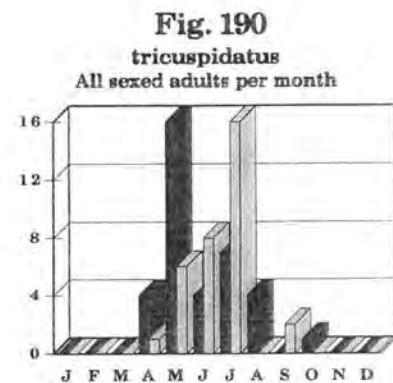
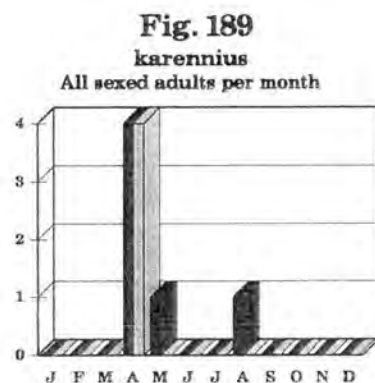


Fig. 188
binotatus

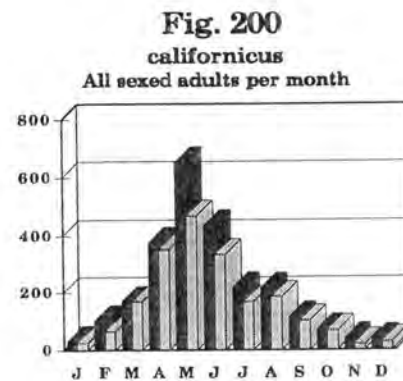
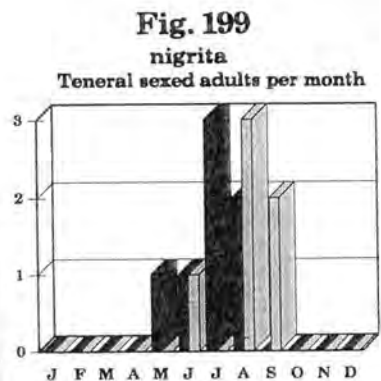
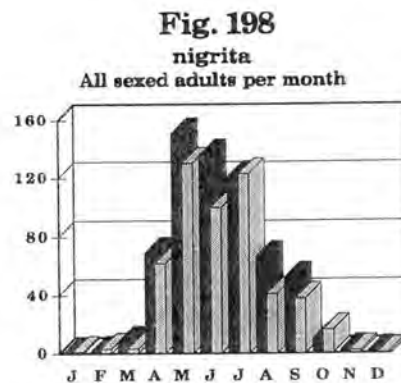
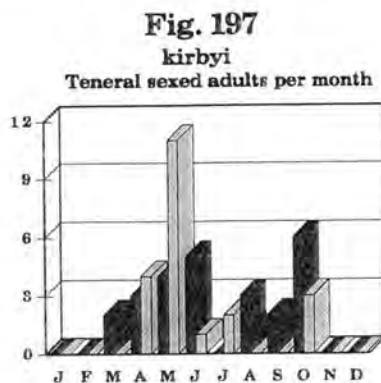
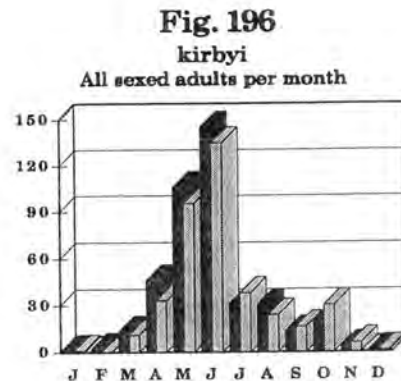
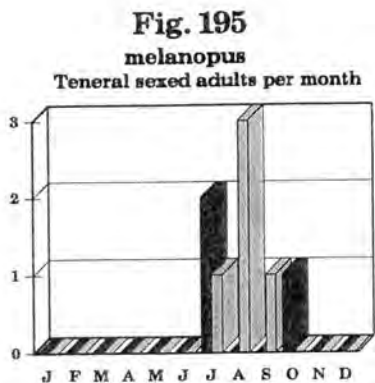
Teneral sexed adults per month/Nearctic



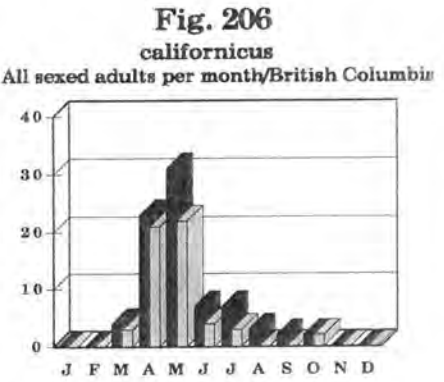
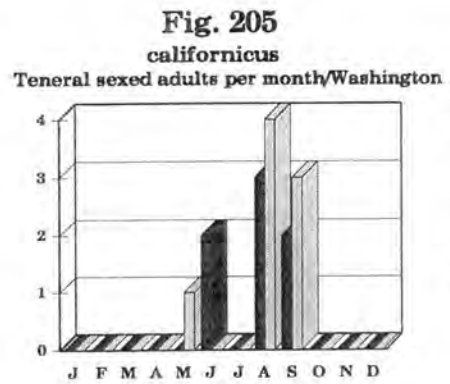
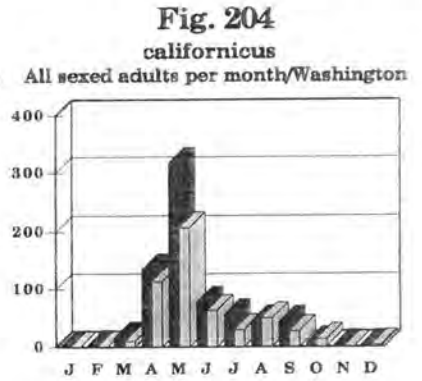
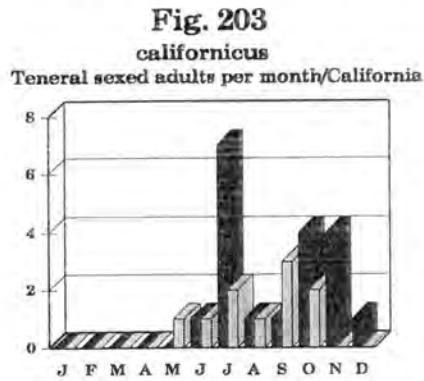
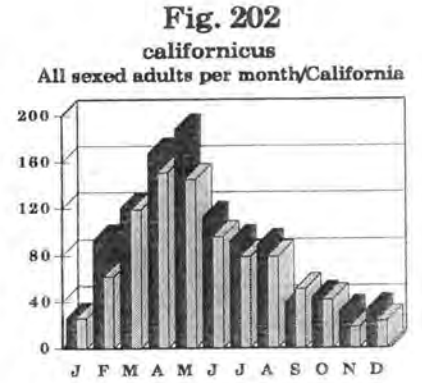
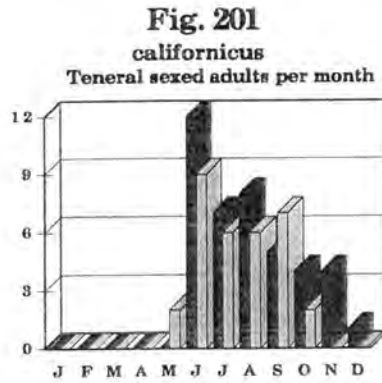
Figs. 183-188. Captures of adult males (solid bars) and females (stippled bars) of *Anisodactylus* spp. per month; see text for analysis.



Figs. 189-194. Captures of adult males (solid bars) and females (stippled bars) of *Anisodactylus* spp. per month; see text for analysis.



Figs. 195-200. Captures of adult males (solid bars) and females (stippled bars) of *Anisodactylus* spp. per month; see text for analysis.



Figs. 201-206. Captures of adult males (solid bars) and females (stippled bars) of *Anisodactylus* spp. per month; see text for analysis

Fig. 207

similis
All sexed adults per month

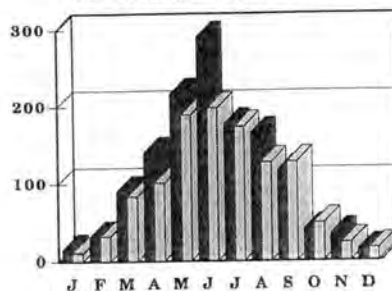


Fig. 208

similis
Teneral sexed adults per month

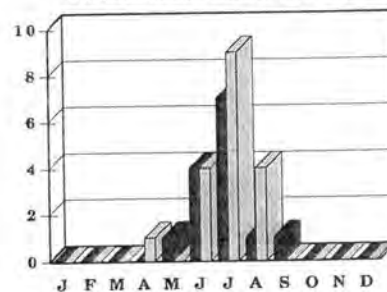


Fig. 209

similis
All sexed adults per month/British Columbia

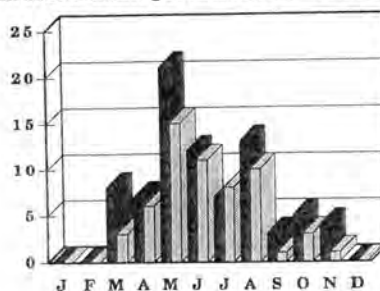


Fig. 210

similis
All sexed adults per month/California

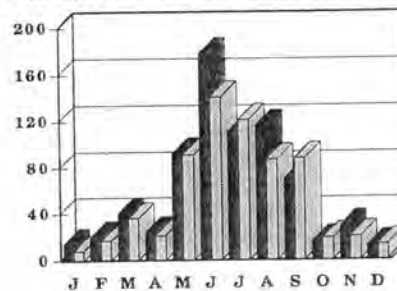


Fig. 211

similis
Teneral sexed adults per month/California

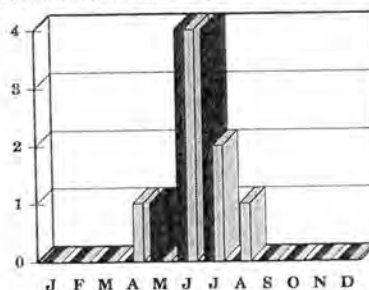


Fig. 212

similis
All sexed adults per month/Washington



Figs. 207-212. Captures of adult males (solid bars) and females (stippled bars) of *Anisodactylus* spp. per month; see text for analysis.

Fig. 213
similis
 Teneral sexed adults per month/Washington

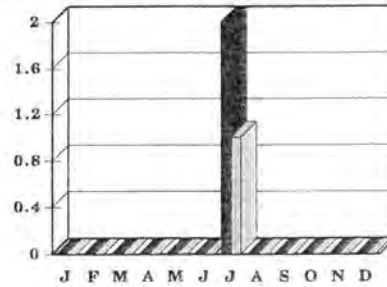


Fig. 214
furvus
 All sexed adults per month

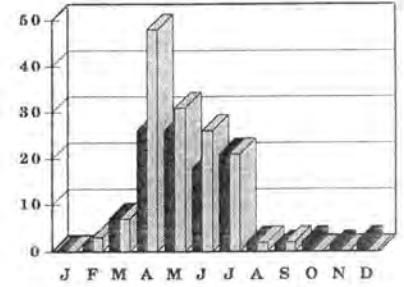


Fig. 215
furvus
 Teneral sexed adults per month

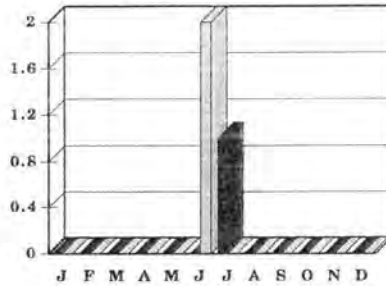


Fig. 216
nigerrimus
 All sexed adults per month

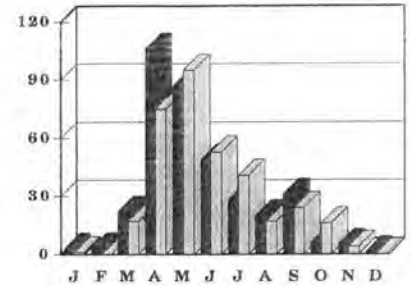


Fig. 217
nigerrimus
 Teneral sexed adults per month

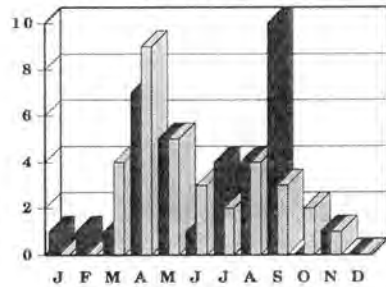
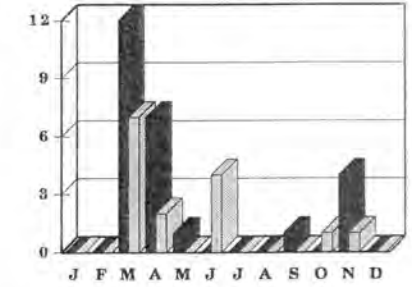


Fig. 218
loedingi
 All sexed adults per month



Figs. 213-218. Captures of adult males (solid bars) and females (stippled bars) of *Anisodactylus* spp. per month; see text for analysis.

