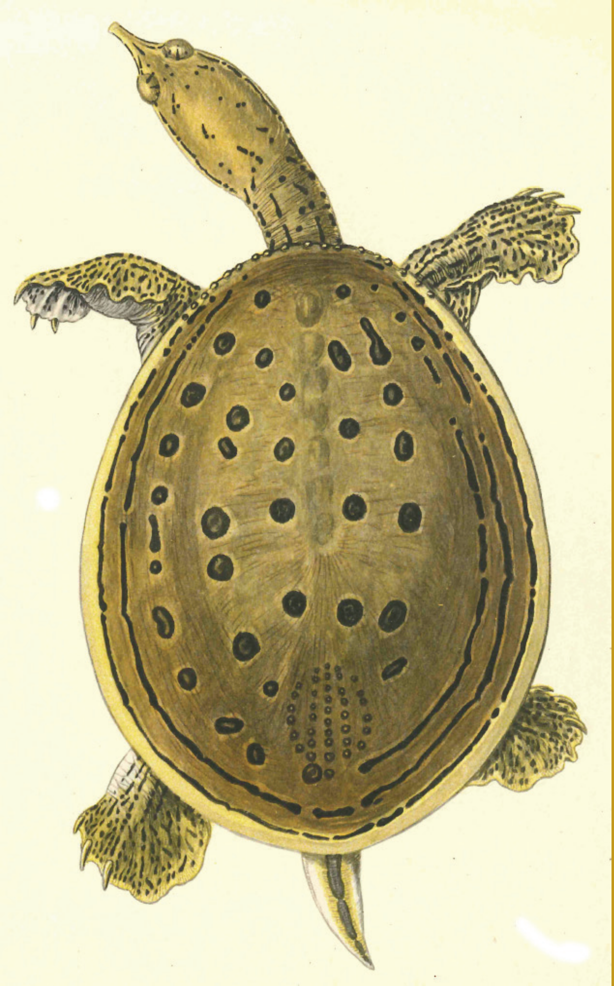
SCIENTIFIC AND STANDARD ENGLISH NAMES OF AMPHIBIANS AND REPTILES OF NORTH AMERICA NORTH OF MEXICO, WITH COMMENTS REGARDING CONFIDENCE IN OUR UNDERSTANDING

EIGHTH EDITION



Committee On Standard English And Scientific Names
Brian I. Crother (Committee Chair)

Society for the Study of Amphibians and Reptiles

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Cover Illustration: Spiny Softtshell from Babcock. 1919. Turtles of New England. This species has gone through 3 generic name changes from *Amyda* to *Trionyx* to *Apalone* over the last 60 years.

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Table of Contents

INTRODUCTION

The eighth edition is a complete update of the seventh edition, published to coincide with the seventh World Congress of Herpetology. The introduction to the seventh edition included a history of names lists for North American amphibians and reptiles as well as guidelines the committee uses for English names. Because that information is not included here, interested readers are referred to the seventh edition.

As with previous editions, it is hoped that the standard English names will be used by all concerned in an attempt to standardize usage to facilitate communication. The scientific names recommended here are based on the committee's expertise and interpretation of the available literature. When names are under debate, explanations are provided in the annotations under the names. It is worth making clear that while this is the offical names list for several North American societies, the scientific names are not official. Their usage, ultimately, is up to the particular worker.

With regard to citing this work, to achieve uniformity the committee agreed on the following format in the previous edition, in which the authors of a subsection are cited as the authors of a publication within the list as a whole. For example,

de Quieroz, K., T. W. Reeder, and A. D. Leaché. 2017. Squamata (in part) – Lizards. *in* B. I. Crother (ed.), Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in Our Understanding pp. 1–102. SSAR Herpetological Circular 43.

If the entire list is cited, it is treated as an edited volume using the following format:

Crother, B. I. (ed.). 2017. Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in Our Understanding pp. 1–102. SSAR Herpetological Circular 43.

The task of compiling the information that goes into these publications is not trivial. We encourage readers to send us your reprints (pdfs) concerning any taxonomic changes or decisions that your work may dictate or which may be relevant to this list. Receiving your reprints will help ensure that future versions of the list are as complete and up-to-date as possible.

Anura - Frogs

Darrel R. Frost[1], Emily Moriarty Lemmon[2], Roy W. McDiarmid[3], and Joseph R. Mendelson III[4]

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Acris Duméril and Bibron, 1841—CRICKET FROGS

A. blanchardi Harper, 1947—Blanchard's Cricket Frog

Gamble et al. (2008, Mol. Phylogenet. Evol. 48: 112–125) recognized *Acris blanchardi* as distinct from *A. crepitans* on the basis of molecular evidence (and included *Acris crepitans paludicola* as a synonym of *A. blanchardi*), although McCallum and Trauth (2006, Zootaxa 1104: 1–21) previously rejected the distinctiveness of *A. c. blanchardi* from *A. c. crepitans* on the basis of morphology. Reviewed by Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press. 205–219).

A. crepitans Baird, 1854—Eastern Cricket Frog

See comment under *Acris blanchardi.* Reviewed by Gray et al. (2005, in Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ of California Press: 441–443), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press. 219–226).

A. gryllus (Le Conte, 1825)—Southern Cricket Frog

The lineages delimited on the basis of the molecular evidence of Gamble et al. (2008, Mol. Phylogenet. Evol. 48: 112-125) do not correspond to the nominal subspecies occasionally employed by various previous authors. It seems on that basis that recognition of the subspecies. *A. g. dorsalis* and *A. g. gryllus*, is not warranted. Reviewed by Jensen (2005, in Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ of California Press: 443–444).

Anaxyrus Tschudi, 1845—NORTH AMERICAN TOADS

This taxon of strictly North American toads was removed from "*Bufo*" (as well as were a number of other taxa) by Frost et al. (2006, Bull. Am. Mus. Nat. Hist., 297) as a revision to render a monophyletic taxonomy and with genera delimited to be more compact than the unwieldy "*Bufo*". The phylogenetic study of bufonids by Van Bocxlaer et al. (2010, Science 327: 679–682) also suggests that New World "*Bufo*" do not form a monophyletic group. Smith and Chiszar (2006, Herpetol. Conserv. Biol. 1: 6–8) recommend retaining the North American taxa *Anaxyrus*, *Incilius*, and *Rhinella* (as well as such long-recognized extralimital taxa such as *Ansonia, Capensibufo, Crepidophryne, Didynamipus, Mertensophryne, Nectophryne, Nectophrynoides, Pedostibes, Pelophryne, Schismaderma, Werneria,* and *Wolterstorffina*) as subgenera of *Bufo* to obviate the need for generic changes in North American species. More recently, Fouquette and Dubois (2014, A Checklist of North American Amphibians and Reptiles: The United States and Canada. Xlibris Corporation) followed this approach in a modified form. This approach, though, would visit considerable nomenclatural instability on many countries outside of the USA and Canada. See Pauly et al. (2009, Herpetologica 65: 115–128) and Frost et al. (Herpetologica 65: 136–153) for discussion.

A. americanus (Holbrook, 1836)—American Toad

Geographic variation has been insufficiently studied, although careful evaluation of call and/or molecular data might provide considerable evidence of divergent lineages. See comments under *A. baxteri, A. fowleri, A. hemiophrys, A. terrestris,* and *A. woodhousii.* Masta et al. (2002, Mol. Phylogenet. Evol. 24: 302–314) provided evidence that suggests that *A. a. charlesmithi* may be a distinct species. Reviewed by Green (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 692–704) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press. 219–226).

A. a. americanus (Holbrook, 1836)—Eastern American Toad
A. a. charlesmithi (Bragg, 1954)—Dwarf American Toad

A. baxteri (Porter, 1968)—Wyoming Toad

Recognized as a species, rather than a subspecies of *A. hemiophrys* by Packard (1971, J. Herpetol. 5: 191–193), and more recently by Smith et al. (1998, Contemp. Herpetol. 1). Nevertheless, Cook (1983, Publ. Nat. Sci. Natl. Mus. Canada 3) considered *A. baxteri* to be undiagnosable against the background of geographic variation in *A. hemiophrys* (as *Bufo americanus hemiophrys*), and this has not been addressed by subsequent authors. Reviewed by Odum and Corn (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press:390–392), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press. 43–47).

A. boreas (Baird and Girard, 1852)—Western Toad

See Schuierer (1963, Herpetologica 18: 262–267). Two nominal subspecies are generally recognized, although Goebel (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 210–211) discussed geographic variation and phylogenetics of the *A. boreas* (as the *Bufo boreas*) group (i.e., *A. boreas, A. canorus, A. exsul,* and *A. nelsoni*), and noted other unnamed populations of nominal *A. boreas* that may be species. Populations in Alberta, Canada, assigned to *A. boreas* have a distinct breeding call and vocal sacs (Cook, 1983, Publ. Nat. Sci. Natl. Mus. Canada 3; Pauly 2008, PhD Dissertation, Univ. Texas at Austin); the taxonomic implications of this warrant investigation. Goebel et al. (2009, Mol. Phylogenet. Evol. 50: 209–225) suggested on the basis of molecular evidence that nominal *Anaxyrus boreas* is a complex of species (as suggested previously by Bogert, 1960, The influence of sound on the behavior of amphibians and reptiles. Washington DC: American Institute of Biological Sciences 179) that do not conform to the traditional limits of taxonomic species and subspecies (and which we do not recognize here for this reason) and that some populations assigned to this taxon may actually be more closely related to *Anaxyrus canorus* and *A. nelsoni*—a problem that calls for additional elucidation. Reviewed by Muths and Nanjappa (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 392–396) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 47–65).

A. californicus (Camp, 1915)—Arroyo Toad

See Gergus (1998, Herpetologica 54: 317–325) for justification for this to be considered a distinct species from *Anaxyrus microscaphus*. Reviewed by Price and Sullivan (1988, Cat. Am. Amph. Rept. 415, as *Bufo microscaphus californicus*), Sweet and Sullivan (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 396–400), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 65–70).

A. canorus (Camp, 1916)—Yosemite Toad

Reviewed by Karlstrom (1973, Cat. Am. Amph. Rept. 132), Davidson and Fellers (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 400–401), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 70–77). See comment under *A. boreas*.

A. cognatus (Say *in* James 1822)—Great Plains Toad

Reviewed by Krupa (1990, Cat. Am. Amph. Rept. 457), Graves and Krupa (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 440–404) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 78–87).

A. debilis (Girard, 1854)— Chihuahuan Green Toad

See accounts in Sanders and Smith (1951, Field and Laboratory 19: 141–160) and by Bogert (1962, Am. Mus. Novit. 2100) as *Bufo debilis.* Reviewed by Painter (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 404–406, as *Bufo debilis*) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 88–91). The nominal subspecies are unlikely to be anything other than arbitrarily defined sections of clines although this remains to be investigated adequately. Fouquette and Dubois (2014, A Checklist of North American Amphibians and Reptiles: The United States and Canada. Xlibris Corporation: 301) rejected subspecies but presented no evidence for this conclusion.

A. d. debilis (Girard, 1854)—Eastern Chihuahuan Green Toad

A. d. insidior (Girard, 1854)—Western Chihuahuan Green Toad

A. exsul (Myers, 1942)—Black Toad

See comment under *A. boreas.* Reviewed by Fellers (2005, i*in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 406–408, as *Bufo exsul*) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 92–96).

A. fowleri (Hinckley, 1882)—Fowler's Toad

Green (1996, Israel J. Zool. 42: 95–109) discussed the problem of interspecific hybridization in the *A. americanus* complex and briefly addressed the publication by Sanders (1987, Evolutionary hybridization and speciation in North American indigenous bufonids. O. Sanders, Dallas, TX), in which Sanders recognized a number of dubiously delimited taxa within the *A. americanus* complex (his *Bufo hobarti*, which would be in the synonymy of *A. fowleri*; *Bufo copei*, which would be in *A. americanus*, and *Bufo planiorum* and *Bufo antecessor*, both of which would be in the synonymy of *A. woodhousii woodhousii*). None have been formally synonymized, nor have any attracted recognition by those working on the complex. See comment under *A. woodhousii*. Masta et al. (2002, Mol. Phylogenet. Evol. 24: 302–314) provided evidence for the distinctiveness of this species from *A. woodhousii* and noted (as did Smith and Green, 2004, Mol. Ecol. 13: 3723–3733) that at the molecular level there are multiple, distinct mitochondrially-recognizable populations in *A. fowleri.* Reviewed by Green (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press:, as *Bufo fowleri*) and Dodd (2013, FFrogs of the United States and Canada, John Hopkins Univ. Press: 96–113).

A. hemiophrys (Cope, 1886)—Canadian Toad

See comment under *A. baxteri*. Cook (1983, Publ. Nat. Sci. Natl. Mus. Canada 3) regarded *A. hemiophrys* and *A. americanus* as forming very distinctive subspecies of one species, although subsequent authors (e.g., Green and Pustowka, 1997, Herpetologica 53: 218–228) have regarded the contact zone between these taxa as a hybrid zone between two species. Reviewed by Ewert and Lannoo (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press:412–415, as *Bufo hemiophrys*) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press:113–120).

A. houstonensis (Sanders, 1953)—Houston Toad

Reviewed by Brown (1973, Cat. Am. Amph. Rept. 133, as *Bufo houstonensis*), Shepard and Brown (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 415–417, as *Bufo houstonensis*), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 120–126).

A. microscaphus (Cope, 1867)—Arizona Toad

Reviewed by Price and Sullivan (1988, Cat. Am. Amph. Rept. 415, as *Bufo microscaphus*), Schwaner and Sullivan (2005, in *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 422–424, as *Bufo microscaphus*), and Dodd, 2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 127–13). See comment under *A. californicus*. Formerly included *A. californicus* and *A. mexicanus* (extralimital) as subspecies, both of which were recognized as species by Gergus (1998, Herpetologica 54: 317–325).

A. nelsoni (Stejneger, 1893)—Amargosa Toad

Stebbins (1985, A Field Guide to Western Reptiles and Amphibians, Houghton Mifflin, Boston) and Altig et al. (1998, Contemp. Herpetol. Inform. Serv. 2) regarded *A. nelsoni* as a species, rather than a subspecies of *A. boreas*. Reviewed by Goebel et al. (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 427–430, as *Bufo nelsoni*) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 132–136). See comment under *A. boreas*.

A. punctatus (Baird and Girard, 1852)—Red-spotted Toad

Reviewed by Korky (1999, Cat. Am. Amph. Rept. 1104, as *Bufo punctatus*), Sullivan (2005, i*in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 430–432, as *Bufo punctatus*), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 136–144).

A. quercicus (Holbrook, 1840)—Oak Toad

Reviewed by Ashton and Franz (1979, Cat. Am. Amph. Rept. 222, as *Bufo quercicus*), Punzo (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 432–433, as *Bufo quercicus*), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 144–149).

A. retiformis (Sanders and Smith, 1951)—Sonoran Green Toad

Reviewed by Hulse (1978, Cat. Am. Amph. Rept. 207, as *Bufo retiformis*), Blomquist (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press:, as *Bufo retiformis*), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 149–152).

A. speciosus (Girard, 1854)—Texas Toad

Older literature confused this species with *A. cognatus, A. mexicanus* (extralimital), and *A. compactilis* (extralimital). Rogers (1972, Copeia 1972: 381–383) demonstrated its morphological distinctiveness. Reviewed by Dayton and Painter (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 435–436, as *Bufo speciosus*), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 152–155).

A. terrestris (Bonnaterre, 1789)—Southern Toad

No reports of geographic variation exist in the literature, although extensive geographic variation is evident on examination of specimens. Hybridization with *A. americanus* along the Fall Line may have strong effects on geographic variation, although data on this have not been published. Reviewed by Blem (1979, Cat. Am. Amph. Rept. 223, as *Bufo terrestris*), Jensen (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 436–438, as *Bufo terrestris*), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 155–166).

A. woodhousii (Girard, 1854)—Woodhouse's Toad

See comments under *A. fowleri*. The incorrect spelling of the species name to *woodhousei* has been used widely. The status of taxa recognized by Sanders (1987, Evolutionary hybridization and speciation in North American indigenous bufonids. O. Sanders, Dallas, TX) has not been evaluated closely by any author, although neither have they enjoyed any recognition. Evidence provided by Masta et al. (2002, Mol. Phylogenet. Evol. 24: 302–314) suggests that *A. w. australis* may be a distinct species and that former *A. w. velatus* is a hybrid population of *A. woodhousii* × *A. fowleri,* and therefore should not be recognized. Reviewed by Sullivan (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 438–440, as *Bufo woodhousii*) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 166–176).

A. w. australis (Shannon and Lowe, 1955)—Southwestern Woodhouse's Toad

A. w. woodhousii Girard, 1854—Rocky Mountain Toad

Ascaphus Stejneger, 1899—TAILED FROGS

A. montanus Mittleman and Myers, 1949—Rocky Mountain Tailed Frog

See Nelson et al. (2001, Evolution 55: 147–160) for evidence supporting the recognition of this species distinct from *A. truei*. Adams (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 382) provided a brief but detailed review as did Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 17).

A. truei Stejneger, 1899—Coastal Tailed Frog

See Metter (1968, Cat. Am. Amph. Rept. 69) for review (as including *A. montanus*). Reviewed by Adams and Pearl (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 382–385) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 7–16).

Bufo: See *Anaxyrus, Incilius,* and *Rhinella*. *Bufo,* as now recognized, is extralimital and more closely related to other Old World genera than to anything in the New World.

Craugastor Cope, 1862—NORTHERN RAINFROGS

This taxon of predominantly Mexican and Central American frogs was removed from a paraphyletic "*Eleutherodactylus*" by Crawford and Smith (2005, Mol. Phylogenet. Evol. 35: 536–555).

C. augusti (Dugès, 1879)—Barking Frog

Reviewed by Zweifel (1967, Cat. Am. Amph. Rept. 41, as *Eleutherodactylus augusti*) and Schwalbe and Goldberg, (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the

Conservation Status of United States Species. Univ. of California Press: 491–492). Goldberg et al. (2004, Herpetologica 60: 312–320) suggested that *C. a. cactorum* and *C. a. latrans* are different species but did not provide a new taxonomy.

C. a. cactorum Taylor, 1939 "1938"—Western Barking Frog

C. a. latrans (Cope, 1880)—Balcones Barking Frog

Eleutherodactylus Duméril and Bibron, 1841—RAINFROGS

See *Craugastor*. Frost et al. (2006, Bull. Am. Mus. Nat. Hist., 297) recognized *Syrrhophus* for a monophyletic group containing *E. cystignathoides, E. guttilatus,* and *E. marnocki* and *Euhyas* for a group containing *E. planirostris.* Heinicke et al. (2007, Proc. Natl. Acad. Sci. USA 104: 10092–10097) and Hedges et al. (2008, Zootaxa 1737: 1–182) redelimited *Eleutherodactylus* as monophyletic by exclusion of a number of South American taxa and treated (and redelimited) *Euhyas* and *Syrrhophus* as subgenera of *Eleutherodactylus*.

E. cystignathoides (Cope, 1877)—Rio Grande Chirping Frog

Two nominal subspecies named, only one of which enters the USA. The status of these taxa, whether they represent arbitrarily delimited parts of a single population or different lineages is unknown. Reviewed by Wallace (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 494–495) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 197–199).

E. c. campi Stejneger, 1915—Rio Grande Chirping Frog

E. guttilatus (Cope, 1879)—Spotted Chirping Frog

Geographic variation is poorly known. Some authors (e.g. Morafka, 1977, Biogeographica 9) considered *E. guttilatus* to be a synonym of *E. c. campi* (and by extension, of *E. cystignathoides*) but this remains to be sufficiently tested. Reviewed by Wallace (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 496–497) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 199–201).

E. marnockii (Cope, 1878)—Cliff Chirping Frog

See account by Lynch (1970, Univ. Kansas Publ. Mus. Nat. Hist. 20: 1–45) and reviews by Wallace, (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 496–499) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 201–204). Geographic variation is not well studied.

Gastrophryne Fitzinger, 1843—NORTH AMERICAN NARROW-MOUTHED TOADS

Reviewed by Nelson (1972, J. Herpetol. 6: 111–137; 1973, Cat. Am. Amph. Rept. 134).

G. carolinensis (Holbrook, 1835)—Eastern Narrow-mouthed Toad

Reviewed by Nelson (1972, Cat. Am. Amph. Rept. 120) and Mitchell and Lannoo (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 501–503) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 439–448).

G. mazatlanensis Taylor, 1943—Sinaloan Narrow-mouthed Toad

Recognized as distinct from *G. olivacea* by Streicher et al. (2012, Mol. Phylogenet. Evol. 64: 645–653).

G. olivacea (Hallowell, 1856)—Western Narrow-mouthed Toad
Reviewed by Nelson (1972, Cat. Am. Amph. Rept. 122), Sredl and Field (2005, *in* Lannoo, M. J. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 503–506), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 448–455) in the sense of including *G. mazatlanensis* of southern Arizona.

Hyla Laurenti, 1768—HOLARCTIC TREEFROGS
Faivovich et al. (2005, Bull. Am. Mus. Nat. Hist., 294) redelimited this monophyletic taxon to include only North American and Eurasian species. Hua et al. (2009, Herpetologica 65: 246–259) discussed relationships within the group. Fouquette and Dubois (2014, A Checklist of North American Amphibians and Reptiles: The United States and Canada. Xlibris Corporation) recently recognized a suite of subgenera based on genetic and morphological evidence, but pending a more thorough evidentiary review, we hesitate to employ this taxonomy. Duellman et al. (2016, Zootaxa 4104: 1–109) restricted *Hyla* to Eurasia and North Africa and referred the North American and east Asian sister taxon of this group to *Dryophytes*, although the acceptance of this taxonomy within the community is not clear at this point.

H. andersonii Baird, 1854—Pine Barrens Treefrog
Reviewed by Gosner and Black (1967, Cat. Am. Amph. Rept. 54), Means (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 445–447), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 235–239). The widely disjunct populations have been examined with allozymes and only subtle (no fixed differences) geographic variation was documented (Karlin et al., 1982, Copeia 1982: 175–178).

H. arenicolor Cope, 1866—Canyon Treefrog
Barber (1999, Mol. Ecol. 8: 563–576) examined geographic variation and suggested that at least two other species should be recognized within the Mexican component of its range. Bryson et al. (2010, Evolution, 64: 2315–2340) also reported on molecular geographic variation and demonstrated introgression with *Hyla wrightorum*. Reviewed by Painter (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 447–448) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 239–245).

H. avivoca Viosca, 1928—Bird-voiced Treefrog
Smith (1953, Herpetologica 9: 169–173) discussed geographic variation and recognized two nominal subspecies which are rarely employed. Reviewed by Smith (1966, Cat. Am. Rept. Amph. 28), Redmer (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 448–449) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 245–250).

H. a. avivoca Viosca, 1928—Western Bird-voiced Treefrog
H. a. ogechiensis Neill, 1948—Eastern Bird-voiced Treefrog

H. chrysoscelis Cope, 1880—Cope's Gray Treefrog
See comment under *H. versicolor*. Reviewed by Hoffman (1988, Cat. Am. Amph. Rept. 436), Cline, (2005, *in* Lannoo, M. [ed.], AAmphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 449–452), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 250–262).

H. cinerea (Schneider, 1799)—Green Treefrog

Subspecies occasionally are recognized (*H. c. cinerea* and *H. c. evittata*) without discussion, and on the basis of a single populationally variable character. See Duellman and Schwartz (1958, Bull. Florida State Mus., Biol. Sci. 3: 241) for discussion and rejection of subspecies. Reviewed by Redmer and Brandon (2003, Cat. Am. Amph. Rept. 766), Redmer and Brandon (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 452–454), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 262–273).

H. femoralis Daudin, 1800—Pine Woods Treefrog

Reviewed by Hoffman (1988, Cat. Am. Amph. Rept. 436). Mitchell (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 454–456), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 274–280).

H. gratiosa LeConte, 1856—Barking Treefrog

Reviewed by Caldwell (1982, Cat. Am. Amph. Rept. 298), Mitchell (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 455–456), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 280–288).

H. squirella Bosc, 1800—Squirrel Treefrog

Reviewed by Martof (1975, Cat. Am. Amph. Rept. 168), Mitchell and Lannoo (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 456–458), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 288–294).

H. versicolor Le Conte, 1825—Gray Treefrog

Holloway et al. (2006, Am. Nat. 167: E88–E101) discussed the role of diploid *H. chrysoscelis* in the formation of the tetraploid *H. versicolor,* reviewed previous literature, and provided a revised range. Reviewed by Cline, (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 458–461) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 294–309).

H. wrightorum Taylor, 1939 “1938”—Arizona Treefrog

Gergus et al. (2004, Copeia 2004: 758–769) reported on the distinctiveness of this species with respect to *H. eximia* (extralimital). See comment under *H. arenicolor*. Reviewed by Gergus et al. (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 461–463) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 309–332).

Hypopachus Keferstein, 1867—SHEEP FROGS

H. variolosus (Cope, 1866)—Sheep Frog

See Nelson (1973, Herpetologica 29: 6–17; 1974, Herpetologica 30: 250–274) for discussion of geographic variation and rejection of subspecies. USA population reviewed by Judd and Irwin (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 506–508) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 455–457). Although only two species are currently recognized within this genus, very strong geographic variation in coloration, call, and toe structure suggests that several species are masquerading under this particular name. Given that the type locality of *H. variolosus* is in Costa Rica, the scientific name applied to the U.S. form is likely to change.

Incilius Cope, 1863—CENTRAL AMERICAN TOADS

This taxon of predominantly Central American toads was removed from a paraphyletic "*Bufo*" by Frost et al. (2006, Bull. Am. Mus. Nat. Hist., 297; as *Cranopsis*). However, the oldest name for this taxon is *Incilius* Cope, 1863 (see Frost et al., 2009, Copeia 2009: 418–419) which therefore takes precedence. Mendelson et al. (2011, Zootaxa, 3138: 1–34), provided evidence for the monophyly of this genus. See comment under *Anaxyrus*, regarding the treatment of this genus as a subgenus of *Bufo* by some although the effect extralimitally of subgeneric status would be to require a number well-marked genera (e.g., *Ansonia*) to be treated as subgenera as well.

I. alvarius (Girard, 1859)—Sonoran Desert Toad

Reviewed by Fouquette (1970, Cat. Am. Amph. Rept. 93, as *Bufo alvarius*), Fouquette et al. (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 384–386, as *Bufo alvarius*), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 177–180).

I. nebulifer (Girard, 1854)—Gulf Coast Toad

Mulcahy and Mendelson (2000, Mol. Phylogenet. Evol. 17: 173) recognized this species as *Bufo nebulifer,* and as distinct from *I. valliceps,* an extralimital species. Reviewed by Mendelson (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 424–427, as *Bufo nebulifer*) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 180–186), and Mendelson et al. (2015, Zootaxa 3974: 517–537).

Leptodactylus Fitzinger, 1826—NEOTROPICAL GRASS FROGS

L. fragilis (Brocchi, 1877)—Mexican White-lipped Frog

Reviewed by Heyer et al. (2006, Cat. Am. Amph. Rept. 830), Heyer (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 500–501), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 436–438). Much of the older literature about this species refers to it incorrectly as *Leptodactylus labialis.*

Lithobates Fitzinger, 1843—AMERICAN WATER FROGS

This taxon of North, Central, and South American frogs was removed from the large and predominantly Eurasian genus *Rana* by Frost et al. (2006, Bull. Am. Mus. Nat. Hist., 297). Hillis and Wilcox (2005, Mol. Phylogenet. Evol. 34: 299–314) provided a phylogenetic taxonomy that retained the species now under *Lithobates* within *Rana* and restricted the use of that name to a small part of what was subsequently assigned to *Lithobates* by Frost et al. (2006, op. cit.). Dubois (2006, Mol. Phylogenet. Evol. 42: 317–330) criticized the nomenclatural proposals of Hillis and Wilcox and regarded their names as *nomina nuda* and their approach outside of the International Code of Zoological Nomenclature (1999). This criticism was responded to by Hillis (2006, Mol. Phylogenet. Evol. 42: 331–338), who argued that most of the new names proposed by Hillis and Wilcox do have nomenclatural status under the International Code of Zoological Nomenclature (1999). The revision by Che et al. (2007, Mol. Phylogenet. Evol. 42: 1–13) which recognized *Lithobates* as a genus, we think best reflects the majority opinion of members of the international community who are actively working on large-scale ranid relationships, although Hillis, 2007 (Mol. Phylogenet. Evol. 42: 331–338) and Wiens et al. (2009, Evolution 63: 1217–1231) expressed reluctance to accept this taxonomy. Dubois (2006, Mol. Phylogenet. Evol. 42: 317–330; 2007, Cladistics 23: 390–402), Hillis (2007, op. cit.), Pauly et al. (2009, Herpetologica 65: 115–128), Frost et al. (2009, Herpetologica, 65: 136–153) discussed the issues surrounding the nomenclature of North American ranids and most recently Fouquette and Dubois (2014, A Checklist of North American Amphibians and Reptiles: The United States and Canada. Xlibris Corporation.: 390–391), suggested that *Lithobates* be considered a subgenus of *Rana*. A different approach was suggested by Yuan et al. (Syst. Biol., 65: 824–842) who suggested returning *Lithobates* to *Rana*, with *Lithobates* found to be monophyletic by them, being arrayed as *Rana sylvaticus* + 4 subgenera within *Rana*, without applying a name to the overarching *Lithobates* group. Given that arguments about name stability are largely 10 years and thousands of citations late and also turn on what earlier authors may have meant by "*Rana pipiens*" when likely few experimental animals with this name attached to them were correctly identified, it seems that the best course of action at this point is to hold this taxonomic change in abeyance.

L. areolatus (Baird and Girard, 1852)—Crawfish Frog

See comment under *L. capito*. Reviewed by Altig and Lohoefener (1983, Cat. Am. Amph. Rept. 324, as *Rana areolata*), Parris and Redmer (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 526–528), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 461–466). Geographic variation deserves further study to determine status of the nominal subspecies.

L. a. areolatus (Baird and Girard, 1852)—Southern Crawfish Frog
L. a. circulosus (Rice and Davis, 1878)—Northern Crawfish Frog

L. berlandieri (Baird, 1859)—Rio Grande Leopard Frog

Geographic variation is not well documented and relationships with extralimital Mexican forms (e.g., *L. forreri, L. brownorum*) are not well understood. Reviewed with special reference to the USA populations by Rorabaugh (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 530–532) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 466–471).

L. blairi (Mecham, Littlejohn, Oldham, Brown, and Brown, 1973)—Plains Leopard Frog

Reviewed by Brown (1992, Cat. Am. Amph. Rept. 536, as *Rana blairi*) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 472–479). Isolated western populations have not been well studied.

L. capito (Le Conte, 1855)—Gopher Frog

Lithobates capito is considered by some to be part of *L. areolatus* (but see Case, 1978, Syst. Zool. 27: 299–311, who considered them distinct). Reviewed by Altig and Lohoefener (1983, Cat. Am. Amph. Rept. 324, as *Rana areolata capito*), Jensen and Richter (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 536–538), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 479–485). Recognized as distinct from *L. areolatus* by Young and Crother (2001, Copeia, 2001: 382–388), who also rejected subspecies. Richter et al. (2014, Copeia: 231–237) presented mitochondrial evidence on interpopulational variation at the molecular level and suggested an historical structure among these.

L. catesbeianus (Shaw, 1802)—American Bullfrog

Geographic variation within the natural range *L. catesbeianus* is not well understood although Austin et al. (2004, Mol. Phylogenet. Evol. 32: 799–816) presented mitochondrial DNA evidence of distinct eastern and western lineages. Reviewed by Casper and Hendricks (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 540–546) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 486–515).

L. chiricahuensis (Platz and Mecham, 1979)—Chiricahua Leopard Frog

The status of southern Arizona and Mexican populations needs study. *Rana subaquavocalis* Platz, 1993, is a synonym according to Goldberg et al. (2004, J. Herpetol. 38: 313–319), although some authors (e.g., Hillis and Wilcox, 2005, Mol. Phylogenet. Evol. 34: 299–314; Dubois, 2006, C. R. Biol., Paris 329: 823–840) have continued to recognize the two taxa as distinct species, without comment. Reviewed by Sredl and Jennings (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 546–549, in the sense of including the central Arizona populations now transferred to *Lithobates fisheri*), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 515–522). See comment under *L. fisheri.*

L. clamitans (Latreille, 1801)—Green Frog

Austin and Zamudio (2008, Mol. Phylogenet. Evol. 48: 1041–1053) reported on interpopulational variation at the molecular level and suggested an historical structure inconsistent with the recognized subspecies, which are here rejected on that basis. Reviewed by Stewart (1968, Cat. Am. Amph. Rept. 337), Pauley and Lannoo (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 549–552), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press:522–547) as *Rana clamitans.*

L. fisheri (Stejneger, 1893)—Vegas Valley Leopard Frog

Until recently, this species has been considered to be highly restricted in range and extinct. However, Hekkala et al. (2011. Conserv. Genet. 12: 1379–1385) used DNA sequence data from museum specimens to show that *L. fisheri* and frogs ascribed to *R. chiricahuensis* from near the Mogollon Rim in central Arizona comprise a lineage that is distinct from *R. chiricahuensis* populations to the south and east. Platz (1993, J. Herpetol. 27: 154–162) previously noted the various lines of evidence suggesting that *L. chiricahuensis* was composed of more than one species, with the central Arizona population notably distinctive, but it was not possible, at that time, to compare those frogs genetically with *L. fisheri*. Reviewed by Jennings (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 554–555, in the sense of only referring to the Vegas Valley, Nevada, population, which was and is considered to be extinct) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 547–551).

L. grylio (Stejneger, 1901)—Pig Frog

Reviewed by Altig and Lohoefener (1982, Cat. Am. Amph. Rept. 286, as *Rana grylio*), Richter (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 555–557, as *Rana grylio*) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 551–556).

L. heckscheri (Wright, 1924)—River Frog

Reviewed by Sanders (1984, Cat. Am. Amph. Rept. 348) as *Rana heckscheri*), Butterfield and Lannoo, (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 557–558, as *Rana heckscheri*), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 556–560).

L. kauffeldi (Feinberg, Newman, Watkins-Colwell, Schlesinger, Zarate, Curry, Shaffer, and Burger, 2014)—Mid-Atlantic Coast Leopard Frog

The recognition of this species may require revision of the range of *L. pipiens* and *L. palustris* to exclude areas of southern New York, southern Connecticut, Rhode Island, and parts of Massachusetts. The original publication's association of this species on the basis of molecular data allied this species with *Lithobates palustris* rather than *L. sphenocephalus,* suggesting that issues of identification may run deeper than originally suggested.

L. okaloosae (Moler, 1985)—Florida Bog Frog

Reviewed by Moler (1993, Cat. Am. Amph. Rept. 561, as *Rana okaloosae*) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 561–564). Austin et al. (2003, Biol. J. Linn. Soc. 80: 601–624) discussed the genetic relationship of *L. okaloosae* and *L. clamitans.*

L. onca (Cope, 1875)—Relict Leopard Frog

The status of this taxon is controversial. Jaeger et al. (2001, Copeia 2001: 339–351) noted a close relationship with *L. yavapaiensis*, and Pfeiler and Markow (2008, Mol. Phylogenet. Evol. 49: 343–348) reported evidence consistent with a close or identical relationship with *L. yavapaiensis*. Reviewed by Jennings (1988, Cat. Am. Amph. Rept. 417, as *Rana onca*) and Bradford et al. (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 567–568) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 565–568).

L. palustris (LeConte, 1825)—Pickerel Frog

Geographic variation studied by Pace (1974, Misc. Publ. Mus. Zool. Univ. Michigan 148). Reviewed by Schaaf and Smith (1971, Cat. Am. Amph. Rept. 117, as *Rana palustris*) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 568–578). See comment under *L. kauffeldi.*

L. pipiens (Schreber, 1782)—Northern Leopard Frog

Synonymy and discussion in Pace (1974, Misc. Publ. Mus. Zool. Univ. Michigan 148) as *Rana pipiens.* Reviewed by Rorabaugh (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 570–576) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 578–608).

L. septentrionalis (Baird, 1854)—Mink Frog

Reviewed by Hedeen (1977, Cat. Am. Amph. Rept. 202, as *Rana septentrionalis*) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 608–617).

L. sevosus (Goin and Netting, 1940)—Dusky Gopher Frog

Reviewed by Altig and Lohoefener (1983, Cat. Am. Amph. Rept. 324, as *Rana areolata sevosa*), Richter and Jensen (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press:584–586), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 617–621). Recognized as distinct from *L. capito* and *L. areolatus* by Young and Crother (2001, Copeia, 2001: 382–388).

