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Paul Mayer, Editor

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ABSTRACT

The literature for 43 anostracans from the United States (U.S.) is presented with an emphasis on the first records for the 48 contiguous states and their counties. The section Species Treatments gives these literature citations as well as published sources of illustrations. Although a number of genera such as *Branchinecta* continue to undergo active taxonomic scrutiny, with longstanding species being in the process of redefinition as new ones are discovered, only fully described species are treated here. State checklists and county level maps are generated based on the literature records. Eight states are not mapped, because either no county-level records or no records at all were found in the literature. United States maps present a preliminary, visual summary of each species distribution. Three species are recorded from their type localities only. The most widely distributed U.S. anostracan is *Streptocephalus sealii.* Four fairy shrimps have been granted protected status under the U.S. Endangered Species Act.

INTRODUCTION

A number of landmark summaries guide the way of the researcher seeking information on the distribution of North American fairy shrimps. In 1975 Belk published "Key to the Anostraca (Fairy Shrimps) of North America" which presented a distributional list based on published records as well as specimens in the United States National Museum of Natural History, Smithsonian Institution. Belk (1975) reviewed the literature since the prior major milestone by Dexter (1959) and sorted out taxonomic and nomenclatural problems which had arisen in the intervening years. In 1995 Belk and Brtek produced a checklist of the world's fairy shrimp species which again sorted out nomenclatural and taxonomic difficulties from the prior two decades and included brief notes on geographic distribution. A supplement updated this checklist (Belk and Brtek, 1997). Reference to these authoritative and comprehensive guides will aid considerably in untangling various taxonomic confusions in the past literature.

Herein we present state checklists for the contiguous United States, based on published records, using the species as given in the most recent world checklist (Belk and Brtek, 1995). Our reason for attempting this arose from a very practical consideration, the need to plan fieldwork goals for collecting fairy shrimps. Whether the goal is to re-document the existence of an infrequently collected fairy shrimp in a location where a prior collector had found it, or to survey adjacent areas to determine the extent of the range of a species, the first logical step is a survey of the literature and mapping of prior distribution records.

We present two sets of maps in the appendices. The state species lists of Appendix II are accompanied by individual state maps with the counties of record named and numbered. Appendix III uses a pair of U.S. maps to visually compile the distribution information available from the literature for each species. A U.S. state outline map (top map) summarizes all state records in cross-hatching, including those where no county has been specified. A U.S. counties outline map (bottom map) gives county records in black, depicting a more circumscribed range due to its being based on more specific references, and it may be more definitive in that sense.

The landmark summary publications cited above have been major sources for this compilation, as supplemented by volumes of the *Zoological Record* back to 1869.

However, we also have included additional published records from the more recent literature, especially as annually presented in the *Zoological Record* (through Volume 135, 1998/1999). Our intent has not been to comprehensively cite all records but rather to focus on those which present new geographic information. For the contiguous U.S., we cite the first state records and subsequent new county records.

In certain explicitly stated instances, we have not included records from the older literature where prior authors, such as Belk (1975) and others, have made clear that taxonomic problems put into question the validity of such earlier citations. An example of this is our exclusion of records for *Eubranchipus vernalis* from west of the Appalachian Plateau, since Belk and Brtek (1995) caution that all these have the potential of confusion with *E. neglectus*.

FUTURE WORK

Much work remains to be done on the zoogeography of United States fairy shrimps. Mapping the current records for a widely distributed species like *Eubranchipus bundyi* amply illustrates the incompleteness and lack of uniformity in the published literature. A number of species are known from their type localities only, which especially in some of the older publications may have been so incompletely described as to make them very difficult if not impossible to relocate. In many instances, several decades intervene between the initial published record and any subsequent citation adding to the species distribution.

Also, for several species, past taxonomic confusions make very difficult any attempt to make coherent sense of the literature. To establish a baseline of accepted records is a goal which will require much future effort by both taxonomists and zoogeographers. This compilation of state and county records is only a beginning step in that process. The records that exist so far represent a challenge to zoologists and local naturalists to extend known ranges and to fill in or confirm distributional gaps with more intensive and more widespread collecting efforts. The often short period of time for collecting fairy shrimp adults and the patchy distribution patterns of many species in part explain the deficiency of past records as well as the difficulties to be faced in order to improve the situation.

One of the goals of this publication is to draw attention to the existence of distribution gaps in the published records of the past as a means of emphasizing the importance of setting standards for improvement. The political boundaries of county and state lines are obviously arbitrary and do not correspond to any spatially consistent or ecologically rational division of the United States. However, they are the commonest and most stable denominator for comparison of records already in the literature, and the compilation of such records is a basic step taken by anyone approaching the field. The inadequacy of these records is starkly revealed by this compilation, providing a strong impetus for the in-depth zoogeographic data gathering and analysis which are needed.

Persons with some prior familiarity with their regional fairy shrimp species will no doubt already have in mind numerous instances where the records in the literature presented here fall short of fully representing actual distributions as already known by local naturalists. Putting such knowledge into the literature is only step one in the documentation process which should also include the deposit of voucher specimens in recognized collections. If this two step documentation process were to become standard practice, it

would put anostracan research on a high level for future scholars.

Recognition of the benefits of fostering cooperative efforts between biologists within regions and also across broader geographical areas should increase the completeness of knowledge of North American anostracans in the future and is also a goal of this work. It is intended that this volume be a working document summarizing recently accepted published records, to guide future efforts to add to the maps and eventually lead to zoogeographical insights into the distribution patterns of North American fairy shrimp species. Identification of the ephemeral wetlands upon which many of these crustaceans depend is crucial to their conservation and future survival. Recent research, such as that of Farrar and Hey (1997) and Pfennig et al. (1991), has put new emphasis on the vital roles played by fairy shrimps in these fragile ecological systems.

SPECIES TREATMENTS

Each fairy shrimp species known to occur in the 48 contiguous U.S. states is listed alphabetically with the author and date of the original description. A taxonomic listing of these species is given in Appendix I. Each Species Treatment consists of three information categories.