Fig. 219
carbonarius
 All sexed adults per month



Fig. 220
carbonarius
 Teneral sexed adults per month

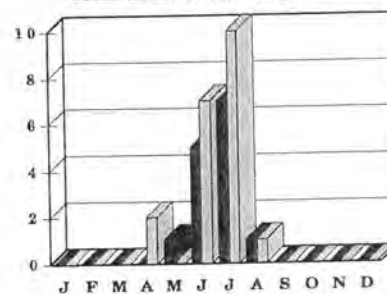


Fig. 221
harrisii
 All sexed adults per month

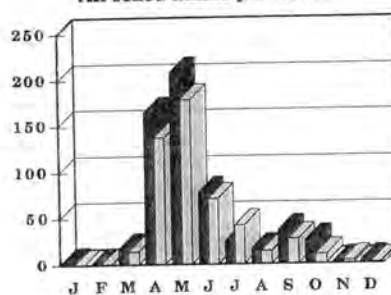
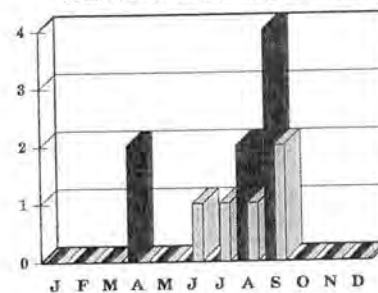
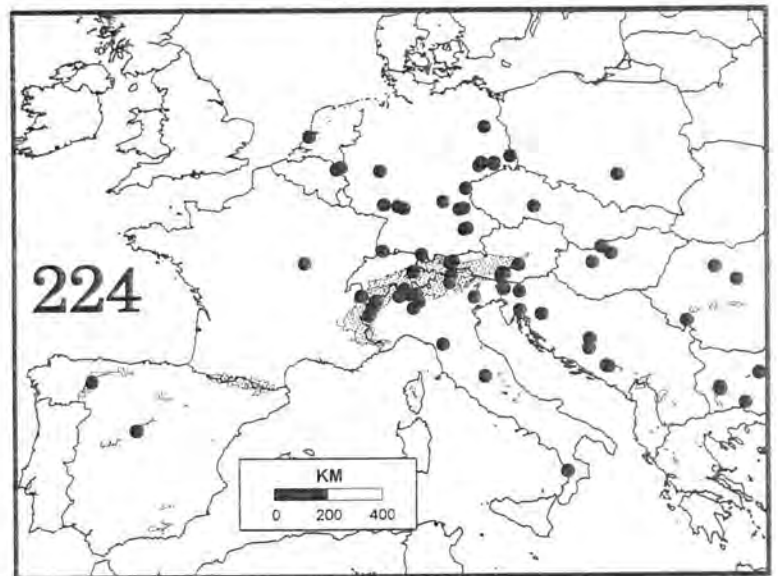
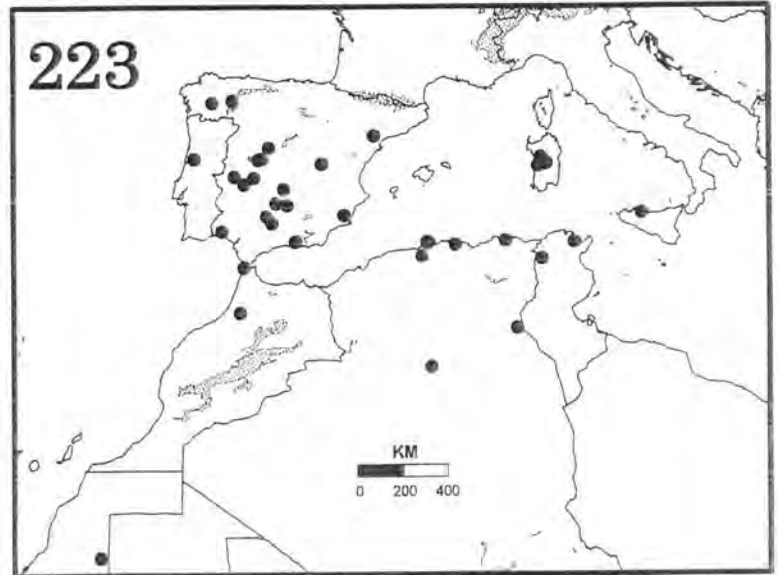


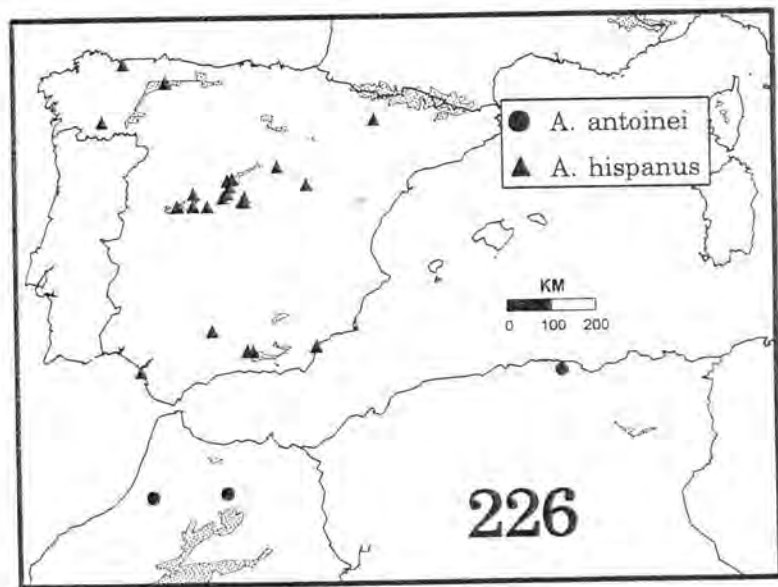
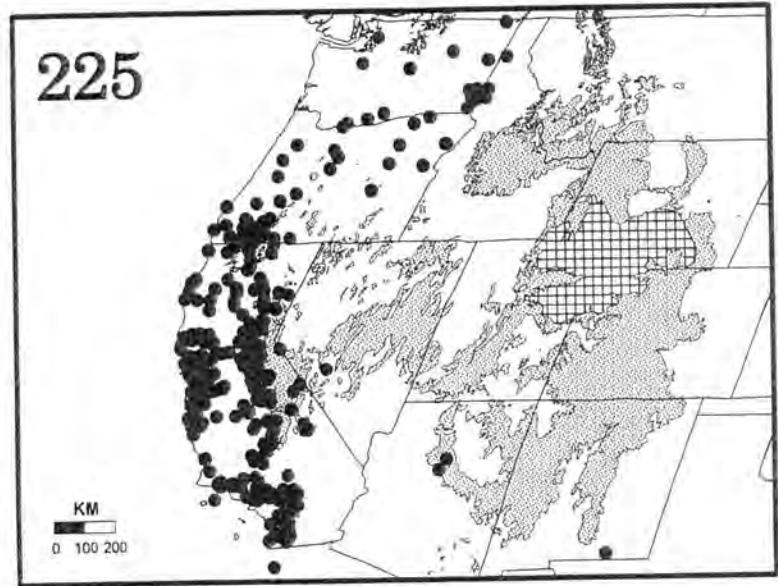
Fig. 222
harrisii
 Teneral sexed adults per month



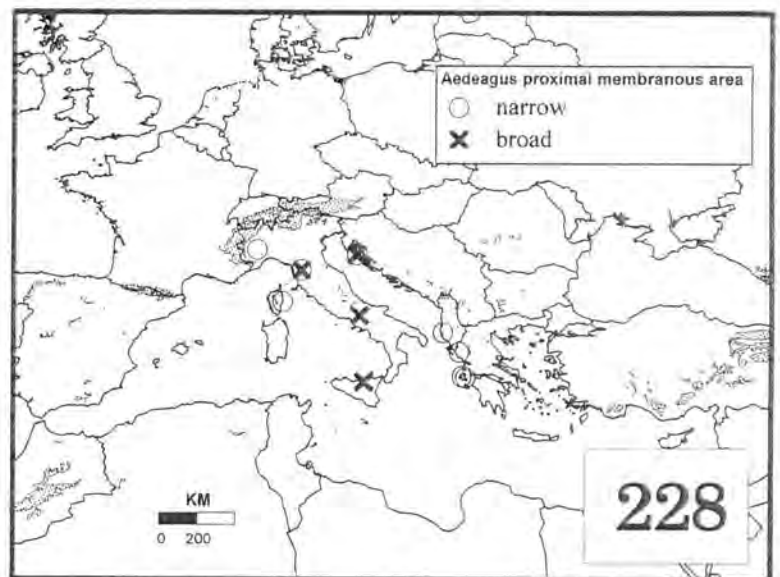
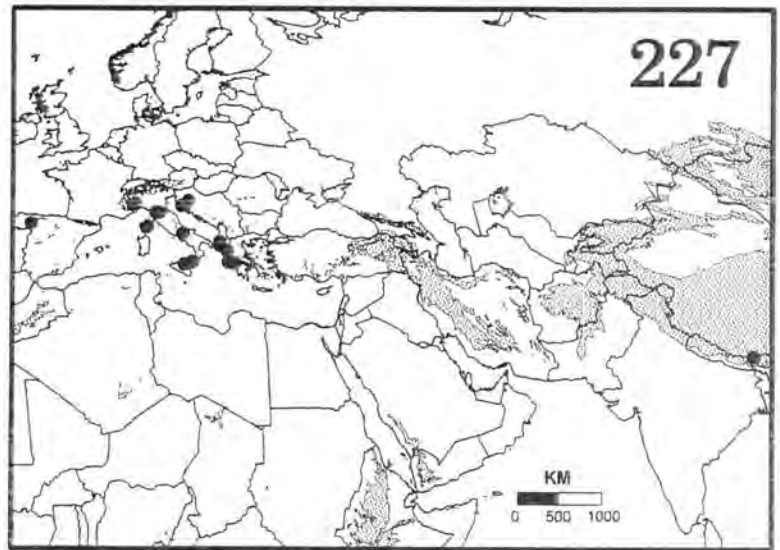
Figs. 219-222. Captures of adult males (solid bars) and females (stippled bars) of *Anisodactylus* spp. per month; see text for analysis.



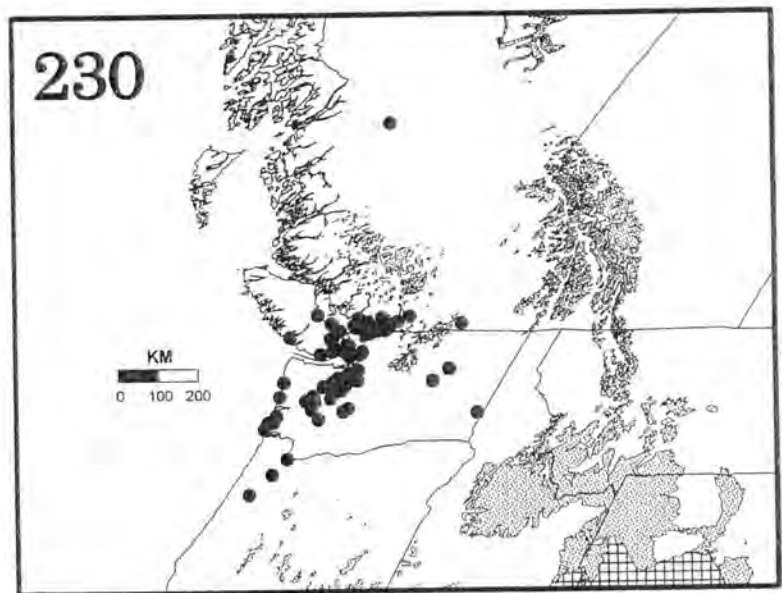
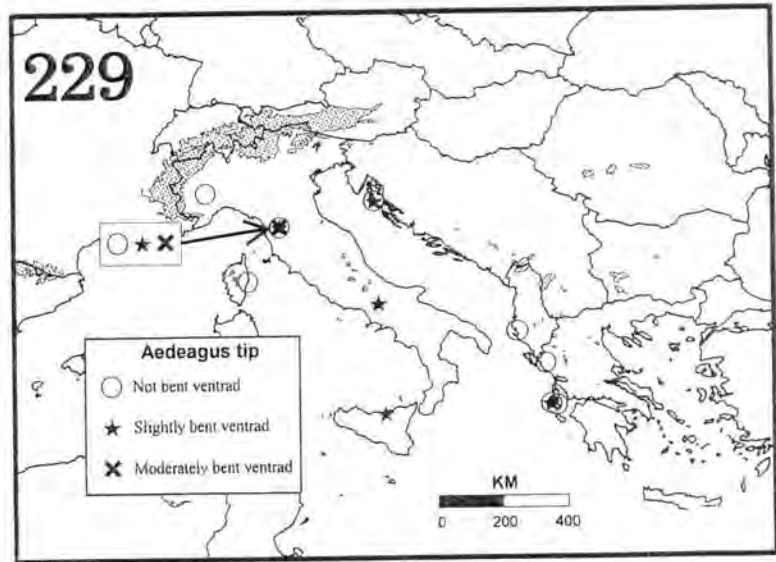
Figs. 223-224. Geographical distributions of species. (223) *A. heros*. (224) *A. nemorivagus*. (Stippling = mts. at or over 1830 m.)