L. sphenocephalus (Cope, 1886)—Southern Leopard Frog

Pace (1974, Misc. Publ. Mus. Zool. Univ. Michigan 148) revived the older name *Rana utricularius* Harlan, 1825, for this species, which Pace emended to *R. utricularia*. Subsequently, the International Commission of Zoological Nomenclature moved (Opinion, 1685, 1992, Bull. Zool. Nomencl. 49: 171–173) to suppress *R. utricularia* for purposes of priority in favor of *R. sphenocephala*, leaving the unusual situation of the subspecies name *sphenocephalus* having priority over the older species name, *utricularius*. The status of the nominal subspecies requires detailed examination (see Brown et al., 1977, Bull. Zool. Nomencl. 33: 199–200; Zug, 1982, Bull. Zool. Nomencl. 39: 80–81; and Uzzell, 1982, Bull. Zool. Nomencl. 39: 83). Reviewed by Butterfield et al. (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 586–590) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 621–637). See comment under *L. kauffeldi.*

L. s. sphenocephalus (Cope, 1886)—Florida Leopard Frog

L. s. utricularius (Harlan, 1825)—Coastal Plains Leopard Frog

L. sylvaticus (LeConte, 1825)—Wood Frog

The extensive morphological variation in this species was examined by Martof and Humphries (1959, Amer. Midl. Nat. 61: 350–389), who rejected previously recognized taxonomic divisions; however a study of DNA sequence variation by Lee-Yaw et al. (2008, Mol. Ecol. 17: 867–884) revealed two distinct clades corresponding to eastern and western populations. Reviewed by Martof (1970, Cat. Am. Amph. Rept. 86, as *Rana sylvatica.*), Redmer and Trauth (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 590–593, as *Rana sylvatica*), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 637–669).

L. tarahumarae (Boulenger, 1917)—Tarahumara Frog

Extinct in the USA although persisting in Mexico. Attempts are being made to reintroduce the species into former Arizona localities. Reviewed by Zweifel (1968, Cat. Am. Amph. Rept. 66, as *Rana tarahumarae.*), Rorabaugh and Hale (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 593–595, as *Rana tarahumarae*), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 669–637).

L. virgatipes (Cope, 1891)—Carpenter Frog

Reviewed by Gosner and Black (1968, Cat. Am. Amph. Rept. 67, as *Rana virgatipes*), Mitchell (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 595–596, as *Rana virgatipes*), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 674–681). Data provided by Pytel (1986, Herpetologica 42: 273–282) suggest that careful evaluation for cryptic species is warranted.

L. yavapaiensis (Platz and Frost, 1984)—Lowland Leopard Frog

See comment under *L. onca*. Reviewed by Sredl (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 596–599, as *Rana yavapaiensis*) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 681–636).

Pseudacris Fitzinger, 1843—CHORUS FROGS

Lemmon et al. (2007, Mol. Phylogenet. Evol. 44: 1068–1082) revised the *P. nigrita* group (*P. brimleyi, P. brachyphona, P. clarkii, P. feriarum, P. kalmi, P. maculata,* and *P. triseriata* and an unnamed species, which was subsequently named as *Pseudacris fouquettei*). Fouquette and Dubois (2014, A Checklist of North American Amphibians and Reptiles: The United States and Canada. Xlibris Corporation.) deployed a system of subgenera based on the work of Lemmon et al., placing the eastern species in the subgenus *Pseudacris* and the western members (*P. cadaverina, P. hypchondriaca, P. regilla,* and *P. sierra*) in the subgenus *Hyliola*, and the species *P. ocularis* and *P. crucifer* in the subgenus *Limnaoedus* but we have not adopted subgenera in this list. Duellman et al. (2016, Zootaxa 4104: 1–109) restricted the name *Pseudacris* to the eastern and Rocky Mountain species related to *Pseudacris nigrita* and allocated the western species, *Pseudacris cadaverina, P. hypochondriaca, P. regilla,* and *H. sierra* to *Hyliola* Mocquard, 1899. We hold this change in abeyance pending some sense of acceptance within the professional community.

P. brachyphona (Cope, 1889)—Mountain Chorus Frog

Reviewed by Hoffmann (1980, Cat. Am. Amph. Rept. 234), Mitchell and Pauley (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 465–466) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 313–318).

P. brimleyi Brandt and Walker, 1933—Brimley's Chorus Frog

Reviewed by Hoffmann (1983, Cat. Am. Amph. Rept. 311, Mitchell (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 466–467)) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 319–322).

P. cadaverina (Cope, 1866)—California Treefrog

Reviewed by Gaudin (1979, Cat. Am. Amph. Rept. 225, as *Hyla cadaverina*), Ervin (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 467–470) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 322–328). Phillipsen and Metcalf (2009, Mol. Phylogenet. Evol. 53: 152–170) reported on considerable geographic structure at the molecular level among populations.

P. clarkii (Baird, 1854)—Spotted Chorus Frog

Reviewed by Pierce and Whitehurst (1990, Cat. Am. Amph. Rept. 458), Sredl (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 470–472), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 328–331).

P. crucifer (Wied-Neuwied, 1838)—Spring Peeper

Moriarty and Cannatella (2004, Mol. Phylogenet. Evol. 30: 409–420) rejected subspecies. Reviewed by Butterfield et al. (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 472–474), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 331–348).

P. feriarum (Baird, 1854)—Upland Chorus Frog

See comment under *P. kalmi*.

P. fouquettei Lemmon, Lemmon, Collins, and Cannatella, 2008—Cajun Chorus Frog

Reviewed by Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 357–363).

P. hypochondriaca (Hallowell, 1854)—Baja California Treefrog

Recuero et al. (2006, Mol. Phylogenet. Evol. 39: 293–304) recognized this species as distinct from *P. regilla* and composed of two subspecies, one of which is extralimital, and whose mutual status is unclear. Barrow et al. (2014, Mol. Phylogenet. Evol. 75: 78–900) suggested that the distinction of *P. hypochondriaca* and *P. sierra*, drawn on the basis of mtDNA, was not supported by nDNA analysis. This suggests that this taxon will ultimately be included in the synonymy of *Pseudacris regilla*.

P. h. hypochondriaca (Hallowell, 1854)—Northern Baja California Treefrog

P. illinoensis Smith, 1951—Illinois Chorus Frog

Moriarty and Cannatella (2004, Mol. Phylogenet. Evol. 30: 409–420) and Barrow et al. (2015. Mol. Ecol. 24:4739-4758) discussed the arguable distinctiveness of this taxon with respect to *Pseudacris streckeri*. Reviewed by Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 363–367).

P. kalmi Harper, 1955—New Jersey Chorus Frog

Platz (1989, Copeia 1989: 704–712) retained *P. feriarum* and *P. kalmi* as subspecies of one species but suggested that they might also be distinct species on the basis of data presented by Hedges (1986, Syst. Zool. 35: 1–21). Lemmon et al. (2007, Mol. Phylogenet. Evol. 44: 1068–1082) confirmed that *P. kalmi* and *P. feriarum* are distinct species although the contact zone between these taxa is poorly understood.

P. maculata (Agassiz, 1850)—Boreal Chorus Frog

Considered a species distinct from *P. triseriata* by Platz (1989, Copeia 1989: 704–712). Lemmon et al. (2007, Mol. Phylogenet. Evol. 44: 1068–1082) revised the geographic limits of this species although the evidence based only on mitochondrial DNA variation was not accepted by Green et al. (2014. North American amphibians: distribution and diversity. Univ of California Press.). Reviewed by Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 371–384).

P. nigrita (Le Conte, 1825)—Southern Chorus Frog

Reviewed by Gates (1988, Cat. Am. Amph. Rept. 416), Leja (2005, in Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 474–475), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 385–390). Subspecies rejected by Moriarty and Cannatella (2004, Mol. Phylogenet. Evol. 30: 409–420).

P. ocularis (Holbrook, 1838)—Little Grass Frog

Reviewed by Franz and Chantell (1978, Cat. Am. Amph. Rept. 209, as *Limnaoedus ocularis*), Jensen, (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press:475–477), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 391–395).

P. ornata (Holbrook, 1836)—Ornate Chorus Frog

For discussion see Harper (1937, Am. Midl. Nat. 18: 260–272). Reviewed by Jensen (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 477–478), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 395–400).

P. regilla (Baird and Girard, 1852)—Pacific Treefrog

Recuero et al. (2006, Mol. Phylogenet. Evol. 39: 293–304) redelimited this species and revised its range. Rorabaugh and Lannoo (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 478–484) provided a detailed account that summarized the literature (in the sense of including *Pseudacris sierra* and *Pseudacris hypochondriaca*. Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 400–416) also provided a review.

P. sierra (Jameson, Mackey, and Richmond, 1966)—Sierran Treefrog

Recognized as distinct from *P. regilla* by Recuero et al. (2006, Mol. Phylogenet. Evol. 39: 293–304; 2006, Mol. Phylogenet. Evol. 41: 511). See comment under *P. hypochondriaca*.

P. streckeri Wright and Wright, 1933—Strecker's Chorus Frog

Reviewed by Smith (1966, Cat. Am. Amph. Rept. 27), and Shepard et al.(2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 484–485) provided reviews in the sense of including *Pseudacris illinoensis*. Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 416–421) also provided a review. See comment under *Pseudacris illinoensis*.

P. triseriata (Wied-Neuwied, 1838)—Western Chorus Frog

See comment under *P. maculata*. Lemmon et al. (2007, Mol. Phylogenet. Evol. 44: 1068–1082) revised the geographic limits of this species based on mitochondrial DNA evidence. Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 421–428) reviewed the species.

Rana Linnaeus, 1758—BROWN FROGS

This large taxon of predominantly Eurasian frogs was redelimited by Frost et al. (2006, Bull. Am. Mus. Nat. Hist., 297, and Che et al. (2007, Mol. Phylogenet. Evol. 42: 1–13) to exclude a number of taxa (e.g., *Lithobates, Glandirana, Odorrana, Pelophylax*). See *Lithobates* for most North American species associated with *Rana* prior to 2006 and comments regarding taxonomy.

R. aurora Baird and Girard, 1852—Northern Red-legged Frog

Reviewed by Altig and Dumas (1972, Cat. Am. Amph. Rept. 160, in the sense of including *R. draytonii*), Pearl (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 528–530), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 687–697). Evidence of the distinctiveness of this species from *R. draytonii* was provided by Hayes and Miyamoto (1984, Copeia 1984: 1018–1022), Shaffer et al. (2004, Mol. Phylogenet. Evol. 13: 2667–2677), Conlon et al. (2006, Peptides 27: 1305–1312), and Pauly et al. (2008, J. Herpetol. 42: 668–679).

R. boylii Baird, 1854—Foothill Yellow-legged Frog

Reviewed by Zweifel (1968, Cat. Am. Amph. Rept. 71), Fellers (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 534–536), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 697–707). Molecular study of geographic variation of this rapidly disappearing species should prove illuminating.

R. cascadae Slater, 1939—Cascades Frog

Reviewed by Altig and Dumas (1971, Cat. Am. Amph. Rept. 105), Pearl and Adams (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 538–540), and Dodd (2013, FFrogs of the United States and Canada, John Hopkins Univ. Press: 707–715). The disjunct populations should be investigated with respect to call and molecular parameters.

R. draytonii Baird and Girard, 1852—California Red-legged Frog

See comment under *R. aurora.* Reviewed by Fellers (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 552–554) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 715–722).

R. luteiventris Thompson, 1913—Columbia Spotted Frog

Green et al. (1996, Evolution 50: 374–390) and Cuellar (1996, Biogeographica 72: 145–150) suggested that *R. pretiosa* was composed of two sibling species. Subsequently Green et al. (1997, Copeia 1997: 1–8) recognized the eastern and northern form, *R. luteiventris,* as a species distinct from *R. pretiosa*. Reviewed by Reaser and Pilliod (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 559–563) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 723–732).

R. muscosa Camp, 1917—Southern Mountain Yellow-legged Frog

Reviewed by Zweifel (1968, Cat. Am. Amph. Rept. 65), Vredenburg et al. (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 563–566), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 733–739). Vredenburg et al. (2007, J. Zool. 271: 361–374) discussed the systematics of this species and its disappearance from large parts of its former range.

R. pretiosa Baird and Girard, 1853—Oregon Spotted Frog

See comment under *R. luteiventris*. Reviewed by Pearl and Hayes (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 577–580) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 739–747).

R. sierrae Camp, 1917—Sierra Nevada Yellow-legged Frog

Vredenburg et al. (2007, J. Zool. 271: 361–374) recognized this species as distinct from *R. muscosa*. Reviewed by Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 747–752).

Rhinella Fitzinger, 1826—SOUTH AMERICAN TOADS

This genus of predominantly South American toads was redelimited by Chaparro et al. (2007, Herpetologica 63: 203–212) to reflect the phylogenetic results of Pramuk (2006, Zool. J. Linn. Soc. 146: 407–452). Van Bocxlaer et al. (2010, Science 327: 679–682) suggested that *Rhinella* is only distantly related to North American toads of the genera *Incilius* and *Anaxyrus*. See comment under *Anaxyrus*, regarding the treatment of this genus as a subgenus by some.

R. horribilis (Wiegmann, 1833) —Mesoamerican Cane Toad

Recently shown to be a distinct species from *R. marina* by Acevedo et al. (2016, Zootaxa, 4103: 574–586). Found in South Texas south through Middle America to northwestern Peru. Hero and Stoneham (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 417–422) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 186–191), provided detailed accounts for the USA under *Bufo marinus* or *Rhinella marina,* prior to the partition of the overarching species complex.

Rhinophrynus Duméril and Bibron, 1841—BURROWING TOADS

R. dorsalis Duméril and Bibron, 1841—Burrowing Toad

Geographic variation has not been studied in any detail and cryptic lineages are a possibility. Reviewed by Fouquette (1969, Cat. Am. Amph. Rept. 78) and Fouquette (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 599–600).

Scaphiopus Holbrook, 1836—NORTH AMERICAN SPADEFOOTS

See comment under *Spea*.

S. couchii Baird, 1854—Couch's Spadefoot

Reviewed by Wasserman (1970, Cat. Am. Amph. Rept. 85), Morey (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 508–511), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 753–760). Geographic variation is poorly documented.

S. holbrookii (Harlan, 1835)—Eastern Spadefoot

Reviewed by Wasserman (1968, Cat. Am. Amph. Rept. 70, as *Scaphiopus h. holbrookii*), Palis (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 511–512), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 772–776).

S. hurterii Strecker, 1910—Hurter's Spadefoot

Reviewed by Wasserman (1968, Cat. Am. Amph. Rept. 70, as *Scaphiopus holbrookii hurterii*), briefly by Lannoo (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 512–513), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 772–776).

Smilisca Cope, 1865—MEXICAN TREEFROGS
The content of this taxon was redelimited by Faivovich et al. (2005, Bull. Am. Mus. Nat. Hist. 294) to include former *Pternohyla*.

S. baudinii (Duméril and Bibron, 1841)—Mexican Treefrog
Reviewed by Duellman (1968, Cat. Am. Amph. Rept. 59), Malone (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 489–491), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 431–435).

S. fodiens (Boulenger, 1882)—Lowland Burrowing Treefrog
Reviewed by Trueb (1969, Cat. Am. Amph. Rept. 77, as *Pternohyla fodiens*), Sredl (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 488–489), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 428–431).

Spea Cope, 1866—WESTERN SPADEFOOTS
Tanner (1989, Great Basin Nat. 49: 38–70) and Wiens and Titus (1991, Herpetologica 47: 21–28) recognized *Spea* as distinct from *Scaphiopus,* within which it was previously regarded as a subgenus.

S. bombifrons (Cope, 1863)—Plains Spadefoot
Known to hybridize with *S. multiplicata* in parts of their ranges (Brown, 1976, Contrib. Sci. Nat. Hist. Mus. Los Angeles Co. 286). Geographic variation is poorly documented. Reviewed by Farrar and Hey (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 513–514) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 777–785).

S. hammondii (Baird, 1859 "1857")—Western Spadefoot
This name formerly covered populations now referred to *S. multiplicata* and *S. intermontana* until separated by Brown (1976, Contrib. Sci. Nat. Hist. Mus. Los Angeles Co. 286). See Tanner (1989, Great Basin Nat. 49: 503–510) for discussion, although he continued to retain these species as subspecies of *S. hammondi*, a position rejected by Wiens and Titus (1991, Herpetologica 47: 21–38). Reviewed by Morey (2005, i*in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 514–517) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 786–790).

S. intermontana (Cope, 1883)—Great Basin Spadefoot
Geographic variation very poorly documented, and, according to evidence provided by Titus and Wiens (1991, Herpetologica 47: 21–29), this nominal species may be a paraphyletic composite of at least two species. Reviewed by Hall (1999, Cat. Am. Amph. Rept. 650), Morey (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press:517–519), and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 791–797).

S. multiplicata (Cope, 1863)—Mexican Spadefoot
Considered a species distinct from *S. hammondii* by Brown (1976, Contrib. Sci. Nat. Hist. Mus. Los Angeles Co. 286) and by Titus and Wiens (1991, Herpetologica 47: 21–28). Regarded, on the basis of overall similarity and paleoclimatic inference to be conspecific with *S. hammondii* by Van Devender et al.(1991, Southwest. Nat. 36: 302–314) and by Tanner (1989, Great Basin Nat. 49: 503–510). Tanner recognized *S. h. stagnalis* Cope as the northern (Arizona to central Chihuahua) subspecies of his *Spea hammondii*, though the phylogenetic evidence presented by Titus and Wiens (1991, op.cit.) indicated it

to be part of *S. multiplicata*. Geographic variation has not been carefully studied and cryptic species are possible. Reviewed by Morey (2005, *in* Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 519–522) and Dodd (2013, Frogs of the United States and Canada, John Hopkins Univ. Press: 798–806).

S. m. stagnalis (Cope, 1875)—Chihuahuan Desert Spadefoot

Caudata - Salamanders

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Ambystoma Tschudi, 1838—MOLE SALAMANDERS

A. annulatum Cope, 1886—Ringed Salamander

A. barbouri Kraus and Petranka, 1989—Streamside Salamander

A. bishopi Goin, 1950—Reticulated Flatwoods Salamander

Pauly et al. (2006, Mol. Ecol. 16: 415–429) recognized western populations of *A. cingulatum* as a distinct species. They inadvertently reversed the proposed vernacular name with that for *A. cingulatum*.

A. californiense Gray, 1853—California Tiger Salamander

A. cingulatum Cope, 1868—Frosted Flatwoods Salamander

Pauly et al. (2006, Mol. Ecol. 16: 415–429) recognized western populations of *A. cingulatum* as a distinct species (*A. bishopi*) and proposed a new vernacular name for this species. They inadvertently reversed the proposed vernacular name with that for *A. bishopi*.

A. gracile (Baird, 1859)—Northwestern Salamander

A. jeffersonianum (Green, 1827)—Jefferson Salamander

Taxonomic recognition of asexual forms that combine genomes of this species, *A. laterale*, *A. texanum*, and *A. tigrinum* raises complex issues. These include discordance between cytoplasmic and nuclear genes, reticulate evolution, and genome-swapping (Bogart, 2003, *in* Sever, D.M. [ed.], Reproductive Biology and Phylogeny of Urodela, Science Publishers, Inc., Pp. 109–134). Bi and Bogart (2010, BMC Evol. Biol. 10: 238) confirm an ancient origin for the mitochondrial genome shared by asexual forms of this complex. Dubois and Rafaëlli (2012, Alytes 28: 77–161) resurrected the name *platineum* for the asexual forms.

A. laterale Hallowell, 1856—Blue-spotted Salamander

See comment under *A. jeffersonianum*.

A. mabeei Bishop, 1928—Mabee's Salamander

A. macrodactylum Baird, 1850—Long-toed Salamander

Lee-Yaw and Irwin (2012, J. Evol. Biol. 25: 2276–2287) and Lee-Yaw et al. (2014, Mol. Ecol. 23: 4590–4602) evaluated geographic variation of mtDNA and nuclear genes throughout the range of the species and found the distributions of five lineages did not completely agree with those of the five presently recognized subspecies, but suggested no changes in the taxonomy of the species.

A. m. columbianum Ferguson, 1961—Eastern Long-toed Salamander

A. m. croceum Russell and Anderson, 1956—Santa Cruz Long-toed Salamander

A. m. krausei Peters, 1882—Northern Long-toed Salamander

A. m. macrodactylum Baird, 1850—Western Long-toed Salamander
A. m. sigillatum Ferguson, 1961—Southern Long-toed Salamander

A. maculatum (Shaw, 1802)—Spotted Salamander

A. mavortium Baird, 1850 "1849"—Western Tiger Salamander

Shaffer and McKnight (1996, Evolution 50: 417–433) provided molecular phylogenetic data indicating that the eastern and western tiger salamanders should be regarded as distinct species and treated the western forms as subspecies of *Ambystoma mavortium*. Lannoo ((2005, in Lannoo, M. [ed.], Amphibian Declines: the Conservation Status of United States Species. Univ. of California Press: 636–639) includes *A. mavortium* in *A. tigrinum*.

A. m. diaboli Dunn, 1940—Gray Tiger Salamander
A. m. melanostictum (Baird, 1860)—Blotched Tiger Salamander
A. m. mavortium Baird, 1850 "1849"—Barred Tiger Salamander
A. m. nebulosum Hallowell, 1853—Arizona Tiger Salamander
A. m. stebbinsi Lowe, 1954—Sonoran Tiger Salamander

A. opacum (Gravenhorst, 1807)—Marbled Salamander

A. talpoideum (Holbrook, 1838)—Mole Salamander

A. texanum (Matthes, 1855)—Small-mouthed Salamander

A. tigrinum (Green, 1825)—Eastern Tiger Salamander

See comment under *A. mavortium*.

Amphiuma Garden, 1821—AMPHIUMAS

A. means Garden, 1821—Two-toed Amphiuma

A. pholeter Neill, 1964—One-toed Amphiuma

A. tridactylum Cuvier, 1827—Three-toed Amphiuma

Aneides Baird, 1851—CLIMBING SALAMANDERS

A. aeneus (Cope and Packard, 1881)—Green Salamander

A. ferreus Cope, 1869—Clouded Salamander

A. flavipunctatus (Strauch, 1870)—Black Salamander

Rissler and Apodaca (2007, Syst. Biol. 56: 924–942) conclude, on the basis of mitochondrial DNA phylogeography and ecological niche modeling, that this taxon should be subdivided into two or more species. Dubois and Raffaëlli (2012, Alytes 28: 77–161) formally recognize *A. iecanus* Cope, 1883, *niger* Myers and Maslin, 1948, and a *nomen nudum*, "*sequoiensis*" Lowe, 1950, the latter based on an unpublished thesis. Reilly et al. (2013, Diversity 5: 657–679) used nuclear and mitochondrial DNA to show that northern populations in the Klamath, Smith, and Rogue River drainages are genetically distinct from other populations but made no taxonomic changes. Raffaëlli (2013, Les Urodèles du Monde, 2e edition, Penclen Édition, France) recognizes *A. niger* and *A. iëcanus* (although diacritical marks are not to be used in scientific names), and also refers to an unnamed subspecies of *A. flavipunctatus* that he formerly treated as "*sequoiensis*" by the French vernacular name "*Anéides noir de l'Est*". Furthermore, he refers to the populations identified by Reilly et al. (2012, Mol. Ecol. 21: 5745–5761) as an unnamed species, to which he applies the French vernacular name "*Anéides noir du Nord*". Fouquette and Dubois (2014, A Checklist of North American Amphibians and Reptiles: The United States and Canada. Xlibris Corporation.)do not recognize the subspecies listed below. Reilly and Wake (2012 Molec. Ecol. 21: 5745–5761), Reilly et al. (2013: Diversity 5: 657–679), and Reilly and Wake (2014, J. Biogeog. 41: 280–2910 suggested that there are undescribed species within *A. flavipunctatus* on the basis of molecular data, but did not revise the present taxonomy.

A. f. flavipunctatus (Strauch, 1870)—Speckled Black Salamander

A. f. niger Myers and Maslin, 1948—Santa Cruz Black Salamander

A. hardii (Taylor, 1941)—Sacramento Mountains Salamander

A. lugubris (Hallowell, 1849)—Arboreal Salamander

A. vagrans Wake and Jackman, 1999—Wandering Salamander

Batrachoseps Bonaparte, 1839—SLENDER SALAMANDERS

B. altasierrae Jockusch, Martínez-Solano, Hansen, and Wake, 2012—Greenhorn Mountains Slender Salamander

B. attenuatus (Eschscholtz, 1833)—California Slender Salamander

This species is highly differentiated with respect to mitochondrial DNA and Martinéz-Solano et al. (2007, Molec. Ecol., 16: 4335–4355) recognized five major clades. Highton (2014, Molec. Phylo. Evol., 71: 127–141), using only the mtDNA data, suggested that as many as 39 species should be recognized.

B. bramei Jockusch, Martínez-Solano, Hansen, and Wake, 2012—Fairview Slender Salamander

B. campi Marlow, Brode, and Wake, 1979—Inyo Mountains Salamander

B. diabolicus Jockusch, Wake, and Yanev, 1998—Hell Hollow Slender Salamander

B. gabrieli Wake, 1996—San Gabriel Mountains Slender Salamander

B. gavilanensis Jockusch, Yanev, and Wake, 2001—Gabilan Mountains Slender Salamander.

B. gregarius Jockusch, Wake, and Yanev, 1998—Gregarious Slender Salamander

B. incognitus Jockusch, Yanev, and Wake, 2001—San Simeon Slender Salamander

B. kawia Jockusch, Wake, and Yanev, 1998—Sequoia Slender Salamander

B. luciae Jockusch, Yanev, and Wake, 2001—Santa Lucia Mountains Slender Salamander

B. major Camp, 1915—Southern California Slender Salamander

B. m. aridus Brame, 1970—Desert Slender Salamander

Fouquette and Dubois (2014, A Checklist of North American Amphibians and Reptiles: The United States and Canada. Xlibris Corporation.) follow Hansen and Wake (2005, *in* Lannoo M., [ed.], Amphibian Declines, Status of United States Species, Univ. California Press, Pp. 666–667) in treating this form as a full species. The status of this taxon is considered in Martínez-Solano et al. (2012, Mol. Phylogenet. Evol. 63: 131–149), who document discordance between nuclear and mitochondrial sequence data in *B. major*. *B. m. aridus* is one of six clades of “southern” *major* with mtDNA data, but “northern” and “southern” components of *major* are not supported by data from nuclear genes.

B. m. major Camp, 1915—Garden Salamander

B. minor Jockusch, Yanev, and Wake, 2001—Lesser Slender Salamander

B. nigriventris Cope, 1869—Black-bellied Slender Salamander

B. pacificus (Cope, 1865)—Channel Islands Slender Salamander
B. regius Jockusch, Wake, and Yanev, 1998—Kings River Slender Salamander
B. relictus Brame and Murray, 1968—Relictual Slender Salamander
B. robustus Wake, Yanev, and Hansen, 2002—Kern Plateau Salamander
B. simatus Brame and Murray, 1968—Kern Canyon Slender Salamander
B. stebbinsi Brame and Murray, 1968—Tehachapi Slender Salamander
B. wrighti (Bishop, 1937)—Oregon Slender Salamander

Cryptobranchus Leuckart, 1821—HELLBENDERS
C. alleganiensis (Daudin, 1803)—Hellbender
C. a. alleganiensis (Daudin, 1803)—Eastern Hellbender
C. a. bishopi Grobman, 1943—Ozark Hellbender

Collins (1991, Herpetol. Rev. 22: 42–43) elevated this form to species status. Molecular data presented by Crowhurst et al. (2011, Conserv. Genet. 12: 637–646) do not support the monophyly of the subspecies, but no formal change in the taxonomy was suggested.

Desmognathus Baird, 1850—DUSKY SALAMANDERS
D. abditus Anderson and Tilley, 2003—Cumberland Dusky Salamander
D. aeneus Brown and Bishop, 1947—Seepage Salamander
D. apalachicolae Means and Karlin, 1989—Apalachicola Dusky Salamander
D. auriculatus (Holbrook, 1838)—Holbrook's Southern Dusky Salamander

Divergent mitochondrial DNA lineages occur among Atlantic Coastal Plain populations that are morphologically assignable to this species. These lineages do not comprise a monophyletic unit (Beamer and Lamb, 2008, Mol. Phylogenet. Evol. 47: 143–153).

D. brimleyorum Stejneger, 1895—Ouachita Dusky Salamander
D. carolinensis Dunn, 1916—Carolina Mountain Dusky Salamander

Tilley et al. (2013, Ecol. and Evol. 3: 2547–2567) reported on a molecularly distinctive form in the southern Bald Mountains and northern foothills of the Great Smoky Mountains that is phenotypically indistinguishable from this species. This form appears to hybridize with both *D. carolinensis* and *D. santeetlah* in the Blue Ridge Physiographic Province, and with an innominate lowland form further west in the Ridge and Valley Physiographic Province.

D. conanti Rossman, 1958—Spotted Dusky Salamander

Populations in the Ridge and Valley Physiographic Province of eastern Tennessee appear to hybridize with this form but Tilley et al. (2013, Ecol. and Evol. 3: 2547–2567) declined to assign them to *D. conanti* due to their unique mitochondrial haplotypes.

D. folkertsi Camp, Tilley, Austin, and Marshall, 2002—Dwarf Black-bellied Salamander
D. fuscus (Rafinesque, 1820)—Northern Dusky Salamander

Molecular data suggest deep differentiation among populations that morphologically resemble *D. fuscus* (Bonett, 2002, Copeia 2002: 344–355; Kozak et al., 2005, Evolution 59: 2000–2016), and additional species almost certainly await resolution.

D. imitator Dunn, 1927—Imitator Salamander

D. marmoratus (Moore, 1899)—Shovel-nosed Salamander

Molecular data indicate that this taxon and *D. quadramaculatus* may not be reciprocally monophyletic (Rissler and Taylor, 2003, Mol. Phylogenet. Evol. 27: 197–211; Kozak et al., 2005, Evolution 59: 2000–2016; Jones et al. 2006, Mol. Phylogenet. Evol. 38: 280–287; Wooten and Rissler, 2011, Acta Herpetol. 6: 175–208). None of these studies propose taxonomic revisions but Dubois and Rafaëlli (2012, Alytes 28: 77–161) and Fouquette and Dubois (2014, A Checklist of North American Amphibians and Reptiles: The United States and Canada. Xlibris Corporation.) resurrect two taxa, *D. aureatus* and *D. melanius*, from synonymy under this species (Martof, 1962, Am. Midl. Nat. 67: 30).

D. monticola Dunn, 1916—Seal Salamander

D. ochrophaeus Cope, 1859—Allegheny Mountain Dusky Salamander

D. ocoee Nicholls, 1949—Ocoee Salamander

This form consists of numerous parapatric units that occupy different mountain ranges in the southern Blue Ridge and Cumberland Plateau physiographic provinces and probably represent distinct species (Tilley and Mahoney, 1996, Herpetol. Monogr. 10: 1–42; Tilley, 1997, J. Heredity 88: 305–315; Highton, 2000, *in* R. C. Bruce, B. G. Jaeger and L. D, Houck [eds.], The Biology of Plethodontid Salamanders. Kluwer Academic/Plenum Publishers: 215–241).

D. orestes Tilley and Mahoney, 1996—Blue Ridge Dusky Salamander

This taxon consists of two genetically differentiated units that may represent cryptic species (Tilley and Mahoney, 1996, Herpetol. Monogr. 10: 1–42; Tilley, 1997, J. Heredity 88: 305–315; Highton, 2000, *in* R. C. Bruce, R. G. Jaeger, and L. D, Houck [eds.], The Biology of Plethodontid Salamanders. Kluwer Academic/Plenum Publishers: 215–241).

D. organi Crespi, Brown, and Rissler, 2010—Northern Pygmy Salamander

D. planiceps Newman, 1955—Flat-headed Salamander.

Removed from synonymy under *D. fuscus* (Martof and Rose, 1962, Copeia 1962: 215–216) by Tilley et al. (2008, Zool. J. Linn. Soc. 152: 115–130).

D. quadramaculatus (Holbrook, 1840)—Black-bellied Salamander

See comment under *D. marmoratus*.

D. santeetlah Tilley, 1981—Santeetlah Dusky Salamander

D. valentinei Means, Lamb, and Bernardo, 2017—Valentine's Southern Dusky Salamander

This species was described by Means et al. (2017, Zootaxa 4263: 467-506), on the basis of mtDNA and morphological differences distinguishing it from *D. auriculatus*.

D. welteri Barbour, 1950—Black Mountain Salamander

D. wrighti King, 1936—Pygmy Salamander

Dicamptodon Strauch, 1870—PACIFIC GIANT SALAMANDERS

D. aterrimus (Cope, 1868)—Idaho Giant Salamander

D. copei Nussbaum, 1970—Cope's Giant Salamander

D. ensatus (Eschscholtz, 1833)—California Giant Salamander

D. tenebrosus (Baird and Girard, 1852)—Coastal Giant Salamander

Ensatina Gray, 1850—ENSATINAS

E. eschscholtzii Gray, 1850—Ensatina

The taxonomy of this complex is controversial. Some authors would recognize from two (e.g., Frost and Hillis, 1990, Herpetologica 46: 87–104) to as many as 11 or more species (e.g., Highton, 1998, Herpetologica 54: 254–278), whereas others (e.g., Wake, 1997, Proc. Natl. Acad. Sci. USA 94: 7761–7767; Wake and Schneider, 1998, Herpetologica 54: 279–298; Pereira and Wake, 2009, Evolution 68: 2288–2301; Kuchta and Wake, 2016, Copeia 104: 189–201) consider evidence for evolutionary independence of segments of the complex to be inadequate or equivocal. Narrow hybrid zones have been demonstrated to exist between populations assigned to the subspecies *xanthoptica* and *platensis*, and between *klauberi* and *eschscholtzii*, and one site of sympatry with no hybridization between the latter pair has been reported (Wake et al., 1989, *in* D. Otte and J. A. Endler [eds.], Speciation and its Consequences, Sinauer: 134–157). Broader zones of genetic admixture and reticulation between units of the complex in many areas raise questions about evolutionary independence, and borders of taxa are elusive.

E. e. croceater (Cope, 1868)—Yellow-blotched Ensatina
E. e. eschscholtzii Gray, 1850—Monterey Ensatina
E. e. klauberi Dunn, 1929—Large-blotched Ensatina
E. e. oregonensis (Girard, 1856)—Oregon Ensatina
E. e. picta Wood, 1940—Painted Ensatina
E. e. platensis (Jimenez de al Espada, 1875)—Sierra Nevada Ensatina
E. e. xanthoptica Stebbins, 1949—Yellow-eyed Ensatina

Eurycea Rafinesque, 1822—BROOK SALAMANDERS

E. aquatica Rose and Bush, 1963—Brown-backed Salamander
E. bislineata (Green, 1818)—Northern Two-lined Salamander
E. chamberlaini Harrison and Guttman, 2003—Chamberlain's Dwarf Salamander
E. chisholmensis Chippindale, Price, Wiens, and Hillis, 2000—Salado Salamander
E. cirrigera (Green, 1831)—Southern Two-lined Salamander
E. guttolineata (Holbrook, 1838)—Three-lined Salamander
E. hillisi Wray, Means, and Steppan, 2017—Hillis's Dwarf Salamander

This species was described by Wray et al. (2017, Herpetol. Monogr. 31:18-46) based on morphological and mtDNA sequence differences distinguishing it from other Dwarf Salamanders.

E. junaluska Sever, Dundee, and Sullivan, 1976—Junaluska Salamander
E. latitans Smith and Potter, 1946— Cascade Caverns Salamander
E. longicauda (Green, 1818)—Long-tailed Salamander
    E. l. longicauda (Green, 1818)—Eastern Long-tailed Salamander
    E. l. melanopleura (Cope, 1894)—Dark-sided Salamander
E. lucifuga Rafinesque, 1822—Cave Salamander
E. multiplicata (Cope, 1869)—Many-ribbed Salamander

Formerly subdivided into the subspecies *E. m. griseogaster* and *E. m. multiplicata*.

Biochemical data indicate that populations assigned to *E. m. griseogaster* are conspecific with *E. tynerensis*, while those of the nominate subspecies fall into two or three divergent clades that may represent distinct species (Bonett and Chippindale, 2004, Mol. Ecol. 13: 1189–1203).

E. nana Bishop, 1941—San Marcos Salamander

E. naufragia Chippindale, Price, Wiens, and Hillis, 2000—Georgetown Salamander

E. neotenes Bishop and Wright, 1937—Texas Salamander

E. paludicola (Mittleman, 1947)—Western Dwarf Salamander

This species was originally described as a subspecies of *E. quadridigitata* by Mittleman, but he later (1967, Cat. Am. Amphib. Rept 44:1–2) synonymized it with *E. quadridigitata*. Wray et al. (2017, Herpetol. Monogr.31: 18–46) recognized it as a species on the basis of morphological and mtDNA sequence differences distinguishing it from other Dwarf Salamanders.

E. pterophila Burger, Smith, and Potter, 1950—Fern Bank Salamander

E. quadridigitata (Holbrook, 1842)—Southeastern Dwarf Salamander

E. rathbuni (Stejneger, 1896)—Texas Blind Salamander

E. robusta (Longley, 1978)—Blanco Blind Salamander

E. sosorum Chippindale, Price, and Hillis, 1993—Barton Springs Salamander

E. spelaea Stejneger, 1892—Grotto Salamander

E. sphagnicola Wray, Means, and Steppan, 2017—Bog Dwarf Salamander

This species was described by Wray et al. (2017, Herpetol. Monogr. 31:18-46) on the basis of morphological and mtDNA sequence differences distinguishing it from other Dwarf Salamanders.