Published State and County Records: The primary focus of this section is the compilation of first records from the literature for each geographic unit. States are listed alphabetically by their abbreviations, for example AR (Arkansas) precedes AZ (Arizona), which are given in Appendix II. Under each state, publications are cited chronologically, starting with the first state record followed by any new county-level records published subsequently. In parentheses following the citation, the county names are listed. *Rand McNally Commercial Atlas and Marketing Guide*, Eighty-second Edition (1951) and *Merriam-Webster's Geographical Dictionary*, Third Edition (1997) were consulted to determine the correct county for a given locality, if not specified in the publication. The phrase "record for state only" means that no county-level record has yet appeared in the literature. The maps of Appendix III give a visual summary of these records. In some cases, additionally detailed locality information may be found in the references.

Published Illustrations: Publications with drawings, photographs, or scanning electron micrographs are cited alphabetically by author. Our attempt was not to produce an exhaustive listing but rather to emphasize the most recent and more accessible sources. Secondary references may be included, especially where access to the original publication may be difficult.

Remarks: The types of information in this section include habitat data, mating behavior, and conservation status. Common names, if they have been suggested in the literature, are added, along with the citations where they appeared. The broadest coverage, specifically matching fairy shrimp species with particular habitat types, has been presented by Dexter (1953) and Eng et al. (1990). Recently, Eriksen and Belk (1999) matched eight habitat categories to the geographic-vegetational regions of California, based on environmental measures which they quantified. They also provided thorough summaries of the natural history of each California fairy shrimp.

Artemia franciscana Kellogg 1906

Published State and County Records: AZ-Koehn and Cole 1964 (record for state only), Clark and Bowen 1976 (Apache); CA-Kellogg 1906 (record for state only), Clark and Bowen 1976 (Monterey, Solano), Eng et al. 1990 (Inyo, Kern, Kings, San Diego, San Luis Obispo, San Mateo), Eriksen and Belk 1999 (Contra Costa, Merced, Napa); ND-Pennak 1953 (record for state only); NE-McCarraher 1970 (Garden, Sheridan); NM-Clark and Bowen 1976 (Catron, McKinley, Torrance); NV-Pennak 1953 (record for state only), Bowen et al. 1985 (Churchill); OR-Pennak 1953 (record for state only); TX-Belk 1975 (record for state only); UT-Pearse 1918 (record for state only), Allen 1996 (Box Elder, Davis, Salt Lake, Tooele, Weber); WA-Bowen et al. 1985 (Okanogan).

Published Illustrations: Dodson and Frey (1991) Fig. 20.68; Hill and Shepard (1997) Fig. 2 [cyst]; Kellogg (1906) Figs. 1-2.

Remarks: Habitat--seasonally and perennially astatic hypersaline playas, ponds, and pools (Eng et al., 1990). Suggested common name--San Francisco brine shrimp (Eriksen and Belk, 1999).

Artemia gracilis Verrill 1869

Published State and County Records: CT-Belk and Brtek 1995 (New Haven).

Published Illustrations: Packard (1875) Fig. 11; Pratt (1916) Fig. 509.

Remarks: Known from type locality only; "may be extinct" (Belk and Brtek, 1995).

Artemia monica Verrill 1869

Published State and County Records: CA-Verrill 1869 (Mono).

Published Illustrations: Hill and Shepard (1997) Fig. 3 [cyst]; Mura (1995) Pl. 3.

Remarks: Habitat--endemic to Mono Lake, a permanent, clear-water, carbonate rich, saline lake (Eng et al., 1990). Suggested common name--Mono brine shrimp (Eng et al., 1990).

Branchinecta campestris Lynch 1960

Published State and County Records: CA-Belk and Serpa 1992 (San Luis Obispo); NE-McCarraher 1970 (Sheridan); OR-Pennak 1989 (record for state only); TX-Sublette and Sublette 1967 (Lynn); UT-Maynard and Romney 1975 (Salt Lake); WA-Lynch 1960 (Adams, Grant, Okanogan); WY-Lynch 1960 (Carbon).

Published Illustrations: Eriksen and Belk (1999) Fig. 7.17; Hill and Shepard (1997) Fig. 32 [cyst]; Lynch (1960) Figs. 1-5; Mura (1991) Figs. I.4 and II.4 [cysts]; Mura (1995) Pl. 11.5-11.8, Fig. 1.4.

Remarks: Habitat--cool to warm water pools which are high in dissolved solids, predictable, and temporary or permanent (Eriksen and Belk, 1999). Suggested common name--pocketed pouch fairy shrimp (Eriksen and Belk, 1999).

Branchinecta coloradensis Packard 1874

Published State and County Records: AZ-Dexter 1953 (Coconino); CA-Eng et al. 1990 (Lassen, Stanislaus), Eriksen and Belk 1999 (Colusa, Fresno, Glenn, Inyo, Modoc); CO-Packard 1874 (Lake), Packard 1883 (Clear Creek), Shantz 1905 (El Paso), Creaser 1931 (Larimer), Gordon 1932 (Boulder), Sprules 1972 (Gunnison), Saunders 1981 (Gilpin, Grand, Pitkin); MT-Lynch 1958 (record for state only); NV-Dexter 1953 (Clark, Washoe); OK-Mackin 1936 (Comanche, Jackson); OR-Coopey 1946 (Lake, Malheur); TX-Pennak 1989 (record for state only); UT-Dexter 1953 (record for state only), Dodson and Frey 1991 (Grand); WA-Belk 1975 (record for state only); WY-Lynch 1964 (Carbon).

Published Illustrations: Dexter (1959) Fig. 24.9=B. *shantzi,* now a synonym of *B. coloradensis*, Fig. 24.13; Eriksen and Belk (1999) Fig. 7.15A; Lynch (1964) Figs. 2-3, 7; Mura (1991) Figs. I.1 and II.1 [cysts]; Pennak (1989) Fig. 13G; Saunders (1981) Figs. 8-9.

Remarks: Habitat--seasonally astatic snowmelt pools (Eng et al., 1990). Mating behavior was studied by Lynch (1960). Saunders (1981) emphasized the caution against the use of records in the literature between Mackin (1952) and Lynch (1964) because of confusion between *B. coloradensis* and *B. lindahli* during that interval. Belk (1977) commented on this in regard to Arizona records. Suggested common name--Colorado fairy shrimp (Eriksen and Belk, 1999).