Figs. 225-226. Geographical distributions of species. (225) *A. consobrinus* (Southern-most dot is in Northern Baja California). (226) *A. antoinei* & *A. hispanus*. (Stippling = mts. at or over 1830 m. Cross hatching = Wyoming Basin & other xeric basins.)



Figs. 227-228. Geographical distributions of species & geographic variation within species. (227) *A. pueli*. (228) Geographic variation in width of proximal dorsal membranous area of aedeagus of *A. pueli*. (Stippling = mts. at or over 1830 m.)



Figs. 229-230. Geographical distributions of species & geographical variation within species. (229) Geographical variation in aedeagus tip of *A. pueli*. (230) Geographical distribution in Nearctic Region of *A. binotatus*. (Stippling = mts. at or over 1830 m. Cross hatching = Wyoming Basin & other xeric basins.)

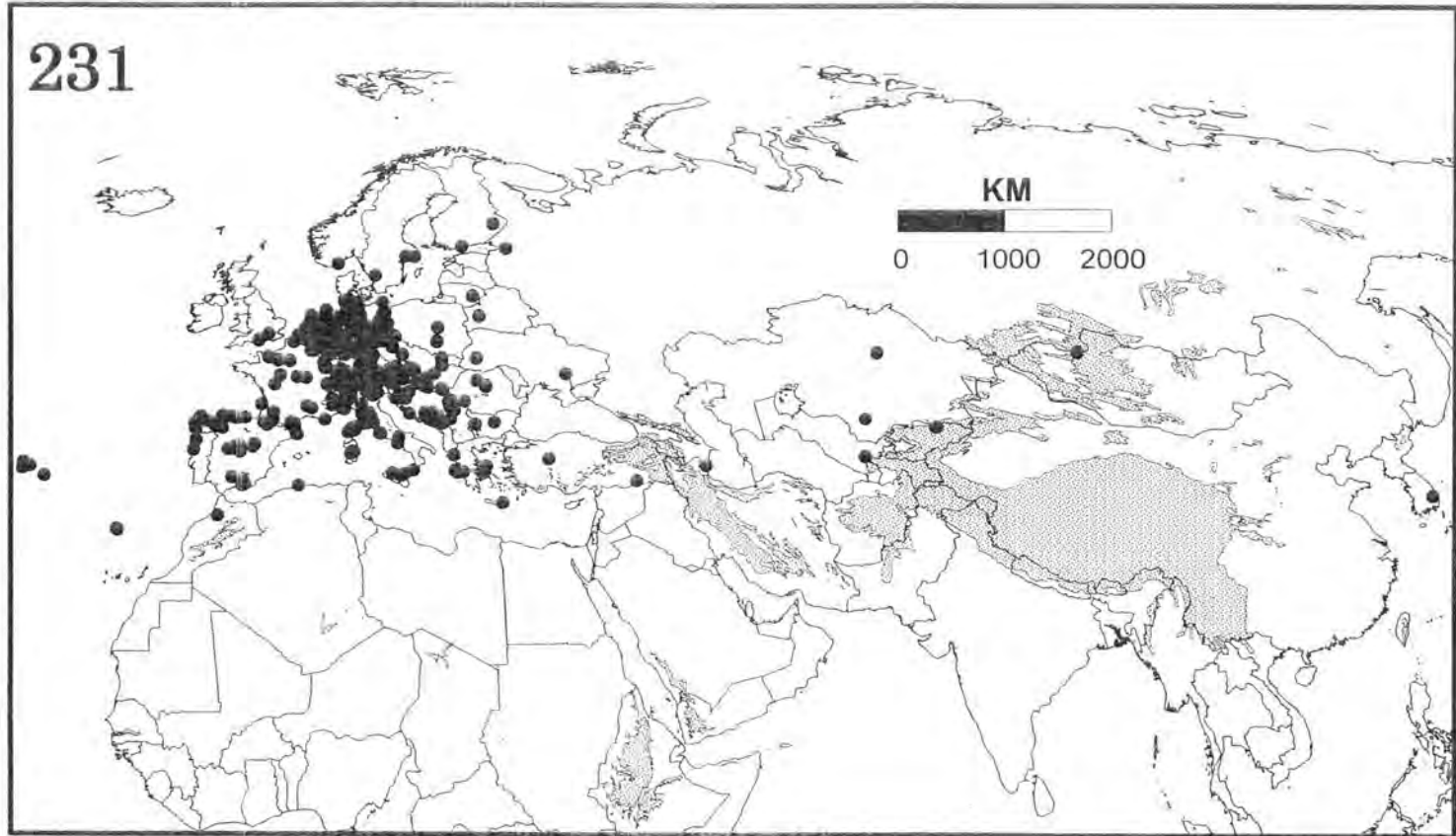


Fig. 231. Geographical distribution of *A. binotatus* in the Palearctic Region. (Stippling = mts. at or over 1830 m.)

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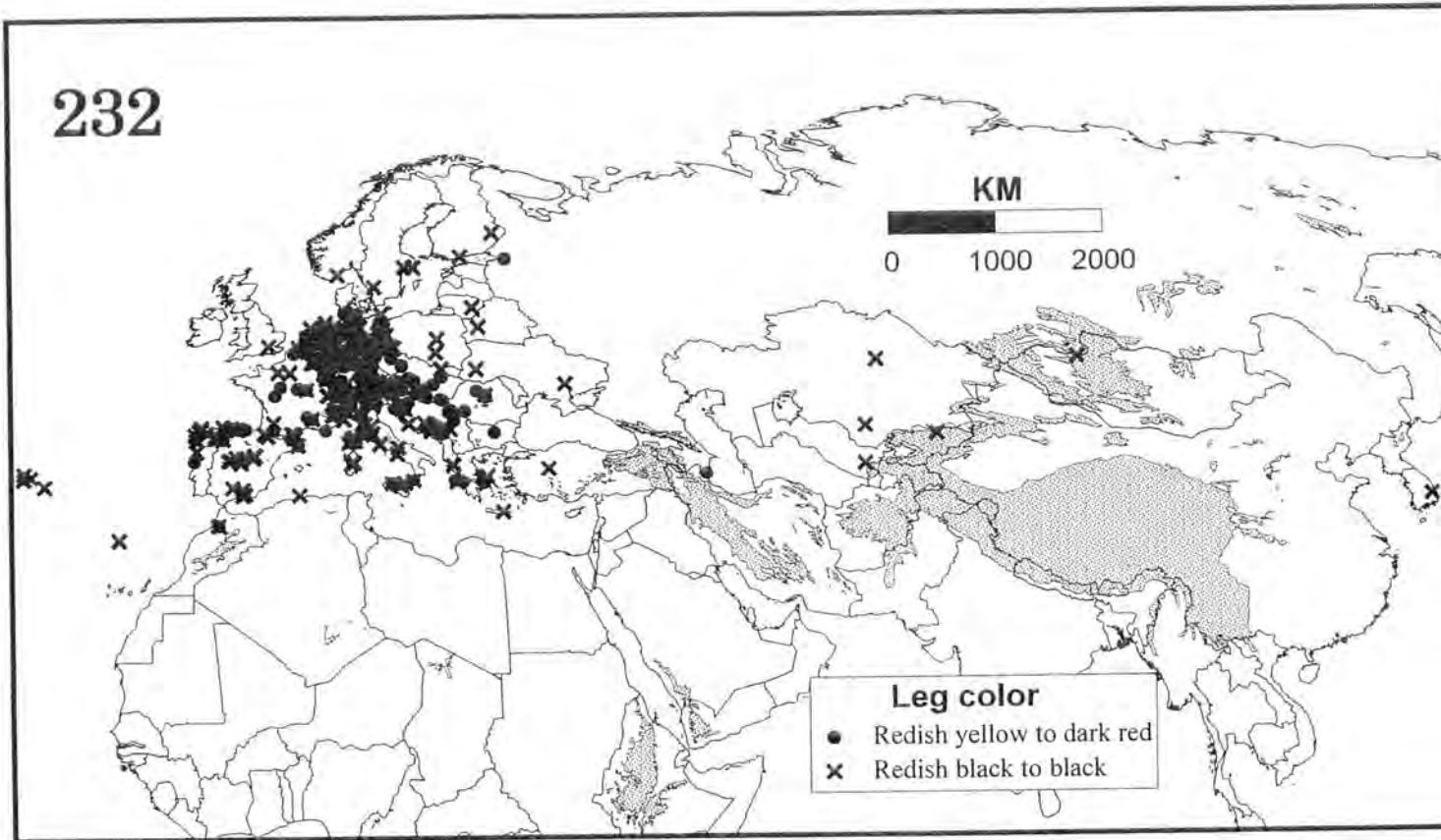


Fig. 232. Geographical distribution of leg color of *A. binotatus* in the Palearctic Region. (Stippling = mts. at or over 1830 m.)