E. subfluvicola Steffen, Irwin, Blair, and Bonett, 2014—Ouachita Streambed Salamander

E. tonkawae Chippindale, Price, Wiens, and Hillis, 2000— Jollyville Plateau Salamander

E. tridentifera Mitchell and Reddell, 1965—Comal Blind Salamander

E. troglodytes Baker, 1957—Valdina Farms Salamander.

E. tynerensis Moore and Hughes, 1939—Oklahoma Salamander

E. wallacei (Carr, 1939)—Georgia Blind Salamander

This taxon was originally placed in the monotypic genus *Haideotriton*. It was considered a junior synonym of *Eurycea* by Dubois (2005, Alytes 23: 20) and shown to nest phylogenetically within *Eurycea* by Pyron and Wiens (2011, Mol. Phylogenet. Evol. 61: 543–583), and Bonett et al. (2013 [2014], Evolution 68: 466–482).

E. waterlooensis Hillis, Chamberlain, Wilcox, and Chippindale, 2001—Austin Blind Salamander

E. wilderae Dunn, 1920—Blue Ridge Two-lined Salamander

Gyrinophilus Cope, 1869—SPRING SALAMANDERS

See comment under *Pseudotriton montanus*. Kuchta et al. (2016, J. Biogeog. 43: 639–652), in a molecular study of both mitochrondrial and nuclear DNA sequences of the genus, found considerable discordance between their results and the present taxonomy, but did not suggest any taxonomic changes.

G. gulolineatus Brandon, 1965—Berry Cave Salamander

Niemiller et al. (2008, Molec. Ecol. 17: 2258–2275) provide molecular evidence indicating that this form has diverged very recently from *G. porphyriticus* and is phylogenetically nested within populations referred to that species. Niemiller and Miller (2010, Cat. Am. Amphib. Rept. 862: 1–4), Miller and Niemiller (2012, Cat. Am. Amphib. Rept. 884: 1–7), and Raffaëlli (2013, Les Urodèles du Monde, 2e edition, Penclen Édition, France) treat the taxon as a full species, while Fouquette and Dubois (2014, A Checklist of North American Amphibians and Reptiles: The United States and Canada. Xlibris Corporation.) treat it as a subspecies of *G. "porphoriticus."* Bonnet et al. (2013 [2014], Evolution 68: 466–482) treat it as a subspecies of *G. palleucus* in their trees but refer to it as a full species in their text. While closely related to *G. palleucus*, the taxon is distinguished from it in body proportions, osteology, colorations, and some genetic aspects (Niemiller and Miller, 2010).

G. palleucus McCrady, 1954—Tennessee Cave Salamander

Fouquette and Dubois (2014, A Checklist of North American Amphibians and Reptiles: The United States and Canada. Xlibris Corporation.) treat this taxon and its subspecies as subspecies of *G. porphyriticus*, citing a close relationship to a population of that species suggested in trees in Bonnet et al. (2013 [2014], Evolution 68: 466–482). That relationship lacks strong statistical support and the latter authors drew no taxonomic conclusions.

G. p. necturoides Lazell and Brandon, 1962—Big Mouth Cave Salamander

G. p. palleucus McCrady, 1954—Pale Salamander

G. porphyriticus (Green, 1827)—Spring Salamander

G. p. danielsi (Blatchley, 1901)—Blue Ridge Spring Salamander

G. p. dunni Mittleman and Jopson, 1941—Carolina Spring Salamander

G. p. duryi (Weller, 1930)—Kentucky Spring Salamander

G. p. porphyriticus (Green, 1827)—Northern Spring Salamander

G. subterraneus Besharse and Holsinger, 1977—West Virginia Spring Salamander

Hemidactylium Tschudi, 1838—FOUR-TOED SALAMANDERS

Herman and Bouzat (2016, J. Biogeog. 43: 666–678) analyzed geographic variation in a mitochondrial gene throughout the range of the genus and found six highly divergent lineages, but suggested no change in the current taxonomy.

H. scutatum (Temminck and Schlegel in Von Siebold, 1838)—Four-toed Salamander

Hydromantes Gistel, 1848—WEB-TOED SALAMANDERS

Rovito (2010, Mol. Ecol. 19: 4554–4571) evaluated genetic variation in both mitochondrial and nuclear genes in *H. brunus* and *H. platycephalus* and those data supported the hypothesis that *H. brunus* was derived from *H. platycephalus* by peripatric speciation. Thus *H. platycephalus* is paraphyletic, but no changes in its taxonomy were suggested.

H. brunus Gorman, 1954—Limestone Salamander

H. platycephalus (Camp, 1916)—Mount Lyell Salamander

H. shastae Gorman and Camp, 1953—Shasta Salamander

Necturus Rafinesque, 1819—WATERDOGS and MUDPUPPIES

N. alabamensis Viosca, 1937—Black Warrior River Waterdog

Raffaëlli (2013, Les Urodèles du Monde, 2e edition, Penclen Édition, France) and Fouquette and Dubois (2014, A Checklist of North American Amphibians and Reptiles, The United States and Canada, Xlibris Corporation) recognize *N. lodingi*, which we treat as a synonym of this form.

N. beyeri Viosca, 1937—Gulf Coast Waterdog

According to Bart et al. (1997, J. Herpetol. 31: 192–201) this taxon may consist of more than one species.

N. lewisi Brimley, 1924—Neuse River Waterdog

N. maculosus (Rafinesque, 1818)—Mudpuppy

N. m. maculosus (Rafinesque, 1818)—Common Mudpuppy

N. m. louisianensis Viosca, 1938—Red River Mudpuppy

Collins (1991, Herpetol. Rev. 22: 42–43) elevated this form to species rank. Its taxonomic status requires further research.

N. punctatus (Gibbes, 1850)—Dwarf Waterdog

Notophthalmus Rafinesque, 1820—EASTERN NEWTS

N. meridionalis (Cope, 1880)—Black-spotted Newt

N. m. meridionalis (Cope, 1880)—Texas Black-spotted Newt

N. perstriatus (Bishop, 1941)—Striped Newt

N. viridescens (Rafinesque, 1820)—Eastern Newt

N. v. dorsalis (Harlan, 1828)—Broken-striped Newt

N. v. louisianensis (Wolterstorff, 1914)—Central Newt

N. v. piaropicola (Schwartz and Duellman, 1952)—Peninsula Newt

N. v. viridescens (Rafinesque, 1820)—Red-spotted Newt

Phaeognathus Highton, 1961—RED HILLS SALAMANDERS

P. hubrichti Highton, 1961—Red Hills Salamander

Plethodon Tschudi, 1838—WOODLAND SALAMANDERS

P. ainsworthi Lazell, 1998—Bay Springs Salamander

This taxon is based on two poorly preserved specimens, one subsequently destroyed, from a single locality in south-central Mississippi. Himes and Beckett (2014, Southeast. Nat. 12: 851–856) suggest that the taxon be treated as a synonym of *Plethodon mississippi*, based on their study of the holotype and their inability to find any *Plethodon* other than *P. mississippi* at the type locality.

P. albagula Grobman, 1944—Western Slimy Salamander

There is molecular and morphological evidence for distinct evolutionary lineages within this taxon (Baird et al., 2006, Copeia 2006: 760–768; Davis and Pauly, 2011, Copeia 2011: 103–112).

P. amplus Highton and Peabody, 2000—Blue Ridge Gray-cheeked Salamander

P. angusticlavius Grobman, 1944—Ozark Zigzag Salamander

P. asupak Mead, Clayton, Nauman, Olson and Pfrender, 2005—Scott Bar Salamander

P. aureolus Highton, 1984—Tellico Salamander

P. caddoensis Pope and Pope, 1951—Caddo Mountain Salamander

Shephard and Burbrink (2011, Mol. Phylogenet. Evol. 59: 399–411) sequenced two mitochondrial genes in a detailed study of geographic variation in this species and found four highly divergent groups, but made no taxonomic changes.

P. chattahoochee Highton, 1989—Chattahoochee Slimy Salamander

P. cheoah Highton and Peabody, 2000—Cheoah Bald Salamander

P. chlorobryonis Mittleman, 1951—Atlantic Coast Slimy Salamander

P. cinereus (Green, 1818)—Eastern Red-backed Salamander

P. cylindraceus (Harlan, 1825)—White-spotted Slimy Salamander

P. dorsalis Cope, 1889—Northern Zigzag Salamander

P. dunni Bishop, 1934—Dunn's Salamander

P. electromorphus Highton, 1999—Northern Ravine Salamander

P. elongatus Van Denburgh, 1916—Del Norte Salamander

P. fourchensis Duncan and Highton, 1979—Fourche Mountain Salamander

Shephard and Burbrink (2009, Mol. Ecol. 18: 2243–2262) sequenced two mitochondrial genes in a study of geographic variation in the species and found four subgroups but did not suggest changes in the taxonomy.

P. glutinosus (Green, 1818)—Northern Slimy Salamander

P. grobmani Allen and Neill, 1949—Southeastern Slimy Salamander

P. hoffmani Highton, 1972—Valley and Ridge Salamander

P. hubrichti Thurow, 1957—Peaks of Otter Salamander

P. idahoensis Slater and Slipp, 1940—Coeur d'Alene Salamander

Pelletier et al. (2015, Syst. Biol. 64: 909–925) found support for two independently evolving lineages within this species based on 8 nuclear genes along with mitochondrial data.

P. jordani Blatchley, 1901—Red-cheeked Salamander

P. kentucki Mittleman, 1951—Cumberland Plateau Salamander

There is molecular evidence for distinct evolutionary lineages within this taxon (Kuchta et al. 2016, PLoS ONE 11(3): 1–25.

P. kiamichi Highton, 1989—Kiamichi Slimy Salamander

P. kisatchie Highton, 1989—Louisiana Slimy Salamander

P. larselli Burns, 1954—Larch Mountain Salamander

P. meridianus Highton and Peabody, 2000—South Mountain Gray-cheeked Salamander

P. metcalfi Brimley, 1912—Southern Gray-cheeked Salamander

P. mississippi Highton, 1989—Mississippi Slimy Salamander

P. montanus Highton and Peabody, 2000—Northern Gray-cheeked Salamander

P. neomexicanus Stebbins and Riemer, 1950—Jemez Mountains Salamander

P. nettingi Green, 1938—Cheat Mountain Salamander

P. ocmulgee Highton, 1989—Ocmulgee Slimy Salamander

P. ouachitae Dunn and Heinze, 1933—Rich Mountain Salamander

Shephard and Burbrink (2008, Mol. Ecol. 17: 5315–5335) sequenced two mitochondrial genes in a study of geographic variation in the species and found seven subgroups but did not suggest changes in the taxonomy.

P. petraeus Wynn, Highton and Jacobs, 1988—Pigeon Mountain Salamander

P. punctatus Highton, 1972—Cow Knob Salamander

P. richmondi Netting and Mittleman, 1938—Southern Ravine Salamander

P. savannah Highton, 1989—Savannah Slimy Salamander

P. sequoyah Highton, 1989—Sequoyah Slimy Salamander

P. serratus Grobman, 1944—Southern Red-backed Salamander

Newman and Austin (2015, PLoS ONE: 0130131), and Thesing et al. (2016, Evol. Ecol. 30: 89–104) sequenced mitochondrial DNA from the same or nearby localities in most isolates of this species. They both found five divergent groups, but neither suggested changes in the taxonomy of the group.

P. shenandoah Highton and Worthington, 1967—Shenandoah Salamander

P. sherando Highton, 2004—Big Levels Salamander

P. shermani Stejneger, 1906—Red-legged Salamander

P. stormi Highton and Brame, 1965—Siskiyou Mountains Salamander

P. teyahalee Hairston, 1950—Southern Appalachian Salamander

P. vandykei Van Denburgh, 1906—Van Dyke's Salamander

P. variolatus (Gilliams, 1818)—South Carolina Slimy Salamander

P. vehiculum (Cooper, 1860)—Western Red-backed Salamander

P. ventralis Highton, 1997—Southern Zigzag Salamander

P. virginia Highton, 1999—Shenandoah Mountain Salamander

P. websteri Highton, 1979—Webster's Salamander

P. wehrlei Fowler and Dunn, 1917—Wehrle's Salamander

P. welleri Walker, 1931—Weller's Salamander

P. yonahlossee Dunn, 1917—Yonahlossee Salamander

Pseudobranchus Gray, 1825—DWARF SIRENS

P. axanthus Netting and Goin, 1942—Southern Dwarf Siren

P. a. axanthus Netting and Goin, 1942—Narrow-striped Dwarf Siren

P. a. belli Schwartz, 1952—Everglades Dwarf Siren

P. striatus (LeConte, 1824)—Northern Dwarf Siren

P. s. lustricolus Neill, 1951—Gulf Hammock Dwarf Siren

P. s. spheniscus Goin and Crenshaw, 1949—Slender Dwarf Siren

P. s. striatus (LeConte, 1824)—Broad-striped Dwarf Siren

Pseudotriton Tschudi, 1838—RED and MUD SALAMANDERS

Kozak et al. (2009, Evolution 63: 1769–1784) presented support for the monophyly of *Pseudotriton*. Bonett et al. (2013 [2014], Evolution 68: 466–482) presented molecular evidence that this genus may not be monophyletic but made no taxonomic recommendations, stating that while *Gyrinophilus*, *Pseudotriton*, and *Stereochilus* form a clade, relationships among these lineages are not well supported in current analyses.

P. montanus Baird, 1850—Mud Salamander

Fouquette and Dubois (2014, A Checklist of North American Amphibians and Reptiles: The United States and Canada. Xlibris Corporation) transfer this species to the genus *Gyrinophilus*, citing the cladogram published by Bonnet et al. (Bonett et al. (2013 [2014], Evolution 68: 466–482). Those authors, however, refrained from recommending this treatment on the basis of their phylogeny and relationships among forms of *Pseudotriton* and *Gyrinophilus* lack strong statistical support in their analysis.

P. m. diastictus Bishop, 1941—Midland Mud Salamander

This taxon was elevated to a full species by Collins (1991, Herpetol. Rev. 22: 42–43). This treatment has been followed by Dubois and Raffaëlli (2012, Alytes 28: 77–161) and Raffaëlli (2013, Les Urodèles du Monde, 2e edition, Penclen Édition, France). Fouquette and Dubois (2014, A Checklist of North American Amphibians and Reptiles: The United States and Canada. Xlibris Corporation.) also treat it as a subspecies of *P. montanus*, which they transfer to *Gyrinophilus.* The phylogeny presented by Bonett et al. (2013 [2014], Evolution 68: 466–482) indicates a sister relationship between this taxon and *P. montanus.* In the absence of data on levels of genetic differentiation we retain the original taxonomic status of this form (Bishop, 1941, Occ. Pap. Mus. Zool. Univ. Michigan 451: 1–27).

P. m. flavissimus Hallowell, 1856—Gulf Coast Mud Salamander

Dubois and Raffaëlli (2012, Alytes 28:77–161) consider this taxon a full species, and Raffaëlli (2013, Les Urodèles du Monde, 2e edition, Penclen Édition, France) treats it as a full species, including two subspecies, *flavissimus* and *floridanus*.

P. m. floridanus Netting and Goin, 1942—Rusty Mud Salamander

P. m. montanus Baird, 1850—Eastern Mud Salamander

P. ruber (Sonnini de Manoncourt and Latreille, 1801)—Red Salamander

Folt et al. (2016, Mol. Phylogen. Evol. 98: 97–110) published an analysis of molecular variation in one nuclear and two mtDNA genes in the southern and western portions of the range of this species. They found several lineages whose geographic ranges do not agree with those of the four presently recognized subspecies. However, they continued to recognize all four subspecies for other reasons.

P. r. nitidus Dunn, 1920—Blue Ridge Red Salamander

P. r. ruber (Latreille, 1801)—Northern Red Salamander

P. r. schencki (Brimley, 1912)—Black-chinned Red Salamander

P. r. vioscai Bishop, 1928—Southern Red Salamander

Rhyacotriton Dunn, 1920—TORRENT SALAMANDERS

R. cascadae Good and Wake, 1992—Cascade Torrent Salamander

R. kezeri Good and Wake, 1992—Columbia Torrent Salamander

R. olympicus (Gaige, 1917)—Olympic Torrent Salamander

R. variegatus Stebbins and Lowe, 1951—Southern Torrent Salamander

Siren Österdam, 1766—SIRENS

S. intermedia Barnes, 1826—Lesser Siren

S. i. texana was synonymized with *S. intermedia nettingi* by Flores-Villela and Brandon (1992, Ann. Carnegie Mus. 61: 289–291) but Dubois and Raffaëlli (2012, Alytes 28: 77–161) and Fouquette and Dubois (2014, A Checklist of North American Amphibians and Reptiles: The United States and Canada. Xlibris Corporation) considered that subspecies to be valid. The taxonomic status of this and the remaining subspecies remains unclear and deserve careful evaluation.

S. i. intermedia Barnes, 1826—Eastern Lesser Siren

S. i. nettingi Goin, 1942—Western Lesser Siren

S. lacertina Österdam, 1766—Greater Siren

The status of the two distantly allopatric populations (see Flores-Villela and Brandon, 1992, Ann. Carnegie Mus. 61: 289–291) in (1) south Texas and adjacent Mexico and (2) peninsular Florida is unclear and deserves evaluation.

Stereochilus Cope, 1869—MANY-LINED SALAMANDERS

S. marginatus (Hallowell, 1856)—Many-lined Salamander

Taricha Gray, 1850—PACIFIC NEWTS

T. granulosa (Skilton, 1849)—Rough-skinned Newt

T. rivularis (Twitty, 1935)—Red-bellied Newt

T. sierrae (Twitty, 1942) —Sierra Newt

Formerly considered a subspecies of *T. torosa*; elevated to species status by Kuchta (2007, Herpetologica 63: 332–350).

T. torosa (Rathke, *in* Eschscholtz, 1833)—California Newt

Urspelerpes Camp, Peterman, Milanovich, Lamb, Maerz, and Wake, 2009—PATCH-NOSED SALAMANDERS

U. brucei Camp, Peterman, Milanovich, Lamb, Maerz, and Wake, 2009—Patch-nosed Salamander.

Squamata (in part) - Lizards

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Anniella Gray, 1852—CALIFORNIA LEGLESS LIZARDS

Taxonomy for *Anniella* follows Papenfuss and Parham (2013, Breviora 536: 1–17), who recognized five species for specimens previously referred to *A. pulchra* based on molecular and morphological evidence. Some of the standard English names proposed by Papenfuss and Parham (2013, *op. cit.*) have been changed in the interest of brevity and descriptive accuracy.

A. alexanderae Papenfuss and Parham, 2013—Temblor Legless Lizard
A. campi Papenfuss and Parham, 2013—Big Spring Legless Lizard
A. grinnelli Papenfuss and Parham, 2013—Bakersfield Legless Lizard
A. pulchra Gray, 1852—Northern Legless Lizard
A. stebbinsi Papenfuss and Parham, 2013—San Diegan Legless Lizard

Anolis Daudin, 1802—ANOLES

Taxonomy for *Anolis* follows Williams (1976, Breviora 440: 1–21) with addition of subspecies from Schwartz and Henderson (1991, Amphibians and Reptiles of the West Indies, University of Florida Press) and modifications described in the notes below. Some authors divide *Anolis* into five (e.g., Guyer and Savage, 1986, Syst. Zool. 35: 509–531; 1992, Syst. Biol. 41: 89–110; Savage and Guyer, 1989, Amphibia-Reptilia 10: 105–116) or 8 (Nicholson et al., 2012, Zootaxa 3477: 1–108) genera (for criticisms see Williams, 1989, *in* C. A. Woods [ed.], Biogeography of the West Indies, Sandhill Crane Press :433–477; Cannatella and de Queiroz, 1989, Syst. Zool. 38: 57–69; Jackman et al., 1999, Syst. Biol. 48: 254–285; Poe, 2004, Herpetol. Monogr. 18: 37–89; 2013, Zootaxa 3626: 295–299). Other authors (e.g., Nicholson, 2002, Herpetol. Monogr. 16: 93–120; Brandley and de Queiroz, 2004, Herpetol. Monogr. 18: 90–126; Castañeda and de Queiroz, 2011, Mol. Phylogenet. Evol. 61: 784–800; 2013, Bull. Mus. Comp. Zool. 160: 345–398) use the name *Anolis* for the larger clade, applying the other names to various of its subclades (sometimes with different circumscriptions than the genera with the same names). We have adopted the second approach and included names of subclades parenthetically, where applicable.

A. carolinensis (Voigt, 1832)—Green Anole

Tollis et al. (2012, PLoS ONE 7(6): e38474) and Campbell-Staton et al. (2012, Ecol. Evol. 2: 2274–2284) provided evidence for the existence of five mutually exclusive mtDNA clades within *A. carolinensis*. Although nDNA (Tollis et al., *op. cit.*) corroborated the existence of some of these units, it also suggested the existence of gene flow between others. More extensive geographic sampling by Tollis and Boissinot (2014, Genetica 142: 59–72) revealed that two of the five mtDNA clades are nested but supported five genetic clusters, with admixture. More extensive nDNA sampling by Manthey et al. (2016, Ecol. and Evol. doi: 10.1002/ece3.2547) corroborated those clusters. Because the distributions of the subspecies proposed by Vance (1991, Bull. Maryland Herpetol. Soc. 27: 43–89) do not match those of any of the five genetic clusters, we have not recognized subspecies; however, the existence of fixed differences and an estimated Pliocene divergence between southern Florida and the remaining populations (Manthey et al., 2016, *op. cit*) suggests that the possibility of more than one species. Species delimitation studies involving contact zones between the phylogeographic groups are needed.

A. (Ctenonotus) distichus Cope, 1861—Bark Anole

The potential natural occurrence of *A. (Ctenonotus) distichus* in Florida is an unresolved issue. Current populations show evidence of hybridization between introduced *A. d. dominicensis* and another form (see note on *A. distichus* in the section on alien species), but the origin of the other form is currently unknown. Smith and McCauley (1948, Proc. Biol. Soc. Washington 61: 159–166) named it as the subspecies *A. d. floridanus* based on differences from the Bahamian and Hispaniolan specimens. Schwartz (1968, Bull. Mus. Comp. Zool. 137: 255–310) reviewed morphological variation in *A. distichus* and confirmed differences between Floridian versus Bahamian and Hispaniolan populations. He considered *A. d. floridanus* to have colonized Florida recently, either by natural dispersal or human introduction, and that the Bimini chain (*A. d. biminiensis*) and Andros Island (*A. d. distichoides*) represented the most likely sources. A detailed study of genetic variation in *A. distichus*, similar to that done for *A. sagrei* (Kolbe et al., 2004, Nature 431: 177–181) and including the introduced populations, would help to clarify this issue.

A. (C.) d. floridanus Smith and McCauley, 1948—Florida Bark Anole

Aspidoscelis Fitzinger, 1843—WHIPTAILS

Taxonomy for *Aspidoscelis* follows Maslin and Secoy (1986, Contrib. Zool. Univ. Colorado Mus. 1: 1–60) and Wright (1993, *in* J. W. Wright and L. J. Vitt [eds.], Biology of Whiptail Lizards [Genus *Cnemidophorus*], Oklahoma Mus. Nat. Hist. :27–81) with modifications by Camp (1916, Univ. California Pub. Zool. 17: 63–74; proposal of *A. t. munda* as a replacement name for the invalid name *A.* (*t.*) *undulata* Hallowell 1854), Maslin and Walker (1981, Am. Midl. Nat. 105: 84–92; treatment of *A. t. stejnegeri* as the name of the subspecies of *A. tigris* occurring in coastal southern California), Collins (1991, Herpetol. Rev. 22: 42–43; treatment of *A. xanthonota* as a separate species from *A. burti*), Dessauer and Cole (1991, Copeia 1991: 622–637; recognition of *A. marmorata (tigris) reticuloriens*), Trauth (1992, Texas J. Sci. 44: 437–443; proposal of *A. sexlineata stephensae*), Wright and Lowe (1993, J. Arizona-Nevada Acad. Sci. 27: 129–157; proposals of *A. inornatus gypsi*, *A. i. junipera*, *A. i. llanuras*, and *A. i. pai*), Trauth (1995, Bull. Chicago Herpetol. Soc. 30: 68; spelling of *A. sexlineata stephensae*), Smith et al. (1996, Herpetol. Rev. 27: 129; priority of the names *A. scalaris* and *A. semifasciata* over *A. septemvittata* and *A. sericea* and precedence of *A. scalaris* over *A. semifasciata* and *A. septemvittata* over *A. sericea*), Taylor and Walker (1996, Copeia 1996: 140–148; synonymy of *A. t. gracilis* with *A. t. tigris*, and use of the name *A. t. punctilinealis* for the taxon formerly called *A. t. gracilis*), Walker et al. (1997, Herpetologica 53: 233–259; restriction of the name *A. tesselata* to the diploid members of the species formerly referred to by that name and recognition of the species *A. neotesselata* for the triploid members), ICZN (1999, Bull. Zool. Nomencl. 56: 162–163) precedence of the name *A. neomexicana* over *A. perplexa*; Reeder et al. (2002, Am. Mus. Novit. 3365: 1–61; use of *Aspidoscelis* for a clade containing all of the whiptail species native to North America), Cole et al. (2014, Breviora 539:1–19; proposal of *A. neavesi*), and those described in additional notes below. Maslin and Secoy (op. cit.) and Wright (op. cit.) are the sources for information on reproductive mode.

A. exsanguis (Lowe, 1956)—Chihuahuan Spotted Whiptail (unisexual)

A. flagellicauda (Lowe and Wright, 1964)—Gila Spotted Whiptail (unisexual)

A. gularis (Baird and Girard, 1852)—Common Spotted Whiptail

See comment under *A. scalaris*.

A. g. gularis (Baird and Girard, 1852)—Texas Spotted Whiptail

A. hyperythra (Cope, 1863)—Orange-throated Whiptail

A. h. beldingi (Stejneger, 1894)—Belding's Orange-throated Whiptail

A multivariate analysis of morphological variation in *A. hyperythra* by Taylor and Walker (2014, Southwest. Nat. 59: 221–227) found evidence of differentiation between populations north and south of the Isthmus of La Paz, which have previously been recognized as the subspecies *A. h. beldingi* and *A. h. hyperythra*, respectively (e.g., Wright, 1994, *in* Brown and Wright [eds.], Herpetology of the North American Deserts, Southwestern Herpetologists Society :255–271). The results of that study did not support the recognition of *A. h. schmidti*.

A. inornata (Baird, 1859 "1858")—Little Striped Whiptail

Wright and Lowe (1993, J. Arizona-Nevada Acad. Sci. 27: 129–157) recognized six subspecies of *Aspidoscelis inornata* in the United States. Collins (1997, SSAR Herpetol. Circ. 25), treated three of them, *arizonae*, *gypsi*, and *pai*, as separate species (but see note on *A. i. gypsi*). Walker et al. (1996, J. Herpetol. 30: 271–275) called into question some of the characters used by Wright and Lowe (1993, J. Arizona-Nevada Acad. Sci. 27: 129–157) to separate *Aspidoscelis inornata junipera* from *A. i. heptagramma*. Walker et al. (2012, Herpetol. Conserv. Biol. 7: 265–275) and Sullivan et al. (2013, Copeia 2013:366–377) provided morphological evidence for the separation of *A. pai* from *A. arizonae*; however, Sullivan et al. (op. cit.) found that *A. arizonae* was not morphologically distinguishable from *A. i. llanuras*. Sullivan et al. (2014, Copeia 2014: 519–529) found incongruence between mtDNA clades and several of the subspecies of *A. inornata*. We have followed those authors in no longer recognizing *arizonae* and *pai* as species separate from *A. inornata* and in considering *heptagramma*, *junipera*, and *llanuras* to form a single taxonomic entity. A comprehensive study of gene flow within the Little Striped Whiptail complex, including the Mexican populations, is needed.

A. i. arizonae (Van Denburgh, 1986)—Arizona Striped Whiptail

A. i. gypsi (Wright and Lowe, 1993)—Little White Whiptail

Rosenblum and Harmon (2010, Evolution 65: 946–960), in a study based on n and mtDNA, coloration, and body size and proportions, concluded that although whiptails from the gypsum sands have diverged more from their dark soil counterparts in terms of body size and shape than sympatric earless and fence lizards (see notes on *Holbrookia maculata ruthveni* and *Sceloporus cowlesi*), the genetic data indicate that the whiptails are failing to speciate. This conclusion suggests that it is more appropriate to recognize the taxon not as a species (as proposed by Collins, 1997, SSAR Herpetol. Circ. 25) but as a subspecies of *A. inornata.*

A. i. heptagramma (Axtell, 1961)—Northern Striped Whiptail

A. i. pai (Wright and Lowe, 1993)—Pai Striped Whiptail

A. laredoensis (McKinney, Kay, and Anderson, 1973)—Laredo Striped Whiptail (unisexual)

Abuhteba et al. (2001, Copeia 2001: 262–266) interpreted histoincompatibility between the members of two pattern classes within *Aspidoscelis laredoensis* as evidence for separate hybrid origins of the corresponding clones. The authors noted that two of them are planning to restrict the name *A. laredoensis* to one of the clones and propose a new species name for the other.

A. marmorata (Baird and Girard, 1852)—Marbled Whiptail

Dessauer and Cole (1991, Copeia 1991: 622–637; see also Dessauer et al., 2000, Bull. Am. Mus. Nat. Hist. 246: 1–148) presented evidence of both differentiation and interbreeding between *A. marmorata* and *A. tigris* along a transect near the southern part of the border between Arizona and New Mexico, including a narrow (3 km) hybrid zone in which hybrid indices based on color patterns and allele frequencies changed abruptly in concordant step clines. Although those authors interpreted their data as reflecting incomplete speciation between the two forms (i.e., a single species), the same data can be interpreted alternatively as reflecting largely separate gene pools (i.e., two species). Following the terminology of de Queiroz (1998, *in* D. J. Howard and S. H. Berlocher [eds.], Endless Forms: Species and Speciation, Oxford University Press :57–75), they are here considered incompletely separated species.

A. m. marmorata (Baird and Girard, 1852)—Western Marbled Whiptail

A. m. reticuloriens (Vance, 1978)—Eastern Marbled Whiptail

See note on *A. tesselata* concerning hybridization between that species and *A. m. reticuloriens*.

A. neavesi Cole, Taylor, Baumann, and Baumann, 2014—Neaves' Whiptail (unisexual)

This tetraploid parthenogenetic species of *Aspidoscelis* was generated in the laboratory by hybridization between *A. exsanguis* and *A. inornata* (Lutes et al., 2011, Proc. Natl. Acad. Sci. USA 108: 9910–9915; Cole et al., 2014, Breviora 539: 1–19). It is not known to occur in the wild.

A. neomexicana (Lowe and Zweifel, 1952)—New Mexico Whiptail (unisexual)

Manning et al. (2005, Am. Mus. Novit. 3492: 1–56) presented evidence for hybridization between *A. neomexicana* and *A. sexlineatus viridis*, but there is no indication either that this hybridization has produced a new hybrid species or that it is leading to the fusion of the two species.

A. neotesselata (Walker, Cordes and Taylor, 1997)—Colorado Checkered Whiptail (unisexual)

A. scalaris (Cope, 1892)—Plateau Spotted Whiptail

Aspidoscelis scalaris (as *A. septemvittata*) was treated as a subspecies of *A. gularis* by Maslin and Secoy (1986, Contrib. Zool. Univ. Colorado Mus. 1: 1–60) but as a species by Wright (1993, *in* J. W. Wright and L. J. Vitt [eds.], Biology of Whiptail Lizards [Genus *Cnemidophorus*], Oklahoma Mus. Nat. Hist. :27–81). Forstner et al. (1998, J. Herpetol. 32: 418–425) presented evidence of hybridization between *A. scalaris* and *A. gularis*. A detailed phylogeographic study of *A. scalaris* and closely related species is needed.

A. s. septemvittata (Cope, 1892)—Big Bend Spotted Whiptail

A. sexlineata (Linnaeus, 1766)—Six-lined Racerunner

A. s. sexlineata (Linnaeus, 1766)—Eastern Six-lined Racerunner
A. s. stephensae (Trauth, 1992)—Texas Yellow-headed Racerunner
A. s. viridis (Lowe, 1966)—Prairie Racerunner

See note on *A. neomexicana* concerning hybridization between that species and *A. s. viridis*.

A. sonorae (Lowe and Wright, 1964)—Sonoran Spotted Whiptail (unisexual)

A. stictogramma (Burger, 1950)—Giant Spotted Whiptail

Based on differences in body size, scutellation, and color patterns, Walker and Cordes (2011, Herpetol. Rev. 42: 33–39) inferred that *A. stictogramma* (formerly *A. burti stictogramma*) is a separate species from *A. burti*.

A. tesselata (Say, *in* James, 1822 "1823")—Common Checkered Whiptail (unisexual)

Aspidoscelis dixoni was recognized as a species by Wright (1993, *in* J. W. Wright and L. J. Vitt [eds.], Biology of Whiptail Lizards [Genus *Cnemidophorus*], Oklahoma Mus. Nat. Hist. :27–81) and Walker et al. (1994, Texas J. Sci. 46: 27–33) because its origin was thought to have resulted from a separate hybridization event than the one involved in the origin of the clone represented by the type of *A. tesselata*. However, Cordes and Walker (2006, Copeia 2006: 14–26) presented evidence in the form of skin-graft histocompatibility that *A. dixoni* and *A. tesselata* resulted from a single hybridization event. We have therefore treated the name *A. dixoni* as a synonym of *A. tesselata* following Maslin and Secoy (1986, Contrib. Zool. Univ. Colorado Mus. 1: 1–60). Taylor et al. (2001, Am. Mus. Novit. 3345: 1–65) presented evidence for hybridization between *A. tesselata* and *A. marmorata*, but there is no indication that this hybridization has produced a new hybrid species. Cole et al. (2007, Am. Mus. Novit. 3555: 1–31) presented evidence for hybridization between *A. tesselata* (one of the pattern classes formerly recognized as *A. dixoni*) and *A. tigris punctilinealis* and hypothesized that it may be negatively impacting the former taxon.

A. tigris (Baird and Girard, 1852)—Tiger Whiptail
A. t. munda (Camp, 1916)—California Whiptail
A. t. punctilinealis (Dickerson,1919)—Sonoran Tiger Whiptail

See note on *A. tesselata* concerning hybridization between that species and *A. t. punctilinealis*.

A. t. septentrionalis (Burger, 1950)—Plateau Tiger Whiptail
A. t. stejnegeri (Van Denburgh, 1894)—San Diegan Tiger Whiptail
A. t. tigris (Baird and Girard, 1852)—Great Basin Whiptail

A. uniparens (Wright and Lowe, 1965)—Desert Grassland Whiptail (unisexual)

A. velox (Springer, 1928)—Plateau Striped Whiptail (unisexual)

Maslin and Secoy (1986, Contrib. Zool. Univ. Colorado Mus. 1: 1–60) treated the name *Aspidoscelis* (*sackii*) *innotata* as a synonym of *A. velox*, but Wright (1993, *in* J. W. Wright and L. J. Vitt [eds.], Biology of Whiptail Lizards [Genus *Cnemidophorus*], Oklahoma Mus. Nat. Hist., Pp. 27–81) applied the name *A. velox* to populations of triploid parthenogens and treated *A. innotata* as the name of a separate diploid species. Cuellar (1977, Evolution 31: 24–31) found histoincompatibility (rejection of skin grafts) between *A. velox*-like lizards from Colorado, New Mexico, and Utah, which Cuellar and Wright (1992, C. R. Soc. Biogeogr. 68: 157–160) interpreted as potential evidence for different ploidy levels. The type locality of *A. velox* is in Arizona, while that of *A. innotata* is in

Utah, and lizards from New Mexico are known to be triploid (Neaves, 1969, J. Exp. Zool. 171: 175–184; Dessauer and Cole, 1989, *in* R. M. Dawley and J. P. Bogart [eds.], Evolution and Ecology of Unisexual Vertebrates, New York State Museum, Pp. 49–71). If lizards from the type locality of *A. innotata* turn out to be diploid, it would be reasonable to recognize a separate diploid species and apply the name *A. innotata* (Plateau Unspotted Whiptail) to it.

A. xanthonota (Duellman and Lowe 1953)—Red-backed Whiptail

Callisaurus Blainville, 1835—ZEBRA-TAILED LIZARDS

Taxonomy for *Callisaurus* follows de Queiroz (1989, Ph.D. dissertation, Univ. California, Berkeley).

C. draconoides Blainville, 1835—Zebra-tailed Lizard

Recent molecular phylogeographic studies shed some preliminary light on the relationships and status of the three U.S. subspecies of *C. draconoides*. Based on mtDNA, Lindell et al. (2005, Mol. Phylogenet. Evol. 36: 682–694) found that both *C. d. myurus* and *C. d. ventralis* are nested within *C. d. rhodostictus*, *C. d. ventralis* deeply so; however, both *C. d. myurus* and *C. d. ventralis* were represented by small samples, and there were large geographic gaps between these samples and those representing *C. d. rhodostictus*. Blaine (2008, Ph.D. dissertation, Washington Univ.) found that samples representing *C. d. rhodostictus* and *C. d. myurus* formed a mtDNA haplotype clade, as did those representing *C. d. ventralis*, but he had few samples from Baja California and none from the Mexican mainland. Based on genome-wide SNP data, Gottscho (2015, Ph.D. dissertation, Univ. California, Riverside and San Diego State Univ.) inferred that *C. d. rhodostictus* is distinct from more southerly subspecies endemic to Baja California.