Branchinecta conservatio Eng, Belk & Eriksen 1990

Published State and County Records: CA-Eng et al. 1990 (Butte, Merced, Solano, Tehama), Eriksen and Belk 1999 (Glenn, Stanislaus, Ventura).

Published Illustrations: Eng et al. (1990) Fig. 2; Eriksen and Belk (1999) Figs. 7.21D, 7.26; Mura (1991) Figs. I.10 and II.10 [cysts].

Remarks: Habitat--seasonally aquatic grassland swales (Eng et al., 1990). Listed as an endangered species under the United States Endangered Species Act (Belk, 1994b). Suggested common name--Conservancy fairy shrimp (Eng et al., 1990).

Branchinecta cornigera Lynch 1958

Published State and County Records: OR-Belk and Brtek 1995 (record for state only); WA-Lynch 1958 (Adams, Grant, Lincoln, Spokane).

Published Illustrations: Lynch (1958) Figs. 1-16; Mura (1991) Figs. I.11 and II.11 [cysts]; Mura (1995) Pl. 6, Fig. 1.1.

Remarks: Habitat--ponds, typically with clear or slightly turbid, moderately alkaline water (Lynch, 1958).

Branchinecta dissimilis Lynch 1972

Published State and County Records: CA-Eriksen and Belk 1999 (Modoc [see Eriksen and Belk p. 182]); OR-Lynch 1972 (Harney, Lake), Eng et al. 1990 (Deschutes).

Published Illustrations: Eriksen and Belk (1999) Fig. 7.19B; Hill and Shepard (1997) Fig. 33 [cyst]; Lynch (1972) Figs. 1-3; Mura (1991) Figs. I.5 and II.5 [cysts]; Pennak (1989) Fig. 13J.

Remarks: Habitat--cold water pools which are low to moderate in dissolved solids, predictable, and long-lived (Eriksen and Belk, 1999). The fairy shrimp reported under this name by Eng et al. (1990) is not *B. dissimilis* but a different, new species (Belk, pers.comm., 1999). Suggested common name--dissimilar fairy shrimp (Eriksen and Belk, 1999).

Branchinecta gigas Lynch 1937

Published State and County Records: CA-Brown and Carpelan 1971 (San Bernardino), Eng et al. 1990 (Kern), Eriksen and Belk 1999 (Los Angeles, Modoc); MT-Pennak 1953 (record for state only); ND-Belk 1975 (record for state only); NV-Dexter 1953 (Washoe); OR-Belk 1975 (record for state only); UT-Dexter 1953 (Millard), Maynard and Romney 1975 (Salt Lake); WA-Lynch 1937 (Grant), Broch 1988 (Adams, Whitman).

Published Illustrations: Dexter (1959) Fig. 24.12; Eriksen and Belk (1999) Fig. 7.20; Hill and Shepard (1997) Fig. 4, 35 [cysts]; Lynch (1937) Pl. 77-80; Mura (1991) Figs. I.2 and II.2 [cysts]; Mura (1995) Pl. 9.7, 9.8, Fig. 1.5.

Remarks: Habitat--seasonally astatic playa lakes which obtain water from unpredictable winter and spring rains (Eng et al., 1990). Suggested common name--giant fairy shrimp (Eriksen and Belk, 1999).

Branchinecta lindahli Packard 1883

Published State and County Records: AZ-Dexter 1953* (record for state only), Belk 1977 (Apache, Coconino, Maricopa, Navajo, Pima, Pinal); CA-Belk 1975 (record for state only), Eng et al. 1990 (San Diego, San Luis Obispo), Soiseth 1994 (Ventura), Sassaman and Fugate 1997 (Riverside, Tulare, Santa Barbara), Eriksen and Belk 1999 (Alameda, Contra Costa, Fresno, Glenn, Inyo, Kern, Kings, Lassen, Los Angeles, Merced, Orange, Stanislaus, Sutter, Yolo); CO-Beardsley 1902 (Weld), Saunders 1981 (Alamosa, Elbert, Las Animas, Moffat); IA-Dexter 1953* (record for state only); KS-Pearse 1918 (record for state only), Lynch 1964 (Finney); MT-Lynch 1964 (Teton); ND-Belk 1975 (record for state only); NE-Packard 1874 (record for state only), Lafler and Pearse 1898 (Saline), McCarraher 1970 (Cherry, Sheridan); NM-Pennak 1953* (record for state only); NV-Belk 1975 (record for state only); OK-Pennak 1953* (record for state only); OR-Belk 1975 (record for state only); SD-Pennak 1989 (record for state only); TX-Pennak 1953* (record for state only); UT-Belk 1975 (record for state only), Maynard and Romney 1975 (Wayne); WA-Belk 1975 (record for state only); WY-Shantz 1905 (Albany), Lynch 1964 (Natrona).

Published Illustrations: Eriksen and Belk (1999) Figs. 7.21B, 7.22B, 7.24; Lynch (1964) Figs. 1, 4, 6, 8, 14; Mura (1991) Figs. I.12 and II.12 [cysts]; Mura (1995) Pl. 11.1-11.4; Pennak (1989) Fig. 13C; Saunders (1981) Fig. 10.

Remarks: Habitat--seasonally astatic pools which collect water from winter and spring rains (Eng et al., 1990). Dexter (1959) mingled *B. lindahli* and *B. packardi* records. *Saunders (1981) emphasized the caution against the use of records in the literature between Mackin (1952) and Lynch (1964) because of confusion between *B. coloradensis* and *B. lindahli* during that interval. See Eng et al. (1990) for an explanation of the complex history of this species. Suggested common name--versatile fairy shrimp (Eriksen and Belk, 1999).

Branchinecta longiantenna Eng, Belk & Eriksen 1990

Published State and County Records: CA-Eng et al. 1990 (Alameda, Contra Costa, San Luis Obispo).

Published Illustrations: Eng et al. (1990) Fig. 3; Eriksen and Belk (1999) Fig. 7.19A; Mura (1991) Figs. I.9 and II.9 [cysts].

Remarks: Habitat--seasonally astatic grassland pools (Eng et al., 1990). Listed as an endangered species under the United States Endangered Species Act (Belk, 1994b). Suggested common name--longhorn fairy shrimp (Eng et al., 1990).