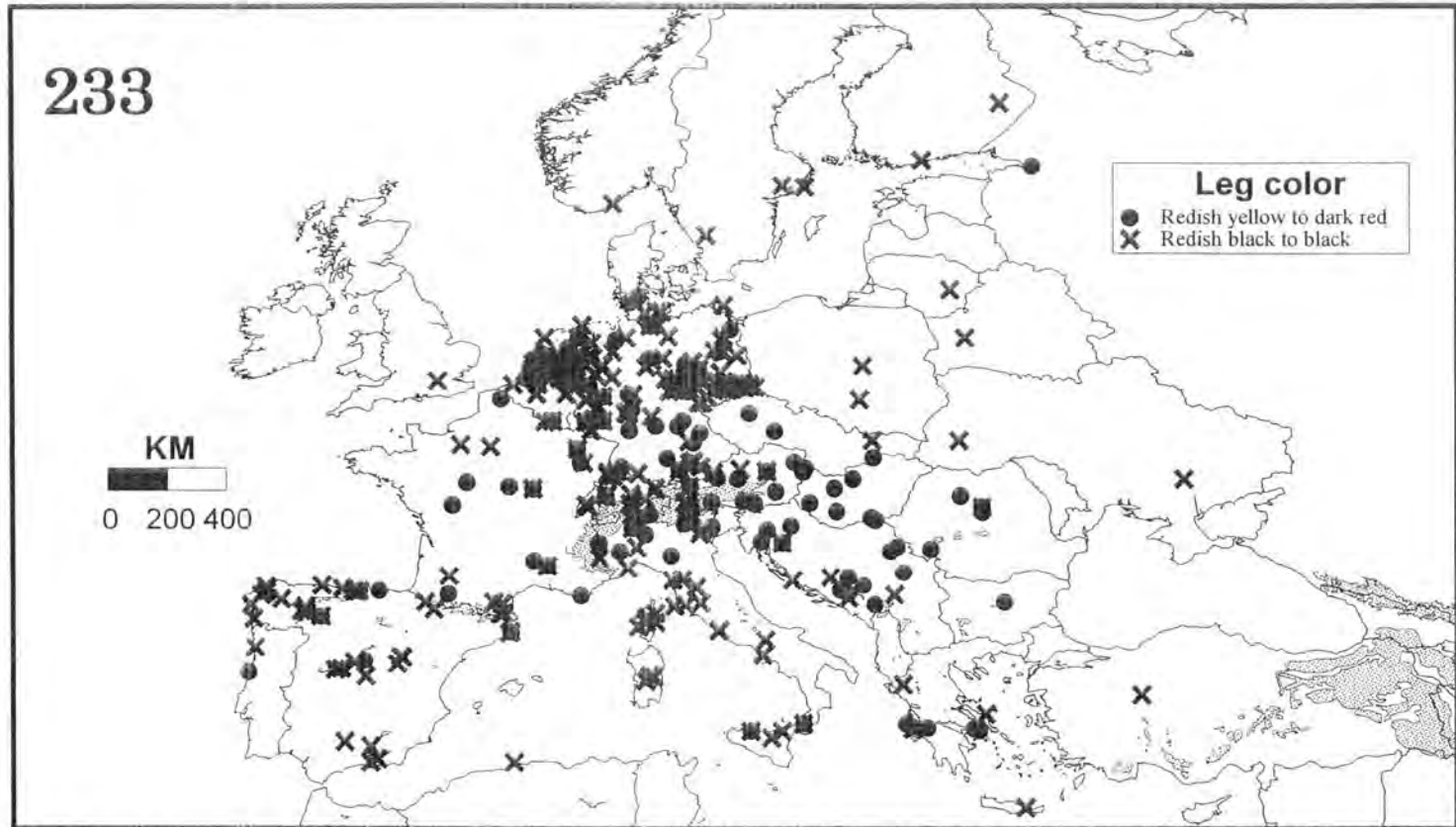
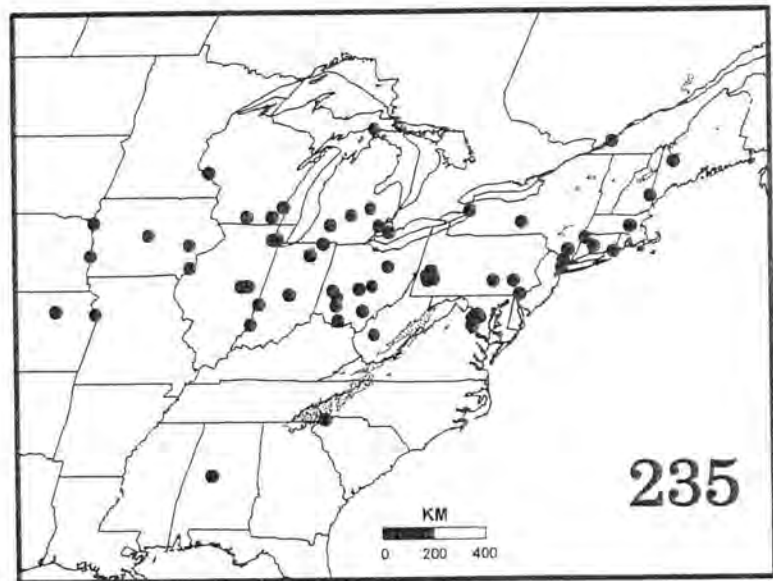
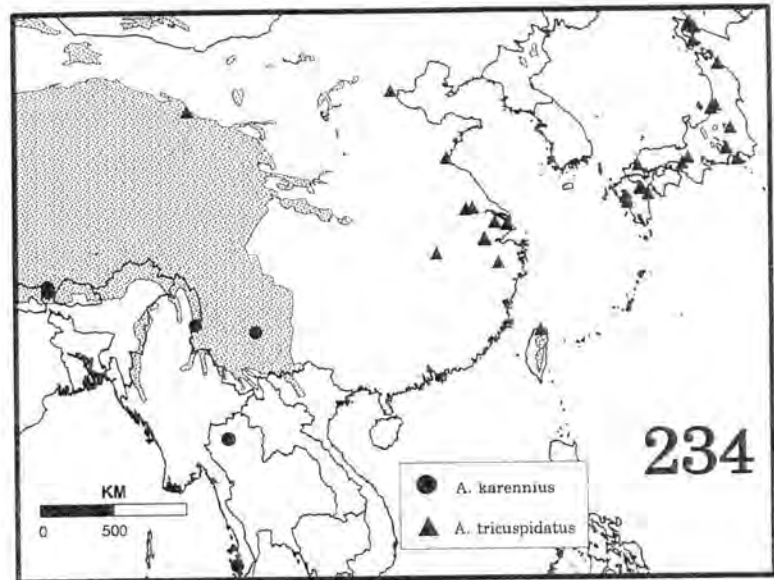
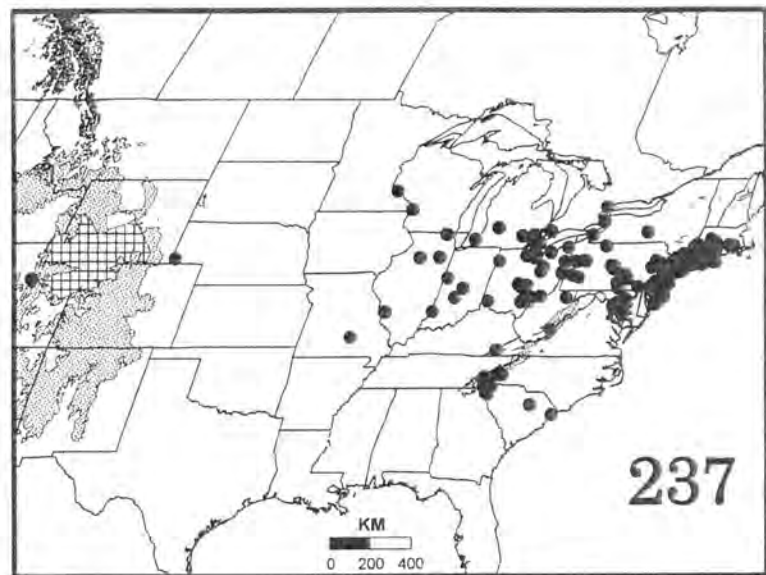
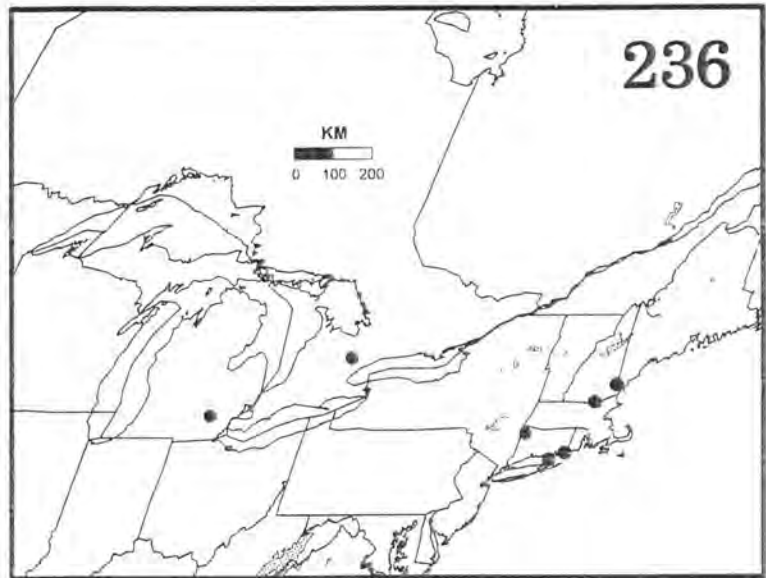


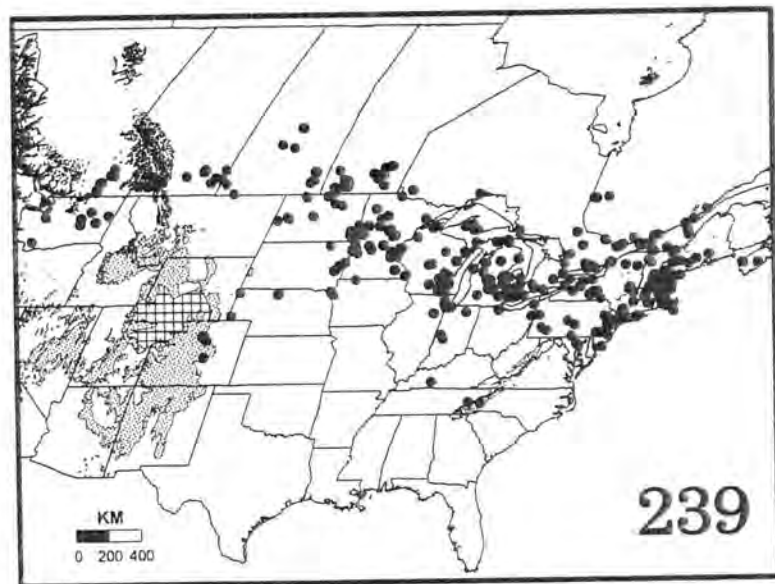
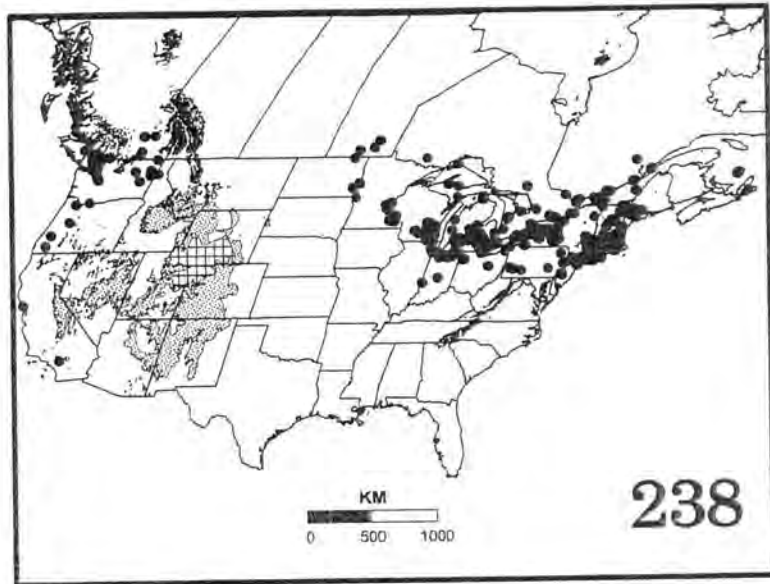
Fig. 233. Geographical distribution in Europe & adjacent areas of leg color in *A. binotatus*. (Stippling = mts. at or over 1830 m.)