C. d. myurus Richardson, 1915—Northern Zebra-tailed Lizard
C. d. rhodostictus Cope, 1896—Western Zebra-tailed Lizard
C. d. ventralis (Hallowell, 1852)—Eastern Zebra-tailed Lizard

Coleonyx Gray, 1845—BANDED GECKOS

Taxonomy for *Coleonyx* follows Grismer (1988, *in* Phylogenetic Relationships of the Lizard Families, R. Estes and G. Pregill [eds.], Stanford Univ. Press :369–469) with modifications described below.

C. brevis Stejneger, 1893—Texas Banded Gecko
C. reticulatus Davis and Dixon, 1958—Reticulate Banded Gecko
C. switaki (Murphy, 1974)—Switak's Banded Gecko
C. s. switaki (Murphy, 1974)—Peninsula Banded Gecko
C. variegatus (Baird, 1859 "1858")—Western Banded Gecko

Leavitt (2015, Ph.D. dissertation, Univ. California, Davis and San Diego State Univ.) presented evidence, based on mt and nuDNA sequences, that *C. v. variegatus* and *C. v. abbotti* constitute lineages with limited bi-directional nuclear gene flow and that *C. v. bogerti* and *C. v. utahensis* are not differentiated from *C. v. variegatus*.

C. v. abbotti Klauber, 1945—San Diego Banded Gecko
C. v. variegatus (Baird, 1859)—Desert Banded Gecko

Cophosaurus Troschel, 1852 "1850"—GREATER EARLESS LIZARDS

Taxonomy for *Cophosaurus* follows de Queiroz (1989, Ph.D. dissertation, Univ. California, Berkeley).

C. texanus Troschel, 1852 "1850"—Greater Earless Lizard

Blaine (2008, Ph.D. dissertation, Washington Univ.) found that most *C. texanus* sampled within the United States formed three non-overlapping mtDNA haplotype clades, the relationships among which were poorly supported. If the central clade is more closely related to the western clade, then the two primary clades would correspond roughly with the two subspecies of *C. texanus* that occur in the United States. Samples from the vicinity of Eagle Pass, Maverick County, Texas, formed a separate, earlier diverging clade that could represent a separate species or subspecies.

C. t. scitulus (Peters, 1951)—Chihuahuan Greater Earless Lizard
C. t. texanus Troschel, 1852—Texas Greater Earless Lizard

Crotaphytus Holbrook, 1842—COLLARED LIZARDS

Taxonomy for *Crotaphytus* follows McGuire (1996, Bull. Carnegie Mus. Nat. Hist. 32: 1–143); for precedence of *C. vestigium* over *C. fasciolatus* see McGuire (2000, Bull. Zool. Nomencl. 57: 158–161) and ICZN (2002, Bull. Zool. Nomencl. 59: 228–229). McGuire et al. (2007, Evolution 61: 2879–2897) interpreted incongruences between their mtDNA phylogeny and currently recognized species boundaries in *Crotaphytus* as evidence for introgression of *C. collaris* haplotypes into both *C. reticulatus* and *C. bicinctores* resulting from past hybridization during glacial maxima.

C. bicinctores Smith and Tanner, 1972—Great Basin Collared Lizard
C. collaris (Say, in James, 1822 "1823")—Eastern Collared Lizard
C. nebrius Axtell and Montanucci, 1977—Sonoran Collared Lizard
C. reticulatus Baird, 1859 "1858"—Reticulate Collared Lizard
C. vestigium Smith and Tanner, 1972—Baja California Collared Lizard

Dipsosaurus Hallowell, 1854—DESERT IGUANAS

Taxonomy for *Dipsosaurus* follows de Queiroz (1995, Publ. Espec. Mus. Zool. Univ. Nac. Autón. México 9: 1–48).

D. dorsalis (Baird and Girard, 1852)—Desert Iguana
    D. d. dorsalis (Baird and Girard, 1852)—Northern Desert Iguana

Elgaria Gray, 1838—WESTERN ALLIGATOR LIZARDS

Taxonomy for *Elgaria* follows Good (1988, Univ. California Pub. Zool. 121: 1–139) with modifications described below.

E. coerulea (Wiegmann, 1828)—Northern Alligator Lizard
    E. c. coerulea (Wiegmann, 1828)—San Francisco Alligator Lizard
    E. c. palmeri (Stejneger, 1893)—Sierra Alligator Lizard
    E. c. principis Baird and Girard, 1852—Northwestern Alligator Lizard
    E. c. shastensis (Fitch, 1934)—Shasta Alligator Lizard
E. kingii Gray, 1838—Madrean Alligator Lizard
    E. k. nobilis Baird and Girard, 1852—Arizona Alligator Lizard
E. multicarinata (Blainville, 1835)—Southern Alligator Lizard

A study of mtDNA sequences by Feldman and Spicer (2006, Mol. Ecol. 15: 2201–2222) and one of mt and nDNA sequences by Leavitt (2015, Ph.D. dissertation, Univ. California, Davis and San Diego State Univ.) failed to support previously recognized subspecies boundaries within *E. multicarinata* (Fitch, 1938, Am. Midl. Nat. 20: 381–424). Alleles of specimens from the central Coast Ranges of California (formerly *E.*

m. multicarinata) are more closely related to those of specimens from southern (*E. m. webbii*) rather than northern (*E. m. multicarinata*) California, while alleles of specimens from the Sierra Nevada (formerly *E. m. webbii*) are more closely related to those of specimens from northern (*E. m. multicarinata*) rather than southern (*E. m. webbii*) California. In addition, alleles representing *E. m. scincicauda* are phylogenetically intermixed with, as well as nested within, those of *E. m. multicarinata*. For these reasons, we have eliminated *E. m. scincicauda* and have changed the standard English names of the recognized subspecies. There is a potential problem with the scientific names of the subspecies: the type locality of *E. m. multicarinata*, given only as "Californie", was thought likely by Fitch (op. cit.) to be in the vicinity of Monterey, which is within the distribution of *E. m. webbii* as currently recognized.

E. m. multicarinata (Blainville, 1835)—Forest Alligator Lizard
E. m. webbii (Baird, 1859 "1858")—Woodland Alligator Lizard

E. panamintina (Stebbins, 1958)—Panamint Alligator Lizard

The results of Feldman and Spicer (2006, Mol. Ecol. 15: 2201–2222) indicate that *E. panamintina* is derived from within *E. multicarinata*.

Gambelia Baird 1859 "1858"—LEOPARD LIZARDS

Taxonomy for *Gambelia* follows McGuire (1996, Bull. Carnegie Mus. Nat. Hist. 32: 1–143) with modifications by Frost and Collins (1988, Herpetol. Rev. 19: 73–74; spelling of the specific epithet of *G. sila*).

G. copeii (Yarrow, 1882)—Cope's Leopard Lizard

McGuire et al. (2007 Evolution 61: 2879–2897) found the mtDNA of *G. copeii* to be deeply nested within that of *G. wislizenii* and suggested that perhaps the former should not be recognized as a separate species. A study of gene flow (or the absence thereof) between the two forms would clarify the situation.

G. sila (Stejneger, 1890)—Blunt-nosed Leopard Lizard

Grimes et al. (2014, Southwestern Nat. 59: 38–46) found that the mtDNA of this species forms two non-overlapping haplotype clades.

G. wislizenii (Baird and Girard, 1852)—Long-nosed Leopard Lizard

Gerrhonotus Wiegmann, 1828—EASTERN ALLIGATOR LIZARDS

Taxonomy for *Gerrhonotus* follows Good (1994, Herpetol. Monog. 8: 180–202).

G. infernalis Baird, 1859 "1858"—Texas Alligator Lizard

Heloderma Wiegmann, 1829—GILA MONSTERS and BEADED LIZARDS

Taxonomy for *Heloderma* follows Bogert and Martín del Campo (1956, Bull. Am. Mus. Nat. Hist. 109: 1–238).

H. suspectum Cope, 1869—Gila Monster

Douglas et al. (2010, Mol. Phylogenet. Evol. 55: 153–167) stated that they found no mtDNA evidence for the two subspecies of *H. suspectum*; however, their results are difficult to evaluate because little information is provided on the collection localities of the sampled specimens. Further study is needed.

H. s. cinctum Bogert and Martín del Campo, 1956—Banded Gila Monster
H. s. suspectum Cope, 1869—Reticulate Gila Monster

Holbrookia Girard, 1851—LESSER EARLESS LIZARDS

Taxonomy for *Holbrookia* follows Smith (1946, Handbook of Lizards, Cornell Univ. Press) with modifications by Duellman (1955, Occ. Pap. Mus. Zool. Univ. Michigan 569: 1–14; synonymy of *H. m. pulchra* with *H. m. thermophila*), Axtell (1956, Bull. Chicago Acad. Sci 10: 163–179; proposal of *H. maculata perspicua* and treatment of *H. lacerata* as a species), Clarke (1965, Emporia St. Res. Stud. 13: 1–66; removal of *H. texana* to *Cophosaurus*), Lowe (1964, *in* C. H. Lowe [ed.], The Vertebrates of Arizona, Univ. Arizona Press, Tucson, 153–174; recognition of *H. elegans* as a species; for supporting evidence see Adest, 1978, Ph.D. dissertation, Univ. California, Los Angeles, Wilgenbusch and de Queiroz, 2000, Syst. Biol. 49: 592–612, and Axtell, 1998, Interpretive Atlas of Texas Lizards 18: 1–19), and those described in additional notes below.

H. elegans Bocourt, 1874 ***in*** Duméril, Mocquard & Bocourt, 1870–1909—Elegant Earless Lizard

Blaine (2008, Ph.D. dissertation, Washington Univ.) found large levels of mtDNA sequence divergence between samples of this putative species from Arizona and southern Sonora (*H. e. thermophila*) versus those from southern Sinaloa (*H. e. elegans*), though large sampling gaps make it difficult to determine whether these forms represent separate species. His data also support the synonymy of *H. m. pulchra* with *H. e. thermophila*).

H. e. thermophila Barbour, 1921—Sonoran Earless Lizard

H. lacerata Cope, 1880—Spot-tailed Earless Lizard

H. l. lacerata Cope, 1880—Northern Spot-tailed Earless Lizard

H. l. subcaudalis Axtell, 1956—Southern Spot-tailed Earless Lizard

H. maculata Girard, 1851—Common Lesser Earless Lizard

Blaine (2008, Ph.D. dissertation, Washington Univ.) found that *Holbrookia maculata* from the United States formed three non-overlapping mtDNA haplotype clades inhabiting the Great Plains, the northern Chihuahuan Desert, and the southern Colorado Plateau. Because his results contradict the taxonomy previously adopted in this list, we have applied the oldest available names to the three haplotype clades and treated them as subspecies.

H. m. campi Schmidt, 1921—Plateau Earless Lizard
H. m. flavilenta Cope, 1883—Chihuahuan Lesser Earless Lizard
H. m. maculata Girard, 1851—Great Plains Earless Lizard
H. m. perspicua Axtell, 1956—Prairie Earless Lizard

This subspecies was not sampled by Blaine (2008, Ph.D. dissertation, Washington Univ.) and is retained until future studies address its status.

H. m. ruthveni Smith, 1943—Bleached Earless Lizard

Although mtDNA haplotypes of *H. m ruthveni* are nested within those of the taxon that is here called *H. m. flavilenta* (Blaine, 2008, Ph.D. dissertation, Washington Univ.), Rosenblum and Harmon (2010, Evolution 65: 946–960) found that earless lizards from the White Sands had diverged both morphologically and genetically from their counterparts on adjacent darker soils and concluded that the populations are well on their way toward completing speciation. On the other hand, data from ecotonal individuals suggest that the populations continue to exchange genes (i.e., that speciation is incomplete), and therefore it seems appropriate to treat the bleached form as a subspecies in the sense of a partially separated lineage.

H. propinqua Baird and Girard 1852—Keeled Earless Lizard

H. p. propinqua Baird and Girard 1852—Northern Keeled Earless Lizard

Blaine (2008, Ph.D. dissertation, Washington Univ.) found that mtDNA from *H. p. propinqua* forms two non-overlapping haplotype clades, one from the red sands south of the Balcones Escarpment and another from the white sands near the southeastern part of the Balcones Escarpment south into the Gulf Coastal Plain.

Ophisaurus Daudin, 1803—GLASS LIZARDS

Taxonomy for *Ophisaurus* follows McConkey (1954, Bull. Florida St. Mus. Biol. Sci. 2: 13–23) with modifications by Palmer (1987, Herpetologica, 43: 415–423; proposal of *O. mimicus*). Macey et al. (1999, Mol. Phylogenet. Evol. 12: 250–272) presented mtDNA evidence that *Ophisaurus*, if it includes North American, European, African, and Asian species, is not monophyletic. Although they favored placing all species in *Anguis*, this action is both nomenclaturally disruptive and makes *Anguis* redundant with Anguinae; we have therefore adopted their alternative proposal of retaining *Ophisaurus* for the North American and Southeast Asian species.

O. attenuatus Cope, 1880—Slender Glass Lizard
  O. a. attenuatus Cope, 1880—Western Slender Glass Lizard
  O. a. longicaudus McConkey, 1952—Eastern Slender Glass Lizard
O. compressus Cope, 1900—Island Glass Lizard
O. mimicus Palmer, 1987—Mimic Glass Lizard
O. ventralis (Linnaeus, 1766)—Eastern Glass Lizard

Petrosaurus Boulenger, 1885—BANDED ROCK LIZARDS

Taxonomy for *Petrosaurus* follows Jennings (1990, Cat. Am. Amph. Rept. 494; 1990, Cat. Am. Amph. Rept. 495), with modifications by Grismer (1999, Herpetologica 55: 446–469; treatment of *P. mearnsi* and *P. slevini* as separate species).

P. mearnsi (Stejneger, 1894)—Mearns's Rock Lizard

Phrynosoma Wiegmann, 1828—HORNED LIZARDS

Taxonomy for *Phrynosoma* follows Reeve (1952, Univ. Kansas Sci. Bull. 34: 817–960) with modifications by Zamudio et al. (1997, Syst. Biol. 46: 284–305; treatment of *P. hernandesi* as a separate species from *P. douglasii*; see also Montanucci, 2015, Zootaxa 4015: 1–177), Montanucci (2004, Herpetologica 60: 117–139; treatment of *P. blainvillii* as a separate species from *P. coronatum*; see also Leaché et al., 2009, Proc. Natl. Acad. Sci. USA 106: 12418–12423), Mulcahy et al. (2006, Mol. Ecol. 15: 1807–1826; treatment of *P. goodei* as a separate species from *P. platytrhinos)*, and those described in additional notes below. Leaché and McGuire (2006, Mol. Phylogenet. Evol. 39: 628–644; see also Leaché and Linkem, 2015, Copeia 103: 586–594) named four subclades of *Phrynosoma* based on the results of phylogenetic analyses of mitochondrial and nuclear genes. We have included names of subclades parenthetically, where applicable.

P. (Anota) blainvillii Gray, 1839—Blainville's Horned Lizard
P. cornutum (Harlan, 1825)—Texas Horned Lizard
P. (Tapaja) douglasii (Bell, 1829)**—**Pygmy Short-horned Lizard
P. (Doliosaurus) goodei Stejnejer, 1893—Goode's Horned Lizard
P. (Tapaja) hernandesi Girard, 1858—Greater Short-horned Lizard

In a recent revision of the Short-horned Lizards based on morphology, Montanucci (2015, Zootaxa, 4015: 1–177) recognized five species for lizards previously assigned to the single species *P. hernandesi* (Zamudio et al., 1997, Syst. Biol. 46: 284–305). His taxonomy, however, exhibits both conflicts with inferred phylogenetic relationships based on mt and nDNA (Zamudio et al., op. cit.; Leaché et al., 2015, Syst. Biol. 64: 1032–1047) and internal inconsistencies. For example, the deepest phylogenetic divergence in mtDNA occurs within his subspecies *P. h. hernandesi*, an extensive putative hybrid zone occurs largely within the distribution of *P. h. hernandesi*, and the two ostensibly hybridizing species elsewhere exhibit a patchwork distribution, with some populations of *P. h. hernandesi* completely surrounded by *P. o. ornatissimum*. In addition, all of the newly recognized species for which molecular data are available are nested within *P. hernandesi*. For these reasons, all five species recognized by Montanucci (op. cit.) are here treated as subspecies of *P. hernandesi*. An explicit species delimitation analysis of the Short-horned Lizards based on multilocus genetic data is needed.

P. (T.) h. bauri Montanucci, 2015—Baur's Short-horned Lizard
P. (T.) h. brevirostris Girard, 1858—Plains Short-horned Lizard
P. (T.) h. diminutum Montanucci, 2015—San Luis Valley Short-horned Lizard
P. (T.) h. hernandesi Girard, 1858—Hernandez's Short-horned Lizard
P. (T.) h. ornatissimum Girard, 1858—New Mexico Short-horned Lizard
P. (T.) h. ornatum Girard, 1858—Great Basin Short-horned Lizard

P. (Anota) mcallii (Hallowell, 1852)—Flat-tailed Horned Lizard

P. (Doliosaurus) modestum Girard, 1852—Round-tailed Horned Lizard

P. (Doliosaurus) platyrhinos Girard, 1852—Desert Horned Lizard

According to Pianka (1991, Cat. Am. Amph. Rept. 517), the putative diagnostic characters for the subspecies of *Phrynosoma platyrhinos* are not reliable, which calls the taxa themselves into question. Jezkova et al. (2015, Ecography 38: 1–12) found evidence, based on mtDNA sequences, indicating separate invasions of the Great Basin, with eastern and western populations of *P. p. "platyrhinos"* more closely related to different populations of *P. p. "calidiarum"*. Therefore, we have not recognized those subspecies. Phylogenetic analysis of mtDNA sequences by Mulcahy et al. (2006, Mol. Ecol. 15: 1807–1826; see also Jezkova et al., op. cit.) raised the possibility that lizards from the Yuma Proving Ground represent an unnamed species.

P. (Anota) solare Gray, 1845—Regal Horned Lizard

Phyllodactylus Gray, 1828—LEAF-TOED GECKOS

Taxonomy for *Phyllodactylus* follows Dixon (1969, Cat. Am. Amph. Rept. 79; 1973, Cat. Am. Amph. Rept. 141) with modifications by Murphy (1983, Occ. Pap. California Acad. Sci. 137: 1–48; treatment of *P. nocticolus* as a species separate from *P. xanti*; see also Blair et al., 2009, Zootaxa 2027: 28–42).

P. nocticolus Dixon, 1964—Peninsula Leaf-toed Gecko

Plestiodon Duméril and Bibron, 1839—TOOTHY SKINKS

Taxonomy for *Plestiodon* (often as *Eumeces*) follows Taylor (1935, Univ. Kansas Sci. Bull. 23: 1–643) and Brandley et al. (2012, Zool. Jo. Linn. Soc. 165: 163–189) with modifications by Rodgers (1944, Copeia 1944: 101–104; proposal of *P. gilberti placerensis*), Smith (1946, Univ. Kansas Pub. Mus. Nat. Hist. 1: 85–89; resurrection of *P. anthracinus pluvialis*), Rodgers and Fitch (1947, Univ. California Pub. Zool. 48: 169–220; proposal of *P. gilberti cancellosus* and treatment of *P. skiltonianus brevipes* as a synonym of *P. gilberti gilberti*), Smith and Slater (1949, Trans. Kansas Acad. Sci.

52: 438–448; proposal of *P. septentrionalis pallidus*), McConkey (1957, Bull. Florida St. Mus. (Biol. Sci.) 2: 13–23; proposal of *P. egregius similis*), Lowe and Shannon (1954, Herpetologica 10: 185–187; proposal of *P. gilberti arizonensis*), Lowe (1955b, Herpetologica 11: 233–235; treatment of *P. gaigeae* as a subspecies of *P. multivirgatus*), Mecham (1957, Copeia 1957: 111–123; treatment of *P. taylori* as a synonym of *P. m. gaigeae*), Tanner (1958, Great Basin Nat. 17: 59–94; proposals of *P. skiltonianus utahensis* and *P. s. interparietalis*), Axtell (1961, Texas J. Sci. 13: 345–351; see also Axtell and Smith, 2004, Southwest. Nat. 49: 100; priority of *P. multivirgatus epipleurotus* over *P. m. gaigeae*), Mount (1965, The Reptiles and Amphibians of Alabama, Auburn Univ. Agric. Exper. Station; proposals of *P. egregius lividus* and *P. e. insularis*), Lieb (1985, Contrib. Sci. Nat. Hist. Mus. Los Angeles Co. 357: 1–19; treatment of *P. brevilineatus* and *P. tetragrammus* as subspecies of a single species), Tanner (1987, Great Basin Nat. 47: 383–421; treatment of *P. callicephalus* as a separate species from *P. tetragrammus*), Brandley et al. 2005 (Syst. Biol. 54: 373–390; restriction of *Eumeces* and resurrection of *Plestiodon* for a clade containing all of the North American species as well as inclusion of the taxon formerly known as *Neoseps reynoldsi*), and those described in additional notes below.

P. anthracinus (Baird, 1850)—Coal Skink
- *P. a. anthracinus* Baird,1850—Northern Coal Skink
- *P. a. pluvialis* (Cope, 1880)—Southern Coal Skink

P. callicephalus (Bocourt, 1879 ***in*** Duméril, Mocquard, and Bocourt, 1870–1909)—Mountain Skink

P. egregius Baird, 1859 "1858"—Mole Skink

Branch et al. (2003, Conserv. Gen. 4: 199–212) found that the mainland subspecies *P. e. lividus, P. e. onocrepsis,* and *P. e. similis* exhibit phylogenetic intermixing of mtDNA haplotypes, suggesting that continued recognition of these taxa may not be warranted. Schrey et al. (2012, J. Herpetol. 46: 241–247) found evidence of genetic differentiation between populations of *P. e. lividus* north and south of Josephine Creek on the Lake Wales Ridge but did not propose taxonomic recognition of those units.

- *P. e. egregius* Baird, 1859—Florida Keys Mole Skink
- *P. e. insularis* (Mount, 1965)—Cedar Key Mole Skink
- *P. e. lividus* (Mount, 1965)—Blue-tailed Mole Skink
- *P. e. onocrepis* Cope, 1871—Peninsula Mole Skink
- *P. e. similis* (McConkey, 1957)—Northern Mole Skink

P. fasciatus (Linnaeus, 1758)—Common Five-lined Skink

Howes et al. (2006, Mol. Phylogenet. Evol. 40: 183–194) and Richmond (2006, Evol. Dev. 8: 477–490) presented mt and nDNA evidence of substantial phylogeographic structure within *P. fasciatus*. Although neither set of authors drew any taxonomic conclusions from their results, those results suggest the possibility of one or more cryptic species; in particular, samples from the eastern Carolinas are highly divergent in both mtDNA and microsatellites from nearby populations.

P. gilberti (Van Denburgh, 1896)—Gilbert's Skink

Richmond and Reeder (2002, Evolution 56: 1498–1513) presented mtDNA evidence that populations previously referred to *Plestiodon gilberti* represent three lineages that separately evolved large body size and the loss of stripes in late ontogenetic stages. Although they considered those three lineages to merit species recognition, they did not propose specific taxonomic changes, and subsequently Richmond and Jockusch (2007, Proc. Roy. Soc. Lond. B 274: 1701–1708) and Richmond et al. (2011, Am. Nat.

178: 320–332) have treated them as a single species based on extensive introgressive hybridization between two of the forms and the lack of prezygotic isolation between members of all pairs of them. The results of Richmond and Reeder (2002, op. cit.) contradict the recognition of *P. g. arizonensis*, which is not differentiated from *P. g. rubricaudatus* and therefore has been eliminated from this list, and indicate the existence of an unnamed and at least partially separate lineage within *P. g. rubricaudatus* (their Inyo clade).

P. g. cancellosus (Rodgers and Fitch, 1947)—Variegated Skink
P. g. gilberti (Van Denburgh, 1896)—Greater Brown Skink
P. g. placerensis (Rodgers, 1944)—Northern Brown Skink
P. g. rubricaudatus (Taylor, 1935)—Western Red-tailed Skink

P. inexpectatus (Taylor, 1932)—Southeastern Five-lined Skink

P. laticeps (Schneider, 1801)—Broad-headed Skink

Richmond (2006, Evol. Dev. 8: 477–490) found a substantial division between mtDNA haplotypes of eastern and western *P. laticeps* but did not draw any taxonomic conclusion from it.

P. multivirgatus Hallowell, 1857—Many-lined Skink

Hammerson (1999, Amphibians and Reptiles in Colorado, Univ. Press of Colorado, Niwot) argued, based on diagnosability and the apparent absence of intergrades, that *Plestiodon multivirgatus epipleurotus* (under the name *P. gaigeae*) is a different species than *P. m. multivirgatus*. We have refrained from adopting this proposal pending an explicit analysis.

P. m. epipleurotus (Cope, 1880)—Variable Skink
P. m. multivirgatus Hallowell, 1857—Northern Many-lined Skink

P. obsoletus Baird and Girard, 1852—Great Plains Skink

P. reynoldsi (Stejneger, 1910)—Florida Sand Skink

Branch et al. (2003, Conserv. Gen. 4: 199–212) and Richmond et al. (2009, Conserv. Gen. 10: 1281–1297) found strong phylogeographic structuring in *P. reynoldsi*, with separate mtDNA clades occupying the Mt. Dora Ridge and the northern, central, and southern portions of the Lake Wales Ridge, but they did not propose to recognize those units taxonomically.

P. septentrionalis Baird, 1859 “1858”—Prairie Skink

Plestiodon septentrionalis septentrionalis and *P. s. obtusirostris* have sometimes been recognized as species based on allopatry and morphological diagnosability (e.g., Collins, 1991, Herpetol. Rev. 22: 42–43; 1993, Univ. Kansas Mus. Nat. Hist. Public Edu. Ser. No. 13). Fuerst and Austin (2004, J. Herpetol. 38: 257–268) found 6–7% uncorrected mtDNA sequence divergence between *P. s. septentrionalis* and *P. s. obtusirostris*; however, their geographic sampling was inadequate to address genetic continuity versus discontinuity between these taxa. In addition, the name *P. s. pallidus* apparently has never been explicitly treated as a synonym of either *P. s. septentrionalis* or *P. s. obtusirostris*. We have retained the older arrangement of a single species with three subspecies until a rearrangement is proposed based on a study of all three taxa and thorough geographic sampling.

P. s. obtusirostris (Bocourt, 1879)—Southern Prairie Skink
P. s. pallidus (Smith and Slater, 1949)—Pallid Skink
P. s. septentrionalis Baird, 1859—Northern Prairie Skink

P. skiltonianus Baird and Girard, 1852—Western Skink

Richmond and Reeder (2002, Evolution 56: 1498–1513) presented mtDNA evidence that *P. s. skiltonianus* is paraphyletic with respect to both *P. s. interparietalis* and *P. s. utahensis* as well as to the species *P. lagunensis* (Baja California) and to two of the three lineages of *P. gilberti*.

P. s. interparietalis (Tanner, 1958 “1957”)—Coronado Skink
P. s. skiltonianus Baird and Girard, 1852—Skilton’s Skink
P. s. utahensis (Tanner, 1958 “1957”)—Great Basin Skink

P. tetragrammus Baird, 1859 “1858”—Four-lined Skink

Moseley et al. (2015, Biol. J. Linn. Soc. 116: 819–833) corroborated the distinction between *P. t. brevilineatus* and *P. t. tetragrammus* based on phylogenetic analyses of mtDNA and combined mt and nuDNA.

P. t. brevilineatus (Cope, 1880)—Short-lined Skink
P. t. tetragrammus Baird, 1859—Long-lined Skink

Rhineura Cope, 1861—WIDE-SNOUTED WORMLIZARDS

Taxonomy for *Rhineura* follows Gans (1967, Cat. Am. Amph. Rept. 42; 1967, Cat. Am. Amph. Rept. 43).

R. floridana (Baird, 1859 “1858”)—Florida Wormlizard

Mulvaney et al. (2005, J. Herpetol. 39: 118–124) found evidence of substantial mtDNA divergence between northern and southern populations of *Rhineura floridana* and indicated that these groups of populations may be candidates for recognition as separate species.

Sauromalus Duméril, 1856—CHUCKWALLAS

Taxonomy for *Sauromalus* follows Hollingsworth (1998, Herpetol. Monog. 12: 38–191) and the ICZN (2004, Bull. Zool. Nomencl. 61: 74–75; precedence of the name *S. ater* over *S. obesus*).

S. ater Duméril, 1856—Common Chuckwalla

Although all mainland populations of *Sauromalus* are currently considered to constitute a single species, intergradation or the lack thereof between divergent mtDNA haplotype clades (Petren and Case, 2002, *in* Case et al. [eds.], A New Island Biogeography of the Sea of Cortés, Oxford Univ. Press :574–579) deserves further study.

Sceloporus Wiegmann, 1828—SPINY LIZARDS

Taxonomy for *Sceloporus* follows Schmidt (1953, A Check List of North American Amphibians and Reptiles, Univ. Chicago Press, Chicago) with modifications by Bell (1954, Herpetologica 10: 31–36; resurrection of *S. occidentalis bocourtii* and *S. o. longipes*), Shannon and Urbano (1954, Herpetologica 10: 189–191; proposal of *S. clarki vallaris*), Phelan and Brattstrom (1955, Herpetologica 11: 1–14; proposals of *S. magister uniformis*, *S. m. bimaculosus*, and *S. m. transversus*), Tanner (1955, Great Basin Nat. 15: 32–34; proposal of *S. magister cephaloflavus*), Lowe and Norris (1956, Herpetologica 12: 125–127; proposal of *S. undulatus cowlesi*), Maslin (1956, Herpetologica 12: 291–294; proposal of *S. undulatus erythrocheilus*), Smith and Chrapliwy (1958, Herpetologica 13: 267–271; proposal of subspecies of *S. poinsettii*), Cole (1963, Copeia 1963: 413–425; treatment of *S. virgatus* as a species separate from *S. undulatus*), Degenhardt and Jones (1972, Herpetologica 28: 212–217; proposal of *S. graciosus arenicolous*), Olson (1973, Herpetologica 29: 116–127; proposal of *S. merriami longipunctatus*), Sites and Dixon (1981, J. Herpetol. 15: 59–69; treatment of *disparilis* as a synonym of *microlepidotus*), Collins (1991, Herpetol. Rev. 22: 42–43; treatment of *S. arenicolus* as a species separate from *S. graciosus*; corroborated by Chan et al., 2013, Zootaxa 3664: 312–320), Smith et al. (1992, Bull. Maryland Herpetol. Soc. 28: 123–149; proposal of *S. undulatus tedbrowni* and correction of the spelling of the name *S. arenicolus*), Smith et al. (1996, Bull. Maryland Herpetol. Soc. 32: 70–74; treatment of *S. slevini* as a species separate from

S. scalaris; corroborated by Bryson et al., 2012, Mol. Phylogenet. Evol. 62: 447–457 and Grummer et al., 2014, Syst. Biol. 63: 119–133), Wiens et al. (1999, Evolution 53: 1884–1897; restriction of the name *S. jarrovii* to one of five inferred species formerly referred to by that name), Leaché and Reeder (2002, Syst. Biol. 51: 44–68; treatment of *S. consobrinus*, *S. cowelsi*, and *S. tristichus* as separate species from *S. undulatus*), Schulte et al. (2006, Mol. Phylogenet. Evol. 39: 873–880; treatment of *S. bimaculosus* and *S. uniformis* as species separate from *S. magister* and *tranversus* as a synonym of *uniformis*; see Leaché and Mulcahy, 2007, Mol. Ecol. 16: 5216–5233 for clarification of the distributional limits of those species), and those described in additional notes below.

S. arenicolus Degenhardt and Jones, 1972—Dunes Sagebrush Lizard

Chan et al. (2009, Conserv. Genet. 10: 131–142) found mtDNA and microsatellite evidence of differentiation of *S. arenicolus* populations into three genetic clusters that appear to be recently separated and still experiencing gene flow.

S. bimaculosus Phelan and Brattstrom, 1955—Twin-spotted Spiny Lizard

S. clarkii Baird and Girard, 1852—Clark's Spiny Lizard

S. c. clarkii Baird and Girard, 1852—Sonoran Spiny Lizard

S. c. vallaris Shannon and Urbano, 1954—Plateau Spiny Lizard

S. consobrinus Baird and Girard, 1853—Prairie Lizard

Leaché and Reeder (2002, Syst. Biol. 51: 44–68) noted that the name *S. thayerii* Baird and Girard 1852 (type locality: Indianola, Calhoun Co., TX) may turn out to be the correct name of this species. Dixon (2013, Amphibians and Reptiles of Texas, Texas A&M University Press, College Station) included Calhoun County, Texas, which includes the type locality of *S. thayerii*, within the distribution of *S. consobrinus*; however, he did not indicate a morphological basis for distinguishing *S. consobrinus* from *S. cowlesi* (p. 29), nor did he provide genetic evidence for his distributional inference. An assessment of the relationships of fence lizards from the type locality of *S. thayerii* is needed. Leaché and Reeder (2002, op. cit.) also noted that populations east of the Mississippi River along the Gulf Coast may represent a separate species.

S. cowlesi Lowe and Norris, 1956—Southwestern Fence Lizard

Leaché and Reeder (2002, Syst. Biol. 51: 44–68) applied the name *S. cowlesi* to the populations from roughly the region of the Chihuahuan Desert. Although the name *S. cowlesi* was originally applied to light colored lizards from the White Sands of New Mexico, Leaché and Reeder (op. cit.) presented evidence that mtDNA haplotypes from White Sands lizards are deeply nested within a clade of haplotypes from geographically proximate darker lizards, and Rosenblum (2006, Am. Nat. 167: 1–15) found both phylogenetic mixing of haplotypes between light and dark forms and evidence of gene flow between them. Rosenblum and Harmon (2010, Evolution 65: 946–960) found that fence lizards from the White Sands exhibited discordant patterns of morphological and genetic differentiation from their counterparts on adjacent darker soils and concluded that the populations have made incomplete progress toward speciation. Leaché and Cole (2007, Mol. Ecol. 16: 1035–1054) presented evidence for hybridization between *S. cowlesi* and *S. tristichus*.

S. cyanogenys Cope, 1885—Blue Spiny Lizard

Olson (1987, Bull. Maryland Herpetol. Soc. 23: 158–167) treated *Sceloporus cyanogenys* as a subspecies of *S. serrifer* based on apparent integrades between the former species and *S. serrifer plioporus*. Martínez-Méndez and Méndez de la Cruz (2007, Zootaxa 1609: 53–68) inferred *S. serrifer plioporus* and *S. cyanogenys* to form a mtDNA clade; however, that clade was relatively distantly related to *S. serrifer serrifer* and *S. serrifer* *prezygus* haplotypes (see also Wiens et al., 2010, Mol. Phylogenet. Evol. 54: 150–161). Therefore, they synonymized the name *S. s. plioporus* with *S. cyanogenys*, retaining *S. serrifer* for a species that occurs south and east of the Isthmus of Tehuantepec.

S. graciosus Baird and Girard, 1852—Common Sagebrush Lizard

Chan et al. (2013, Zootaxa 3664: 312–320) found that the currently recognized subspecies of *S. graciosus* are incongruent with mitochondrial haplotype clades, which often exhibit relatively deep divergences between geographically proximate samples, and that *S. graciosus* is paraphyletic relative to *S. arenicolus*. Although these findings suggest that *S. graciosus* is in need of taxonomic revision, those authors did not propose any taxonomic changes.

S. g. gracilis Baird and Girard, 1852—Western Sagebrush Lizard

S. g. graciosus Baird and Girard, 1852—Northern Sagebrush Lizard

S. g. vandenburgianus Cope, 1896—Southern Sagebrush Lizard

Censky (1986, Cat. Am. Amph. Rept. 386) recognized the subspecies *Sceloporus graciosus vandenburgianus*, but Collins (1991, Herpetol. Rev. 22: 42–43) proposed recognizing this taxon as a species. Wiens and Reeder (1997, Herpetol. Monog. 11: 1–101) followed Collins's proposal but noted the morphological similarity and geographic proximity of this taxon to populations of *S. graciosus gracilis*. Chan et al. (2013, Zootaxa 3664: 312–320) found that *S. g. vandenburgianus* was distinct from *S. g. gracilis* and paraphyletic relative to a clade formed by eastern populations of *S. g. graciosus* and *S. arenicolus*. We have retained *vandenburgianus* as a subspecies pending a detailed analysis of geographic variation in *S. graciosus*.

S. grammicus Wiegmann, 1828—Graphic Spiny Lizard

Lizards currently referred to *Sceloporus grammicus* form a complex series of chromosome races that likely represent multiple species (Sites, 1983, Evolution 37: 38–53; Arévalo et al., 1991, Herpetol. Monog. 5: 79–115). A detailed phylogeographic study of this species complex is needed.

S. g. microlepidotus Wiegmann, 1828—Mesquite Lizard

S. jarrovii Cope, *in* Yarrow, 1875—Yarrow's Spiny Lizard

S. magister Hallowell, 1854—Desert Spiny Lizard

Leaché and Mulcahy (2007, Mol. Ecol. 16: 5216–5233) found evidence of asymmetrical gene flow between *S. magister* and both *S. bimaculosus* and *S. uniformis*, with *S. magister* acting as a genetic "sink". Because these lineages show evidence of both separation (with divergence) and ongoing asymmetrical gene flow, they can be considered partially separated species. Leaché and Mulcahy (2007, op. cit.) also identified a fourth potentially separate lineage in northeastern Baja California (currently unnamed). Schulte et al. (2006, Mol. Phylogenet. Evol. 39: 873–880) recognized the subspecies *S. m. magister* and *S. m. cephaloflavus* because their single sample from the Colorado Plateau (assumed to represent the subspecies *S. m. cephaloflavus*) was inferred to be the sister group of the samples representing *S. m. magister*. Leaché and Mulcahy (2007, op. cit.), however, found that specimens from closer to the type locality of *S. m. cephaloflavus* were part of *S. uniformis* rather than *S. magister*; consequently, we have not recognized subspecies within *S. magister*.