Branchinecta lynchi Eng, Belk & Eriksen 1990

Published State and County Records: CA-Eng et al. 1990 (Contra Costa, Glenn, Merced, Riverside, Sacramento, Tehama, Tulare); Gallagher 1996 (Butte), Eriksen and Belk 1999 (Alameda, Colusa, Fresno, Madera, Monterey, Placer, San Benito, San Joaquin, San Luis Obispo, Shasta, Solano, Stanislaus, Sutter, Yuba); OR-Eriksen and Belk 1999 (Jackson).

Published Illustrations: Eng et al. (1990) Fig. 4; Eriksen and Belk (1999) Figs. 7.15B, 7.18B; Mura (1991) Figs. I.8 and II.8 [cysts].

Remarks: Habitat--seasonally astatic rain-filled pools (Eng et al., 1990). Listed as a threatened species under the United States Endangered Species Act (Belk, 1994b). Suggested common name--vernal pool branchinecta (Eng et al., 1990).

Branchinecta mackini Dexter 1956

Published State and County Records: CA-Dexter 1956 (San Bernardino), Eng et al. 1990 (Contra Costa, Tulare), Eriksen and Belk 1999 (Alameda, Fresno, Glenn, Inyo, Kern, Kings, Lassen, Los Angeles, Modoc, Mono, Riverside, San Luis Obispo, Stanislaus); NE-McCarraher 1970 (Sheridan); NV-Dexter 1956 (Esmeralda, Washoe); OR-Sassaman and Fugate 1997 (Lake); UT-Maynard and Romney 1975 (Salt Lake); WA-Dexter 1956 (Douglas), Broch 1988 (Adams, Grant, Whitman).

Published Illustrations: Dexter (1956) Figs. 1-6; Eriksen and Belk (1999) Fig. 7.16A; Hill and Shepard (1997) Fig. 34 [cyst]; Mura (1991) Figs. I.3 and II.3 [cysts]; Mura (1995) Pl. 10 and Fig. 1.3.

Remarks: Habitat--seasonally astatic and aestival playas, roadside ditches and earth fault pools all associated with alkaline soils (Eng et al., 1990). Suggested common name--alkali fairy shrimp (Eriksen and Belk, 1999).

Branchinecta packardi Pearse 1912

Published State and County Records: AR-Harp et al. 1997 (Jackson, Stone); AZ-Dexter 1953 (Navajo), Belk 1977 (Apache, Coconino, Mohave); CO-Pearse 1912 (Otero), Hermann 1977 (Weld), Saunders 1981 (Boulder, Elbert, Las Animas); KS-Lynch 1964 (Edwards), Sassaman and Fugate 1997 (Seward); MT, ND, NE-Belk 1975 (records for states only); NM-Pennak 1953 (record for state only); OK-Belk 1975 (record for state only); TX-Horne 1971 (Hays); UT-Maynard and Romney 1975 (San Juan), Graham 1994 (Grand); WY-Lynch 1964 (Albany, Laramie, Natrona).

Published Illustrations: Fitzpatrick (1983) Fig. 25; Lynch (1964) Figs. 5, 9-13; Maeda-Martinez et al. (1993) Figs. 1C-D, 2C-D; Mura (1991) Figs. I.6 and II.6 [cysts]; Pearse

(1912) Pl. 3; Saunders (1981) Figs. 11-15.

Remarks: Habitat--temporary pool, puddles, roadside pool, rock pool (Saunders, 1980). Dexter (1959) mingled *B. lindahli* and *B. packardi* records.

Branchinecta paludosa O.F. Muller 1788

Published State and County Records: CO-Saunders 1981 (Moffat); MT-Lynch 1958 (record for state only); UT-Maynard and Romney 1975 (Grand, Salt Lake); WY-Linder 1941 (record for state only), Lynch 1958 (Albany).

Published Illustrations: Dexter (1959) Fig. 24.8; Mura (1991) Figs. I.7 and II.7 [cysts]; Mura (1995) Pl. 5; Pennak (1989) Figs. 7, 10, 13B; Saunders (1981) Figs. 5-6.

Remarks: Habitat--tundra pools and lakes (Belk and Brtek, 1995). Saunders et al. (1993) point out that Arizona records of Belk 1975 and 1977 are actually another, yet to be described species.

Branchinecta potassa Belk 1979

Published State and County Records: NE-Belk 1979 (Cherry), Belk and Brtek 1995 (Sheridan).

Published Illustrations: Belk (1979) Figs. 1-3; Mura (1991) Figs. I.13 and II.13 [cysts].

Remarks: Habitat--1/2 acre, 1 meter deep, potassium-rich pond (Belk, 1979).

Branchinecta sandiegonensis Fugate 1993

Published State and County Records: CA-Fugate 1993 (San Diego), Eriksen and Belk 1999 (Orange).

Published Illustrations: Eriksen and Belk (1999) Figs. 7.21A, 7.22A, 7.23; Fugate (1993) p. 296.

Remarks: Habitat--cool water pools which are low to moderate in dissolved solids, less than moderately predictable, and short-lived (Eriksen and Belk, 1999). Protected under the United States Endangered Species Act (Belk, 1997a). Suggested common name--San Diego fairy shrimp (Eriksen and Belk, 1999).

Branchinella acacioidea Belk & Sissom 1992

Published State and County Records: TX-Belk and Sissom 1992 (Brooks, Hidalgo, Kleberg).

Published Illustrations: Belk and Sissom (1992) Figs. 1-3.

Remarks: Habitat--playa, roadside pools (Belk and Sissom, 1992).

Branchinella alachua Dexter 1953

Published State and County Records: FL-Dexter 1953 (Alachua, Lee).

Published Illustrations: Dexter (1959) Fig. 24.17.

Remarks: Habitat--borrow pit temporary pond (Dexter, 1953). The Lee County record is based on a Peabody Museum of Natural History specimen (Belk and Brtek, 1995).

Branchinella lithaca Creaser 1940

Published State and County Records: GA-Creaser 1940 (De Kalb).

Published Illustrations: Creaser (1940) figs.; Dexter (1959) Fig. 24.16; Pennak (1983) Fig. 15B.