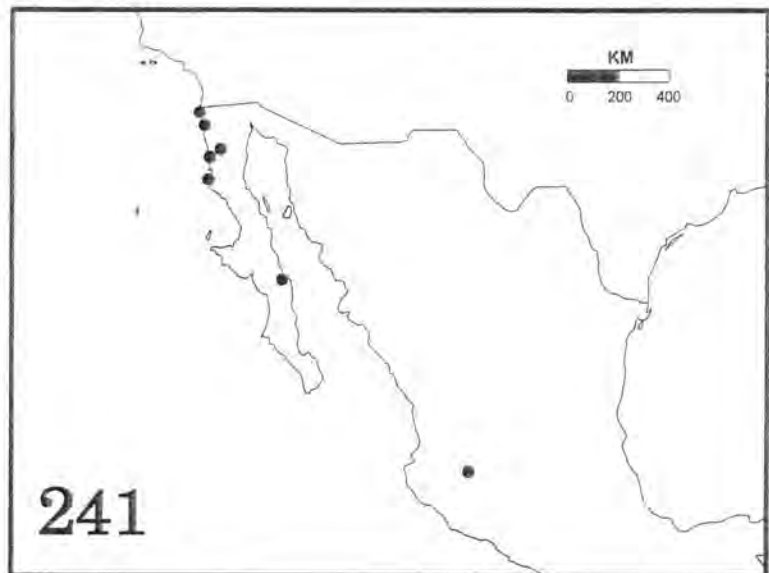
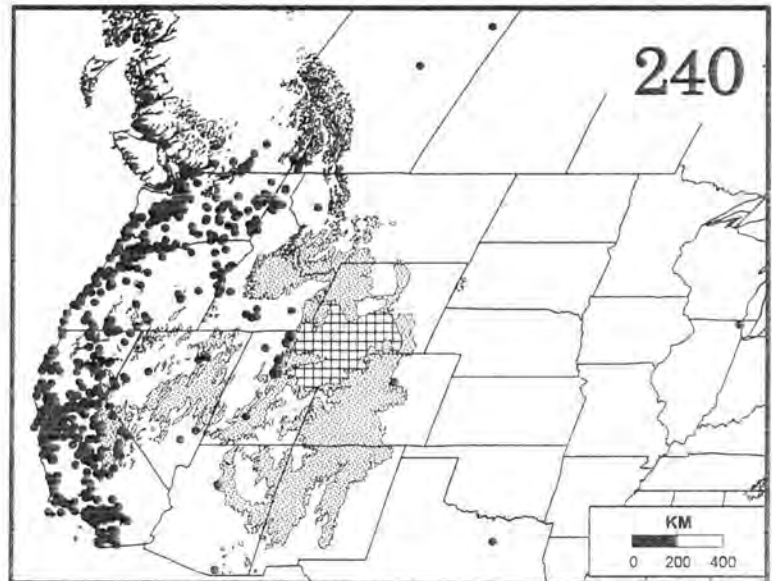
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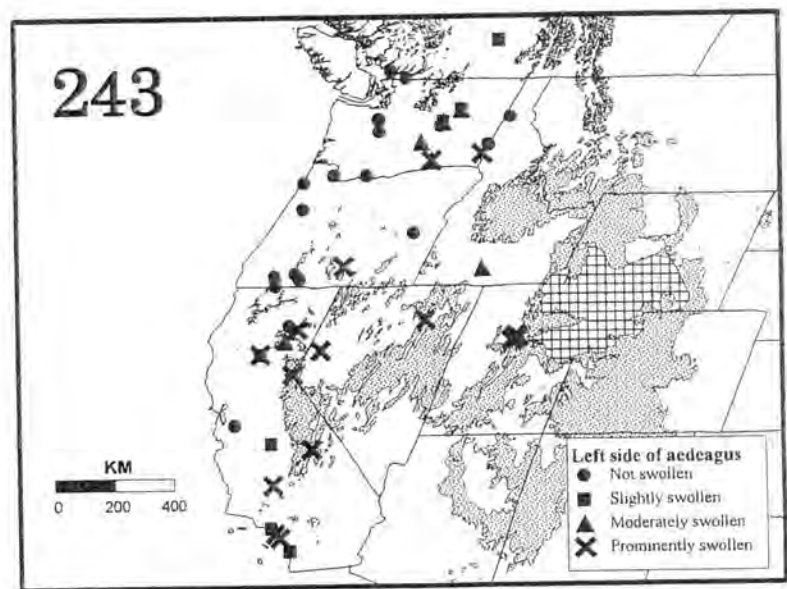
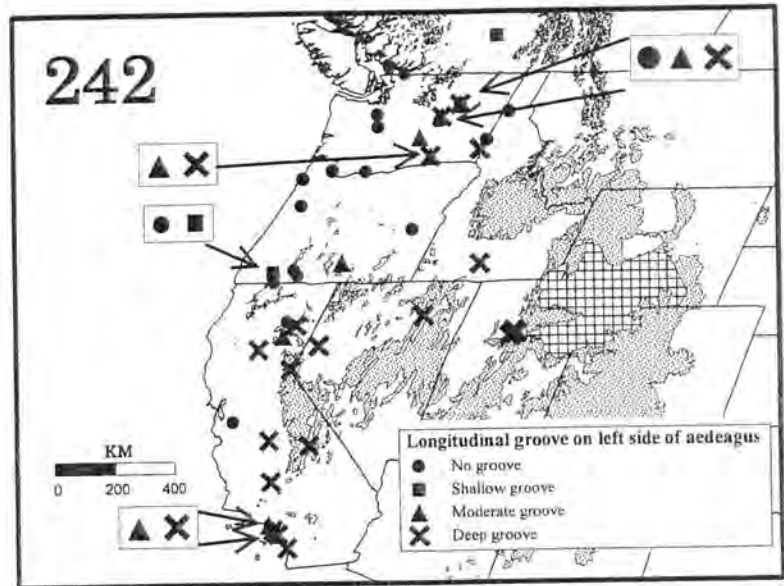
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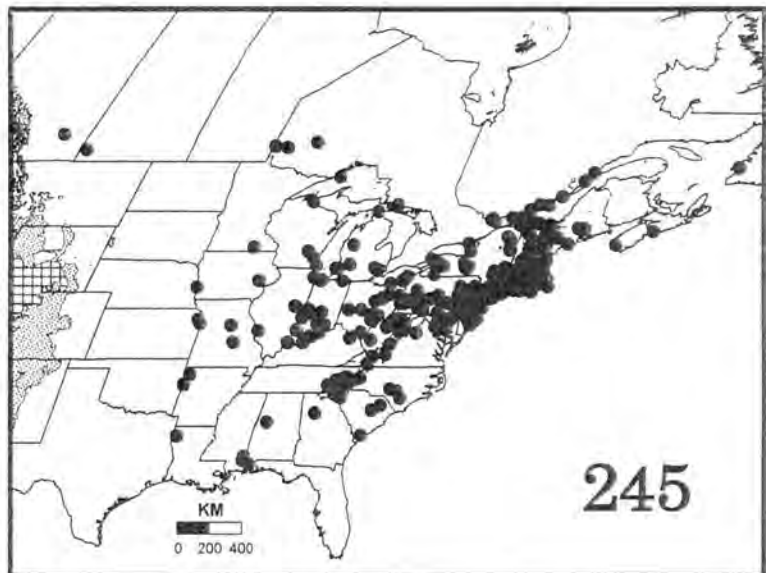
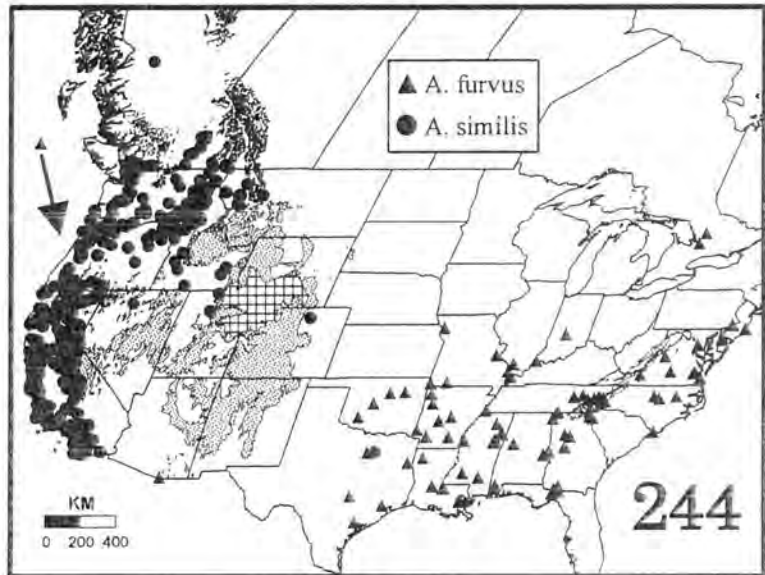
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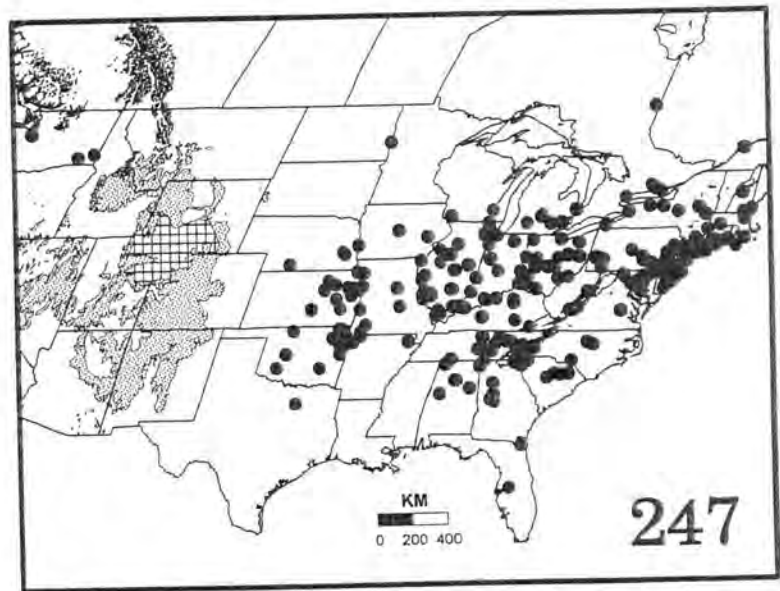
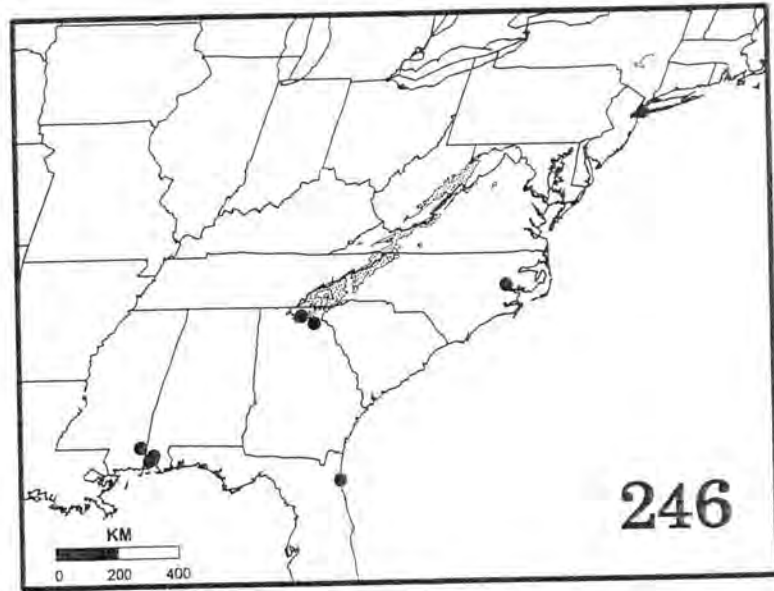
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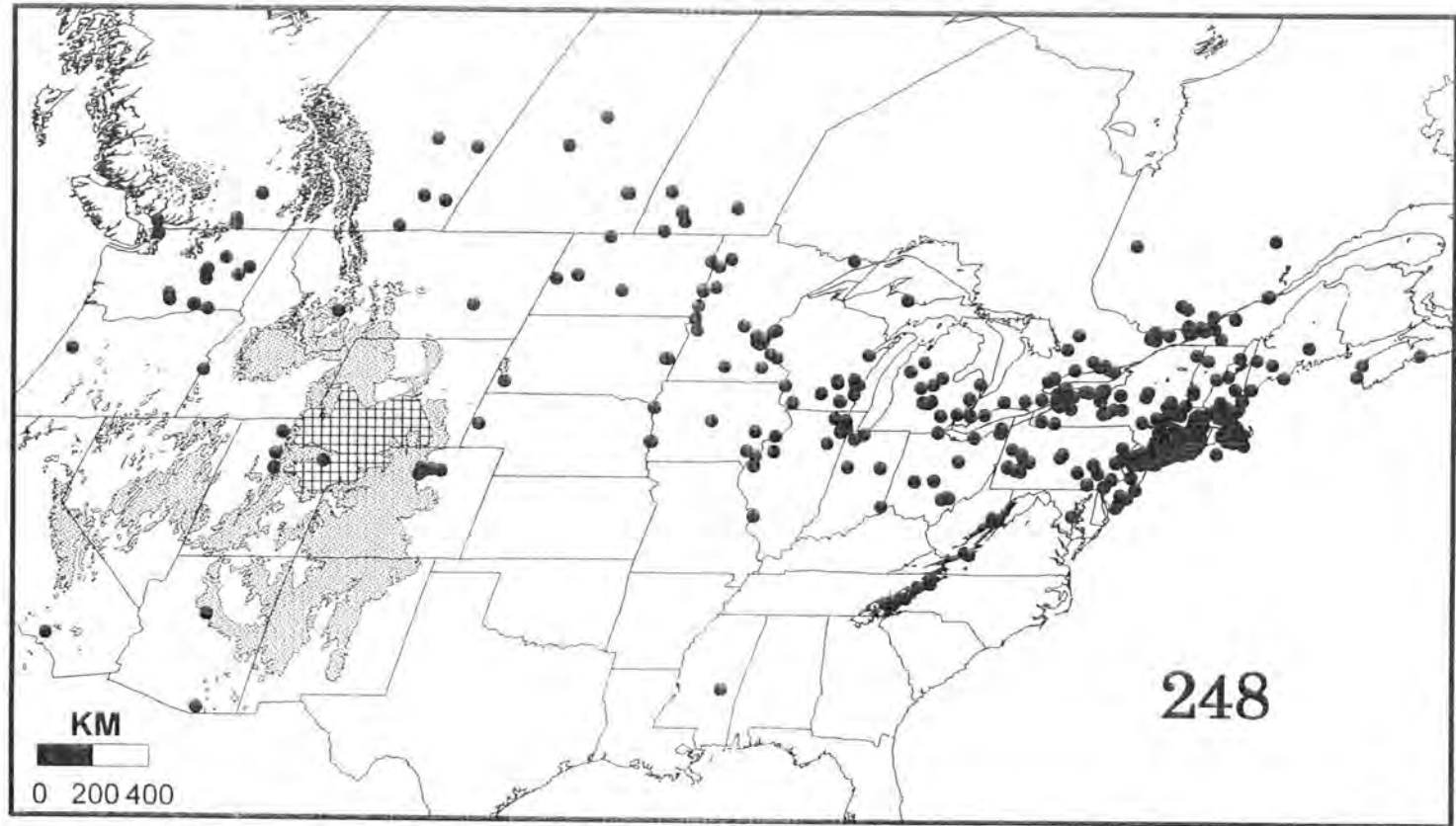
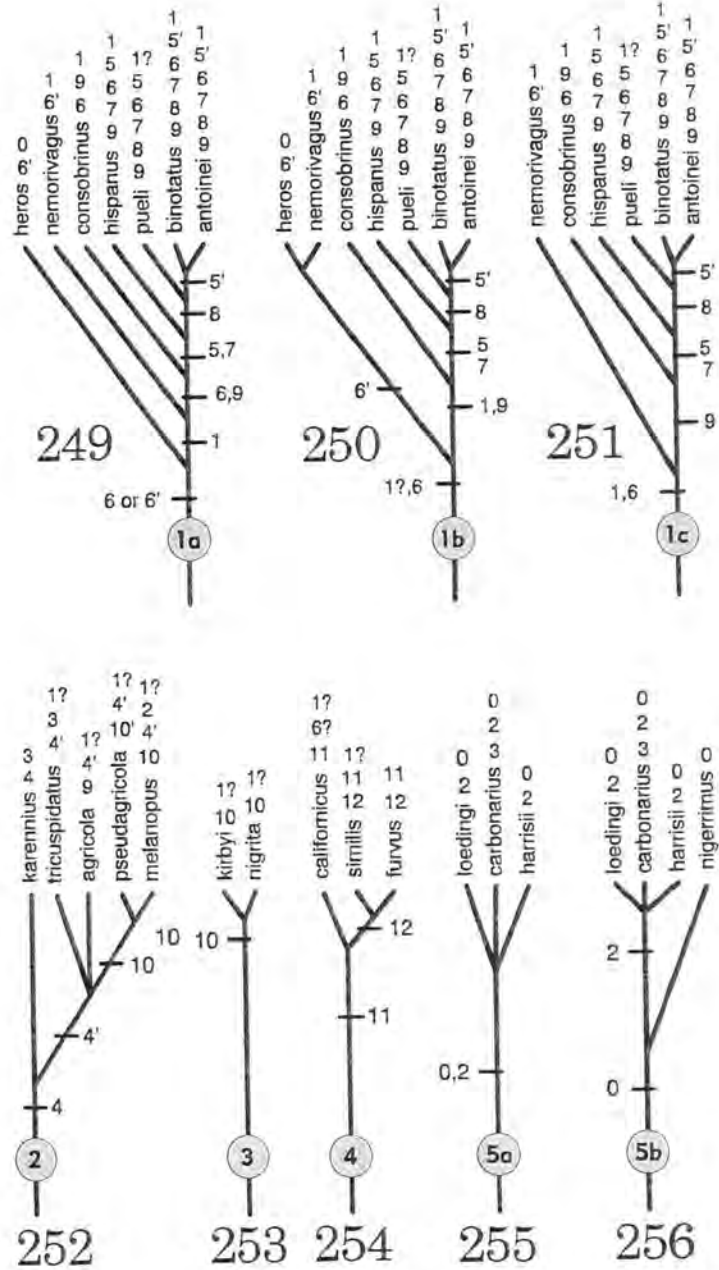