S. merriami Stejneger, 1904—Canyon Lizard

S. m. annulatus Smith, 1937—Big Bend Canyon Lizard

S. m. longipunctatus Olson, 1973—Presidio Canyon Lizard

S. m. merriami Stejneger, 1904—Merriam's Canyon Lizard

S. occidentalis Baird and Girard, 1852—Western Fence Lizard

Leaché et al. (2010, Biol. J. Linn. Soc. 100: 630–641) presented mtDNA evidence that the previously recognized subspecies *S. o. taylori* is polyphyletic and represents convergent phenotypic evolution among high-elevation populations of *S. o. biseriatus*.

S. o. becki Van Denburgh, 1905—Island Fence Lizard

Wiens and Reeder (1997, Herpetol. Monog. 11: 1–101) suggested that *Sceloporus occidentalis becki* should probably be recognized as a species on the basis of diagnosability and allopatry relative to other populations of *S. occidentalis*.

S. o. biseriatus Hallowell, 1854—San Joaquin Fence Lizard
S. o. bocourtii Boulenger, 1885—Coast Range Fence Lizard
S. o. longipes Baird, 1859 "1858"—Great Basin Fence Lizard
S. o. occidentalis Baird and Girard, 1852—Northwestern Fence Lizard

S. olivaceus Smith, 1934—Texas Spiny Lizard
S. orcutti Stejneger, 1893—Granite Spiny Lizard
S. poinsettii Baird and Girard, 1852—Crevice Spiny Lizard

Webb (2006, Bull. Maryland. Herpetol. Soc. 42: 65–114) recognized five subspecies of *S. poinsettii*, two of which occur in the United States. Given the large area inhabited by lizards not assigned to any of the five subspecies, geographic variation in this taxon deserves further study.

S. p. axtelli Webb, 2006—Texas Crevice Spiny Lizard
S. p. poinsettii Baird and Girard, 1852—New Mexico Crevice Spiny Lizard

S. slevini Smith, 1937—Slevin's Bunchgrass Lizard

An explicit species delimitation analysis based on DNA sequences from six nuclear and two mitochondrial gene regions by Grummer et al. (2014, Syst. Biol. 63: 119–133) corroborated *S. slevini* as distinct from other members of the *S. scalaris* group.

S. tristichus Cope *in* Yarrow 1875—Plateau Fence Lizard

Leaché and Cole (2007, Mol. Ecol. 16: 1035–1054) presented evidence for hybridization between *S. tristichus* and *S. cowlesi*.

S. undulatus (Bosc and Daudin *in* Sonnini and Latreille, 1801)—Eastern Fence Lizard
S. uniformis Phelan and Brattstrom, 1955—Yellow-backed Spiny Lizard
S. variabilis Wiegmann, 1834—Rose-bellied Lizard
S. v. marmoratus Hallowell, 1852—Texas Rose-bellied Lizard

Based on patterns of electrophoretically detectable genetic variation, Mendoza-Quijano et al. (1998, Copeia 1998: 354–366) treated *Sceloporus marmoratus* as a species separate from *S. variabilis*; however, their sample of *S. v. marmoratus* was from a single locality separated by more than 500 km from the closest sample of *S. v. variabilis*. More extensive sampling of these taxa from intermediate localities is needed to determine if they constitute separate lineages.

S. virgatus Smith, 1938—Striped Plateau Lizard

Tennessen and Zamudio (2008, Copeia 2008: 558–564) presented evidence of high genetic divergence and, for the most part, reciprocal monophyly in mtDNA haplotypes among populations of *S. virgatus* from the Chiricahua, Animas, Peloncillo, and San Luis mountain ranges, suggesting isolation of those populations for hundreds of thousands to millions of years and the possibility of intrinsic reproductive barriers.

S. woodi Stejneger, 1918—Florida Scrub Lizard

Branch et al. (2003, Conserv. Gen. 4: 199–212) found strong phylogeographic structuring in *S. woodi*, with mtDNA of lizards from populations occupying different major scrub archipelagos differing by 2.0–8.0% and likely qualifying as evolutionarily significant units. Hybridization between *S. woodi* and *S. undulatus* does not appear to be threatening the existence of either species (Robbins et al., 2014, J. Hered. 105: 226–236).

Scincella Mittleman, 1950—GROUND SKINKS

Taxonomy for *Scincella* follows Greer (1974, Austral. J. Zool. Suppl. Ser. 31: 1–67).

S. lateralis (Say, *in* James, 1822 "1823")—Little Brown Skink

Jackson and Austin (2009, Evolution 64: 409–428; 2012, Biol. J. Linn. Soc. 107: 192–209) presented evidence of significant genetic structure among populations of *S. lateralis* as well as of gene flow between both haplotype clades and population clusters inferred from microsatellite and nuclear sequence data.

Sphaerodactylus Wagler, 1830—DWARF GECKOS

Taxonomy for *Sphaerodactylus* follows Kluge (1995, Am. Mus. Novit. 3139: 1–23) and Schwartz and Henderson (1988, Contrib. Biol. Geol. Milwaukee Pub. Mus. 74: 1–264).

S. notatus Baird, 1859 "1858"—Reef Gecko

S. n. notatus Baird, 1859 "1858"—Florida Reef Gecko

Uma Baird, 1859 "1858"—FRINGE-TOED LIZARDS

Taxonomy for *Uma* follows Pough (1973, Cat. Am. Amph. Rept. 126; 1974, Cat. Am. Amph. Rept. 155; 1977, Cat. Am. Amph. Rept. 197; see also de Queiroz, 1989, Ph.D. dissertation, Univ. California, Berkeley), with modifications by Trépanier and Murphy (2001, Mol. Phylogenet. Evol. 18: 327–334; treatment of *U. rufopunctata* as a species separate from *U. notata*), and those described in additional notes below.

U. inornata Cope, 1895—Coachella Fringe-toed Lizard

Hedtke et al. (2007, Herpetologica 63: 411–420) found low levels of differentiation among populations of *U. inornata*.

U. notata Baird, 1859 "1858"—Colorado Desert Fringe-toed Lizard

U. rufopunctata Cope, 1895—Yuman Desert Fringe-toed Lizard

Gottscho et al. (2017, Mol. Phylogenet. Evol. 106: 103–117) interpreted *U. rufopunctata* as a hybrid zone between *U. notata* and *U. cowlesi* based on a variety of analyses of 10 nuclear loci and genome-wide SNP data; however, their results were inconsistent, with some analyses supporting the status of *U. rufopunctata* as a separate species (although with introgression from both *U. notata* and *U. cowlesi*). We have retained *U. rufopunctata* pending further study. Populations formerly assigned to *U. rufopunctata* from the Mohawk Dunes, Yuma Co., AZ appear to represent a currently undescribed cryptic species (Trépanier and Murphy, 2001, Mol. Phylogenet. Evol. 18: 327–334; Gottscho et al., 2017,op. cit.).

U. scoparia Cope, 1894—Mohave Fringe-toed Lizard

Murphy et al. (2006, J. Arid Environ. 67: 226–247) found that mtDNA haplotypes of *U scoparia* formed northern and southern clades, with both northern and southern haplotypes present at one locality. Gottscho et al. (2014, Ecol. Evol. 4: 2546–2562) did not find evidence of discrete populations within *U. scoparia* based on population structure analysis of DNA sequences of 14 nuclear loci.

Urosaurus Hallowell, 1854—TREE and BRUSH LIZARDS

Taxonomy for *Urosaurus* follows (Mittleman, 1942, Bull. Mus. Comp. Zool. 91: 103–181) with modifications by Smith and Taylor (1950, Bull. U. S. Natl. Mus. 199: 1–253; treatment of *U. graciosus* as a separate species from *U. ornatus*; see also Lowe, 1955, Herpetologica 11: 96–101), Murray (1953, Herpetologica 9: 110–112; treatment of the name *U. ornatus chiricahuae* as a synonym of *U. o. linearis*), Langebartel and Smith (1954, Herpetologica 10: 125–136; treatment of the name *U. o. linearis* as a synonym of *U. o. schotti*), Lowe (1955, Herpetologica 11: 96–101; proposal of *U. graciosus shannoni*), and those described in additional notes below.

U. graciosus Hallowell, 1854—Long-tailed Brush Lizard

Vitt and Dickson (1988, Cat. Am. Amph. Rept. 448) called into question the diagnostic characters used to separate the subspecies of *U. graciosus*, implying that there is little evidence for the existence of partially separated lineages.

U. g. graciosus Hallowell, 1854—Western Long-tailed Brush Lizard

U. g. shannoni Lowe, 1955—Arizona Long-tailed Brush Lizard

U. microscutatus (Van Denburgh, 1894)—Small-scaled Lizard

Based on genome-wide SNP data, Gottscho (2015, Ph.D. dissertation, Univ. California, Riverside and San Diego State Univ.) found that *U. nigricaudus* and *U. microscutatus* (considered conspecific with *U. nigricaudus* by Aguirre et al. (1999, Herpetologica 55: 369–381)) are reciprocally monophyletic and exhibit limited evidence of admixture, with an estimated divergence time in the Late Miocene to Early Pliocene. We have therefore treated them as separate species.

U. ornatus (Baird and Girard, 1852)—Ornate Tree Lizard

Haenel (2007, Mol. Ecol. 16: 4321–4334) found substantial phylogeographic structure in the mtDNA of *U. ornatus*, some of which is roughly consistent with previously recognized subspecies (e.g., *U. o. wrighti* from the Colorado Plateau), though other aspects are not (e.g., deep splits within *U. o. schottii*, including some inferred clades for which there are available names). The phylogeography of *U. ornatus* deserves further study, particularly with regard to taxonomic implications.

U. o. levis (Stejneger, 1890)—Smooth Tree Lizard
U. o. ornatus (Baird and Girard, 1852)—Texas Tree Lizard
U. o. schmidti (Mittleman, 1940)—Big Bend Tree Lizard
U. o. schottii (Baird, 1859 "1858")—Schott's Tree Lizard
U. o. symmetricus (Baird, 1859 "1858")—Colorado River Tree Lizard
U. o. wrighti (Schmidt, 1921)—Northern Tree Lizard

Uta Baird and Girard, 1852—SIDE-BLOTCHED LIZARDS

Taxonomy for *Uta* follows Pack and Tanner (1970, Great Basin Nat. 30: 71–90), McKinney (1971, Copeia 1971: 596–613), and Ballinger and Tinkle (1972, Misc. Pub. Mus. Zool. Univ. Michigan 145: 1–83), with modifications described in the note below.

U. stansburiana Baird and Girard *in* Stansbury 1852—Common Side-blotched Lizard

Upton and Murphy (1997, Mol. Phylogenet. Evol. 8: 104–113) presented mtDNA evidence for a distant relationship between *Uta* specimens from Durango versus those from Baja California and surrounding islands (as well as one locality in western Sonora), and they considered the Durango population to constitute a different species, to which they applied the name *U. stejnegeri*. Corl et al. (2009, Evolution, 64: 79–96) presented a phylogenetic tree based on mtDNA that is roughly congruent with previously recognized subspecies within the United States and corroborates the relatively distant relationship of *U. s. stejnegeri* to specimens from Baja California. Although these two studies are complementary in terms of geographic sampling, significant sampling gaps remain (central and eastern Nevada, northern Baja California, and the southeastern part of the distribution). We have therefore refrained from recognizing *U. stejnegeri* as a species pending a more comprehensive phylogeographic study.

U. s. elegans Yarrow, 1882—Western Side-blotched Lizard
U. s. nevadensis Ruthven, 1913—Nevada Side-blotched Lizard
U. s. stansburiana Baird and Girard, 1852—Northern Side-blotched Lizard
U. s. stejnegeri Schmidt, 1921—Eastern Side-blotched Lizard
U. s. uniformis Pack and Tanner, 1970—Plateau Side-blotched Lizard

Xantusia Baird, 1859 "1858"—NIGHT LIZARDS

Taxonomy for *Xantusia* follows Savage (1963, Contrib. Sci. Los Angeles Co. Mus. 71: 1–38) with modifications by Bezy (1967, Copeia 1967: 653–661; treatment of *X. arizonae* as a subspecies of *X. vigilis* [but see below]; 1967, J. Arizona Acad. Sci. 4: 163–167; proposal of *X. vigilis sierrae*; 1972, Contrib. Sci. Los Angeles Co. Mus. 227: 1–29; inclusion of *Klauberina riversiana* in *Xantusia*), Grismer and Galvan (1983, Trans. San Diego Soc. Nat. Hist. 21: 155–165; proposal of *X. henshawi gracilis*), Papenfuss et al. (2001, Sci. Pap. Nat. Hist. Mus. Univ. Kansas 23: 1–9; proposal of *X. bezyi* and treatment of *X. arizonae* as a separate species from *X. vigilis*; see also Sinclair et al., 2004, Am. Nat. 164: 396–414 and Leavitt et al., 2007, Mol. Ecol. 16: 4455–4481), Lovich (2001, Herpetologica 57: 470–487; treatment of *X. gracilis* as a separate species from *X. henshawi*), Sinclair et al. (2004, Am. Nat. 164: 396–414; treatment of *X. sierrae* and *X. wigginsi* as separate species from *X. vigilis* and treatment of the name *X. v. utahensis* as a synonym of *X. vigilis*; see also Leavitt et al., 2007, Mol. Ecol. 16: 4455-4481), and those described in additional notes below.

X. arizonae Klauber, 1931—Arizona Night Lizard
X. bezyi Papenfuss, Macey, and Schulte, 2001—Bezy's Night Lizard
X. gracilis Grismer and Galvan, 1986—Sandstone Night Lizard
X. henshawi Stejneger, 1893—Granite Night Lizard

Lovich (2001, Herpetologica 57: 470–487) presented mtDNA evidence that the populations of *Xantusia henshawi* represent at least three separately evolving lineages, though he did not propose recognizing them as species.

X. riversiana Cope, 1883—Island Night Lizard

Although not mentioned by Noonan et al. (2013, Mol. Phylogenet. Evol. 69: 109–122), their results support the taxonomic distinction between populations of *X. riversiana* on San Nicolas Island (*X. r. riversiana*) and those on San Clemente and Santa Barbara Islands (*X. r. reticulata*).

X. r. reticulata Smith, 1946—San Clemente Night Lizard
X. r. riversiana Cope, 1883—San Nicolas Night Lizard

X. sierrae Bezy, 1967—Sierra Night Lizard

Sinclair et al. (2004, Am. Nat. 164: 396–414) considered the treatment of *Xantusia sierrae* as a separate species from *X. vigilis* as tentative, because of nesting of mtDNA haplotypes of the former within those of the latter (see also Leavitt et al., 2007, Mol. Ecol. 16: 4455–4481 and Noonan et al. 2013, Mol. Phylogenet. Evol. 69: 109–122).

X. vigilis Baird, 1859 "1858"—Desert Night Lizard

X. wigginsi Savage, 1952—Wiggins' Night Lizard

Leavitt et al. (2007, Mol. Ecol. 16: 4455–4481) documented overlap of the *X. wigginsi* and *X. vigilis* haplotype clades in San Diego County, where it remains to be determined if the two forms are exchanging genes. Those authors also identified two haplotype clades (designated by them as the San Jacinto and Yucca Valley clades) that may represent separate species.

Squamata (in part) - Snakes

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Agkistrodon Palisot de Beauvois, 1799—AMERICAN MOCCASINS
Using multi-locus nuclear data, Burbrink and Guiher (2015, Zool. J. Linn. Soc. 173:505–526) partially confirmed previous mitochondrial hypotheses (Guiher and Burbrink 2008, Mol. Phylogenet. Evol. 48: 112–125) that the two North American species (*A. contortrix* and *A. piscivorus*) each consist of multiple species-level taxa. Subspecies are not recognized.

- ***A. conanti*** Gloyd, 1969—Florida Cottonmouth
- ***A. contortrix*** (Linnaeus, 1766)—Eastern Copperhead
- ***A. laticinctus*** Gloyd and Conant, 1934—Broad-banded Copperhead
- ***A. piscivorus*** (Lacépède, 1789)—Northern Cottonmouth

Arizona Kennicott, *in* Baird, 1859—GLOSSY SNAKES
Collins (1991, Herpetol. Rev. 22: 42–43) elevated *A. e. occidentalis* to specific status to include all populations in the Sonoran and Mojave Desert regions, the first use of this binomial. Liner (1994, SSAR Herpetol. Circ. 23: 1–113) and Collins (1997, SSAR Herpetol. Circ. 25: 1–40) followed this arrangement. Because no discussion of the taxonomic diagnosis was presented (although Dixon [1959, Southwest. Nat. 4: 20–29] found tail length differences between eastern and western groups), we retain *occidentalis* as a nominal subspecies.

- ***A. elegans*** Kennicott, *in* Baird, 1859—Glossy Snake
    - *A. e. arenicola* Dixon, 1960—Texas Glossy Snake
    - *A. e. candida* Klauber, 1946—Mohave Glossy Snake
    - *A. e. eburnata* Klauber, 1946—Desert Glossy Snake
    - *A. e. elegans* Kennicott, *in* Baird, 1859—Kansas Glossy Snake
    - *A. e. noctivaga* Klauber, 1946—Arizona Glossy Snake
    - *A. e. occidentalis* Blanchard, 1924—California Glossy Snake
    - *A. e. philipi* Klauber, 1946—Painted Desert Glossy Snake

Bogertophis Dowling and Price, 1988—DESERT RATSNAKES

Recognition of *Bogertophis* as distinct from *Elaphe* has been corroborated by multiple studies using nuclear and mitochondrial data (Utiger et al., 2002, Russian J. Herpetol. 9: 105–124; Burbrink and Lawson, 2007, Mol. Phylogenet. Evol. 43: 173–189; Pyron and Burbrink, 2009, Mol. Phylogenet. Evol. 52: 524–529).

- ***B. rosaliae*** (Mocquard, 1899)—Baja California Ratsnake
- ***B. subocularis*** (Brown, 1901)—Trans-Pecos Ratsnake
  - *B. s. subocularis* (Brown, 1901)—Northern Trans-Pecos Ratsnake

Carphophis Gervais, 1843—NORTH AMERICAN WORMSNAKES

- ***C. amoenus*** (Say, 1825)—Common Wormsnake
  - *C. a. amoenus* (Say, 1825)—Eastern Wormsnake
  - *C. a. helenae* (Kennicott, 1859)—Midwestern Wormsnake
- ***C. vermis*** (Kennicott, 1859)—Western Wormsnake

Clark (1968, Herpetologica 24: 104–112) recommended elevating *C. (a.) vermis* to species status on the basis of allopatry and morphological differences, but Rossman (1973, J. Herpetol. 7: 140–141) presented evidence for the conspecificity of *amoenus* and *vermis* in the form of intergrade populations. Collins (1991, Herpetol. Rev. 22: 42–43) considered *C. vermis* to be distinct from *C. amoenus*, implying that the populations discussed by Rossman were either part of *C. vermis*, or an unnamed taxon. We follow Clark (1968) but anticipate results from molecular studies to better understand population structure and gene flow among allopatric lineages.

Cemophora Cope, 1860—SCARLETSNAKES

Last reviewed by Williams and Wilson, 1967, Tulane Stud. Zool. 13: 103–124).

- ***C. coccinea*** (Blumenbach, 1788)—Scarletsnake
  - *C. c. coccinea* (Blumenbach, 1788)—Florida Scarletsnake
  - *C. c. copei* Jan, 1863—Northern Scarletsnake
- ***C. lineri*** Williams, Brown and Wilson, 1966—Texas Scarletsnake

Weinell and Austin (2017. J. Herpetol. 51: 161–171.) elevated *lineri* based on DNA, color pattern, and lepidosis.

Charina (Gray 1849)—RUBBER BOAS

Kluge (1993, Zool. J. Linn. Soc. 107: 293–351) placed *Lichanura* in the synonymy of *Charina* because they formed sister taxa. Burbrink (2005, Mol. Phylogenet. Evol. 34: 167–180) corroborated the relationship found by Kluge. Rodríguez-Robles et al. (2001, Mol. Phylogenet. Evol. 18: 227–237) found *C. b. umbratica* to be morphologically and geographically distinct and elevated it to species status based in part on lineages using mtDNA evidence along with with allozyme data from a previous study (Weisman, 1988, MS Thesis, CSU Polytechnic Pomona). With the recognition of *C. umbratica* and fossil species referred to both *Charina* and *Lichanura* (Holman, 2000, Fossil Snakes of North America, Indiana Univ. Press), neither genus is monotypic, and they are treated here as separate genera.

- ***C. bottae*** (Blainville, 1835)—Northern Rubber Boa
- ***C. umbratica*** Klauber, 1943—Southern Rubber Boa

Chilomeniscus Cope, 1860—SANDSNAKES

Grismer et al. (2002, Herpetologica 58: 18–31) found the previously recognized species *C. cinctus*, *C. punctatissimus*, and *C. stramineus* to represent morphotypes of a single species.

C. stramineus Cope, 1860—Variable Sandsnake

Chionactis Cope, 1860—SHOVEL-NOSED SNAKES

There is some question as to the validity of the name *C. saxatilis* (Funk, 1967, Southwest Nat. 12: 180), the Gila Mountains Shovel-nosed Snake, which is generally considered to be a synonym of *C. o. annulata* (see Cross, 1978, Ph.D. dissertation, Univ. Arizona). Mahrdt et al. (2001, Cat. Am. Amph. Rept. 730) considered *C. saxatilis* a synonym of *C. o. annulata.* Wood et al. (2008, Conserv. Gen. 9: 1489–1507) demonstrated, using mtDNA and morphological data, that population structure was not concordant with the traditional subspecific taxonomy. They also revealed two potentially independent evolutionary lineages. A phylogeographic study from Wood et al. (2014; PLoS ONE e97494) using mtDNA and microsatellites indicates that *C. o. annulata* should be elevated to species status, while retaining two subspecies *C. a. annulata* and *C. a. klauberi*, that conform to patterns of genetic structure. The authors find no support for *C. o. talpina* and place it in synonymy with *C. occipitalis*.

C. annulata (Baird, 1859 "1858")—Resplendent Desert Shovel-nosed Snake
  C. a. annulata (Baird, 1859 "1858")—Colorado Desert Shovel-nosed Snake
  C. a. klauberi (Stickel, 1941)—Tucson Shovel-nosed Snake
C. occipitalis (Hallowell, 1854)—Mohave Shovel-nosed Snake
C. palarostris (Klauber, 1937)—Sonoran Shovel-nosed Snake
  C. p. organica Klauber, 1951—Organ Pipe Shovel-nosed Snake

Clonophis Cope, 1889—KIRTLAND'S SNAKES

C. kirtlandii (Kennicott, 1856)—Kirtland's Snake

Coluber Linnaeus, 1758—NORTH AMERICAN RACERS, COACHWHIPS AND WHIPSNAKES

Nagy et al. (2004, J. Zool. Syst. Evol. Res. 42: 223–233) restricted the genus *Coluber* to the New World and suggested that *Masticophis* might be paraphyletic with respect *Coluber*. Utiger et al. (2005, Russian J. Herpetol. 12: 39–60) corroborated Nagy et al., finding *Masticophis* to be paraphyletic with respect to *Coluber* and synonymizing *Masticophis* with *Coluber* (the oldest available name). This arrangement was also recovered in a recent phylogeny of Squamata (Pyron et al., 2013 BMC Evol. Biol. 13: 93), though based on much of the same data.

C. bilineatus (Jan, 1863)—Sonoran Whipsnake

Contrary to Collins (1997, SSAR Herpetol. Circ. 25: 1–40), Camper and Dixon (1994, Ann. Carnegie Mus. Nat. Hist. 63: 1–48) did not recognize any subspecies for *bilineatus*.

C. constrictor Linnaeus, 1758—North American Racer

Fitch et al. (1981, Trans. Kansas Acad. Sci. 84: 196–203) argued for the elevation of *C. c. mormon*. This recommendation was rejected by Greene (1983, J. Herpetol. 18: 210–211), and was supported by Corn and Bury (1986, Herpetologica 42: 258–264), who showed a broad zone of intergradation across Colorado and Utah. Collins (1991, Herpetol. Rev.

22: 42–43) re-elevated *mormon* to specific status, although allopatry was not suitably demonstrated. Anderson (1996, MS thesis, Southeastern Louisiana Univ.) argued that based on allozyme data *C. c. mormon* cannot be differentiated but that *C. c. paludicola* and *C. c. oaxaca* were diagnosable and should be elevated to species status. We retain *C. c. mormon* and await action on *oaxaca* and *paludicola* until the data are published. Burbrink et al. (2008, Mol. Phylogenet. Evol 47: 274–288) have demonstrated using mtDNA that *C. constrictor* may be composed of six independently evolving lineages not concordant with most recognized subspecies. In particular, neither *C. c. mormon* or *C. paludicola* represents an evolutionarily distinct lineage. No samples of *C. c. oaxaca* were included.

C. c. anthicus (Cope, 1862)—Buttermilk Racer
C. c. constrictor Linnaeus, 1758—Northern Black Racer
C. c. etheridgei Wilson, 1970—Tan Racer
C. c. flaviventris Say, 1823—Eastern Yellow-bellied Racer
C. c. foxii (Baird and Girard, 1853)—Blue Racer
C. c. helvigularis Auffenberg, 1955—Brown-chinned Racer
C. c. latrunculus Wilson, 1970—Black-masked Racer
C. c. mormon Baird and Girard, 1852—Western Yellow-bellied Racer
C. c. oaxaca (Jan, 1863)—Mexican Racer
C. c. paludicola Auffenberg and Babbitt, 1953—Everglades Racer
C. c. priapus Dunn and Wood, 1939—Southern Black Racer

C. flagellum Shaw, 1802—Coachwhip

C. f. cingulum (Lowe and Woodin, 1954)—Sonoran Coachwhip
C. f. flagellum Shaw, 1802—Eastern Coachwhip
C. f. lineatulus (Smith, 1941)—Lined Coachwhip
C. f. piceus (Cope, 1892)—Red Racer
C. f. ruddocki (Brattstrom and Warren, 1953)—San Joaquin Coachwhip
C. f. testaceus Say, *in* James, 1822—Western Coachwhip

C. fuliginosus (Cope, 1895)—Baja California Coachwhip

On the basis of a sympatric occurrence with *C. flagellum*, Grismer (1994, Herpetol. Nat. Hist. 2: 51; 2002, Amphibians and Reptiles of Baja California, Including Its Pacific Islands and the Islands in the Sea of Cortés, Univ. California Press) elevated *C. f. fuliginosus* to species status.

C. lateralis (Hallowell, 1853)—Striped Racer

C. l. euryxanthus (Riemer, 1954)—Alameda Striped Racer
C. l. lateralis (Hallowell, 1853)—California Striped Racer

C. schotti (Baird and Girard, 1853)—Schott's Whipsnake

Camper and Dixon (1994, Ann. Carnegie Mus. Nat. Hist. 63: 1–48) elevated *C. schotti* from *C. taeniatus* with *ruthveni* retained as a subspecies.

C. s. ruthveni (Ortenburger, 1923)—Ruthven's Whipsnake
C. s. schotti (Baird and Girard, 1853)—Schott's Striped Whipsnake

C. taeniatus (Hallowell, 1852)—Striped Whipsnake

C. t. girardi (Stejneger and Barbour, 1917)—Central Texas Whipsnake
C. t. taeniatus (Hallowell, 1852)—Desert Striped Whipsnake

Coniophanes Hallowell, 1860—BLACK-STRIPED SNAKES

C. imperialis (Baird and Girard, 1859)—Regal Black-striped Snake

C. i. imperialis (Baird and Girard, 1859)—Tamaulipan Black-striped Snake

Contia Baird and Girard, 1853—SHARP-TAILED SNAKES

C. longicauda Feldman and Hoyer, 2010—Forest Sharp-tailed Snake

This species was originally named *Contia longicaudae* by Feldman and Hoyer (2010, Copeia, 2010: 254–267); however, because they explicitly treated the second part of the binomen as an adjective, it must agree with the name *Contia* in gender and number so that the correct spelling is *Contia longicauda*.

C. tenuis (Baird and Girard, 1852)—Common Sharp-tailed Snake

Crotalus Linnaeus, 1758—RATTLESNAKES

The traditional view of rattlesnake taxonomy that recognizes the two monophyletic sister genera *Crotalus* and *Sistrurus* (e.g. Brattstrom, 1964, San Diego Soc. Nat. Hist. 13: 185–268) has recently been challenged. Stille (1987, Herpetologica 43: 98–104) and McCranie (1989, Herpetologica 44: 123–126) presented data that suggested *Sistrurus* is not monophyletic and rendered *Crotalus* paraphyletic. Parkinson (1999, Copeia 1999: 576–586) found *Sistrurus* monophyletic but its position rendered *Crotalus* paraphyletic. Knight et al. (1993, Syst. Biol. 42: 356–367) used mtDNA to defend the traditional generic taxonomy, but in order to do so ignored the most parsimonious tree. The genus *Crotalus* is monophyletic when including the Mexican *C. ravus* (Murphy et al. 2002, *in* Schuett et al. [eds.] Biology of the Vipers, Eagle Mountain Publishing, Pp. 69–92), and is supported as such in most recent phylogenies, as well as being the sister taxon to a monophyletic *Sistrurus* (e.g., Pyron et al., 2013; BMC Evol. Biol. 13: 93). Davis et al. (2016. PLoS ONE 11(1): e0146166.doi:10.1371/journal.pone.0146166) used mtDNA and morphometric analyses that resolved six species within the *C. viridis* complex, which we don't follow pending further analyses with nDNA.

C. adamanteus Palisot de Beauvois, 1799—Eastern Diamond-backed Rattlesnake

C. atrox Baird and Girard, 1853—Western Diamond-backed Rattlesnake

C. cerastes Hallowell, 1854—Sidewinder

Douglas et al. (2006, Mol. Ecol. 15: 3353–3374), using mtDNA, found several geographically distinct lineages within *C. cerastes*. Only one of these lineages corresponded to a recognized subspecies. (*C. c. laterorepens*).

C. c. cerastes Hallowell, 1854—Mohave Desert Sidewinder

C. c. cercobombus Savage and Cliff, 1953—Sonoran Sidewinder

C. c. laterorepens Klauber, 1944—Colorado Desert Sidewinder

C. cerberus (Coues, 1875)—Arizona Black Rattlesnake

See annotation under *C. oreganus*.

C. horridus Linnaeus, 1758—Timber Rattlesnake

Pisani et al. (1972, Trans. Kansas Acad. Sci. 75: 255–263) conducted a multivariate analysis of variation in *C. horridus* and concluded that characters tended to be clinal and recommended against recognition of the two subspecies. Brown and Ernst (1986, Brimleyana 12: 57–74) countered that morphology in the eastern part of the range supported recognition of coastal plain and montane subspecies. Clark et al. (2003, J.

Herpetol. 37: 145–154) identified three mitochondrial DNA lineages separated by the Appalachian and Allegheny Mountain ranges that did not correspond with the classic arrangement of subspecies within *C. horridus*.

C. lepidus (Kennicott, 1861)—Rock Rattlesnake

C. l. klauberi Gloyd, 1936—Banded Rock Rattlesnake

C. l. lepidus (Kennicott, 1861)—Mottled Rock Rattlesnake

C. molossus Baird and Girard, 1853—Western Black-tailed Rattlesnake

The northern populations of this species were examined in detail using a multi-locus nuclear dataset (Anderson and Greenbaum, 2013; Herpetol. Monogr. 26: 19–57), supporting recognition of *C. molossus* for populations west of the Cochise Filter Barrier (from the Sonoran Desert west), and *C. ornatus* for eastern populations (from Chihuahuan Desert east), with a narrow contact zone.

C. oreganus Holbrook, 1840—Western Rattlesnake

Pook et al. (2000, Mol. Phylogenet. Evol. 15: 269–282), Ashton and de Queiroz (2001, Mol. Phylogenet. Evol. 21: 176–189), and Douglas et al. (2002, Biology of the Vipers, Schuett et al.[eds.] Eagle Mountain Publishing) analyzed mtDNA sequence data and concluded that *Crotalus viridis* comprised at least two clades, *C. viridis* and *C. oreganus*, with *C. cerberus* being the sister taxon to populations of *C. oreganus*. The former two studies did not formally recognize *C. cerberus* as a species, although both suggested that it was distinct based on sequence differences and allopatry. The latter study did recognize *C. cerberus* as well as four other taxa. Although the studies relied on the same locus, we conservatively conclude that the congruence among all three studies might suggest the recognition of *C. viridis*, *C. oreganus* and *C. cerberus*. A recent unpublished study (Goldenberg, 2013; MS Dissertation, San Diego State Univ., 90 pp.) suggests a unique lineage, that has not yet been named, occurs in the southern part of the nominate species' range, and that the subspecies as currently recognized do not correspond with the actual species-level divergences in the group.

C. o. abyssus Klauber, 1930—Grand Canyon Rattlesnake

C. o. concolor Woodbury, 1929—Midget Faded Rattlesnake

C. o. helleri Meek, 1906 "1905"—Southern Pacific Rattlesnake

C. o. lutosus Klauber, 1930—Great Basin Rattlesnake

C. o. oreganus Holbrook, 1840—Northern Pacific Rattlesnake

C. ornatus Hallowell, 1854—Eastern Black-tailed Rattlesnake

See note under entry for *C. molossus*

C. pricei Van Denburgh, 1895—Twin-spotted Rattlesnake

C. p. pricei Van Denburgh, 1895—Western Twin-spotted Rattlesnake

C. pyrrhus (Cope, 1867 "1866")—Southwestern Speckled Rattlesnake

Meik et al. (2015. PLoS ONE 10(6): e0131435. doi: 10.1371/journal.pone.0131435), using multilocus sequence and phenotypic data, demonstrated that *C. pyrrhus* is a species distinct from *C. mitchellii* of Baja California.

C. ruber Cope, 1892—Red Diamond Rattlesnake

The International Commission on Zoological Nomenclature (2000, Bull. Zool. Nomencl. 57: 189–190. Opinion 1960) has ruled that the name *Crotalus ruber* Cope 1892 takes precedence over *C. exsul* Garman 1884 when used as a specific epithet.

C. scutulatus (Kennicott, 1861)—Mohave Rattlesnake

The spelling of the word "Mojave" or "Mohave" has been a subject of debate. Lowe, in the preface to his Venomous Reptiles of Arizona (1986), argued for "Mohave" as did Campbell and Lamar (2004, The Venomous Reptiles of the Western Hemisphere, Comstock Publishing). According to linguistic experts on Native American languages, either spelling is correct, but using either the "j" or "h" is based on whether the word is used in a Spanish or English context. Given that this is an English names list, we use the "h" spelling (P. Munro, Linguistics, UCLA, *pers. comm.*). Jones (2016, Sonoran Herpetol. 29: 64–71) argued that the spelling should be with "j" but the committee was not convinced and voted to continue to spell it as Mohave.

C. s. scutulatus (Kennicott, 1861)—Northern Mohave Rattlesnake

The English name of the nominal subspecies has been changed to reflect the distribution rather than describe rattlesnakes from a small portion of its distribution (D. Hardy and H. Greene, *pers. comm.*).

C. stephensi Klauber, 1930—Panamint Rattlesnake

Elevated to species by Douglas et al. (2007, Copeia 2007: 920–932).

C. tigris Kennicott, *in* Baird, 1859—Tiger Rattlesnake

C. viridis (Rafinesque, 1818)—Prairie Rattlesnake

See comments under *C. oreganus*. Douglas et al. (2002, Biology of the Vipers, Schuett et al [eds.] Eagle Mountain Press) synonymized *C.v. nuntius* with *C. v. viridis*.

C. willardi Meek, 1906, "1905"—Ridge-nosed Rattlesnake

Barker (2016, *in* Schuett et al. [eds] Rattlesnakes of Arizona. ECO Publishing) recommended elevating the five subspecies of *C. willardi* to species, which we do not follow until data are available for evaluation.

C. w. obscurus Harris and Simmons, 1976—New Mexico Ridge-nosed Rattlesnake

C. w. willardi Meek, 1906, "1905"—Arizona Ridge-nosed Rattlesnake

Diadophis Baird and Girard, 1853—RING-NECKED SNAKES

D. punctatus (Linnaeus, 1766)—Ring-necked Snake

Numerous data suggest that more than one lineage exists (Blanchard, 1942, Bull. Chicago Acad. Sci. 7: 1–144; Gehlbach, 1974, Herpetologica 30: 140–148; Pinou et al., 1995, J. Herpetol. 29: 105–110; Feldman and Spicer, 2006, Mol. Ecol. 15: 2201–2222). Using mitochondrial data sampled from specimens across their range, Fontanella et al. (2008, Mol. Phylogenet. Evol. 46: 1049–1070) found at least 14 lineages that do not follow the geographic range of the subspecies, and may be independently evolving taxa. While *D. punctatus* may be divided into several species in the near future, we refrain from making any changes at present. Evidence to synonymize the various races into a single species has been poorly presented, and our arrangement follows the traditional subspecies groupings.