Remarks: Known from the type locality only (Belk and Brtek, 1995). Not granted protection under the United States Endangered Species Act because efforts to demonstrate that the species is still extant have failed (Belk, 1999). Suggested common name--Stone Mountain fairy shrimp (Belk, 1997b).

Branchinella sublettei Sissom 1976

Published State and County Records: TX-Sissom 1976 (Lynn), Belk and Sissom 1992 (Gaines, Hudspeth).

Published Illustrations: Dodson and Frey (1991) Fig. 20.67; Sissom (1976) Figs. 1-7.

Remarks: Habitat--playa lakes ranging in size from a few meters to a kilometer in diameter; usually very shallow with depth of water a function of rainfall, humidity, and basin structure; dry during summer and filling with fall rains (Sissom, 1976).

Dexteria floridana (Dexter 1953)

Published State and County Records: FL-Dexter 1953 (Alachua).

Published Illustrations: Dexter (1959) Fig. 24.25; Dodson and Frey (1991) Fig. 20.71.

Remarks: Habitat--temporary pond (Dexter, 1953). Known from the type locality only (Belk and Brtek, 1995).

Eubranchipus bundyi Forbes 1876

Published State and County Records: AZ-Belk 1975 (record for state only), Belk 1977 (Apache, Coconino, Gila, Navajo); CA-Rogers 1996 (Siskiyou); IL-Creaser 1930a (record for state only), Dexter 1953 (Champaign); IN-Pearse 1918 (record for state only); MA-Pearse 1918 (record for state only); MI-Pearse 1913b (Washtenaw), Creaser 1929 (Oakland), Brtek 1966 (Gratiot), Knight et al. 1975 (Barry, Kalamazoo), Porter 1991 (Baraga, Clinton); MN-Dexter 1953 (Ramsey, St. Louis); NE-Dexter 1953 (Cuming, Fillmore, Madison); NH-Dexter 1953 (Grafton); NY-Pearse 1912 (Onondaga), Broch 1965 (Tompkins); OH-Dexter 1943 (Geauga, Stark), Weeks and Marcus 1997 (Franklin, Hardin, Portage); SD-Dexter 1953 (Minnehaha); UT-Dexter 1953 (Uintah); VT-Dexter 1953 (Addison, Windsor); WA-Dexter 1959 (record for state only); WI-Forbes 1876 (Jefferson); WY-Linder 1941 (Albany).

Published Illustrations: Brtek (1966) Pl. 5.1-5.4, Pl. 10.6, Pl. 15.9-15.12, Pl. 18.8, Pl. 20.4, Pl. 21.4 and 21.12; Dodson and Frey (1991) Fig. 20.70; Eriksen and Belk (1999) Fig. 7.12; Van Cleave and Hogan (1931) Pl. I Fig. 3, Pl. II Figs. 6, 9-10, Pl. III Figs. 11, 17.

Remarks: Habitat--pasture pond (photograph #6), swamp pond (photograph #7) (Dexter, 1953). California habitat--cold water pools which are low in dissolved solids, predictable, and long-lived (Eriksen and Belk, 1999). *E. gelidus* (Hay and Hay, 1889) has been synonymized under this species. Suggested common name--knobbedlip fairy shrimp (Eriksen and Belk, 1999).

Eubranchipus holmanii (Ryder 1879)

Published State and County Records: AL-Belk 1975 (record for state only), Modlin 1982 (Madison), Belk and Milne 1984 (Lawrence); CT-Dexter and Kuehnle 1948 (New Haven); GA-Pennak 1953 (record for state only); MD-Dexter 1956 (Frederick, Montgomery); MN-Dexter 1959 (record for state only); NC-Pennak 1953 (record for state only); NJ-Ryder 1879 (Gloucester); NY-Pearse 1918 (record for state only), Dexter and Kuehnle 1948 (Kings, Nassau, Queens, Suffolk); OH-Dexter and Kuehnle 1948 (Stark); PA-Dexter 1959 (record for state only); TN-Mattox 1936 (record for state only), Dexter and Kuehnle 1948 (Lake); VA-Fowler 1913 (Accomac).

Published Illustrations: Brtek (1966) Pl. 5.7-5.10, Pl. 10.7, Pl. 16.5-16.9, Pl. 18.5, Pl. 21.1-21.3 and 21.9; Brtek (1967) Pl. 1.2 and 1.4, Pl. 2.3; Dexter (1959) Fig. 24.21; Pennak (1989) Fig. 14F-G; Ryder (1879) 3 unnumbered figs.

Remarks: Habitat--ditches, little pond (Fowler, 1912). Records from Moore prior to 1967 are actually *E. moorei* (Belk and Brtek, 1995). Suggested common name--green fairy shrimp (Fowler, 1912).

Eubranchipus intricatus Hartland-Rowe 1967

Published State and County Records: MA-Hartland-Rowe 1967 (Middlesex).

Published Illustrations: Daborn et al. (1991) Fig. 1; Hartland-Rowe (1967) Figs. 1, 3; Smith (1995) Figs. 6.3, 6.5, 6.7a.

Remarks: Habitat--temporary prairie and foothill pools of low salinity (Hartland-Rowe, 1967).

Eubranchipus moorei Brtek 1967

Published State and County Records: AL-Belk and Milne 1984 (record for state only); AR-Harp et al. 1997 (Jackson, Lawrence); GA-Dexter 1953 according to Belk and Milne 1984 (record for state only), Moore 1959 according to Belk and Brtek 1995 (Baker); LA-Moore 1951 according to Belk and Brtek 1995 (St. Tammany).

Published Illustrations: Brtek (1967) Pl. I.1, I.3, I.5-I.6, Pl. II.1-II.2, II.4-II.5; Pennak (1989) Fig. 15C.

Remarks: Habitat--shallow depressions, usually in bottomland hardwood forests, but also a roadside ditch (Harp et al. 1997). Mating behavior of this species (misidentified as *E. holmanii*)was studied by Moore and Ogren (1962).