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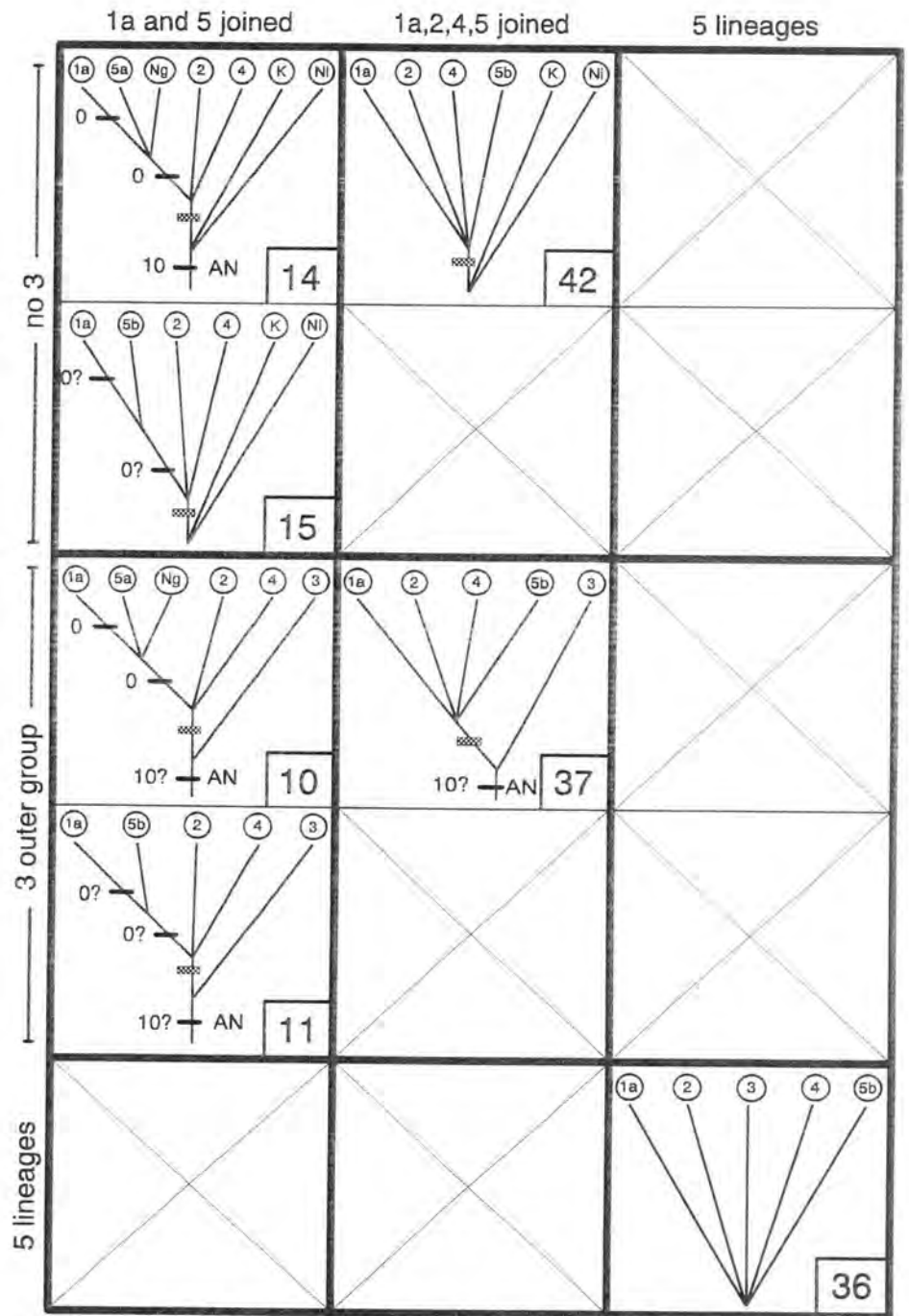


Fig. 257. Cladograms shown as components. See text for explanation.

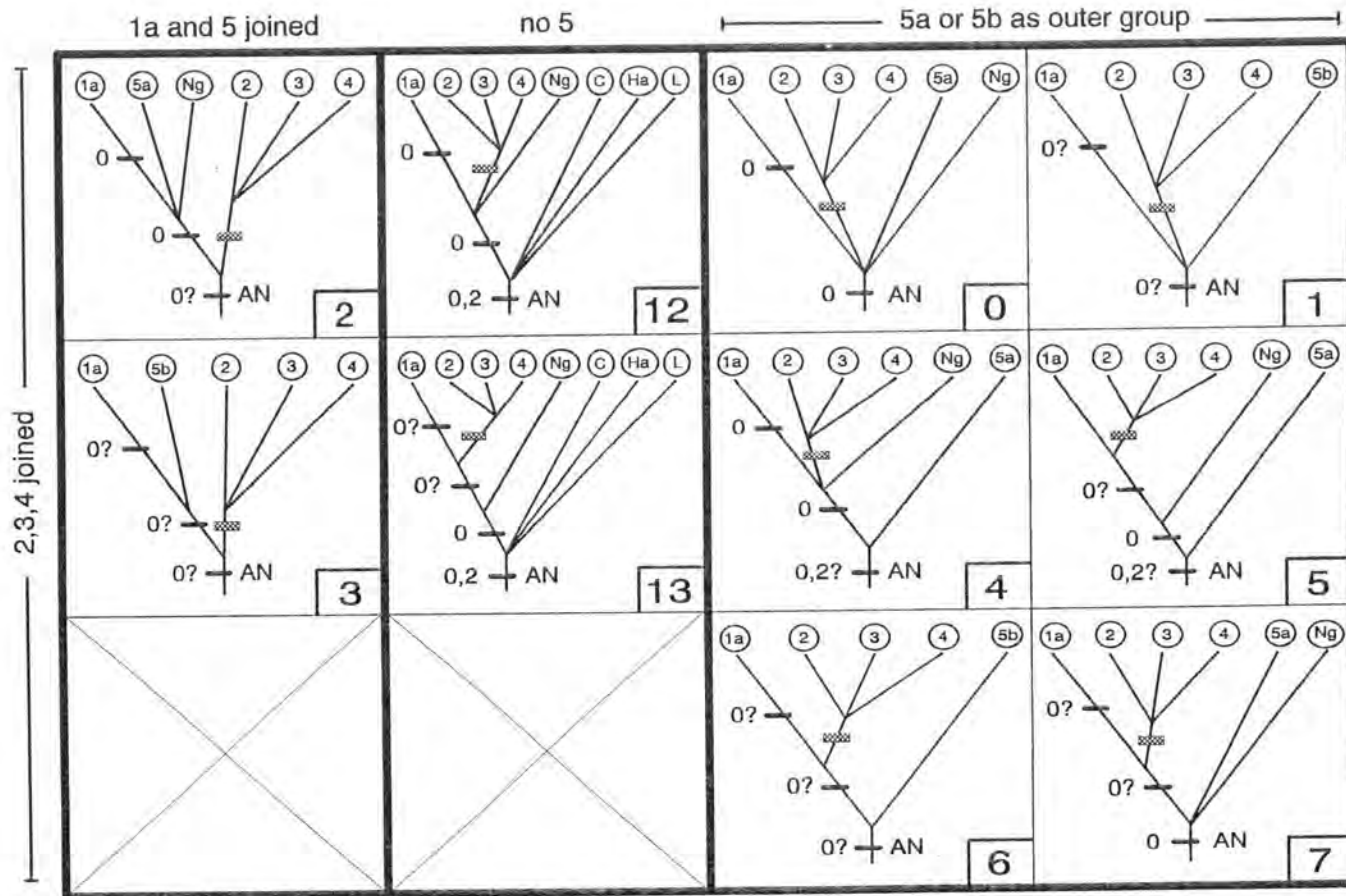


Fig. 258. Cladograms shown as components. See text for explanation.

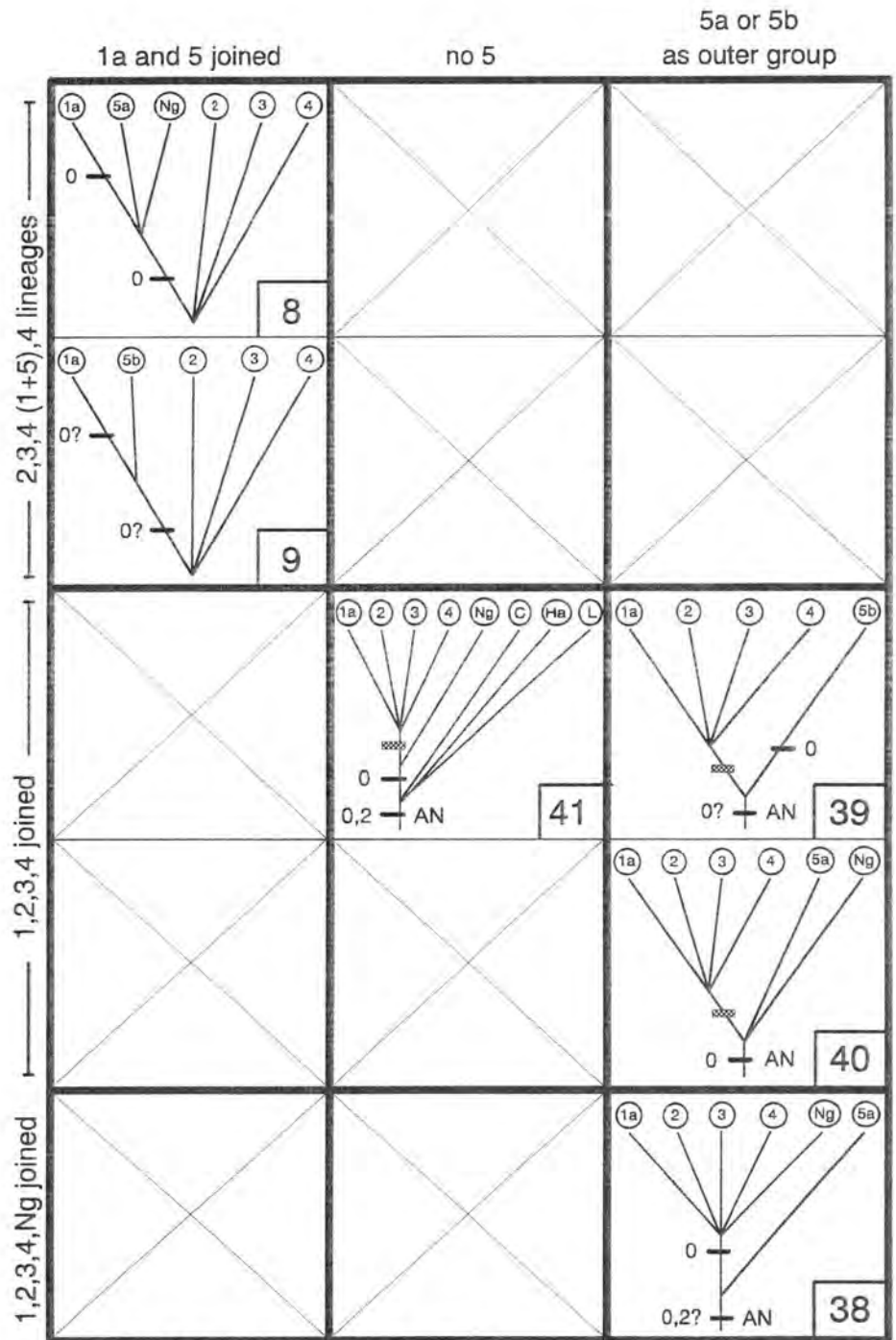


Fig. 259. Cladograms shown as components. See text for explanation.