D. p. acricus Paulson, 1968—Key Ring-necked Snake

D. p. amabilis Baird and Girard, 1853—Pacific Ring-necked Snake

D. p. arnyi Kennicott, 1859—Prairie Ring-necked Snake

D. p. edwardsii (Merrem, 1820)—Northern Ring-necked Snake

D. p. modestus Bocourt, 1886—San Bernardino Ring-necked Snake

D. p. occidentalis Blanchard, 1923—Northwestern Ring-necked Snake

D. p. pulchellus Baird and Girard, 1853—Coral-bellied Ring-necked Snake

D. p. punctatus (Linnaeus, 1766)—Southern Ring-necked Snake

D. p. regalis Baird and Girard, 1853—Regal Ring-necked Snake

D. p. similis Blanchard, 1923—San Diego Ring-necked Snake
D. p. stictogenys Cope, 1860—Mississippi Ring-necked Snake
D. p. vandenburgii Blanchard, 1923—Monterey Ring-necked Snake

Drymarchon Fitzinger, 1843—INDIGO SNAKES
D. couperi (Holbrook, 1842)—Eastern Indigo Snake

Wüster et al. (2001, Herpetol. J. 11: 157–165) using morphological evidence, demonstrated that *couperi* is a distinct species.

D. kolpobasileus Krysko, Granatosky, Nuñez, and Smith 2016—Gulf Coast Indigo Snake
D. melanurus (Duméril, Bibron, and Duméril, 1854)—Central American Indigo Snake

Wüster et al. (2001, Herpetol. J. 11: 157–165) showed that the South American *D. corais* is distinct from the Central/North American (*D. melanurus*) taxon.

D. m. erebennus (Cope, 1860)—Texas Indigo Snake

Drymobius Fitzinger, 1843—NEOTROPICAL RACERS
D. margaritiferus (Schlegel, 1837)—Speckled Racer
D. m. margaritiferus (Schlegel, 1837)—Northern Speckled Racer

Farancia Gray, 1842—MUDSNAKES AND RAINBOW SNAKES
F. abacura (Holbrook, 1836)—Red-bellied Mudsnake

Cundall and Rossman (1984, Herpetologica 40: 388–405) analyzed skull morphology and showed substantial divergence between *F. a. abacura* and *F. a. reinwardtii*.

F. a. abacura (Holbrook, 1836)—Eastern Mudsnake
F. a. reinwardtii Schlegel, 1837—Western Mudsnake
F. erytrogramma (Palisot de Beauvois *in* Sonnini and Latreille, 1801)—Rainbow Snake
F. e. erytrogramma (Palisot de Beauvois *in* Sonnini and Latreille, 1801)—Common Rainbow Snake
F. e. seminola Neill, 1964—Southern Florida Rainbow Snake

Ficimia Gray, 1849—EASTERN HOOK-NOSED SNAKES

The previous standard English names of *Ficimia* and *Gyalopion* were misleading relative to their geographic ranges. All are distributed in Mexico, but *Ficimia* had the moniker "Mexican," whereas *Gyalopion* had the name "Plateau," yet is clearly not confined to any plateau. Given that *Ficimia* has the easternmost distribution, we call it "Eastern" and call *Gyalopion* "Western."

F. streckeri Taylor, 1931—Tamaulipan Hook-nosed Snake

Gyalopion Cope, 1861—WESTERN HOOK-NOSED SNAKES

See note on *Ficimia*.

G. canum Cope, 1861 "1860"—Chihuahuan Hook-nosed Snake
G. quadrangulare (Günther, 1893 *in* Salvin and Godman, 1885-1902)—Thornscrub Hook-nosed Snake

Haldea Baird and Girard, 1853—ROUGH EARTHSNAKES

McVay and Carstens (2013, Mol. Phylogenet. Evol. 68: 425–431) found that *Virginia* is polyphyletic based on a multi-locus nuclear dataset, and resurrected *Haldea* for *V. striatula*.

H. striatula (Linnaeus, 1766)—Rough Earthsnake

Heterodon Latreille, 1801—NORTH AMERICAN HOG-NOSED SNAKES

H. gloydi Edgren, 1952—Dusty Hog-nosed Snake

Werler and Dixon (2000, Texas Snakes, University of Texas Press, Austin) regarded *H. n. gloydi* to be an allopatric, diagnosable taxon restricted to the low plains-eastern forest ecotone of eastern Texas. Smith et al. (2003, J. Kansas Herpetol. 5: 17–20) followed the taxonomy of Walley and Eckerman (1999, Cat Am. Amph. Rept. 698.1) and did not recognize *gloydi*.

H. kennerlyi Kennicott, 1860—Mexican Hog-nosed Snake

Smith et al. (2003, J. Kansas Herpetol. 5: 17–20), based on two scale characters, separated *H. n. kennerlyi* from *H. n. nasicus* and elevated the former to species.

H. nasicus Baird and Girard, 1852—Plains Hog-nosed Snake

Because the three subspecies of *H. nasicus* have been elevated to species, their respective standard English names remain associated with each. Hence, there is no longer a "Western Hog-nosed Snake."

H. platirhinos Latreille, 1801—Eastern Hog-nosed Snake

H. simus (Linnaeus, 1766)—Southern Hog-nosed Snake

Hydrophis Latreille *ex* Sonnini and Latreille, 1801—SEASNAKES

A recent study (Sanders et al., 2013, Mol. Phylogenet. Evol. 66: 575–591) corrected the long-noted non-monophyly of most seasnake genera (including *Pelamis*) by recognizing a single large genus *Hydrophis*, including *H. platurus*.

H. platurus (Linnaeus, 1766)—Yellow-bellied Seasnake

Hypsiglena Cope, 1860—NORTH AMERICAN NIGHTSNAKES

Taxonomy of *Hypsiglena* has received some critical review since Tanner's revision of the genus (1944, Great Basin Nat. 5: 25–92). Dixon (1965, Southwest. Nat. 10: 125–131) and Dixon and Dean (1986, Southwest. Nat. 31: 307–318) studied a morphological contact zone between northern and southern taxa at the Sonora–Sinaloa border in Mexico, finding that it comprised a narrow zone of hybridization with some taxa existing in sympatry. Hardy and McDiarmid (1969, Univ. Kansas Pub. Mus. Nat. Hist. 18: 39–252) examined specimens across the range of this presumptive contact and elsewhere in western Mexico and concluded that no morphological characters existed to separate *torquata* and *ochrorhyncha*, except maybe nuchal patterns, which they decided (p. 170) was "a case of pattern dimorphism in a single, otherwise uniform, species." Grismer et al. (1994, Bull. So. California Acad. Sci. 93: 45–80) dismissed the recognition of subspecies in Baja California, stating, without evidence, that the subspecies intergrade widely. Mulcahy (2008, Mol. Phylogenet. Evol. 46: 1095–1115) conducted a comprehensive phylogeographic study of *Hypsiglena* based on an mtDNA analysis of >150 individuals. Mulcahy (2008, op. cit.) recognized six species in what was considered *H. torquata*, five of which are consistent with previously described lineages (e.g. subspecies), while one represents a unique lineage that remains to be described. Mulcahy (2008) also recommended maintaining the subspecies designations for several of the widespread, polymorphic species, which may represent incipient species. The nominal species *H. torquata* is now restricted to Mexico, three described forms occur in the USA, and the undescribed form is endemic to the Cochise Filter Barrier area of southeastern Arizona and associated New Mexico.

H. chlorophaea Cope, 1860—Desert Nightsnake
  H. c. deserticola (Tanner, 1944)—Northern Desert Nightsnake
  H. c. loreala (Tanner, 1944)—Mesa Verde Nightsnake
  H. c. chlorophaea Cope, 1860—Sonoran Nightsnake
H. jani (Duges, 1866)—Chihuahuan Nightsnake
  H. j. texana (Stejneger, 1893)—Texas Nightsnake
H. ochrorhyncha Cope, 1860—Coast Nightsnake
  H. o. nuchalata (Tanner, 1943)—California Nightsnake
  H. o. klauberi Tanner, 1944—San Diego Nightsnake

Lampropeltis Fitzinger, 1843—KINGSNAKES AND MILKSNAKES

The composition of this group was recently investigated by Ruane et al. (2014, Syst. Biol. 63: 231–250) and the traditionally recognized species within this genus were found to represent a monophyletic group. However, the composition of various species has changed substantially.

L. alterna (Brown, 1901)—Gray-banded Kingsnake

Garstka (1982, Breviora 466: 1–35) and more recently Bryson et al. (2007, Mol. Phylogenet. Evol. 43: 674–684) reviewed the *mexicana* species group of *Lampropeltis*. Based on the more recent molecular work, it appears that the recognition of the traditional species of *alterna*, *mexicana* and *triangulum* may be incorrect. Until more data are available to resolve the taxonomy of these groups, we withhold making any changes. Given the apparent complexity of the situation and the widespread morphological variation of *L. alterna*, we do not recognize any subspecies, though Hilken and Schlepper (1998, Salamandra 34: 97–124) argued for recognition of *L. alterna alterna* and *L. a. blairi*. Recent work by Ruane et al. (2014, Syst. Biol. 63: 231–250) showed that this is an evolutionarily distinct lineage, and clearly represents a separate species. Previous work showing affinity with *L. triangulum* based on mitochondrial data was misled by an apparent genome capture.

L. annulata Kennicott, 1861—Mexican Milksnake

This species comprises a primarily Mexican lineage of the former *L. triangulum*, and is of uncertain occurrence in the United States, possibly along the Rio Grande in southern Texas (Ruane et al. 2014, Syst. Biol. 63: 231–250).

L. californiae (Blainville, 1835)—California Kingsnake

Previously considered a subspecies of *L. getula,* Pyron and Burbrink (2009, Mol. Ecol. 18: 2443–3457 and 2009, Zootaxa 2241: 22–32) demonstrated that this is a distinct species.

L. calligaster (Harlan, 1827)—Prairie Kingsnake

See comment under *L. rhombomaculata*.

L. elapsoides (Holbrook, 1838)—Scarlet Kingsnake

Using multiple nuclear and mitochondrial genes, Pyron and Burbrink (2009, Mol. Phylogenet. Evol. 52: 524–529) found that *L. elapsoides* is distinct from *L. triangulum*. This was confirmed in a larger multilocus study with many individuals sampled (Ruane et al. 2014, Syst. Biol. 63: 231–250).

L. extenuata (Brown, 1890)—Short-tailed Kingsnake

Dowling and Maxson (1990, J. Zool. London 221: 77–85), using immunological distance data, found *Stilosoma* to fall within *Lampropeltis*. Keogh (1996, Herpetologica 52: 406–416), however, found *Stilosoma* to be part of the probable sister group to *Lampropeltis*. Rodriguez-Robles and de Jesus Escobar (1999, Biol. J. Linn. Soc. 68: 355–385) and Bryson et al. (2007, Mol. Phylogenet. Evol. 43: 674–684) corroborated Dowling and Maxson using mtDNA evidence, and demonstrated that recognition of *Stilosoma* as a genus renders *Lampropeltis* paraphyletic. This was confirmed and ameliorated in Pyron and Burbrink (2009, Mol. Phylogenet. Evol. 52: 524–529) and confirmed in Ruane et al. (2014, Syst. Biol. 63: 231–250).

L. floridana (Blanchard 1919) —Florida Kingsnake

See comments under *L. getula*.

L. gentilis (Baird and Girard, 1853)—Western Milksnake

This species comprises the formerly recognized subspecies *L. t. celaenops, L. t. multistriata, L. t. taylori, L. t. amaura* (part), *L. t. syspila* (part), and *L. t. annulata* (part) (Ruane et al. 2014, Syst. Biol. 63: 231–250).

L. getula (Linnaeus, 1766)—Eastern Kingsnake

Krysko et al. (2017, J. Hered. doi:10.1093/jhered/esw086) used mtDNA and nDNA and inferred three monophyletic groups that generally corresponded to the geographic regions Florida Peninsula, Atlantic Coast, and Eastern Apalachicola Lowlands which contained previously recognized subspecies L. g. floridana, L. g. getula, and L. g. meansi. The authors considered the members of the clades as morphologically diagnosable and elevated them to species. Krysko et al. also recognized L. nigrita from Mexico and southeastern Arizona.

L. holbrooki Stejneger, 1903—Speckled Kingsnake

Formerly considered a subspecies of *L. getula,* Pyron and Burbrink (2009, Mol. Ecol. 18: 2443–3457 and 2009, Zootaxa 2241: 22–32) demonstrated that this is a distinct species. However, compared to the range of the former subspecies, this taxon occurs only west of the Mississippi River.

L. knoblochi Taylor, 1940—Madrean Mountain Kingsnake

Formerly considered a subspecies of *L. pyromelana*, Burbrink et al. (2011, Mol. Phylogenet. Evol. 60: 445–454) demonstrated the existence of two species using coalescent species delimitation methods and ecological niche modeling. The complex comprises a northern species on the Colorado Plateau (*L. pyromelana*) and a southern species (*L. knoblochi*) found primarily on the Sierra Madre Occidental and associated Madrean Sky Islands.

L. meansi Krysko and Judd 2006—Apalachicola Kingsnake

See comments under *L. getula*.

L. multifasciata (Bocourt, 1886)—Coast Mountain Kingsnake

See entry under *L. zonata*. This species comprises the formerly recognized subspecies *L. z. multifasciata*, and includes populations from the Transverse and Coastal ranges south.

L. nigra (Yarrow, 1882)—Eastern Black Kingsnake

Formerly considered a subspecies of *L. getula,* Pyron and Burbrink (2009, Mol. Ecol. 18: 2443–3457 and 2009, Zootaxa 2241: 22–32) demonstrated that this is a distinct species.

L. nigrita (Zweifel and Norris 1955)—Western Black Kingsnake

See comments under *L. getula*.

L. occipitolineata Price, 1987—South Florida Mole Kingsnake

See comment under *L. rhombomaculata*.

L. pyromelana (Cope, 1867 “1866”)—Arizona Mountain Kingsnake

Burbrink et al. (2011, Mol. Phylogenet. Evol. 60: 445–454) demonstrated that this species is distinct from *L. knoblochi*.

L. rhombomaculata (Holbrook, 1840)—Northern Mole Kingsnake

McKelvy and Burbrink (2016. Mol. Phylogenet. Evol. 106: 61–72), using multilocus sequence data, found *L. rhombomaculata* and *L. occipitolineata* distinct from *L. calligaster*.

L. splendida (Baird and Girard, 1853)—Desert Kingsnake

Formerly considered a subspecies of *L. getula,* Pyron and Burbrink (2009, Mol. Ecol. 18: 2443–3457 and 2009, Zootaxa 2241: 22–32) demonstrated that this is a distinct species.

L. triangulum (Lacépède, 1789)—Eastern Milksnake

Ruane et al. (2014, Syst. Biol. 63: 231–250) used a multi-locus nuclear dataset to show that *L. triangulum* was polyphyletic as previously recognized, consisting of at least three distinct species groups. As currently defined, *L. triangulum* primarily comprises populations of the former subspecies *L. t. triangulum, L. t. syspila* (part), and *L. t. amaura* (part).

L. zonata (Lockington *ex* Blainville, 1876)—California Mountain Kingsnake

This species was investigated using a multi-locus nuclear dataset (Myers et al., 2013, Mol. Ecol. 21: 5418–5429), finding multiple species-level taxa. This species comprises the formerly recognized subspecies *L. z. zonata, L. z. multicincta*, and *L. z. multifasciata* (part), including populations from the Sierra Nevada north.

Leptodeira Fitzinger, 1843—CAT-EYED SNAKES

L. septentrionalis (Kennicott, *in* Baird, 1859)—Northern Cat-eyed Snake

The genus *Leptodeira* and the *L. septentrionalis/annulata* complex in particular, were investigated using a mitochondrial dataset with rangewide sampling (Daza et al. 2009, Mol. Phylogenet. Evol. 53: 653–657). Those authors found that the latter two species are polyphyletic, and that complex geographic structure exists which does not correspond with the current taxonomy.

Leptotyphlops see *Rena.*

Lichanura Cope, 1861—ROSY BOAS

See annotation under *Charina*. Wood et al. (2008, Mol. Phylogenet. Evol. 46: 484–582), used mtDNA and found three main clades within *trivirgata* that do not correspond to currently recognized subspecies. They concluded that these clades corresponded to two species, *L. trivirgata* and *L. orcutti*.

L. orcutti (Stejneger 1889)—Rosy Boa

L. trivirgata (Cope, 1861)—Three-lined Boa

Liodytes Cope 1885—SWAMPSNAKES

Using a multi-locus nuclear dataset, McVay and Carstens (2013, Mol. Phylogenet. Evol. 68: 425–431) found that *Regina rigida* and *R. alleni* formed a separate species group containing *Seminatrix* (which has been found previously), and resurrected *Liodytes* for these species.

L. alleni (Garman, 1874)—Striped Swampsnake

L. pygaea (Cope, 1871)—Black Swampsnake

L. p. cyclas Dowling, 1950—Southern Florida Swampsnake

L. p. paludis Dowling, 1950—Carolina Swampsnake

L. p. pygaea (Cope, 1871)—Northern Florida Swampsnake

L. rigida (Say, 1825)—Glossy Swampsnake

L. r. deltae (Huheey, 1959)—Delta Swampsnake

L. r. rigida (Say, 1825)—Eastern Glossy Swampsnake

L. r. sinicola (Huheey, 1959)—Gulf Swampsnake

Masticophis: See *Coluber*.

Micruroides Schmidt, 1928—SONORAN CORALSNAKES

Slowinski (1995, J. Herpetol. 29: 325–338) presented morphological and biochemical data supporting separation of the genera *Micrurus* and *Micruroides*. Castoe et al. (2007, Zool. J. Linn. Soc. 151:809–831) found that *Micruroides* was the sister taxon to the remainder of the sampled New World *Micrurus*.

M. euryxanthus (Kennicott, 1860)—Sonoran Coralsnake

M. e. euryxanthus (Kennicott, 1860)—Arizona Coralsnake

Micrurus Wagler, 1824—AMERICAN CORALSNAKES

M. fulvius (Linnaeus, 1766)—Harlequin Coralsnake

M. tener (Baird and Girard, 1853)—Texas Coralsnake

Although Castoe et al. and J. Boundy (2006, Joint Meeting Ichthyologists Herpetologists abstracts) presented molecular and morphological evidence, respectively, that *M. fulvius* and *M. tener* are distinct species, these data have not been published. However, this species has been diagnosed by Campbell and Lamar (2004, in J. A. Campbell and W. W. Lamar [eds.], Venomous Reptiles of the Western Hemisphere, Comstock, Publ. :195–197). Using over 1,097 microsatellites, Castoe et al. (2012, Mol. Ecol. Resources 12: 1105–1113) demonstrated that *M. fulvius* (east of the Mississippi River) is distinct (not sharing genes) with *M. tener*, which cannot be differentiated from Mexican populations of *M. bernardi* and *M. tamaulipensis*.

M. t. tener (Baird and Girard, 1853)—Texas Gulf-Coast Coralsnake

Nerodia Baird and Girard, 1853—NORTH AMERICAN WATERSNAKES

N. clarkii (Baird and Girard, 1853)—Saltmarsh Snake

Lawson et al. (1991, Copeia 1991: 638–659) presented allozyme data that supported the separation of *clarkii* and *fasciata*.

N. c. clarkii (Baird and Girard, 1853)—Gulf Saltmarsh Watersnake

N. c. compressicauda Kennicott, 1860—Mangrove Saltmarsh Watersnake

N. c. taeniata (Cope, 1895)—Atlantic Saltmarsh Watersnake

Dunson (1979, Florida Scientist 42: 102–112) synonymized *N. c. taeniata* with *N. c. compressicauda*, concluding that it was pattern variant of the latter. Lawson et al. (1991, Copeia 1991: 638–659) resurrected *N. c. taeniata* on the basis of allozyme data, although the genetic distances were minute.

N. cyclopion (Duméril, Bibron and Duméril, 1854)—Mississippi Green Watersnake

N. erythrogaster (Forster, 1771)—Plain-bellied Watersnake

Makowsky et al. (2010, Mol. Phylogenet. Evol.55: 985–995) demonstrated using mitochondrial data that this taxon represents a single widespread species with no concordance to any of the described subspecies. As such we do not recognize subspecies.

N. fasciata (Linnaeus, 1766)—Southern Watersnake

Allozyme data indicate that *N. fasciata* forms two clades, differentiated on the mid-Florida Panhandle (Lawson et al., 1991, Copeia 1991: 638–659). Also see note under *N. sipedon*.

N. f. confluens (Blanchard, 1923)—Broad-banded Watersnake
N. f. fasciata (Linnaeus, 1766)—Banded Watersnake
N. f. pictiventris (Cope, 1895)—Florida Watersnake

N. floridana (Goff, 1936)—Florida Green Watersnake

Elevation of *N. floridana* from a race of *N. cyclopion* is supported by data from Pearson (1966, Bull. Serol. Mus. 36: 8), Lawson (1987, J. Herpetol. 21: 140–157), and Sanderson (1993, Brimleyana 19: 83–94). The disjunct populations of *floridana* were examined by Thompson and Crother (1998, Copeia 1998: 715–719) with allozyme data that revealed no evidence of differentiation.

N. harteri (Trapido, 1941)—Brazos River Watersnake

N. paucimaculata (Tinkle and Conant, 1961)—Concho Watersnake

Suggested to be separated from *harteri* by Rose and Selcer (1989, J. Herpetol. 23: 261–266) and supported by molecular data in Densmore et al. (1992, Herpetologica 48: 60–68).

N. rhombifer (Hallowell, 1852)—Diamond-backed Watersnake

Brandley et al. (2010, Mol. Phylogenet. Evol. 57: 552–560) found evidence for multiple lineages of *N. rhombifer*. Two lineages were found roughly east and west of the Mississippi River, with a third in Mexico, corresponding to *N. r. werleri*. However, Brandley et al. sampled only one specimen of the two Mexican subspecies, and it revealed as sister taxon to the U.S. specimens. It cannot be concluded that the Mexican forms are not distinct evolutionary units, and the authors do not conclude otherwise.

N. r. rhombifer (Hallowell, 1852)—Northern Diamond-backed Watersnake

N. sipedon (Linnaeus, 1758)—Common Watersnake

Numerous examples exist of hybridization between *sipedon* and *fasciata* (Conant, 1963, Am. Mus. Novit. 2122: 1–38; Blaney and Blaney, 1979, Herpetologica 35: 350–359; Schwaner et al., 1980, Isozyme Bull. 12: 102; Schwaner and Mount, 1976, Occas. Pap. Mus. Nat. Hist. Univ. Kansas 45: 1–44), and *sipedon* and *fasciata* are apparently sister taxa (Pyron et al. 2013, BMC Evol. Biol. 13: 93, doi:10.1186/1471-2148-13-93).

N. s. insularum (Conant and Clay, 1937)—Lake Erie Watersnake
N. s. pleuralis (Cope, 1892)—Midland Watersnake
N. s. sipedon (Linnaeus, 1758)—Northern Watersnake
N. s. williamengelsi (Conant and Lazell, 1973)—Carolina Watersnake

N. taxispilota (Holbrook, 1838)—Brown Watersnake

Opheodrys Fitzinger, 1843—GREENSNAKES

O. aestivus (Linnaeus, 1766)—Rough Greensnake

Recognition of the Florida peninsular form described by Grobman (1984, Bull. Florida St. Mus. Biol. Sci. 29: 153–170) is supported by Plummer (1987, Copeia 1987: 483–485). Reviewed by Walley and Plummer (2000, Cat. Am. Amph. Rept. 718).

O. a. aestivus (Linnaeus, 1766)—Northern Rough Greensnake
O. a. carinatus Grobman, 1984—Florida Rough Greensnake

O. vernalis (Harlan, 1827)—Smooth Greensnake

Given that *Liochlorophis* (Oldham and Smith, 1991, Bull. Maryland Herpetol. Soc. 27:

201–215) is the monotypic sister genus to the monotypic genus *Opheodrys*, recognition of the former taxon is unnecessary, and reduces the amount of information conveyed by the names. As such, we retain *vernalis* in *Opheodrys*. The several subspecies described by Grobman (1941, Misc. Pub. Mus. Zool. Univ. Michigan 50: 1–38; 1992, J. Herpetol. 26: 176–186) are based on character clines and not widely recognized.

Oxybelis Wagler, 1830—AMERICAN VINESNAKES

O. aeneus (Wagler, 1824)—Brown Vinesnake

Pantherophis Fitzinger, 1843—NORTH AMERICAN RATSNAKES

Utiger et al. (2002, Russian J. Herpetol. 9: 105–124), using molecular data, divided *Elaphe* into eight genera. New World *Elaphe* are part of a clade distinct from Old World species, for which *Pantherophis* Fitzinger, 1843, was resurrected as the oldest available name. While further splitting of *Pantherophis* has been proposed (Collins and Taggart, 2008; J. Kansas Herpetol. 26: 16–18), the use of *Pantherophis* has helped stabilize the classification of New World ratsnakes. Thus, we refrain from further division of the genus.

P. alleghaniensis (Holbrook, 1836)—Eastern Ratsnake

See *P. obsoletus*.

P. bairdi (Yarrow, *in* Cope, 1880)—Baird's Ratsnake

P. emoryi (Baird and Girard, 1853)—Great Plains Ratsnake

See comment under *P. guttatus*.

P. guttatus (Linnaeus, 1766)—Red Cornsnake

Using mitochondrial data, Burbrink (2002, Mol. Phylogenet. Evol. 25: 465–476) found *P. guttatus* to comprise three distinct lineages, which were elevated to species level. The name *P. guttatus* was restricted to populations east of the Mississippi River. The populations in western Louisiana and eastern Texas were named *P. slowinskii.* The subspecies *P. g. meahllmorum* was not found to be a distinct lineage, and was synonymized with *P. emoryi*.

P. obsoletus (Say, 1823)—Western Ratsnake

Based on the congruence of morphological (Burbrink, 2001, Herpetol. Monogr. 15: 1–53) and mitochondrial data (Burbrink et al., 2000, Evolution 54: 2107–2118), Burbrink divided *P. obsoletus* into three species (*P. alleghaniensis, P. obsoletus,* and *P. spiloides)* with no subspecies.

P. ramspotti Crother, White, Savage, Eckstut, Graham, and Gardner, 2011**—**Western Foxsnake

Conant (1940, Herpetologica 2: 2) recognized two forms of foxsnakes, one on each side of a geographic disjunction (basically all of Michigan and parts of Indiana and Ohio) with the western form as *Pantherophis vulpinus vulpinus* and the eastern form as *P. v. gloydi*. Collins (1991, Herpetol. Rev. 22: 42–43) elevated *gloydi* to specific status because of its geographic disjunction from *vulpinus* and the characters noted by Conant (1940, Herpetologica 2: 2). Crother et al. (2011, ISRN Zoology, doi:10.5402/2011/436049) supported the concept of two species, but discovered that the species boundary was the Mississippi River and not the disjunction. The type locality of *P. vulpinus* is east of the Mississippi River and thus the appropriate available name for the eastern form, leaving the western form unnamed. An interesting side note is that faster evolving microsatellite data reveal a population level separation associated with the geographic hiatus (Row et al., 2011, J. Evol. Biol. 24: 2364–2377).

P. slowinskii Burbrink, 2002—Slowinski's Cornsnake
See comment under *P. guttatus*

P. spiloides (Duméril, Bibron and Duméril, 1854)—Gray Ratsnake
See comment under *P. obsoletus*.

P. vulpinus (Baird and Girard, 1853)—Eastern Foxsnake
See comment under *P. ramspotti*.

Pelamis — see ***Hydrophis***

Phyllorhynchus Stejneger, 1890 LEAF-NOSED SNAKES

P. browni Stejneger, 1890—Saddled Leaf-nosed Snake

P. decurtatus (Cope, 1868)—Spotted Leaf-nosed Snake
McDiarmid and McCleary (1993, Cat. Am. Amph. Rept.: 579.1–5), argued that the four subspecies of *P. browni* and five subspecies of *P. decurtatus* not be recognized. Gardner and Mendelson (2004, J. Herpetol. 38: 187–196), based on morphological data, also concluded that subspecies of *P. decurtatus* should not be recognized.

Pituophis Holbrook, 1842—BULLSNAKES, PINESNAKES, AND GOPHERSNAKES

Using mitochondrial data, Rodríguez-Robles and de Jesús-Escobar (2000, Mol. Phylogenet. Evol. 14: 35–50) corroborated the current classification of United States *Pituophis* into three species: *melanoleucus*, *catenifer*, and *ruthveni*. However, the recognition of *ruthveni* rendered *catenifer* paraphyletic, and *P. catenifer* and *P. melanoleucus* have geographic structure that does not correspond with currently recognized subspecies. Thus, given further study of this group, some species of *Pituophis* may undergo taxonomic revision in the near future.

P. catenifer (Blainville, 1835)—Gophersnake
Rodriguez-Robles and de Jesús-Escobar (2000, Mol. Phylogenet. Evol. 14: 35–50) discovered significant internal structuring among *P. catenifer* populations using mitochondrial data, which may signify the existence of additional species, though they did not attempt reclassification. Pending further study, we retain the present subspecific designations for the group.

P. c. affinis (Hallowell, 1852)—Sonoran Gophersnake
P. c. annectens Baird and Girard, 1853—San Diego Gophersnake
P. c. catenifer (Blainville, 1835)—Pacific Gophersnake
P. c. deserticola Stejneger, 1893—Great Basin Gophersnake
P. c. pumilus Klauber, 1946—Santa Cruz Island Gophersnake
P. c. sayi (Schlegel, 1837)—Bullsnake

P. melanoleucus (Daudin, 1803)—Eastern Pinesnake

P. m. lodingi Blanchard, 1924—Black Pinesnake
P. m. melanoleucus (Daudin, 1803)—Northern Pinesnake
P. m. mugitus Barbour, 1921—Florida Pinesnake

P. ruthveni Stull, 1929—Louisiana Pinesnake
Reichling (1995, J. Herpetol. 29: 186–198) concluded that *ruthveni* is a distinct species. Rodriguez-Robles and de Jesús-Escobar (2000, Mol. Phylogenet. Evol. 14: 35–50) argued for the recognition of *P. ruthveni*, despite lack of significant or independent differentiation from some populations of *P. c. sayi* using mitochondrial data.

Regina Baird and Girard, 1853—CRAWFISH SNAKES

Using a multi-locus nuclear dataset, McVay and Carstens (2013, Mol. Phylogenet. Evol. 68: 425–431) corroborated Alfaro and Arnold (2001, Mol. Phylogenet. Evol. 21: 408–423) and Lawson (1985, Ph.D. dissertation, Louisiana State University) in finding that *Regina* is polyphyletic, removing *R. rigida* and *R. alleni* to *Liodytes*. Furthermore, *R. grahamii* and *R. septemvittata* do not form a strongly supported monophyletic group. Pyron et al. (2013, BMC Evol. Biol. 2013, 13:93,doi:10.1186/1471-2148-13-93) found *R. grahamii* and *R. septemvittata* related to *Tropidoclonion*. Figueroa et al. (2016, PLoS ONE 11(9): e0161070. doi:10.1371/journal.pone.0161070) found *grahamii* as sister to *Tropidoclonion* and *septemvittata* nested within *Nerodia*.. We await further study before making any additional changes.

R. grahamii Baird and Girard, 1853—Graham's Crawfish Snake
R. septemvittata (Say, 1825)—Queensnake

Rena Baird and Girard, 1853—THREADSNAKES

Adalsteinsson et al. (2009, Zootaxa 2224: 1–50) demonstrated that the former genus *Leptotyphlops* was composed of two large clades each composed of Old World or New World taxa. The type for the genus *Leptotyphlops* is associated with Old World taxa, leaving the clade of North and Central American threadsnakes unnamed. The genus *Rena* has been restored to this group.

R. dissecta (Cope, 1896)—New Mexico Threadsnake

See *R. dulcis*.

R. dulcis (Baird and Girard, 1853)—Texas Threadsnake

Dixon and Vaughan (2003, Texas J. Sci. 55: 3–24), using morphological data, elevated *R. d. dissecta* to species status, and diagnosed three subspecies within the nominate race, one of which remains unnamed.

R. d. dulcis (Baird and Girard, 1853)—Plains Threadsnake
R. d. rubella (Garman, 1884)—South Texas Threadsnake
R. humilis (Baird and Girard, 1853)—Western Threadsnake
R. h. cahuilae Klauber, 1931—Desert Threadsnake
R. h. humilis (Baird and Girard, 1853)—Southwestern Threadsnake
R. h. segrega Klauber, 1939—Trans-Pecos Threadsnake

Wallach et al. (2014. Snakes of the World-A Catalogue of Living and Extinct Species, CRC Press) followed Pinto (2010: unpublished PhD Diss, Universidade Federal do Rio de Janeiro.) in recognizing *R. segrega* as a species. We await publication of the data before we follow Pinto.

R. h. utahensis Tanner, 1938—Utah Threadsnake

Rhadinaea Cope, 1863—LITTERSNAKES

R. flavilata (Cope, 1871)—Pine Woods Littersnake

Rhinocheilus Baird and Girard, 1853—LONG-NOSED SNAKES

R. lecontei Baird and Girard, 1853—Long-nosed Snake

Manier (2004, Biol. J. Linn. Soc. 83: 65–85), in a detailed morphological analysis, concluded that no subspecies should be recognized.

Salvadora Baird and Girard, 1853—PATCH-NOSED SNAKES

S. grahamiae Baird and Girard, 1853—Eastern Patch-nosed Snake

S. g. grahamiae Baird and Girard, 1853—Mountain Patch-nosed Snake

S. g. lineata Schmidt, 1940—Texas Patch-nosed Snake

S. hexalepis (Cope, 1866)—Western Patch-nosed Snake

S. h. deserticola Schmidt, 1940—Big Bend Patch-nosed Snake

Recognition of the species *S. deserticola* was made without justification by Bogert and Degenhardt (1961, Am. Mus. Novit. 2064: 13). Bogert (1985, Snake Syst. Newsl. Nov. no. 3) explained that the usage was based on characters discovered previously (Bogert, 1945, Am. Mus. Novit. 1285: 1–14) and on the absence of any intergrades. Although Bogert may be correct, we await a study to demonstrate it and retain *S. h. deserticola* as a subspecies of *S. hexalepis*.

S. h. hexalepis (Cope, 1866)—Desert Patch-nosed Snake

S. h. mojavensis Bogert, 1945—Mohave Patch-nosed Snake

The spelling of the standard English name has been changed from "Mojave" to "Mohave" for consistency with other names in the list (see note for *Crotalus scutulatus*).

S. h. virgultea Bogert, 1935—Coast Patch-nosed Snake

Seminatrix – see ***Liodytes***

Senticolis Dowling and Fries, 1987—GREEN RATSNAKES

Senticolis is more closely related to the New World tribe Lampropeltini than it is to the Old World genus *Elaphe* (Keogh, 1996, Herpetologica 52: 406–416; Utiger et al., 2002, Russian J. Herpetol. 9: 105–124; Burbrink and Lawson, 2007, Mol. Phylogenet. Evol. 43: 173–189, and Pyron and Burbrink, 2009, Mol. Phylogenet. Evol. 52: 524–529).

S. triaspis (Cope, 1866)—Green Ratsnake

S. t. intermedia (Boettger, 1883)—Northern Green Ratsnake

Sistrurus Garman, 1883—MASSASAUGA AND PYGMY RATTLESNAKES

See note under *Crotalus*.

S. catenatus (Rafinesque, 1818)—Eastern Massasauga

Kubatko et al. (2011, Syst. Biol. 60: 393–409) used a multigene data set to infer two clades among the three previously recognized subspecies. One clade contained the eastern subspecies (*S. c. catenatus*) and the other clade contained the two western subspecies (*S. c. tergeminus* and *S. c. edwardsii*). Kubatko et al. (2011, op. cit.) recommended elevating *S. c. catenatus*. However, if the recommendation was followed at that time, it would also require elevating *S. c. tergeminus* and the formation of three new combinations. In addition, Holycross et al. (2008, Copeia, 2008: 421–424) discovered that *S. c. tergeminus* is actually subsumed by *S. c. catenatus* because the type locality of *catenatus* is within the range of *tergeminus*, and that the name *Crotalus massassaugus* Kirtland, 1838 would be the available and valid name for the eastern subspecies. As such, *tergeminus* was not currently a valid name and if the Kubatko et al. recommendation was followed, the specific epithet for the eastern form would be *massassaugus*. Crother et al. (2011 Bull. Zool. Nomencl. 68: 271–274) submitted a petition to the ICZN for conservation of the names *catenatus* and *tergeminus*. The subsequent opinion by the ICZN (2013 Bull. Zool. Nomencl. 70: 282–283) retained the names *S. catenatus* and *S. tergeminus* by designation of neotypes for both species. We follow the recommendation of Kubatko et al. (2011, op. cit.) and elevate *tergeminus*, leaving no recognized subspecies of *catenatus*.

S. miliarius (Linnaeus, 1766)—Pygmy Rattlesnake

S. m. barbouri Gloyd, 1935—Dusky Pygmy Rattlesnake

Gloyd (1935, Occ. Papers Mus. Zool. Univ. Michigan 322: 1–7) found *S. m. barbouri* distinct from the other two races by having the lateral spots in 3 series vs. 1–2 series for the other two.