Eubranchipus neglectus Garman 1926

Published State and County Records: AL-Modlin 1982 according to Belk and Brtek 1995 (Madison), Belk and Milne 1984 according to Belk and Brtek 1995 (Lauderdale); AR-Harp et al. 1997 (Craighead, Greene, Mississippi); IN-Brtek 1966 (Marion); KY-Garman 1926 (Fayette); MI-Belk et al. 1998 (Berrien); OH-Garman 1926 (record for state only), Brtek 1966 (Tuscarawas), Weeks and Marcus 1997 (Butler, Columbiana, Cuyahoga, Franklin, Geauga, Hamilton, Hardin, Lake, Medina, Montgomery, Pickaway, Portage, Stark, Summit); TN-Belk et al. 1998 (record for state only).

Published Illustrations: Brtek (1966) Pl. 4.9, 4.11-4.12, Pl. 13.5, Pl. 20.6; Creaser (1930a) Pl. I Figs. 1-2, also Fig. 3 which is incorrectly labeled as *E. vernalis*; Garman (1926) A-C and E.

Remarks: Habitat--ditches along railroads and roadsides (Harp et al., 1997). Former *E. vernalis* records from west of the Appalachian Plateau, excluded here, are probably *E. neglectus* (Belk and Brtek, 1995; Harp et al., 1997; Belk et al., 1998).

Eubranchipus oregonus Creaser 1930

Published State and County Records: CA-Eng et al. 1990 (Siskiyou), Hill et al. 1997 (Humboldt, Tuolumne); OK-Creaser 1930a (Pontotoc), Mackin 1936 (Coal), Prophet 1963 (Atoka, Payne); OR-Creaser 1930a (record for state only), Coopey 1950 (Lane, Multnomah); WA-Coopey 1950 (King).

Published Illustrations: Brtek (1966) Pl. 4.7-4.8, 4.10, Pl. 13.7, Pl. 14.14, Pl. 18.4, Pl. 20.5, Pl. 21.8; Creaser (1930a) Pl. II Figs. 5-6; Dexter (1959) Fig. 24.22; Eriksen and Belk (1999) Fig. 7.13.

Remarks: Habitat--shallow temporary pool (photograph #15) (Dexter, 1953); seasonally astatic snowmelt pool, unpredictably filled from year to year (Eng et al., 1990). Suggested common name--Oregon fairy shrimp (Eriksen and Belk, 1999).

Eubranchipus ornatus Holmes 1910

Published State and County Records: MN-Creaser 1930a (record for state only); MT, ND, NE-Dexter 1959 (records for states only); WI-Holmes 1910 (Dane).

Published Illustrations: Brtek (1966) Pl. 5.11-5.12, Pl. 10.8, Pl. 15.1-15.2, Pl. 18.6, Pl. 21.6; Dexter (1959) Fig. 24.27; Holmes (1910) Pl. XCVI.

Remarks: Habitat--small ponds (Holmes, 1910).

Eubranchipus serratus Forbes 1876

Published State and County Records: AR-Harp et al. 1997 (Johnson, Mississippi); AZ-Belk 1975 (record for state only), Belk 1977 (Coconino); CA-Eng et al. 1990 (Lassen), Hill et al. 1997 (Shasta); [District of Columbia-Brtek 1966;] IL-Forbes 1876 (record for state only); IN-Pennak 1953 (record for state only), Dexter 1956 (Tippecanoe); KS-Leonard and Ponder 1949 (Douglas); MD-Dexter 1959 (record for state only), Brtek 1966 (Montgomery); MO-Pearse 1912 (St. Louis), Hazelwood and Hazelwood 1985 (Howard); MT-Pennak 1953 (record for state only); NE-Pearse 1912 (Lancaster); OH-Dexter and Ferguson 1943 (record for state only); OK-Mackin 1938 (record for state only), Prophet

1963 (Mayes, Oklahoma, Rogers); OR-Coopey 1946 (Klamath); VA-Dexter 1956 (Loudoun); WA-Pennak 1953 (record for state only); WI-Pennak 1953 (record for state only), Belk 1994a (Racine); WY-Belk 1975 (record for state only).

Published Illustrations: Brtek (1966) Pl. 6.1-6.3, Pl. 10.10, Pl. 14.1-14.3, Pl. 18.2, Pl. 20.1; Dexter (1959) Fig. 24.26; Eriksen and Belk (1999) Fig. 7.14; Hill and Shepard (1997) Fig. 5-6 [cysts]; Leonard and Ponder (1949) Pl. II Fig. 13; Van Cleave and Hogan (1931) Pl. I Fig. 1, Pl. II Figs. 4 and 7, Pl. III Figs. 11-12, 15.

Remarks: Habitat--pond along railroad (photograph #4), field pond (photograph #5), pasture pond (photograph #6), swamp pond (photograph #7), roadside ditch (photographs #9, 10), flood plain pond (photograph #13) (Dexter, 1953); rain-filled pool (Eng et al., 1990). California habitat--same as above for *E. bundyi* (Eriksen and Belk, 1999). *E. dadayi* Pearse 1912 was synonymized under this species by Van Cleave (1928). Mating behavior was studied by Pearse (1913a) and Belk (1984). Suggested common name--ethologist fairy shrimp (Eriksen and Belk, 1999).

Eubranchipus vernalis Verrill 1869

Published State and County Records: CT-Belk et al. 1998 (New Haven, New London); DE-Belk et al. 1998 (record for state only); MA-Verrill 1869 (Middlesex), Brtek 1966 (Barnstable); MD-Brtek 1966 (Montgomery); NJ-Pearse 1918 (record for state only); NY-Belk et al. 1998 (record for state only); PA-Belk et al. 1998 (record for state only); SC-Belk et al. 1998 (Richland).

Published Illustrations: Belk et al. (1998) Figs. 1-2; Brtek (1966) Pl. 6.5-6.7, Pl. 10.5, Pl. 13.6, Pl. 14.4-14.5, Pl. 18.3, Pl. 20.2, Pl. 21.7, 21.10; Fitzpatrick (1983) Fig. 28; Garman (1926) D.

Remarks: Habitat--small quiet pools (Pearse, 1918). Former *E. vernalis* records from west of the Appalachian Plateau are probably *E. neglectus* (Belk and Brtek, 1995; Harp et al., 1997; Belk et al., 1998).