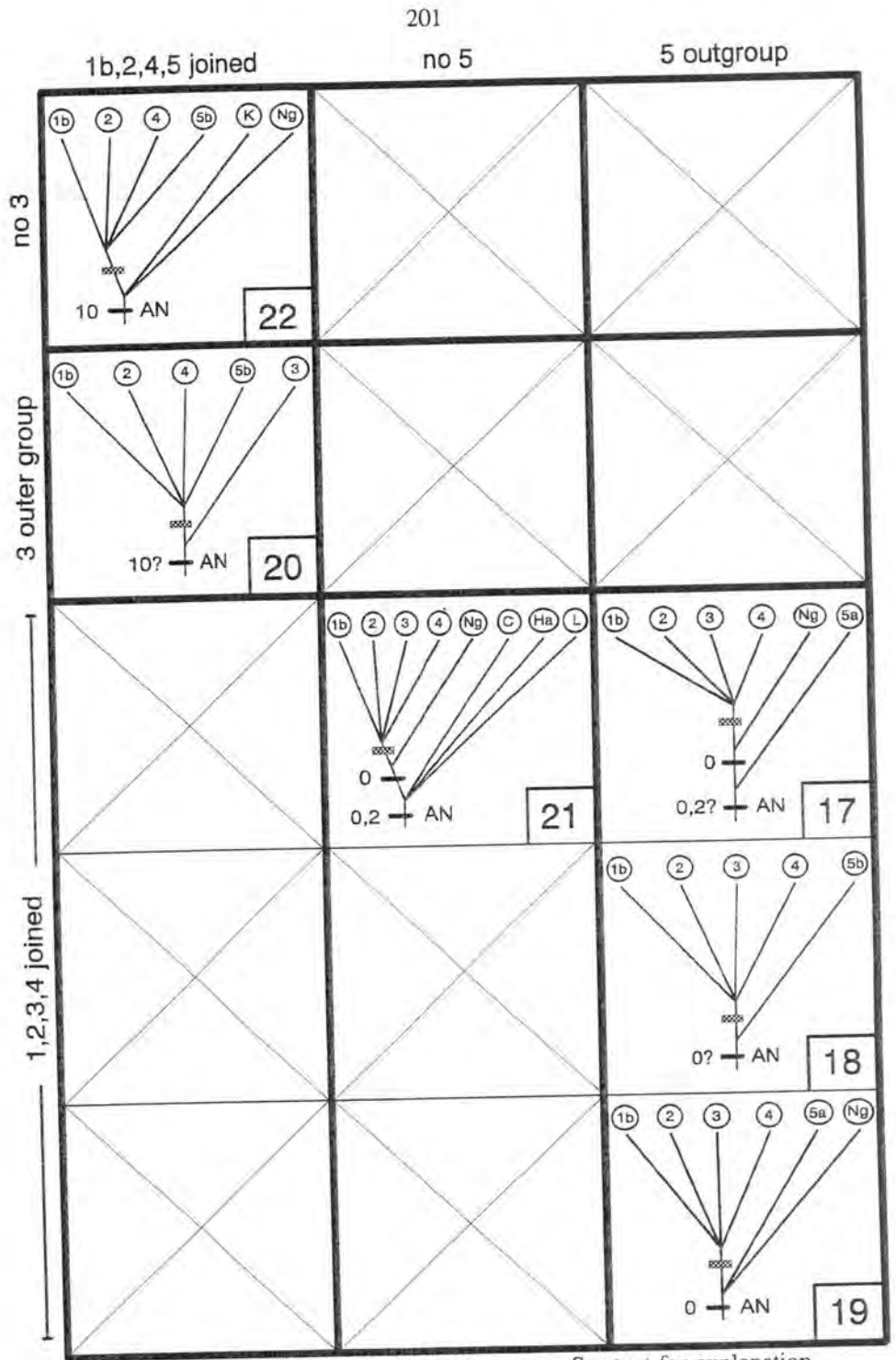


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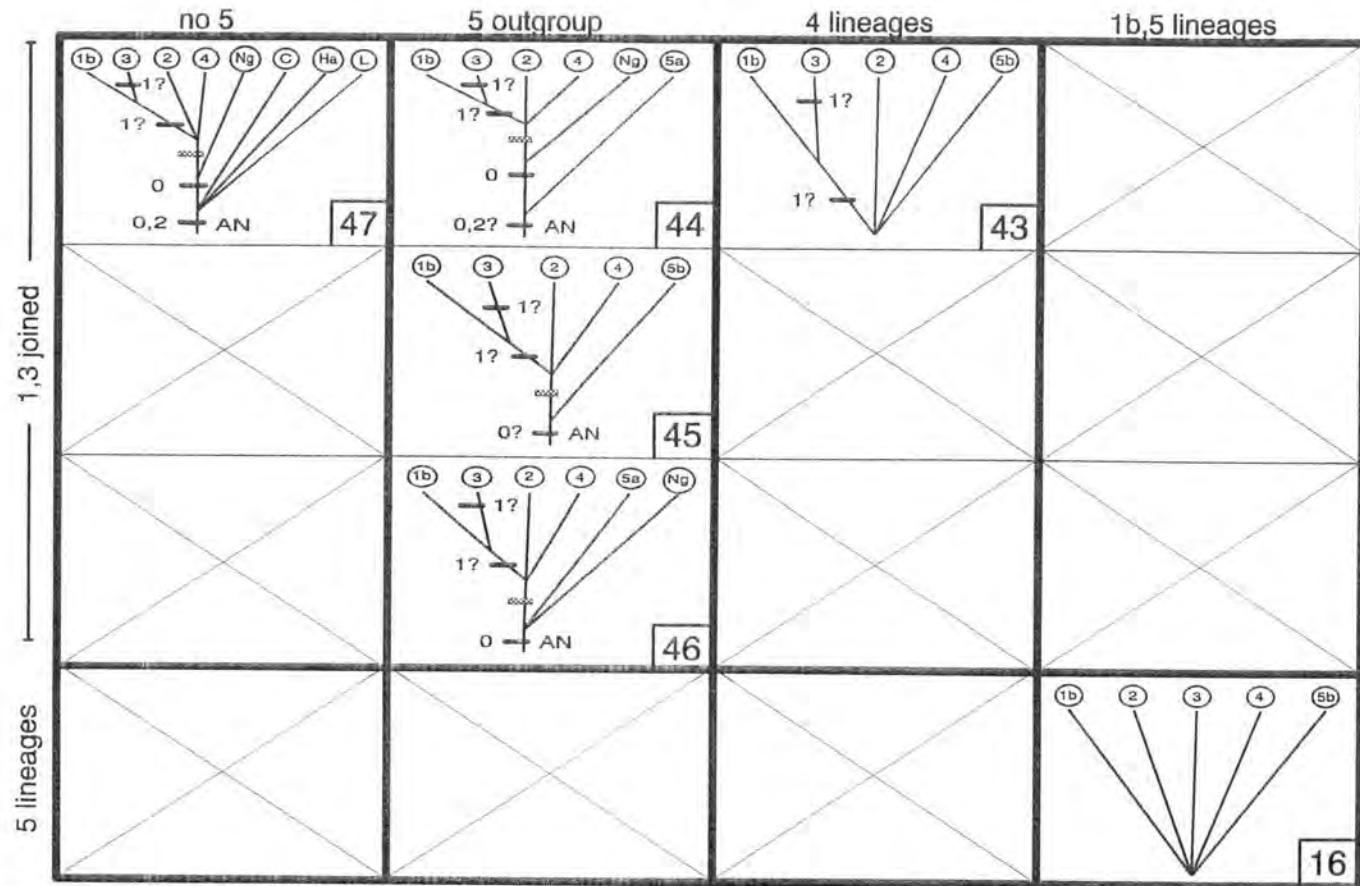


Fig. 261. Cladograms shown as components. See text for explanation.

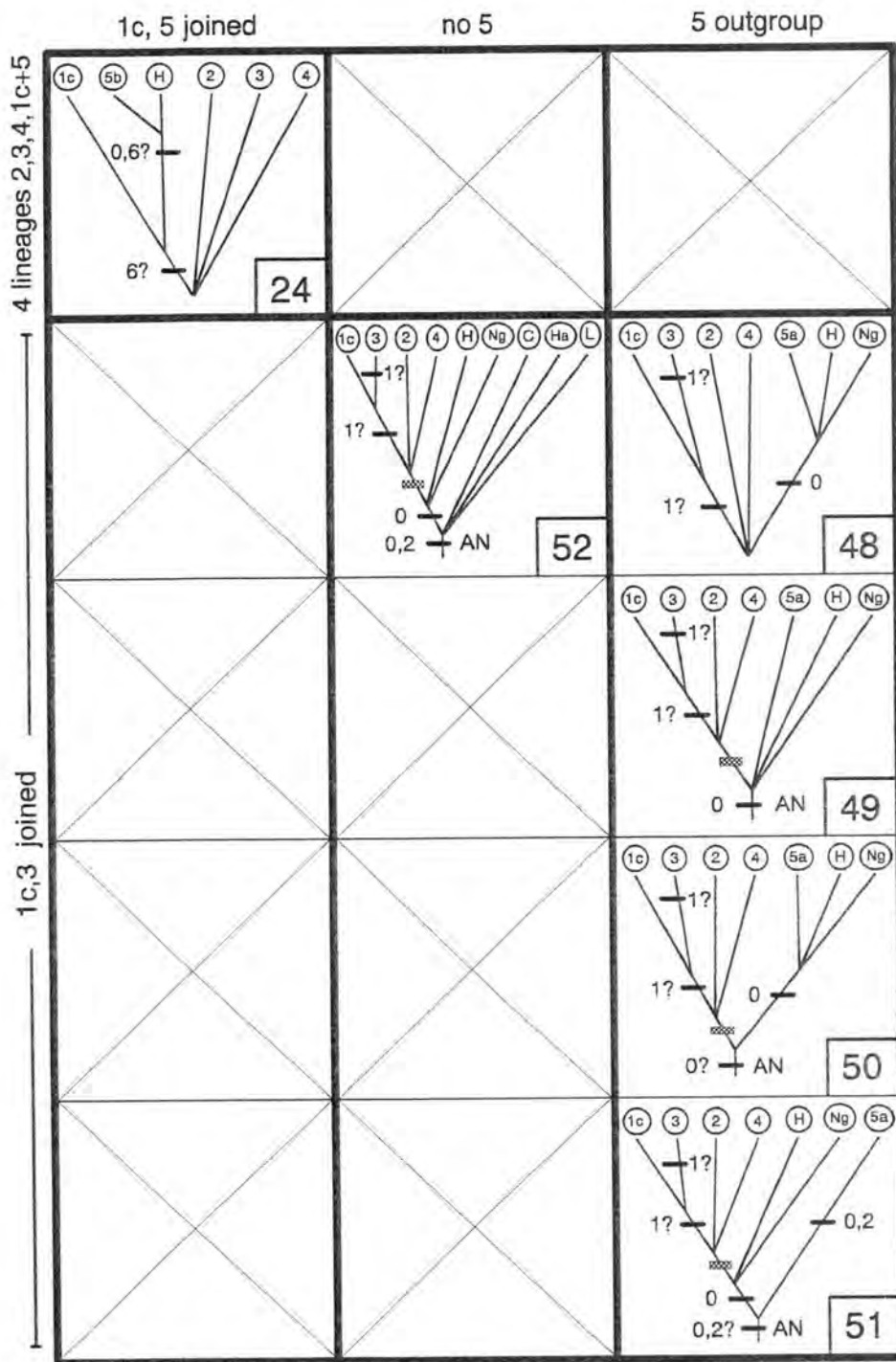


Fig. 262. Cladograms shown as components. See text for explanation.