S. m. miliarius (Linnaeus, 1766)—Carolina Pygmy Rattlesnake

S. m. streckeri Gloyd, 1935—Western Pygmy Rattlesnake

S. tergeminus (Say, 1823)—Western Massasauga

Kubatko et al. (2011, Syst. Biol. 60: 393–409) found mixed signals and limited support for the separation of the subspecies.

S. t. tergeminus (Say, 1823)—Prairie Massasauga

S. t. edwardsii (Baird and Girard, 1853)—Desert Massasauga

Sonora Baird and Girard, 1853—NORTH AMERICAN GROUNDSNAKES

S. semiannulata Baird and Girard, 1853—Western Groundsnake

S. s. semiannulata Baird and Girard, 1853—Variable Groundsnake

S. s. taylori (Boulenger, 1894)—Southern Texas Groundsnake

Storeria Baird and Girard, 1853—NORTH AMERICAN BROWNSNAKES

Pyron et al. (2016, Zool. J. Linn. Soc. 177: 937–949) used high throughput molecular data to detect eight species-level clades within *Storeria*, but elected to recognize only four clades (three in the United States) that were corroborated by morphology. They concluded against the recognition of subspecies.

S. dekayi (Holbrook, 1839)—Dekay's Brownsnake

S. occipitomaculata (Storer, 1839)—Red-bellied Snake

No evidence of separate lineages has been found between the sympatric brown and grey color morphs (Grudzien and Owens, 1991, J. Herpetol. 25: 90–92).

S. victa Hay, 1892—Florida Brownsnake

Christman (1980, Bull. Florida St. Mus. 25: 157–256) presented evidence, allopatry with no morphological convergence in proximal populations, to suggest species status for *victa*. This is supported by genomic sequence data (Pyron et al., 2016, Zool. J. Linn. Soc. 177: 937–949).

Tantilla Baird and Girard, 1853—BLACK-HEADED, CROWNED, AND FLAT-HEADED SNAKES

T. atriceps (Günther, 1895 *in* Salvin and Godman, 1885-1902)—Mexican Black-headed Snake

T. coronata Baird and Girard, 1853—Southeastern Crowned Snake

T. cucullata Minton, 1956—Trans-Pecos Black-headed Snake

The taxonomic status of *T. cucullata* and *T. diabola* has been problematic. They have been alternately synonymized (Degenhardt et al., 1976, Texas J. Sci. 17: 225–234; Hillis and Campbell, 1982, Southwest. Nat. 27: 220–221; Irwin and Collins, 1995, Herpetol. Rev. 26: 47) or elevated to species (Collins, 1991, Herpetol. Rev. 22: 42–43). We follow the most recent proposals from Wilson (1999, Smithsonian Inform. Serv. 122: 1–34) and Dixon et al. (2000, Southwest. Nat. 45: 141–153) who both recognized *T. cucullata* as a species distinct from *T. rubra* (extralimital) and synonymized *T. diabola* with the former.

T. gracilis Baird and Girard, 1853—Flat-headed Snake

T. hobartsmithi Taylor, 1937—Smith's Black-headed Snake
T. nigriceps Kennicott, 1860—Plains Black-headed Snake
T. oolitica Telford, 1966—Rim Rock Crowned Snake
T. planiceps (Blainville, 1835)—Western Black-headed Snake

Cole and Hardy (1981, Bull. Am. Mus. Nat. Hist. 17: 201–284) noted local geographic variation but did not recognize any available subspecies of the many disjunct populations.

T. relicta Telford, 1966—Florida Crowned Snake
  T. r. neilli Telford, 1966—Central Florida Crowned Snake
  T. r. pamlica Telford, 1966—Coastal Dunes Crowned Snake
  T. r. relicta Telford, 1966—Peninsula Crowned Snake
T. wilcoxi Stejneger, 1903—Chihuahuan Black-headed Snake
T. yaquia Smith, 1942—Yaqui Black-headed Snake

Thamnophis Fitzinger, 1843—NORTH AMERICAN GARTERSNAKES

The specific and infraspecific status of the taxa listed below is based on Rossman et al. (1996, The Garter Snakes: Evolution and Ecology, Univ. Oklahoma Press).

T. atratus (Kennicott, 1860)—Aquatic Gartersnake

Rossman and Stewart (1987, Occ. Pap. Mus. Zool. Louisiana St. Univ. 63: 1–25) recognized *atratus* as distinct from *T. couchii* and recommended against recognizing *T. a. aquaticus*.

  T. a. atratus (Kennicott, 1860)—Santa Cruz Gartersnake
  T. a. hydrophilus Fitch, 1936—Oregon Gartersnake
  T. a. zaxanthus Boundy, 1999—Diablo Range Gartersnake
T. brachystoma (Cope, 1892)—Short-headed Gartersnake
T. butleri (Cope, 1889)—Butler's Gartersnake
T. couchii (Kennicott, 1859)—Sierra Gartersnake
T. cyrtopsis (Kennicott, 1860)—Black-necked Gartersnake
  T. c. cyrtopsis (Kennicott, 1860)—Western Black-necked Gartersnake
  T. c. ocellatus (Cope, 1880)—Eastern Black-necked Gartersnake
T. elegans (Baird and Girard, 1853)—Terrestrial Gartersnake

Using mitochondrial data, Bronikowski and Arnold (2001, Copeia 2001: 508–513) identified several clades within *T. elegans* that did not, in some cases, follow phenotypic subspecies boundaries. Hammerson (1999, Amphibians and Reptiles of Colorado. 2nd ed. University of Colorado Press) found phenotypes assignable to *T. e. arizonae* and *T. e. vascotanneri* outside of their purported distributions within Colorado, and recommended that the two names be synonymized with *T. e. vagrans*. Hammerson's data supported similar action for Arizona and New Mexico populations as well (J. Boundy, *pers. obs.*). Thus, we tentatively retain three subspecies.

  T. e. elegans (Baird and Girard, 1853)—Mountain Gartersnake
  T. e. terrestris Fox, 1951—Coast Gartersnake
  T. e. vagrans (Baird and Girard, 1853)—Wandering Gartersnake
T. eques (Reuss, 1834)—Mexican Gartersnake
  T. e. megalops (Kennicott, 1860)—Brown Gartersnake
T. gigas Fitch, 1940—Giant Gartersnake
T. hammondii (Kennicott, 1860)—Two-striped Gartersnake

The extralimital *T. digueti* was synonymized with *T. hammondi* by McGuire and Grismer (1993, Herpetologica 49: 354–365).

T. marcianus (Baird and Girard, 1853)—Checkered Gartersnake

T. m. marcianus (Baird and Girard, 1853)—Marcy's Checkered Gartersnake

T. ordinoides (Baird and Girard, 1852)—Northwestern Gartersnake

T. proximus (Say, 1823)—Western Ribbonsnake

T. p. diabolicus Rossman, 1963—Arid Land Ribbonsnake

T. p. orarius Rossman, 1963—Gulf Coast Ribbonsnake

T. p. proximus (Say, 1823)—Orange-striped Ribbonsnake

T. p. rubrilineatus Rossman, 1963—Red-striped Ribbonsnake

T. radix (Baird and Girard, 1853)—Plains Gartersnake

T. rufipunctatus (Cope, 1875)—Narrow-headed Gartersnake

Based on scale microstructure, Chiasson and Lowe (1989, J. Herpetol. 23: 109–118) suggested this taxon be moved from *Thamnophis* to *Nerodia*. De Queiroz and Lawson (1994, Biol. J. Linn. Soc. 53: 209–229) rejected the suggested reallocation, based on their finding that *rufipunctatus* is nested within *Thamnophis*.

T. saurita (Linnaeus, 1766)—Eastern Ribbonsnake

Kraus and Cameron (2016, Herpetol. Rev. 47: 74–75) corrected the spelling to *saurita.*

T. s. nitae Rossman, 1963—Blue-striped Ribbonsnake

T. s. sackenii (Kennicott, 1859)—Peninsula Ribbonsnake

T. s. saurita (Linnaeus, 1766)—Common Ribbonsnake [see above, *saurita*]

T. s. septentrionalis Rossman, 1963—Northern Ribbonsnake

T. sirtalis (Linnaeus, 1758)—Common Gartersnake

Analyses of mitochondrial and nuclear data suggest that this species may be composed of multiple independently evolving lineages often not concordant with the subspecific taxonomy (F. Burbrink, *pers. comm.*).

T. s. annectens Brown, 1950—Texas Gartersnake

T. s. concinnus (Hallowell, 1852)—Red-spotted Gartersnake

T. s. dorsalis (Baird and Girard, 1853)—New Mexico Gartersnake

T. s. fitchi Fox, 1951—Valley Gartersnake

T. s. infernalis (Blainville, 1835)—California Red-sided Gartersnake

The International Commission on Zoological Nomenclature (2000, Bull. Zool. Nomencl. 57: 191–192, Opinion 1961) has ruled that the name *Coluber infernalis* be re-associated with Pacific Coast populations referred to as *T. s. concinnus* by Crother et al. (2000, Herpetol. Circular 29: 73), as suggested by Boundy and Rossman (1995, Copeia 1995: 236–240).

T. s. pallidulus Allen, 1899—Maritime Gartersnake

T. s. parietalis (Say, 1823)—Red-sided Gartersnake

T. s. pickeringii (Baird and Girard, 1853)—Puget Sound Gartersnake

T. s. semifasciatus Cope, 1892—Chicago Gartersnake

Benton (1980, Zool. J. Linnaean Soc. 68: 307–323) synonymized *T. s. semifasciatus* with the nominate race, but Rossman et al. (1996, The Gartersnakes. Evolution and Ecology, Univ. Oklahoma Press) resurrected *T. s. semifasciatus*.

T. s. similis Rossman, 1965—Blue-striped Gartersnake

T. s. sirtalis (Linnaeus, 1758)—Eastern Gartersnake

T. s. tetrataenia (Cope, 1875)—San Francisco Gartersnake

Action by the International Commission on Zoological Nomenclature (2000, Bull. Zool. Nomencl. 57: 191–192. Opinion 1961) has retained the name *Eutaenia s. tetrataenia* for San Francisco Peninsula populations of *T. sirtalis*.

Trimorphodon Cope, 1861—LYRESNAKES

Devitt et al. (2008, Copeia 2008: 370–387) recognized six species (three extralimital), including *T. lambda* and *T. lyrophanes,* based on morphological and mitochondrial data.

T. lambda Cope, 1886—Sonoran Lyresnake

T. lyrophanes (Cope, 1860)—California Lyresnake

T. vilkinsonii Cope, 1886—Texas Lyresnake

LaDuc and Johnson (2003, Herpetologica 59: 364–374) re-elevated *T. vilkinsonii* to species status.

Tropidoclonion Cope, 1860—LINED SNAKES

T. lineatum (Hallowell, 1856)—Lined Snake

See comments under *Regina*.

Virginia Baird and Girard, 1853—SMOOTH EARTHSNAKES

McVay and Carstens (2013, Mol. Phylogenet. Evol. 68: 425–431) found that *Virginia* is polyphyletic based on a multi-locus nuclear dataset, and resurrected *Haldea* for *V. striatula*.

V. valeriae Baird and Girard, 1853—Smooth Earthsnake

V. v. elegans Kennicott, 1859—Western Smooth Earthsnake

V. v. valeriae Baird and Girard, 1853—Eastern Smooth Earthsnake

V. v. pulchra (Richmond, 1954)—Mountain Earthsnake

Collins (1991, Herpetol. Rev. 22: 42–43) elevated *pulchra* to specific status. Because no supporting data, aside from allopatric distribution, were published in his list, we retain *V. valeriae pulchra.*

Crocodilia—Crocodilians

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Alligator Cuvier, 1807—ALLIGATORS
    A. mississippiensis (Daudin, 1802 “1801”)—American Alligator

Crocodylus Laurenti, 1768—CROCODILES
    C. acutus Cuvier, 1807—American Crocodile

Testudines—Turtles

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Actinemys Agassiz, 1857—WESTERN POND TURTLES

See note under *Clemmys*.

- ***A. marmorata*** (Baird and Girard, 1852)—Northwestern Pond Turtle
- ***A. pallida*** (Seeliger, 1945)—Southwestern Pond Turtle

Spinks et al. (2010, Mol. Ecol. 19: 542–556; 2014, Mol. Ecol. 23: 2228–2241; 2016, Mol. Phylogenet. Evol. 103: 85–97) demonstrated deep phylogeographic divergence within the genus, corresponding to the previously recognized subspecies, and recommended species recognition for *pallida*.

Apalone Rafinesque, 1832—NORTH AMERICAN SOFTSHELLS

- ***A. ferox*** (Schneider, 1783)—Florida Softshell
- ***A. mutica*** (LeSueur, 1827)—Smooth Softshell
  - *A. m. mutica* (LeSueur, 1827)—Midland Smooth Softshell
  - *A. m. calvata* (Webb, 1959)—Gulf Coast Smooth Softshell

Some recent field guides (e.g., Guyer et al., 2016, Turtles of Alabama, Univ. Alabama Press; and Powell et al., 2016, Peterson Field Guide to the Reptiles and Amphibians of Eastern and Central North America, Houghton Mifflin Harcourt) have recognized *calvata* as a full species. However, until more thorough geographic and genetic sampling is completed, especially in the presumed area of overlap with *mutica*, we continue to recognize *calvata* as a subspecies.

- ***A. spinifera*** (LeSueur, 1827)—Spiny Softshell
  - *A. s. spinifera* (LeSueur, 1827)—Eastern Spiny Softshell
  - *A. s. aspera* (Agassiz, 1857)—Gulf Coast Spiny Softshell
  - *A. s. emoryi* (Agassiz, 1857)—Texas Spiny Softshell
  - *A. s. guadalupensis* (Webb, 1962)—Guadalupe Spiny Softshell
  - *A. s. pallida* (Webb, 1962)—Pallid Spiny Softshell

Content follows McGaugh et al. (2008, Zool. Scripta 37: 289–304), who synonymized *A. s. hartwegi* with *A. s. spinifera*.

Caretta Rafinesque, 1814—LOGGERHEAD SEA TURTLES

This comment applies to all the standard English names of the sea turtles listed herein. We have returned to the use of “sea turtles” (rather than “seaturtles”) as part of the standard English name for marine turtles. The combined name has not been used recently in the literature.

- ***C. caretta*** (Linnaeus, 1758)—Loggerhead Sea Turtle

Chelonia Brongniart, 1800—GREEN SEA TURTLES

See note under *Caretta*.

C. mydas (Linnaeus, 1758)—Green Sea Turtle

The Black Turtle of the Pacific Ocean has been considered a separate species (*Chelonia agassizii*) by some authors (e.g., Pritchard and Trebbau, 1984, SSAR Contrib. Herpetol. 2: 1–403; Okamato and Kamezaki, 2014, Curr. Herpetol. 33: 46–56), a subspecies of *Chelonia mydas* by others (Kamezaki and Matsui, 1995, J. Herpetol. 29: 51–60), and synonymous with *Chelonia mydas* by others (e.g., Bowen et al., 1992, Evolution 46: 865–881). We follow Parham and Zug (1996, Marine Turtle Newsl. 72: 2–5) and Karl and Bowen (1999, Conserv. Biol. 13: 990–999) in not recognizing it taxonomically until more complete geographic and genetic sampling is completed.

Chelydra Schweigger, 1812—SNAPPING TURTLES

C. serpentina (Linnaeus, 1758)—Snapping Turtle

This species has often been called the Common Snapping Turtle (e.g., Collins, 1997, SSAR Herpetol. Circ. 25). We have dropped the adjective because it might be misinterpreted as referring to the abundance of the species rather than to its being the typical, most widespread species of its family. Shaffer et al. (2008; *in* Steyermark, et al. [ed.], Biology of the Snapping Turtle, John Hopkins Univ. Press: 44–52) provided convincing genetic evidence that *C. serpentina* is a “single, virtually invariant lineage” and hence abandoned the recognition of the subspecies *C. s. osceola* Stejneger, 1918.

Chrysemys Gray, 1844—PAINTED TURTLES

Starkey et al. (2003, Evolution 57: 119–128) argued that the Southern Painted Turtle is genetically divergent and hence should be elevated to the species level. More recent genetic work by Jensen et al. (2014, Conserv. Gen. 15: 261–274) and Jensen et al. (2015, J. Herpetol. 49: 314–324) supported this position. However, these studies also questioned the recognition of the remaining subspecies on genetic grounds, but did not take a position on their abandonment. In contrast, Ernst et al. (2006, Herpetol. Bull. 95: 6–15) reexamined color patterns and dorsal scute alignment in *Chrysemys* and identified intermediate specimens between *C. dorsalis* and *C. p. marginata* and *C. p. bellii*. Although the evidence for species recognition of *dorsalis* is primarily mitochondrial, we continue to recognize it as a full species pending further genetic sampling.

C. picta (Schneider, 1783)—Painted Turtle
C. p. bellii (Gray, 1831)—Western Painted Turtle
C. p. marginata Agassiz, 1857—Midland Painted Turtle
C. p. picta (Schneider, 1783)—Eastern Painted Turtle
C. dorsalis Agassiz, 1857—Southern Painted Turtle

Clemmys Ritgen, 1828—SPOTTED TURTLES

Work by Bickham et al. (1996, Herpetologica 52: 89–97), Burke et al. (1996, Herpetologica 52: 572–584), Lenk et al. (1999, Mol. Ecol. 8: 1911–1922), Holman and Fritz (2001, Zoolog. Abhand. Staat. Mus. für Tierkunde Dresden 51: 331–354), Feldman and Parham (2002, Mol. Phylogenet. Evol. 22: 388–398), Seidel (2002, Copeia 2002: 1118–1121), Stephens and Wiens (2003, Biol. J. Linn. Soc. 79: 577–610), Wiens et al. (2010, Biol. J. Linn. Soc. 99: 445–461), Fritz et al. (2011, Zootaxa 2791: 41–53), and Spinks et al. (2016, Mol. Phylogenet. Evol. 103: 85–97) provided ample evidence that the genus *Clemmys* as previously recognized (e.g., McDowell, 1964, Proc. Zool. Soc. Lond.

143: 239–279) was paraphyletic with respect to the sister genera *Emys* and *Emydoidea*, and also possibly *Terrapene*. Two taxonomic schemes reflecting these relationships are currently in contention. Both would place sister taxa *insculpta* and *muhlenbergii* in the genus *Glyptemys* and leave *guttata* in the monotypic genus *Clemmys* (both changes are recognized in this list). However, one scheme (e.g., Feldman and Parham, 2002, op cit.; Spinks and Shaffer, 2005, Mol. Ecol. 14: 2047–2064; Spinks et al. (2016, op cit.) would expand the definition of *Emys* to include *marmorata* (and *pallida*), *blandingii*, *orbicularis* (European) and *trinacris* (Sicilian). This would involve two taxonomic changes and eliminate the genus *Emydoidea*, which is monotypic as a living taxon, but polytypic if the fossil record is included (Holman, 2002, Michigan Academician 34: 393–394). The other scheme (Holman and Fritz, 2001, op cit.; Stephens and Wiens, 2003, op cit.; Wiens et al. 2010, op cit.; Fritz et al. 2011, op cit.) involves only one taxonomic change, placing *marmorata* (and *pallida*) in the now polytypic genus *Actinemys*, and retaining the polytypic genera *Emydoidea* (North America) and *Emys* (Eurasia). The contention originally hinged on the relative importance of eliminating monotypic genera versus maintaining taxonomic stability (fewer changes being preferable). The former is supported primarily by taxonomists who consider monotypic genera to be redundant names and hence of no value in providing phylogenetic information. Thus, although the former scheme requires more changes, it eliminates the genus *Emydoidea* (which is monotypic only if the fossil record is ignored: Holman, 2002, op. cit), although it retains the monotypic genus *Clemmys*. Many proponents of the latter scheme believe that monotypic genera are not taxonomically redundant but rather reflect evolutionary distinctiveness (see Mayr and Bock, 2002, J. Zool. Syst. Evol. Research 40: 169–194 for a general discussion of the values of taxonomic stability and recording anagenesis in classification schemes). An analysis by Angielczyk and Feldman (2013, Biol. J. Linn. Soc. 108: 727–755), based on 14 nuclear genes, found that *Emys* broadly defined is paraphyletic with respect to *Clemmys*, but more recently Spinks et al. (2016, op cit.) resolved a monophyletic *Emys* sensu lato based on 30 nuclear loci. Because of the value of current stability, the belief that monotypic genera do provide some phylogenetic information, the uncertainty concerning the monophyly of *Emys* sensu lato, and the increasing use of the three separate genera in the turtle literature, we here follow the second scheme, recognizing *Actinemys*, *Emydoidea* and *Emys*, as recommended by Fritz et al. (2011, op cit.).

C. guttata (Schneider, 1792)—Spotted Turtle

Deirochelys Agassiz, 1857—CHICKEN TURTLES

D. reticularia (Latreille, *in* Sonnini and Latreille 1801)—Chicken Turtle
- *D. r. chrysea* Schwartz, 1956—Florida Chicken Turtle
- *D. r. miaria* Schwartz, 1956—Western Chicken Turtle
- *D. r. reticularia* (Latreille, *in* Sonnini and Latreille 1801)—Eastern Chicken Turtle

Dermochelys Blainville, 1816—LEATHERBACK SEA TURTLES

See note under *Caretta*.

D. coriacea (Vandelli, 1761)—Leatherback Sea Turtle

Emydoidea Gray, 1870—BLANDING'S TURTLES

See note under *Clemmys*.

E. blandingii (Holbrook, 1838)—Blanding's Turtle

Eretmochelys Fitzinger 1843—HAWKSBILL SEA TURTLES
See note under *Caretta*.

E. imbricata (Linnaeus, 1766)—Hawksbill Sea Turtle

E. i. bissa (Rüppell, 1835)—Pacific Hawksbill Sea Turtle

E. i. imbricata (Linnaeus, 1766)—Atlantic Hawksbill Sea Turtle

Although many recent authors have abandoned use of Atlantic versus Indo-Pacific Ocean subspecies (Meylan, 2006, Chelon. Res. Monogr. 3: 105–127; Bowen and Karl, 2007, Mol. Ecol. 16(23): 4886–4907), the names have not been formally synonymized. Because mitochondrial genome comparisons by Okayama et al. (1999, Chelon. Conserv. Biol. 3: 362–367) suggested genetic divergence between the Caribbean and Indo-Pacific populations, we retain the subspecies names pending further study.

Glyptemys Agassiz 1857—SCULPTED TURTLES
See note under *Clemmys*.

G. insculpta (LeConte 1830) —Wood Turtle

G. muhlenbergii (Schoepff 1801)—Bog Turtle

Gopherus Rafinesque, 1832—GOPHER TORTOISES
Increasing evidence indicates that the species groups *flavomarginata-polyphemus* and *agassizii-berlandieri-evgoodei-morafkai* are reciprocally monophyletic (reviews in Rostal et al., 2014, Biology and Conservation of North American Tortoises, Johns Hopkins Univ. Press). This has led some authors (Bramble and Hutchison, 2014 and Franz, 2014, both in Rostal et al. op cit.) to suggest recognizing the two clades as separate genera (*Gopherus* and *Xerobates*, respectively). However, we follow most recent authors in recognizing a single inclusive genus.

G. agassizii (Cooper, 1861)—Mohave Desert Tortoise

See note under *G. morafkai*. The spelling of the standard English name has been changed from "Mojave" to "Mohave" for consistency with other names in the list (see note for *Crotalus scutulatus*).

G. berlandieri (Agassiz, 1857)—Berlandier's Tortoise

Because most of the range of this tortoise is in Mexico (not Texas), we follow Ernst and Lovich (2009, Turtles of the United States and Canada. Second Edition. Johns Hopkins Univ. Press) in using the patronym Berlandier's Tortoise, rather than the frequently used name of Texas Tortoise.

G. morafkai Murphy, Berry, Edwards, Leviton, Lathrop, and Riedle, 2011—Sonoran Desert Tortoise

This cryptic species was formerly included in *G. agassizii* (Murphy et al., 2011, ZooKeys 113: 39–71). The original description noted that *G. morafkai* occurs in the Sonoran Desert as well as part of the Mohave Desert and part of the Sinaloan thornscrub, and that the restricted *G. agassizii* occurs in the Mohave Desert as well as part of the Sonoran Desert. Hence, the authors recommended the patronyms Morafka's Desert Tortoise and Agassiz's Desert Tortoise, respectively, rather than the geographic names Sonoran Desert Tortoise (often abbreviated SDT) and Mohave Desert Tortoise (MDT), reflecting their primary distributions. However, because the latter names have long been used as standard names for these two populations (including legislation by the US Fish and Wildlife Service), and because of the potential for confusion of the abbreviation for Morafka's Desert Tortoise (also MDT) with that for the Mohave Desert Tortoise, we support the use of the traditional geographic standard names.

G. polyphemus (Daudin, 1802)—Gopher Tortoise

Graptemys Agassiz, 1857—MAP TURTLES

Evidence for monophyly and content of this genus was reviewed by Dobie (1981, Tulane Stud. Zool. Bot. 23: 85), Lamb and Osentoski (1997, J. Herpetol. 31: 258–265), and Stephens and Wiens (2003, Biol. J. Linn. Soc. 79: 577–610).

G. barbouri Carr and Marchand, 1942—Barbour's Map Turtle

G. caglei Haynes and McKown, 1974—Cagle's Map Turtle

G. ernsti Lovich and McCoy, 1992—Escambia Map Turtle

G. flavimaculata Cagle, 1954—Yellow-blotched Map Turtle

Ennen et al. (2010, J. Herpetol. 44: 544–554) argued for the continued recognition of this species and the closely related *G. oculifera,* despite their limited genetic divergence.

G. geographica (LeSueur, 1817)—Northern Map Turtle

We do not refer to this species as the Common Map Turtle because of the possibility that the word 'common' might be misinterpreted to imply abundance rather than to the fact that it has a broad geographic distribution.

G. gibbonsi Lovich and McCoy, 1992—Pascagoula Map Turtle

G. nigrinoda Cagle, 1954—Black-knobbed Map Turtle

Based on an analysis of morphometric, colorimetric, and genetic data from across the species range, Ennen et al. (2014, Biol. J Linn. Soc. 111: 810–822) synonymized *G. n. delticola* Folkerts and Mount 1969 with the nominate form.

G. oculifera (Baur, 1890)—Ringed Map Turtle

G. ouachitensis Cagle, 1953— Ouachita Map Turtle

G. pearlensis Ennen, Lovich, Kreiser, Selman, and Qualls, 2010—Pearl River Map Turtle

This cryptic species was formerly included in *G. gibbonsi* (Ennen et al., 2010, Chel. Conserv. Biol. 9: 98–113).

G. pseudogeographica (Gray, 1831)—False Map Turtle

G. p. kohnii (Baur, 1890)—Mississippi Map Turtle

G. p. pseudogeographica (Gray, 1831)—Northern False Map Turtle

G. pulchra Baur, 1893—Alabama Map Turtle

G. sabinensis Cagle, 1953—Sabine Map Turtle

Although *sabinensis* has been considered a subspecies of *G. ouachitensis* by most authors since Vogt (1980, Tulane Stud. Zool. Bot. 22: 17–48), the morphological and molecular evidence for its species status has slowly been mounting (Ward, 1980, Ph.D. dissertation, North Carolina State Univ.; Stephens and Wiens, 2003, Biol. J. Linn. Soc. 79: 577–610; Myers, 2008, Ph.D. dissertation, Iowa State Univ.; Wiens et al., 2010, Biol. J. Linn. Soc. 99: 445–461; Brown et al., 2012, Copeia 2012: 301–306). Based on these data and his own field sampling, Lindeman (2013, The Map Turtle and Sawback Atlas: Ecology, Evolution, Distribution, and Conservation. Univ. Oklahoma Press) noted that *sabinensis* is allopatric, non-intergrading, and diagnosable, and formally elevated it to a full species.

G. versa Stejneger, 1925—Texas Map Turtle

Kinosternon Spix, 1824—AMERICAN MUD TURTLES

Iverson (1991, Herpetol. Monogr. 5: 1–27) and Iverson et al. (2013, Mol. Phylogenet. Evol. 69: 929–939) are the most recent reviewers of this genus. See also comment under *Sternotherus*.

K. arizonense Gilmore, 1922—Arizona Mud Turtle

Formerly a subspecies of *K. flavescens*, Serb et al. (2001, Mol. Phylogenet. Evol. 18: 149–162) demonstrated that including this taxon in *K. flavescens* made the latter paraphyletic with respect to *K. baurii* and *K. subrubrum*. They recommended species recognition, which was supported by Iverson (1989, Southwest. Natur. 34: 356–368; and 2013, Mol. Phylogenet. Evol. 69: 929–939). However, McCord (2016, Hist. Biol. 28: 310–315) examined the original Pliocene material for this taxon, concluded that it differs significantly from the Recent material, and recommended restricting the name *arizonense* to the fossil material and resurrecting the name *stejnegeri* Hartweg 1938 for Recent populations. We are not convinced of this distinction based on the data and statistical analyses presented in that paper, and continue to recognize *K. arizonense* pending further study.

K. baurii (Garman, 1891)—Striped Mud Turtle

K. flavescens (Agassiz, 1857)—Yellow Mud Turtle

The validity of the subspecies *Kinosternon flavescens spooneri* Smith, 1951 (Illinois Mud Turtle) has been questioned on morphological and molecular grounds by Houseal et al. (1982, Copeia 1982: 567–580), Berry and Berry (1984, Ann. Carnegie Mus. Nat. Hist. 53: 185–206), and Serb et al. (2001, Mol. Phylogenet. Evol. 18: 149–162).

K. hirtipes (Wagler, 1830)—Rough-footed Mud Turtle

Collins (1997, SSAR Herpetol. Circ. 25) suggested the name Mexican Mud Turtle for this turtle, but that name is generally applied to *Kinosternon integrum* (Iverson et al., 1998, Cat. Am. Amph. Rept. 652).

K. h. murrayi Glass and Hartweg, 1951—Mexican Plateau Mud Turtle

K. sonoriense LeConte, 1854—Sonora Mud Turtle

K. s. longifemorale Iverson, 1981—Sonoyta Mud Turtle

K. s. sonoriense LeConte, 1854—Desert Mud Turtle

K. subrubrum (Lacépède, 1788)—Eastern Mud Turtle

K. s. hippocrepis Gray, 1855—Mississippi Mud Turtle

K. s. subrubrum (Lacépède, 1788)—Southeastern Mud Turtle

Based on a mitochondrial DNA restriction fragment analysis, Walker et al. (1998, Herpetologica 54: 174–184) resolved *hippocrepis* as sister to the clade including *steindachneri, subrubrum,* and *baurii*, but nearly all subsequent authors retained *hippocrepis* and *steindachneri* as subspecies of *K. subrubrum*. However, Bourque (2016, J. Paleo. 89: 821–844) elevated *hippocrepis* to a full species based on morphological data from living and fossil form. Nevertheless, without a range-wide analysis of morphometric and/or molecular data supporting that change, we continue to recognize *hippocrepis* as a subspecies of *K. subrubrum*.

K. steindachneri Siebenrock, 1906—Florida Mud Turtle

Walker et al. (1998, Herpetologica 54: 174–184) first demonstrated the distinctiveness of *steindachneri* relative to the other subspecies of *K. subrubrum* based on mitochondrial DNA restriction fragment analyses. In a subsequent phylogenetic analysis of mitochondrial and nuclear DNA, Iverson et al. (2013, Mol. Phylogenet. Evol. 69: 929–939) found that *steindachneri* was sister to *K. baurii*, rendering *K. subrubrum* paraphyletic. They recommended elevating *steindachneri* to species status, a suggestion previously also made by Meshaka and Gibbons (2006, *in* Meylan, Biology and Conservation of Florida Turtles, Chelon. Res. Monogr. 3) and Bourque (2012, J. Vert. Paleo. 32: 68–81; see also Bourque, 2016, J. Paleo. 89: 821–844) based on morphological evidence from extant and fossil *Kinosternon*. Although additional nuclear DNA sampling is warranted, we follow these authors in elevating *steindachneri* to full species status.

Lepidochelys Fitzinger, 1843—RIDLEY SEA TURTLES

See note under *Caretta*. Bowen et al. (1991, Nature 352: 709) reviewed variation within this genus.

L. kempii (Garman, 1880)—Kemp's Ridley Sea Turtle
L. olivacea (Eschscholtz, 1829)—Olive Ridley Sea Turtle

Macrochelys Gray, 1855—ALLIGATOR SNAPPING TURTLES

Webb (1995, Chelon. Conserv. Biol. 1: 322–323) demonstrated that the name *Macrochelys* Gray has precedence over the name *Macroclemys* Gray (contra Smith, 1955, Herpetologica 11: 16). Preliminary mitochrondrial and microsatellite data (Roman et al., 1999, Conserv. Biol. 13: 135–142; Echelle et al., 2010, Conserv. Gen. 11: 1375–1387) indicated the presence of significant genetic structure across the current range of this formerly monotypic genus. Subsequently, Thomas et al. (2014, Zootaxa 3786(2): 141–165) provided further analysis of the mitochondrial data as well as morphological data that supported the recognition of three monophyletic lineages in this genus. They retained the older species name for the western lineage, but those in the Apalachicola and Suwannee River basins were described as full species. Independently, Murray et al. (2014, J. Zool. Syst. Evol. Res. 52: 305–311) examined morphometric variation in the skull across the range of the genus, and demonstrated drainage-specific differences among populations, especially the Suwannee River versus other populations. Folt and Guyer (2015, Zootaxa 3947: 447–450) reconsidered all of the published data and supported the recognition of *M. suwanniensis*, but not the recognition of *M. apalachicolae*. Pending additional genetic sampling, we follow their recommendation.

M. suwanniensis Thomas, Granatosky, Bourque, Krysko, Moler, Gamble, Suarez, Leone, Enge, and Roman, 2014— Suwannee Alligator Snapping Turtle
M. temminckii (Harlan, 1835)—Alligator Snapping Turtle

Although Troost coined the species name, it was Harlan (1835) alone who authored the original description.

Malaclemys Gray, 1844—DIAMOND-BACKED TERRAPINS

M. terrapin (Schoepff, 1793)—Diamond-backed Terrapin

In independent analyses of variation across microsatellite loci in terrapin populations, Hart et al. (2014, Conserv. Gen. 15: 593–603) and Drabeck et al. (2014, J. Herpetol. 48: 125–136) both found discordance between patterns of genetic variation and those based on morphology (reflected in the current subspecies designations). Neither made recommendations for taxonomic changes, but it is clear that a range-wide analysis (with deep sampling) of both morphometrics and genetics should be a top prioirity. Until such an analysis is available, we continue to recognize the previously defined seven subspecies.

M. t. centrata (Latreille, *in* Sonnini and Latreille 1801)—Carolina Diamond-backed Terrapin
M. t. littoralis (Hay, 1904)—Texas Diamond-backed Terrapin
M. t. macrospilota (Hay, 1904)—Ornate Diamond-backed Terrapin
M. t. pileata (Wied-Neuwied, 1865)—Mississippi Diamond-backed Terrapin
M. t. rhizophorarum Fowler, 1906—Mangrove Diamond-backed Terrapin

M. t. tequesta Schwartz, 1955—Eastern Florida Diamond-backed Terrapin

M. t. terrapin (Schoepff, 1793)—Northern Diamond-backed Terrapin

Pseudemys Gray, 1856—COOTERS

Spinks et al. (2013, Mol. Phylogenet. Evol. 68: 269–281) examined variation in mitochondrial and nuclear DNA across all recognized taxa of *Pseudemys*, and revealed almost no support for the currently recognized species groups, species, or subspecies. They concluded that the genus was probably over-split, but offered no explicit taxonomic suggestions. Pending more extensive genetic sampling and phylogenetic analyses, and in the interest of stability, we continue to follow the content recommended by Seidel (1994, Chelon. Conserv. Biol. 1: 117–130).

P. alabamensis Baur, 1893—Alabama Red-bellied Cooter

P. concinna (LeConte, 1830)—River Cooter

Only two subspecies are recognized here: *Pseudemys concinna concinna*, and *P. c. floridana*. Seidel (1994, Chelon. Conserv. Biol. 1: 117–130) demonstrated that *P. c. hieroglyphica* and *P. c. metteri* are not distinct and represent only clinal variation; he elevated *P. c. suwanniensis* to species status (see separate entry); and he relegated *P. floridana* to a subspecies of *P. concinna* (but see comments below). The taxonomy adopted here has recently been followed by Ernst and Lovich (2009, Turtles of the United States and Canada. Second Edition. John Hopkins Univ. Press).