Linderiella occidentalis (Dodds 1923)

Published State and County Records: CA-Dodds 1923 (record for state only), Eriksen and Belk 1999 (Alameda, Butte, Calaveras, Contra Costa, Fresno, Glenn, Lake, Madera, Marin, Mendocino, Monterey, Napa, Placer, Sacramento, San Benito, San Joaquin, San Mateo, Santa Barbara, Santa Clara, Shasta, Solano, Sonoma, Stanislaus, Sutter, Tehama, Tulare, Ventura, Yuba).

Published Illustrations: Brtek (1964) Pl. 1-2; Dexter (1959) Fig. 24.19; Dodson and Frey (1991) Fig. 20.73; Eriksen and Belk (1999) Fig. 7.9; Hill and Shepard (1997) Fig. 7 [cyst]; Pennak (1989) Fig. 13D-E.

Remarks: Habitat--seasonally astatic pools and ponds filled by winter and spring rains (Eng et al., 1990). Suggested common name--California fairy shrimp (Eriksen and Belk, 1999).

Linderiella santarosae Thiery & Fugate 1994

Published State and County Records: CA-Thiery and Fugate 1994 (Riverside).

Published Illustrations: Eriksen and Belk (1999) Fig. 7.10; Thiery and Fugate (1994) Fig. 7.10.

Remarks: Habitat--vernal grassland pools (Thiery and Fugate, 1994); cool water pools which are low to moderate in dissolved solids, moderately predictable, and long-lived (Eriksen and Belk, 1999). Suggested common name--Santa Rosa Plateau fairy shrimp (Eriksen and Belk, 1999).

Streptocephalus dorothae Mackin 1942

Published State and County Records: AZ-Koehn and Cole 1964 (Apache, Maricopa), Belk 1977 (Coconino, Navajo, Yavapai); CA-Eriksen and Belk 1999 (Riverside); NM-Mackin 1942 (Colfax, San Miguel, Santa Fe, Union); OK-Mackin 1942 (Cimarron, Texas), Prophet 1963 (Beaver, Cherokee); TX-Mackin 1942 (Deaf Smith, Parmer); UT-Maynard and Romney 1975 (Garfield, Wayne); WY-Debrey et al. 1991 (Goshen).

Published Illustrations: Eriksen and Belk (1999) Fig. 7.5; Mackin (1942) Figs. 4B, 5B; Maeda-Martinez et al. (1995a) Fig. 8A-F; Mura (1992) Pl. 4.1 and Pl. 5.1 [cysts].

Remarks: Habitat--short-grass prairie wetlands (Mackin, 1942). California habitat--warm water pools which are moderate in dissolved solids, less than moderately predictable, and short-lived (Eriksen and Belk, 1999). Mating behavior was studied by Wiman (1981). Suggested common name--New Mexico fairy shrimp (Eriksen and Belk, 1999).

Streptocephalus linderi Moore 1966

Published State and County Records: TX-Moore 1966 (Crockett).

Published Illustrations: Maeda-Martinez et al. (1995a) Fig. 9A-E; Moore (1966) Figs. 15-19; Mura (1992) Pl. 4.9 and Pl. 5.9 [cysts].

Remarks: Habitat--gravel pits, cattle tanks (Moore, 1966).

Streptocephalus mackini Moore 1966

Published State and County Records: AZ-Moore 1966 (Coconino), Belk 1977 (La Paz, Maricopa, Pima, Pinal, Santa Cruz, Yavapai); NM-Belk 1975 (record for state only); TX-Moore 1966 (Terrell), Maeda-Martinez et al. 1995a (Culberson).

Published Illustrations: Maeda-Martinez et al. (1995a) Fig. 10A-E; Moore (1966) Figs. 6-13; Mura (1992) Pl. 4.2 and Pl. 5.2 [cysts].

Remarks: Habitat--semi-permanent cattle tank, roadside temporary ponds (Moore, 1966). Mating behavior was studied by Wiman (1981). Suggested common name--Chihuahua fairy shrimp (Eriksen and Belk, 1999).

Streptocephalus mattoxi Maeda-Martinez, Belk, Obregon-Barboza & Dumot 1995

Published State and County Records: TX-Maeda-Martinez et al. 1995a (Kenedy).

Published Illustrations: Maeda-Martinez et al. (1995a) Fig. 6A-E.

Remarks: Habitat--playa (Maeda-Martinez et al., 1995a).

Streptocephalus sealii Ryder 1879

Published State and County Records: AL-Dexter 1953 (Baldwin); AR-Harp et al. 1997 (Poinsett); AZ-Creaser 1930b (record for state only), Belk 1977 (Coconino); CA-the Creaser 1930b record for the state is actually this species according to Eng et al. (1990), Dexter 1956 (Tuolumne), Eng et al. 1990 (Alpine, Del Norte, El Dorado, Inyo), Eriksen and Belk 1999 (Calaveras, Fresno, Lassen, Madera, Mariposa, Mono, Nevada, Placer, Shasta, Siskiyou, Tehama); CO-Creaser 1930b (Larimer), Saunders 1981 (Boulder, Kiowa); FL-Packard 1883 according to Creaser 1930b (record for state only), Maeda-Martinez et al. 1995a (Leon); GA-Belk 1975 (record for state only); IL-Van Cleave 1928 (Jackson, St. Clair); KS-Leonard and Ponder 1949 (Ellis); KY-Weise 1957 (record for state only); LA-Creaser 1930b (record for state only), Moore 1951 (St. Tammany); MD-Dexter 1959 (record for state only); MN-Dexter 1959 (record for state only), Chelberg 1972 (Hennepin); MO-Dexter 1956 (Cooper), Hazelwood and Hazelwood 1985 (Boone); MS-Moore 1951 record for state only); MT-Dexter 1956 (Valley); NC-Dexter 1956 (Carteret); ND-Dexter 1953 (Cass); NE-Dexter 1953 (Cherry); NJ-Pearse 1918 (record for state only), Maeda-Martinez et al. 1995a (Gloucester); NY-Dexter 1959 (record for state only); OK-Creaser 1930b (Garvin), Mackin 1936 (Grady, Greer, Jefferson, Johnston, Oklahoma, Pontotoc), Prophet 1963 (Carter, Cleveland, Comanche, McClain, Payne, Tillman); OR-Coopey 1946 (Douglas, Klamath); SC-Dexter 1959 (record for state only); TX-Pesta 1921 (Dallas), Leonard and Ponder 1949 (Shelby); VA-Dexter 1959 (record for state only); WA-Belk 1975 (record for state only); WY-Maeda-Martinez et al. 1995b (record for state only).