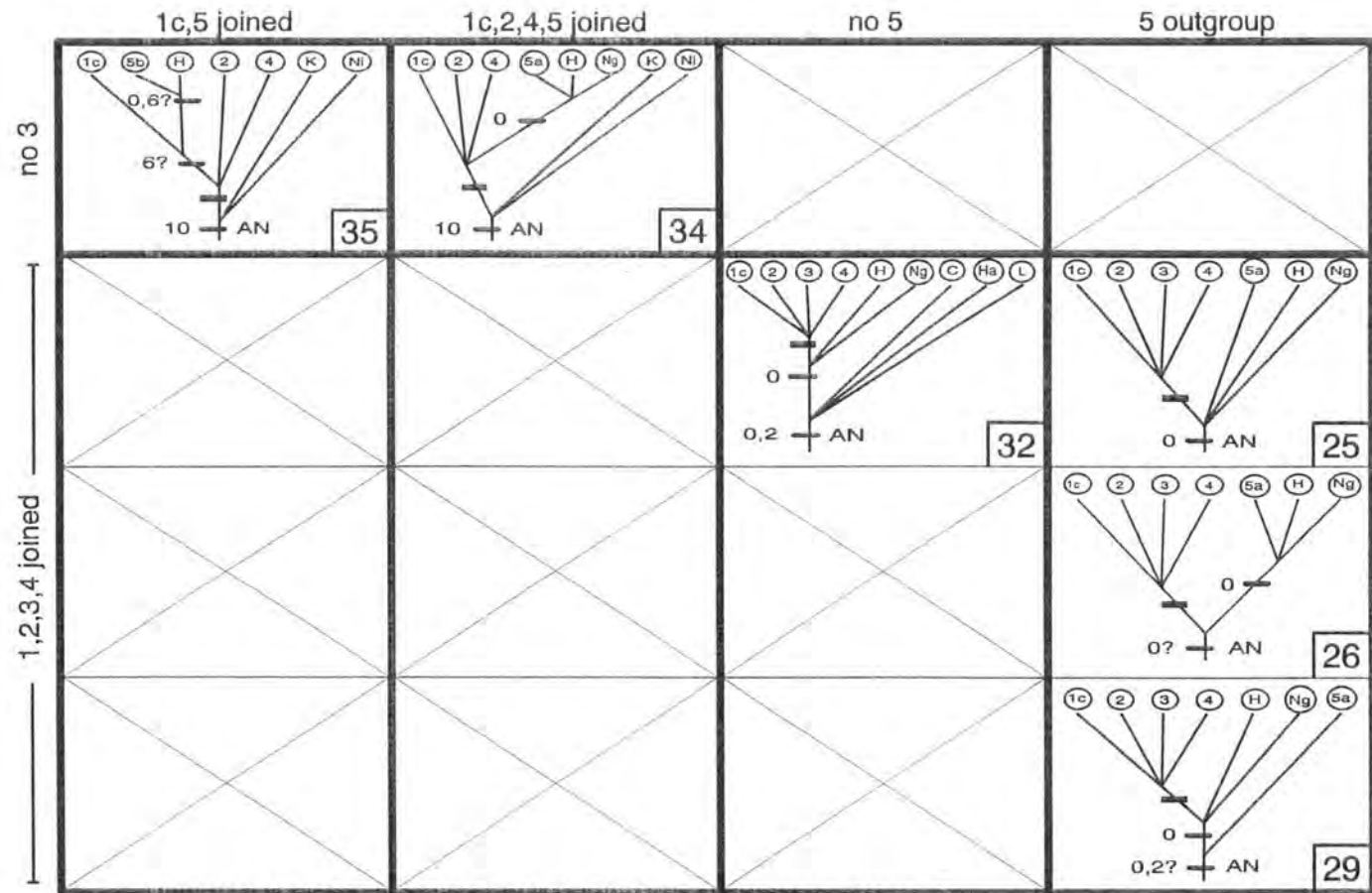


Fig. 263. Cladograms shown as components. See text for explanation.

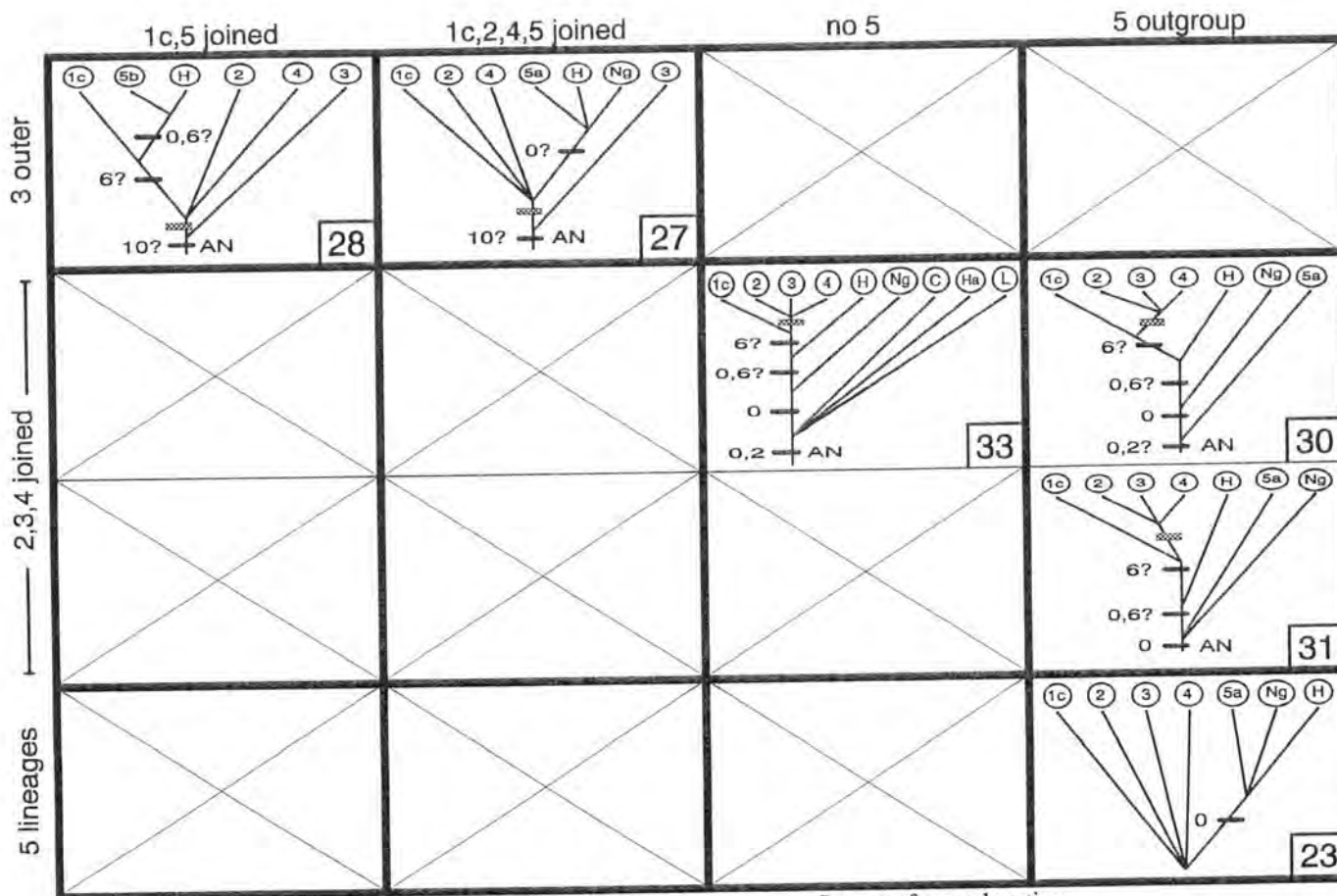


Fig. 264. Cladograms shown as components. See text for explanation.

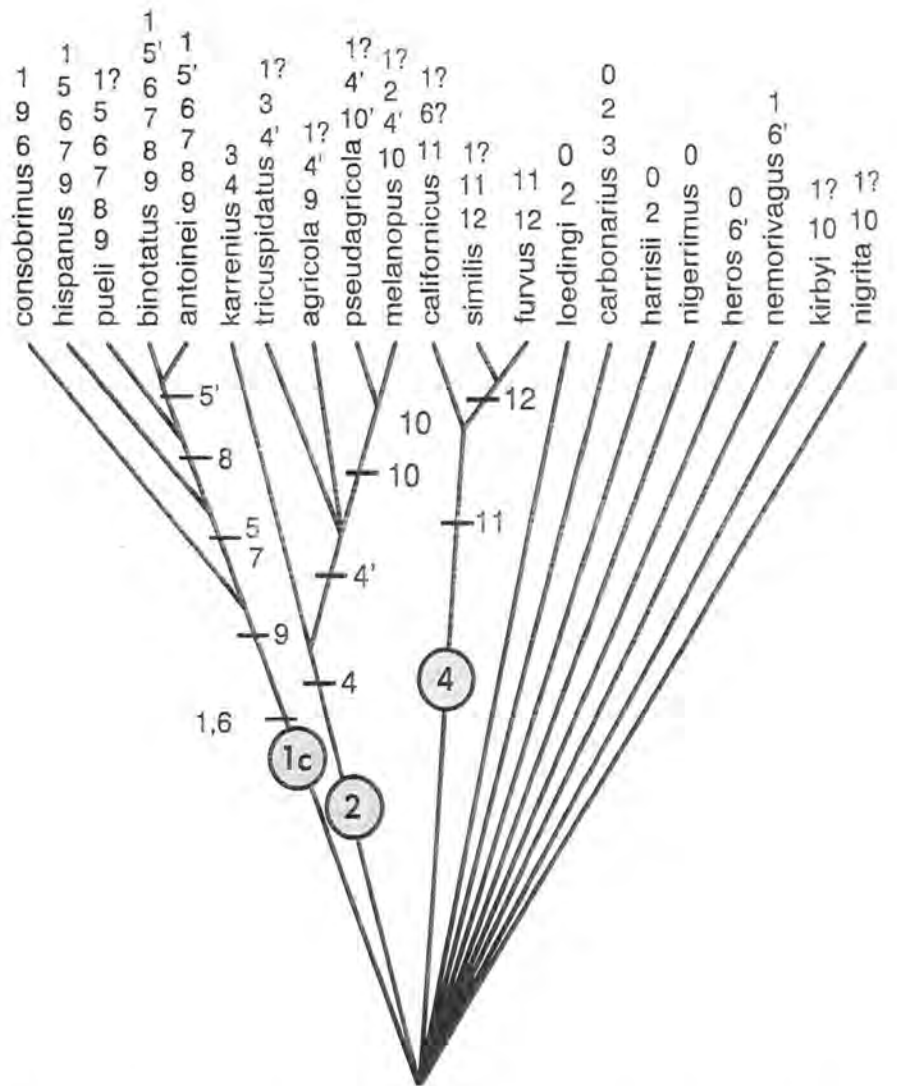


Fig. 265. Nelson tree for subgenus *Anisodactylus*. (Numbers in circles = components. Numbers by horizontal lines = synapomorphies defining lineages & are synapomorphies explained in text. Numbers above a species = apomorphies present in it; ? after number = apomorphy present in only some specimens of species.)

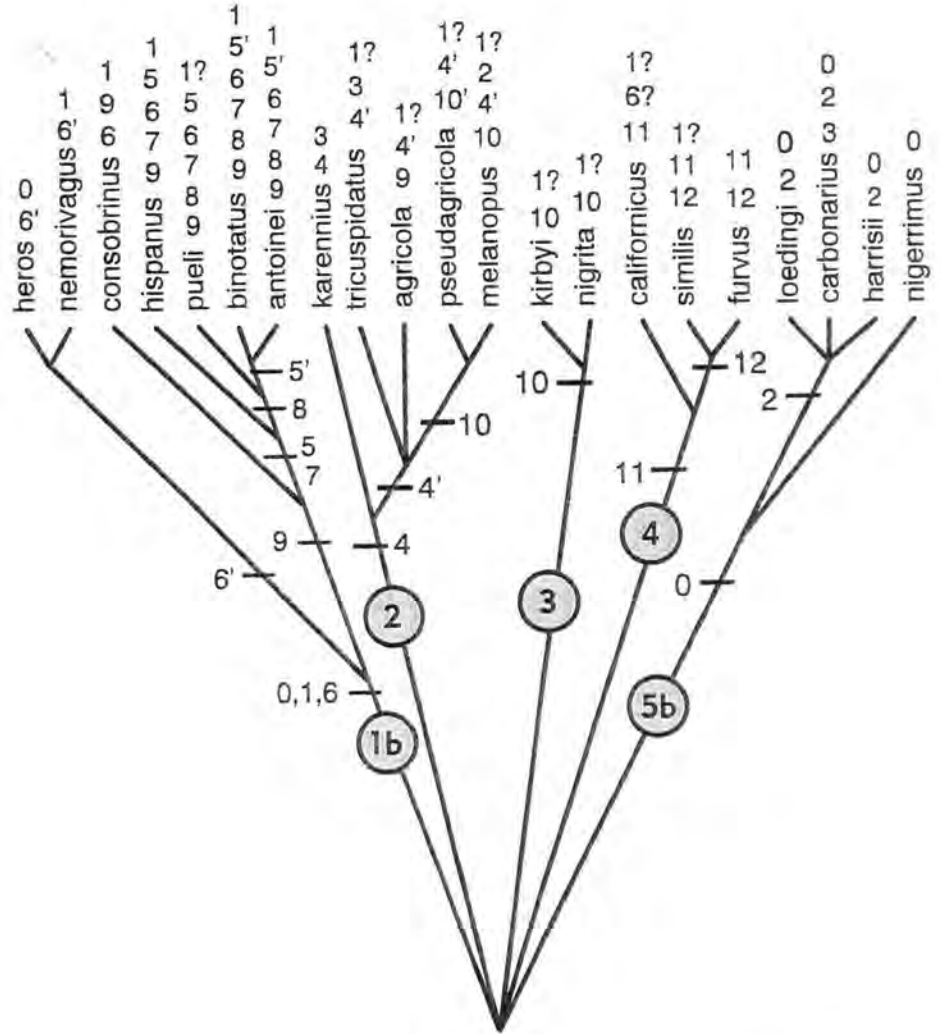


Fig. 266. Chosen hypothesis for cladistic relationships in subgenus *Anisodactylus*. (Numbers in circles = components. Numbers by horizontal lines = synapomorphies defining lineages & are synapomorphies explained in text. Numbers above a species = apomorphies present in it; ? after number = apomorphy present in only some specimens of species.)

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