P. c. concinna (LeConte, 1830)—Eastern River Cooter

P. c. floridana (LeConte, 1830)—Coastal Plain Cooter

This subspecies was formerly recognized as *Pseudemys floridana floridana,* but Seidel (1994, Chelon. Conserv. Biol. 1: 117–130) transferred it to *Pseudemys concinna.* Jackson (1995, Chelon. Conserv. Biol. 1: 329–333) objected to this based on observations that *concinna* and *floridana* are sympatric in northern Florida and South Carolina. Seidel (1995, Chelon. Conserv. Biol. 1: 333–336) countered that the two forms may be macrosympatric at some locations, but that they intergrade in other areas. Based on morphometric, osteological, biochemical, and pigmentation studies, Seidel (1994, Chelon. Conserv. Biol. 1: 117–130) found no character that reliably separates the two forms in many transition areas (intergrade zones) between the coastal plain and piedmont of the Atlantic slope. However, the two forms are microsympatric throughout the panhandle of Florida (Meylan, 2006, Chelon. Res. Monogr. 3: 28–36). Jackson (2006, Chelon. Res. Monogr. 3: 325–337), Thomas and Jansen (2006, Chelon. Res. Monogr. 3: 338–347), and Jensen et al. (2008, Amphibians and Reptiles of Georgia. Univ. Georgia Press) do not follow this taxonomy, and recognize *floridana* and *concinna* as separate species. However, Spinks et al. (2013, Mol. Phylogenet. Evol. 68: 269–281) could not resolve differences between the two taxa even with an analysis of ten nuclear and three mitochondrial genes. Therefore, we continue to recognize these taxa as subspecies until their relationships are further clarified.

P. gorzugi Ward, 1984—Rio Grande Cooter

This form was originally described by Ward (1984, Spec. Pub. Mus. Texas Tech. Univ. 21: 1–50) as a subpecies of *P. concinna*, but it was elevated to species status by Ernst (1990, Cat. Am. Amphib. Rept. 461: 1–2). That change is appropriate given its clear allopatry with *P. concinna* (Ward, 1984, Cat. Am. Amph. Rept. 487: 1–7), its morphological distinctiveness (Seidel, 1994, Chelon. Conserv. Biol. 1: 117–130), and its divergent DNA (Starkey, 1997, Ph.D. dissertation, Texas A&M Univ.; Stephens and Wiens, 2003, Biol. J. Linn. Soc. 79: 577–610; Spinks et al., 2013, Mol. Phylogenet. Evol. 68: 269–281).

P. nelsoni Carr, 1938—Florida Red-bellied Cooter

P. peninsularis Carr, 1938—Peninsula Cooter

Formerly considered a subspecies of *P. floridana* (Conant and Collins, 1992, A Field Guide to Reptiles and Amphibians: Eastern and Central North America. Houghton Mifflin Co.), Seidel (1994, Chelon. Conserv. Biol. 1: 117–130) elevated this form to a species. He demonstrated that *peninsularis* does not intergrade with *P. c. floridana* in northern Florida, that it is sympatric with *P. suwanniensis*, and that there are morphometric and osteological characters (as well as markings) that consistently distinguish it from *P. concinna*. However, Thomas and Jansen (2006, Chelon. Res. Monogr. 3: 338–347) recommended the recognition of this form as a subspecies of *P. floridana*.

P. rubriventris (LeConte, 1830)—Northern Red-bellied Cooter

P. suwanniensis Carr, 1937—Suwannee Cooter

Seidel (1994, Chelon. Conserv. Biol. 1: 117–130) elevated this form from a subspecies of *P. concinna* to a species based on his belief that it is allopatric or parapatric with other members of the *concinna* group. However, Jackson (1995, Chelon. Conserv. Biol. 1: 329–333) believed that it may intergrade with *P. c. concinna* in northern Florida and thus does not deserve species status. Recent availability of material from the Gulf Hammock region of northwest Florida is reviewed by Jackson (2006, Chelon. Res Monogr. 3: 325–337), who recommended recognition of this form as a subspecies of *P. concinna*.

P. texana Baur, 1893—Texas Cooter

Sternotherus Gray, 1825—MUSK TURTLES

The monophyly of the genus *Sternotherus* was questioned by Seidel et al. (1986, Copeia 1986: 285–294) and Iverson (1991, Herpetol. Monogr. 5: 1–27); however, Iverson (1998, Chelon. Conserv. Biol. 3: 113–117), Iverson et al. (2013, Mol. Phylogenet. Evol. 69: 929–939), and Spinks et al. (2014, Mol. Phylogenet. Evol. 76: 254–260) provided support for its monophyly.

S. carinatus (Gray, 1855)—Razor-backed Musk Turtle

S. depressus Tinkle and Webb, 1955—Flattened Musk Turtle

S. minor (Agassiz, 1857)—Loggerhead Musk Turtle

S. m. minor (Agassiz, 1857)—Eastern Loggerhead Musk Turtle

S. m. peltifer Smith and Glass, 1947—Stripe-necked Musk Turtle

Bourque (2016, J. Paleo. 89: 821–844) and Guyer et al. (2016, Turtles of Alabama, Univ. Alabama Press, Tuscaloosa) argued that *peltifer* should be elevated to species status based on previously published literature; however, morphologically and geographically intermediate populations of these musk turtles identified by Iverson (1977, Copeia 1977: 502–517) have not yet been included in these more recent analyses. We retain *peltifer* as a subspecies pending more complete sampling.

S. odoratus (Latreille, *in* Sonnini and Latreille, 1801)—Eastern Musk Turtle

We do not refer to this species as the Common Musk Turtle because of the possibility that the word 'common' might be misinterpreted to imply abundance rather than to the fact that it has a broad range.

Terrapene Merrem, 1820—AMERICAN BOX TURTLES

A review of the variation in this genus appeared in Dodd (2001, North American Box Turtles, Univ. Oklahoma Press).

T. bauri Taylor, 1894—Florida Box Turtle

T. carolina (Linnaeus, 1758)—Eastern Box Turtle

T. c. carolina (Linnaeus, 1758)—Woodland Box Turtle

T. c. triunguis (Agassiz, 1857)—Three-toed Box Turtle

Based on molecular and morphological evidence, Butler et al. (2011, Biol. J. Linn. Soc. 102: 889–901) concluded that the Florida Box Turtle (formerly *T. carolina bauri*) should be elevated to full species status, and that the Gulf Coast Box Turtle (formerly *T. c. major*) represents an intergrade population between the Woodland Box Turtle (*T. c. carolina*) and the Pleistocene Box Turtle (formerly *T. c. putnami*). They recommended that the name *T. c. major* only be applied to the Pleistocene form, and that additional study of the Gulf Coast populations is warranted. However, in an analysis of a single mitochondrial gene and a single nuclear gene, Martin et al. (2013, Mol. Phylogenet. Evol. 68: 119–134) found support for a western (including *triunguis*, *mexicana*, and *yucatana*) and an eastern group (*carolina*, *baurii*, and *major*, plus *coahuila*) within *T. carolina*. They recommended that the former be elevated to species status (*T. mexicana*, the oldest name) with three subspecies. However, Fritz and Havas (2014, Zootaxa 3835: 295–298) argued against the recognition of *mexicana* as a separate species because of demonstrated genetic introgression between *triunguis* and *carolina*. Nevertheless, because interspecific hybridization is known between many other closely related turtle species, Martin et al. (2014, Zootaxa 3835: 292–294) reaffirmed their support for recognizing *mexicana* and *carolina* as separate species. Unfortunately, some authors (e.g., Guyer et al., 2016, Turtles of Alabama, Univ. Alabama Press; and Powell et al., 2016, Peterson Field Guide to the Reptiles and Amphibians of Eastern and Central North America, Houghton Mifflin Harcourt) have recognized *triunguis* as a separate species without discussion of all the taxa in this complex. Pending more complete genetic and geographic sampling of this complex, we retain *triunguis* as a subspecies of *carolina*.

T. ornata (Agassiz, 1857)—Ornate Box Turtle

T. o. luteola Smith and Ramsey, 1952—Desert Box Turtle

T. o. ornata (Agassiz, 1857)—Plains Box Turtle

Martin et al. (2013, Mol. Phylogenet. Evol. 68: 119–134) found no support for a distinction between *ornata* and *luteola*, and recommended their synonymy. However, because their analysis was based on only one mitochondrial and one nuclear gene, we cautiously retain both subspecies pending further geographic and molecular sampling.

Trachemys Agassiz, 1857—SLIDERS

Content of this genus follows Seidel (2002, J. Herpetol. 36: 285–292).

T. gaigeae (Hartweg, 1939)—Mexican Plateau Slider

Price and Hillis (1989, First World Congr. Herpetol. Abstract), Seidel et al. (1999, Herpetologica 55: 470–487), and Seidel (2002, J. Herpetol. 36: 285–292) provided evidence for the specific recognition of this form. Reviewed by Stuart and Ernst (2004, Cat. Amer. Amphib. Rept. 787).

T. g. gaigeae (Hartweg, 1939)—Big Bend Slider

T. scripta (Schoepff, 1792)—Pond Slider

T. s. elegans (Wied-Neuwied, 1838)—Red-eared Slider

T. s. scripta (Schoepff, 1792)—Yellow-bellied Slider

T. s. troostii (Holbrook, 1836)—Cumberland Slider

Alien Species

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Alien species are those species established outside their native ranges by the activities of humans, whether done intentionally or not. Early versions of this check-list referred to these species as “introduced”. We have changed that usage here because an introduction need not imply successful establishment; many additional species have been introduced to the United States that have not become established and are not included here. Species covered in this treatment are those known to be extra-territorial to the United States (e.g., Green Iguana, *Iguana iguana*) and those whose native status within the United States may be open to question (e.g., Bark Anole, *Anolis distichus* in southern Florida).

Inclusion in this list is based on evidence or claims of establishment within the United States that have been presented in the literature and which seem to meet the criteria given by Meshaka et al. (2004, The Exotic Amphibians and Reptiles of Florida. Krieger Publishing Co.). But scientific standards for reporting newly established alien species are minimal, evidence adduced in favor of these claims varies, correction of published errors is often delayed, and, consequently, some published claims may not be factually accurate. Because of these problems, we note instances known to us for which published claims suggesting establishment are nonetheless disputed or uncertain (n = 2). Some of the countervailing evidence calling these reports into question is not yet presented in the literature, but mention of such instances is included here to highlight where doubt is reasonable. For these same reasons we have deleted three species included in earlier versions of this checklist but for which evidence of establishment is lacking. The presence of these cases argues for the need to include vouchers and have tighter editorial accountability when publishing such claims.

Excluded from this list are those species native within the boundaries of the United States that have been translocated by humans elsewhere in the country. Many such instances are known and include, for example, the Red-eared Slider (*Trachemys scripta elegans*) and Bullfrog (*Lithobates catesbeianus*). Also excluded are those alien species introduced to the United States but never established (innumerable examples) and those populations previously established but now extinct, such as an earlier Italian Wall lizard (*Podarcis siculus*) colony that persisted for decades in Pennsylvania (Kauffeld, 1931, Copeia 1931: 163–164; Conant, 1959, Copeia 1959: 335–336). One species included here (*Emoia cyanura*) is recently reported as possibly extinct (Fisher and Ineich, 2012, Oryx 46: 187–195) but this requires confirmation. Finally, the literature includes mention of additional species that may be established in the United States but for which evidence of self-sustaining populations is less compelling or is not discussed in the original publications. Many of these reports are mentioned in Meshaka et al. (2004, op.cit).

A literature search through August 2016 was used to provide a list of states for which alien species are known to occur. Supporting literature for most of these introductions is available in Kraus (2009, Alien Reptiles and Amphibians: a Scientific

Compendium and Analysis. Springer Science and Business Media B.V., Dordrecht, Netherlands). A total of 77–78 alien species of amphibians and reptiles are reported to be established in the United States (*Anolis porcatus* is ambiguous). Taxonomically, most of these are lizards (n = 62–63), followed by anurans (n = 7), snakes (n = 5), turtles (n = 3), and crocodilians (n = 1). Forty-five of these species are from the Old World and 32–33 from the New World.

Alien Species — Anurans

Dendrobates Wagler, 1830—POISON DART FROGS

The most recent review of this genus and its relatives is Grant et al. (2006, Bull. Amer. Mus. Nat. Hist. 299: 1–262).

D. auratus Girard, 1855—Green-and-black Poison Dart Frog

The Green-and-black Poison Dart Frog is native to Central America and Colombia and is established in Hawaii.

Eleutherodactylus Duméril and Bibron, 1841—RAIN FROGS

E. coqui Thomas, 1966—Coquí

The Coquí is native to Puerto Rico, has been reported from five states, is established in Hawaii, and is established in a few greenhouses in California. It is widely established on Hawaii Island but is more restricted and the target of eradication efforts on the other Hawaiian Islands.

E. planirostris (Cope, 1862)—Greenhouse Frog

The Greenhouse Frog is native to Cuba, The Bahamas, and Cayman Islands and is established in Alabama, Florida, Georgia, Hawaii, Louisiana, Mississippi, and South Carolina.

Glandirana Fei, Ye, and Huang, 1991—WRINKLED FROGS

This genus of Asian frogs was removed from a polyphyletic "*Rana*" by Frost et al. (2006, Bull. Am. Mus. Nat. Hist., 297).

G. rugosa (Temminck and Schlegel, 1838)—Japanese Wrinkled Frog

The Japanese Wrinkled Frog is native to Japan and is established in Hawaii.

Osteopilus Fitzinger, 1843—WEST INDIAN TREEFROGS

O. septentrionalis (Duméril and Bibron, 1841)—Cuban Treefrog

The Cuban Treefrog is native to Cuba, The Bahamas, and Cayman Islands, has been introduced into eight states, and is established in Florida. It has been claimed to be established in Hawaii (McKeown, 1996, A Field Guide to Reptiles and Amphibians in the Hawaiian Islands, Diamond Head Publishing, Inc.) but there is no supporting evidence.

Rhinella Fitzinger, 1826—SOUTH AMERICAN TOADS

R. marina (Linnaeus, 1758)—South American Cane Toad

Reviewed (in the sense of including *R. horribilis* within *R. marina*) by Easteal (1986, Cat. Am. Amph. Rept. 395, as *Bufo marinus*). Vallinoto et al. (2010, Zool. Scripta 39: 128–140) suggested on the basis of molecular evidence that the North and Central American population may be a distinct species from the South American populations and subsequently Acevedo et al. (2016, Zootaxa, 4103: 574–586) provided additional morphological and molecular evidence for their distinctiveness, with the largely trans-Andean South American species being the one introduced worldwide, including Hawaii, and the Mesoamerican species extending north into South Texas. The status of introduced Florida populations remains unclear, having been introduced from Colombia where both *R. marina* and *R. horribilis* are known.

Xenopus Wagler, 1827—CLAWED FROGS

X. laevis (Daudin, 1802)—African Clawed Frog

The African Clawed Frog is native to southern Africa, has been reported from nine states, and is established in Arizona, California, and Florida.

Alien Species — Squamata (in part) - Lizards

Agama Daudin, 1802—AGAMAS

A. picticauda Peters, 1877—Peters's Rock Agama

Peters's Rock Agama is native to western Africa and is established in Florida. Earlier confusion about the taxonomy of these lizards (Enge et al. 2004. Florida Scientist 67: 303–310) has been resolved by Nuñez et al. (2016, Bull. Florida Mus. Nat. Hist. 9: 138–146).

Ameiva Meyer, 1795—AMEIVAS

A. ameiva (Linnaeus, 1758)—Giant Ameiva

The Giant Ameiva is native to Amazonia and is established in Florida. Earlier confusion about the taxonomy of these lizards (Wilson and Porras, 1983, The Ecological Impact of Man on the South Florida Herpetofauna. Univ. Kansas Mus. Nat. Hist. Spec. Publ. 9: 1–89) has been resolved by Ugueto and Harvey (2011, Herpetol. Monogr. 25: 113–170).

A. praesignis (Baird and Girard, 1852)—Dusky Giant Ameiva

The Dusky Giant Ameiva is native to lower Central America and northwestern South America; it is established in Florida. Earlier confusion about the taxonomy of these lizards (Wilson and Porras, 1983, The Ecological Impact of Man on the South Florida Herpetofauna. Univ. Kansas Mus. Nat. Hist. Spec. Publ. 9: 1–89) has been resolved by Ugueto and Harvey (2011, Herpetol. Monogr. 25: 113–170).

Anolis Daudin, 1802—ANOLES

See the annotation under *Anolis* in the Squamata (in part) - Lizards for comments on taxonomy.

A. chlorocyanus Duméril and Bibron, 1837—Hispaniolan Green Anole

The Hispaniolan Green Anole is native to Hispaniola and is established in Florida.

A. (Ctenonotus) cristatellus Duméril and Bibron, 1837—Crested Anole

A. c. cristatellus Duméril and Bibron, 1837—Puerto Rican Crested Anole

The Puerto Rican Crested Anole is native to Puerto Rico and the Virgin Islands and is established in Florida. Subspecific identifications have been given for the Miami-Dade County specimens by Schwartz and Henderson (1988, Contrib. Biol. Geol. Milwaukee Publ. Mus. 74: 1–264; 1991, Amphibians and Reptiles of the West Indies: Descriptions, Distributions, and Natural History, University of Florida Press).

A. cybotes Cope, 1862—Large-headed Anole

The Large-headed Anole is native to Hispaniola and the Bahamas and is established in Florida.

A. c. cybotes Cope, 1862—Common Large-headed Anole

The Miami-Dade County population has been identified as *A. c. cybotes* (Schwartz and Henderson, 1988, Contrib. Biol. Geol. Milwaukee Pub. Mus. 74: 1–264). No subspecific identification for the Broward County or Palm Beach County populations has been provided.

A. (Ctenonotus) distichus Cope, 1861—Bark Anole

The Bark Anole is native to Hispaniola, has been reported from two states, and is established in Florida.

A. d. dominicensis Reinhardt and Lütken, 1863—Green Bark Anole

Anolis distichus dominicensis is established in Miami, Florida (King and Krakauer, 1966, Quart. J. Florida Acad. Sci. 29: 144–154; Wilson and Porras, 1983, Univ. Kansas Mus. Nat. Hist. Spec. Publ. 9: 1–89). Another subspecies, *Anolis distichus ignigularis*, was introduced to Miami-Dade County, Florida (King and Krakauer, 1966, op.cit. and was listed as occurring there by Schwartz and Henderson (1988, Contrib. Biol. Geol. Milwaukee Pub. Mus. 74: 1–264; 1991, Amphibians and Reptiles of the West Indies: Descriptions, Distributions, and Natural History, University of Florida Press); however, according to Wilson and Porras (1983, Univ. Kansas Mus. Nat. Hist. Spec. Publ. 9: 1–89), this population is no longer extant. Hybridization appears to have occurred between *A. d. dominicensis* and *A. d. floridanus* (Miyamoto et al., 1986, Copeia 1986: 76–86; see next note).

A. d. floridanus Smith and McCauley, 1948—Florida Bark Anole

Schwartz (1968, Bull. Mus. Comp. Zool. 137: 255–310) reviewed the evidence and discussed alternative hypotheses concerning the occurrence of *Anolis distichus floridanus* in Florida and concluded that this taxon was most likely introduced from Andros Island in The Bahamas; nevertheless, Wilson and Porras (1983, Univ. Kansas Mus. Nat. Hist. Spec. Publ. 9: 1–89) considered it a native component of the Florida herpetofauna. Although the specimens of *A. d. floridanus* examined by Schwartz (1968, Bull. Mus. Comp. Zool. 137: 255–310) are distinguishable from those of *A. d. dominicensis*, more recent samples of Bark Anoles from Florida form a continuum, suggesting intergradation between the two subspecies (Miyamoto et al., 1986, Copeia 1986: 76–86).

A. equestris Merrem, 1820—Knight Anole

The Knight Anole is native to Cuba and is established in Florida and Hawaii.

A. e. equestris Merrem, 1820—Western Knight Anole

The subspecific identification for the Florida population was given by Schwartz and Henderson (1988, Contrib. Biol. Geol. Milwaukee Pub. Mus. 74: 1–264; 1991, Amphibians and Reptiles of the West Indies: Descriptions, Distributions, and Natural History, University of Florida Press); that for the Hawaiian population was given by Lazell and McKeown (1998, Bull. Chicago Herpetol. Soc. 33: 181).

A. (Norops) garmani Stejneger, 1899—Jamaican Giant Anole

The Jamaican Giant Anole is native to Jamaica and is established in Florida.

A. porcatus Gray, 1840—Cuban Green Anole

The Cuban Green Anole is native to Cuba, has been reported in Florida, but there is currently no evidence that the species itself is established, although mitochondrial DNA from this species is present in Florida, making it clear that the species had been introduced at one time (Kolby et al., 2007, Conserv. Biol. 21: 1612–1625). The status of this species in Florida, therefore, requires clarification.

A. (Norops) sagrei Duméril and Bibron, 1837—Brown Anole

The Brown Anole is native to Cuba and The Bahamas, has been reported from 14 states, and is established in Alabama, California, Florida, Georgia, Hawaii, Louisiana, and Texas. Reports from other southern states require confirmation of establishment.

A. s. sagrei Duméril and Bibron, 1837—Cuban Brown Anole

According to Conant and Collins (1991, Reptiles and Amphibians of Eastern and Central North America, Houghton Mifflin Co.), two subspecies, *A. s. sagrei* and *A. s. ordinatus* were introduced to southern Florida, but they can no longer be distinguished from one another and differ from both original races. Lee (1992, Copeia 1992: 942–954) presented evidence that the Florida populations bear a much stronger phenotypic resemblance to populations from Cuba (*A. s. sagrei*) than to those from The Bahamas (*A. s. ordinatus*). Kolbe et al. (2004, Nature 431: 177–181) presented evidence for multiple introductions of this species from Cuba to Florida, which suggests that *A. s. greyi* may also have been involved.

A. trinitatis Reinhardt and Lütken 1862—St. Vincent Bush Anole

The St. Vincent Bush Anole is native to St. Vincent, Lesser Antilles, and is established in Florida.

Aspidoscelis Fitzinger, 1843—WHIPTAILS

A. motaguae Sackett, 1941—Giant Whiptail

The Giant Whiptail is native to Central America and is established in Florida.

Basiliscus Laurenti, 1768—BASILISKS

B. vittatus Wiegmann, 1828—Brown Basilisk

The Brown Basilisk is native to Central America and northern South America and is established in Florida.

Calotes Cuvier, 1817—BLOODSUCKERS

The English name is derived from the brilliant orange or crimson colors that breeding males develop around the head and shoulders.

C. "versicolor" (Daudin 1802)—Variable Bloodsucker

The Variable Bloodsucker is native to southern and southeastern Asia and is established in Florida. The specific epithet is in quotation marks because Zug et al. (2006, Proc. Cal. Acad. Sci. 57: 35–68) demonstrated that *C.* "*versicolor*" is a complex of several species. The introduced population has yet to be identified in light of this new information.

Chalcides Laurenti, 1768—SKINKS

C. ocellatus (Forskål 1775)—Ocellated Skink

The Ocellated Skink is native to the Mediterranean region, Middle East, and northern Africa and is established in Arizona and Florida.

Chamaeleo Laurenti, 1768—CHAMELEONS

C. calyptratus Duméril and Bibron, 1851—Veiled Chameleon

The Veiled Chameleon is native to the southwestern Arabian Peninsula and is established in Florida and Hawaii.

“*Cnemidophorus*” Wagler, 1830—SOUTH AMERICAN WHIPTAILS

Taxonomy for “*Cnemidophorus*” follows Peters and Donoso-Barros (1970, Bull. United States Natl. Mus. 297(Part II): 1–293). Reeder et al. (2002, Am. Mus. Novit. 3365: 1–61) presented evidence that *Cnemidophorus,* even after the removal of *Aspidoscelis*, is not monophyletic, although they did not propose a taxonomic change to rectify this situation. We have placed the name “*Cnemidophorus*” in quotation marks to indicate the apparently non-monophyletic status of the taxon.

“C.” lemniscatus (Linnaeus, 1758)—Rainbow Whiptail

The Rainbow Whiptail is native to South America and is established in Florida. Several species, both uni- and bisexual, have been described for different parts of the taxon that was formerly known as “*C.” lemniscatus* (Cole and Dessauer, 1993, Am. Mus. Novit. 3081: 1–30; Markezich et al., 1997, Am. Mus. Novit. 3207: 1–60), and the introduced population is bisexual but has not yet been associated with one or more of those species.

Cryptoblepharus Wiegmann, 1834—SNAKE-EYED SKINKS

C. poecilopleurus (Wiegmann, 1834)—Pacific Snake-eyed Skink

The Pacific Snake-eyed Skink is native to many Pacific islands and is established in Hawaii.

Ctenosaura Wiegmann, 1828—SPINY-TAILED IGUANAS

C. conspicuosa Dickerson, 1919—Isla San Esteban Spiny-tailed Iguana

A population of *Ctenosaura* established at the Arizona-Sonora Desert Museum in Arizona contains mitochondrial DNA from the Isla San Esteban Spiny-tailed Iguana, but it remains uncertain whether this represents a pure population of this species or a hybrid swarm with the next (Edwards et al., 2005, Son. Herpetol. 18: 122–125). Both are often considered subspecies of *C. hemilopha*.

C. macrolopha Smith, 1972—Sonoran Spiny-tailed Iguana

A population of *Ctenosaura* established at the Arizona-Sonora Desert Museum in Arizona contains mitochondrial DNA from the Sonoran Spiny-tailed Iguana, but it remains uncertain whether this represents a pure population of this species or a hybrid swarm with the preceding (Edwards et al., 2005, Son. Herpetol. 18: 122–125). Both are often considered subspecies of *C. hemilopha*.

C. pectinata (Wiegmann, 1834)—Mexican Spiny-tailed Iguana

The Mexican Spiny-tailed Iguana is native to Central America and is established in Florida and Texas.

C. similis (Gray, 1831)—Gray’s Spiny-tailed Iguana

Gray’s Spiny-tailed Iguana is native to Central America and is established in Florida.

Cyrtopodion Fitzinger, 1843—BOW-FINGERED GECKOS

C. scabrum (Heyden, 1827)—Rough-tailed Gecko

The Rough-tailed Gecko is native to the Middle East and northeastern Africa and is established in Arizona, Neveda, and Texas.

Emoia Gray, 1845—EMOIAS

Taxonomy for *Emoia cyanura* and *E. impar* follows Ineich and Zug (1991, Copeia 1991: 1132–1136).

E. cyanura (Lesson, 1830)—Copper-tailed Skink

The Copper-tailed Skink is native to the Pacific islands, was established in Hawaii, and may now be extinct there (Fisher and Ineich, 2012, Oryx 46: 187–195).

E. impar (Werner, 1898)—Azure-tailed Skink

The Azure-tailed Skink is native to the Pacific islands and is established in Hawaii.

Furcifer Fitzinger, 1843—CHAMELEONS

F. oustaleti (Mocquard, 1894)—Oustalet's Chameleon

Oustalet's Chameleon is native to Madagascar and is established in Florida.

F. pardalis (Cuvier, 1829)—Panther Chameleon

The Panther Chameleon is native to Madagascar and is established in Florida.

Gehyra Gray, 1834—DTELLAS

G. mutilata (Wiegmann, 1834)—Mutilating Gecko

The Mutilating Gecko is native from South Asia through the Pacific islands, has been reported from three states, and is established in Hawaii. The date of publication of the name *Hemidactylus mutilatus* (=*Gehyra mutilata*) is sometimes given as 1835 (e.g., Kluge, 1991, Smithsonian Herpetol. Info. Serv. 85: 1–35) presumably based on the idea that the species was first described by Wiegmann in Nova Acta Acad. Caes. Leop. Carol. Nat. Cur. the date of which is either 1834 or 1835; however, the first valid use of the name is in Wiegmann (1834, Herpetologica Mexicana; see Bauer and Adler, 2001, Arch. Nat. Hist., 28: 313–326 for a discussion of the dates of the relevant publications).

Gekko Laurenti, 1768—TYPICAL GECKOS

G. badenii Szczerbak and Nekrasova 1994—Golden Gecko

The Golden Gecko is native to Vietnam and is established in Florida.

G. gecko (Linnaeus, 1758)—Tokay Gecko

The Tokay Gecko is native to southeastern Asia and has been introduced to Florida and Hawaii. It is established in Florida but the single known incipient population in Hawaii has apparently been eradicated.

Gonatodes Fitzinger, 1843—AMERICAN BENT-TOED GECKOS

G. albogularis (Duméril and Bibron, 1836)—Yellow-headed Gecko

The Yellow-headed Gecko is native to Central and South America and the Caribbean and is established in Florida.

Hemidactylus Gray, 1825—HOUSE GECKOS

H. frenatus Duméril and Bibron, 1836—Common House Gecko

The Common House Gecko is native to South and Southeast Asia, has been reported from four states, and is established in Florida, Hawaii, and Texas.

H. garnotii Duméril and Bibron, 1836—Indo-Pacific House Gecko (unisexual)

The Indo-Pacific Gecko is native to South and Southeast Asia and is established in California, Florida, Georgia, Hawaii, and Texas.

H. mabouia (Moreau de Jonnès, 1818)—Wood Slave

The Wood Slave is native to Africa (and perhaps parts of South America and the

Caribbean, cf. Kluge, 1969, Misc. Publ. Univ. Michigan Mus. Zool. 138: 1–78), has been reported from three states, and is established in Florida and Texas.

H. parvimaculatus (Deraniyagala, 1953)—Sri Lankan Spotted House Gecko

The Sri Lankan Spotted House Gecko is native to Sri Lanka and southern India and is established in Louisiana.

H. platyurus (Schneider, 1792)—Asian Flat-tailed House Gecko

The Asian Flat-tailed House Gecko is native to Southeast Asia and is established in Florida. This species was recently removed from *Cosymbotus* by Carranza and Arnold (2006, Mol. Phylogenet. Evol. 38: 531–545).

H. turcicus (Linnaeus, 1758)—Mediterranean Gecko

The Mediterranean Gecko is native to the Mediterranean region, has been reported from 24 states, and is established in Alabama, Arizona, Arkansas, California, Florida, Georgia, Illinois, Kansas, Kentucky, Louisiana, Maryland, Mississippi, Missouri, Nevada, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Utah, and Virginia.

Hemiphyllodactylus Bleeker, 1860—TREE GECKOS

H. typus Bleeker, 1860—Indo-Pacific Tree Gecko (unisexual)

The Indo-Pacific Tree Gecko is native to Southeast Asia and the Pacific, has been reported from two states, and is established in Hawaii.

Iguana Laurenti, 1768—IGUANAS

I. iguana (Linnaeus, 1758)—Green Iguana

The Green Iguana is native to Central America and South America, has been reported from six states, and is established in Florida and Hawaii.

Lacerta Linnaeus, 1758—LACERTAS

L. bilineata Daudin 1802—Western Green Lacerta

The Western Green Lacerta is native to western Europe, has been reported from two states, and is established in Kansas.

Lampropholis Fitzinger, 1843—SUNSKINKS

L. delicata (De Vis, 1888)—Plague Skink

The Plague Skink is native to eastern Australia and is established in Hawaii.

Leiocephalus Gray, 1827—CURLY-TAILED LIZARDS

L. carinatus Gray, 1827—Northern Curly-tailed Lizard

The Northern Curly-tailed Lizard is native to Cuba, The Bahamas, and Cayman Islands and is established in Florida.

L. schreibersii (Gravenhorst, 1837)—Red-sided Curly-tailed Lizard

The Red-sided Curly-tailed Lizard is native to Hispaniola and is established in Florida.

Leiolepis Cuvier, 1829—BUTTERFLY LIZARDS

L. belliana (Gray, 1827)—Butterfly Lizard

The Butterfly Lizard is native to Southeast Asia and is established in Florida.

L. rubritaeniata Mertens, 1961—Red-banded Butterfly Lizard

The Red-banded Butterfly Lizard is native to Indochina and is established in Florida.

Lepidodactylus Fitzinger, 1843—INDO-PACIFIC GECKOS

L. lugubris (Duméril and Bibron, 1836)—Mourning Gecko (unisexual)

The Mourning Gecko is native from South Asia through much of the Pacific, has been reported from four states, and is established in Florida and Hawaii. This taxon is a unisexual complex of diploid and triploid populations of apparently independent origins (Moritz et al., 1993, Biol. J. Linn. Soc. 48: 113–133; Volobouev, 1994, Biogeographica 70: 14).

Lipinia Gray, 1845—LIPINIAS

L. noctua (Lesson, 1830)—Moth Skink

The Moth Skink is native to some of the Pacific islands and is established in Hawaii.

Mabuya Fitzinger, 1826—MABUYAS

M. multifasciata (Kuhl, 1820)—Brown Mabuya

The Brown Mabuya is native to South and Southeast Asia and is established in Florida.

Phelsuma Gray, 1825—DAY GECKOS

P. grandis Gray, 1870—Madagascan Giant Day Gecko

The Madagascan Giant Day Gecko is native to Madagascar and is established in Florida and Hawaii. Formerly referred to *P. madagascariensis* Gray, 1831 prior to partitioning of that species (Raxworthy et al., 2007, Syst. Biol. 56: 907–923).

P. guimbeaui Mertens, 1963—Orange-spotted Day Gecko

The Orange-spotted Day Gecko is native to Mauritius and is established in Hawaii.

P. laticauda (Boettger, 1880)—Gold Dust Day Gecko

The Gold Dust Day Gecko is native to Madagascar and the Seychelles and is established in Florida and Hawaii.

Podarcis Wagler, 1830—WALL LIZARDS

P. muralis (Laurenti, 1768)—Common Wall Lizard

The Common Wall Lizard is native to Europe, has been reported from four states, and is established in Indiana, Kentucky, Ohio, and British Columbia.

P. siculus (Rafinesque, 1810)—Italian Wall Lizard

The Italian Wall Lizard is native to Europe, has been reported from seven states, and is established in California, Connecticut, Kansas, Missouri, New Jersey, and New York. It was formerly established in Pennsylvania but is now extinct there.

Salvator Duméril and Bibron 1839—TEGUS

S. merianae Duméril and Bibron 1839—Argentine Giant Tegu

The Argentine Giant Tegu is native to South America and is established in Florida.

Sphaerodactylus Wagler, 1830—DWARF GECKOS

S. argus Gosse, 1850—Ocellated Gecko

The Ocellated Gecko is native to Cuba, Jamaica, and The Bahamas and is established in Florida.

S. elegans MacLeay, 1834—Ashy Gecko

The Ashy Gecko is native to Cuba and Hispaniola and is established in Florida.

Tarentola Gray, 1825—WALL GECKOS

T. annularis (Geoffroy Saint-Hilaire, 1827)—Ringed Wall Gecko

The Ringed Wall Gecko is native to northern Africa and is established in California and Florida.

T. mauritanica (Linnaeus, 1758)—Moorish Gecko

The Moorish Gecko is native to the Mediterranean region, has been reported from four states, and is established in California and Florida.

Trachylepis Fitzinger, 1843—SKINKS

T. quinquetaeniata (Lichtenstein, 1823)—African Five-lined Skink

The African Five-lined Skink is native to a wide band of sub-Saharan Africa and is established in Florida.

Trioceros Swainson, 1839—CHAMELEONS

T. jacksonii (Boulenger, 1896)—Jackson's Chameleon

Jackson's Chameleon is native to eastern Africa and is established in California and Hawaii.

Tupinambis Daudin, 1803—TEGUS

T. teguixin (Linnaeus, 1758)—Gold Tegu

The Gold Tegu is native to South America and is established in Florida.

Varanus Merrem, 1820—MONITOR LIZARDS

V. niloticus (Linnaeus *in* Hasselquist, 1762)—Nile Monitor

The Nile Monitor is native to Africa, has been reported from three states, and is established in Florida.

Alien Species — Squamata (in part) - Snakes

Acrochordus Hornstedt, 1787—FILE SNAKES

A. javanicus Hornstedt, 1787—Javanese File Snake

The Javanese File Snake is native to Southeast Asia and is established in Florida.

Boa Linnaeus, 1758—BOAS

B. constrictor Linnaeus, 1758—Boa Constrictor

The Boa Constrictor is native to Central and South America, has been reported from 12 states, and is established in Florida.

Indotyphlops Hedges, Marion, Lipp, Marin, and Vidal, 2014—SOUTH ASIAN BLINDSNAKES

I. braminus (Daudin, 1803)—Brahminy Blindsnake (unisexual)

The Brahminy Blindsnake is likely native to South Asia, has been reported from 13 states, and is established in Alabama, Arizona, California, Florida, Georgia, Hawaii, Louisiana, Massachusetts, Texas, and Virginia.

Python Daudin, 1803—PYTHONS

P. molurus (Linnaeus, 1758)—Indian Python

P. m. bivittatus Kuhl, 1820—Burmese Python

The Burmese Python is native to South and Southeast Asia, has been reported from seven states, and is established in Florida.

P. sebae (Gmelin, 1788)—Northern African Rock Python

The Northern African Rock Python is native to sub-Saharan Africa, has been reported from two states, and is established in Florida.

Alien Species — Crocodilians

Caiman Spix, 1825—CAIMANS

C. crocodilus (Linnaeus, 1758)—Spectacled Caiman

The Spectacled Caiman is native to South America, has been reported from seven states, and is established in Florida.

Alien Species — Turtles

Palea Meylan, 1987—WATTLE–NECKED SOFTSHELLS

P. steindachneri (Siebenrock, 1906)—Wattle-necked Softshell

The Wattle-necked Softshell is native to southeastern China and northern Vietnam, has been reported from two states, and is established in Hawaii.

Pelodiscus Gray, 1844—CHINESE SOFTSHELLS

P. sinensis (Weigman, 1835)—Chinese Softshell

The Chinese Softshell is native to eastern Asia, has been reported from three states, and is established in Hawaii.

Staurotypus Wagler, 1830—GIANT MUSK TURTLES

S. salvinii Gray, 1864— Pacific Coast Giant Musk Turtle

The Pacific Coast Giant Musk Turtle is native to the Pacific lowlands of southern Mexico, El Salvador, and Guatemala, and is established in Florida.

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