Published Illustrations: Creaser (1930b) Pl. I Figs. 2 and 4, Pl. II Fig. 7; Dexter (1959) Fig. 24.3; Eng et al. (1990) Fig. 5; Eriksen and Belk (1999) Figs. 7.2A,C and 7.7; Fitzpatrick (1983) Fig. 32; Leonard and Ponder (1949) Pl. II Fig. 12; Maeda-Martinez et al. (1995a) Fig. 2A-E; Moore (1966) Figs. 2-5; Mura (1992) Pl. 4.6 and Pl. 5.6 [cysts]; Saunders (1981) Figs. 22-26.

Remarks: Habitat--permanent seepage lake (photograph #17) (Dexter, 1953); in California perennially and seasonally astatic and aestival habitats where winter snows lie deep, outside California high mountain clear snowmelt pools as well as low elevation summer rain-filled forest pools and mud holes (Eng et al., 1990). Also see Eng et al. (1990) for an explanation of the complex history of this species. Undoubtedly the most widely distributed member of the genus (Moore, 1966). Mating behavior was studied by Wiman (1981). Suggested common name--spiny-tailed fairy shrimp (Creaser, 1930b).

Streptocephalus similis Baird 1852

Published State and County Records: TX-Moore 1966 (Terrell), Maeda-Martinez et al. 1995a (Kenedy).

Published Illustrations: Baird (1852) Tab. XXII, figs. 3-4; Dexter (1959) Fig. 24.4; Maeda-Martinez et al. (1995a) Fig. 3A-E; Mura (1992) Pl. 4.8 and Pl. 5.8 [cysts].

Remarks: Habitat--a large, semi-permanent cattle tank (Moore, 1966). Suggested common name--Dominican fairy shrimp (Creaser, 1930b).

Streptocephalus texanus Packard 1871

Published State and County Records: AR-Harp et al. 1997 (Johnson); AZ-Creaser 1930b (record for state only), Belk 1977 (Apache, Maricopa, Yuma), Maeda-Martinez et al. 1995a (Yavapai); CA-Eng et al. 1990 (Riverside), Eriksen and Belk 1999 (Imperial); CO-Beardsley 1902 (Las Animas), Cockerell 1912 (Denver), Pearse 1912 (Jefferson, Otero), Saunders 1981 (Boulder, Larimer, Morgan, Pueblo); KS-Pearse 1918 (record for state only), Mackin 1942 (Decatur, Grant, Greeley, Haskell, Meade, Morton, Ness), Leonard and Ponder 1949 (Douglas, Stafford, Wallace), Maeda-Martinez et al. 1995a (Ellis); MO-Dexter 1956 (Boone); MT-Dexter 1956 (Valley); NE-Pearse 1912 (Saline); NM-Mackin 1942 (Colfax, Guadalupe, Torrance); OK-Creaser 1930b (record for state only), Mackin 1942 (Beckham, Comanche, Ellis, Woods), Prophet 1963 (Blaine, Cimarron, Cleveland, Cotton, Harper, McCurtain, Pottawatomie, Tillman); SD-Wiman 1979 (record for state only); TX-Pearse 1918 (record for state only), Moore 1966 (Terrell), Horne 1971 (Culberson, Erath, Webb), Belk 1991 (Blanco, Gillespie, Hays, Llano), Maeda-Martinez et al. 1995a (McLennan, if Waco=type locality but Moore (1966) cites some evidence that this site might actually be in Bosque Co.); UT-Creaser 1930b (Grand); WY-Lynch 1964 (Natrona).

Published Illustrations: Dodson and Frey (1991) Fig. 20.69; Eriksen and Belk (1999) Fig. 7.6; Leonard and Ponder (1949) Pl. II Fig. 11; Mackin (1942) Figs. 4A, 5A; Maeda-Martinez et al. (1995a) Fig. 13A-C; Moore (1966) Fig. 1; Mura (1992) Pl. 4.5 and Pl. 5.5 [cysts]; not Packard (1874) Fig. 13 according to Mackin (1942); Pennak (1989) Fig. 12B-C; Saunders (1981) Figs. 16-20.

Remarks: Habitat--seasonally astatic granitic tanks or pools in dry stream channels which fill with winter, spring, and summer rains (Eng et al., 1990). Eng et al. (1990) considered earlier California records to be reports of *S. sealii*. Mating behavior was studied by Wiman (1981). Suggested common names--smooth-tailed fairy shrimp (Creaser, 1930b), Great Plains fairy shrimp (Eriksen and Belk, 1999).

Streptocephalus woottoni Eng, Belk & Eriksen 1990

Published State and County Records: CA-Eng et al. 1990 (Riverside), Eriksen et al. 1998 (San Diego), Eriksen and Belk 1999 (Orange).

Published Illustrations: Eng et al. (1990) Fig. 5; Eriksen and Belk (1999) Fig. 7.8; Maeda-Martinez et al. (1995a) Fig. 4A-E; Mura (1992) Pl. 4.4 and Pl. 5.4 [cysts].

Remarks: Habitat--seasonally astatic pools (Eng et al., 1990). Suggested common name--Riverside fairy shrimp (Eng et al., 1990).

Thamnocephalus mexicanus Linder 1941

Published State and County Records: AZ-Belk 1975 (record for state only), Belk 1977 (Maricopa-Pinal [assignment to one of these two adjacent counties is uncertain as mapped], Yuma); TX-Moore and Young 1964 (Cameron, Schleicher).

Published Illustrations: Fitzpatrick (1983) Fig. 36; Moore and Young (1964) Fig. 3; Mura (1992) Pl. 3.3 and 3.4 [cysts].

Remarks: Habitat--stock ponds (Belk, 1977). Changed from a subspecies to a species by Moore and Young (1964). Suggested common name--Mexican beavertail fairy shrimp (Eriksen and Belk, 1999).

Thamnocephalus platyurus Packard 1877

Published State and County Records: AR-Harp et al. 1997 (Johnson); AZ-Creaser 1935 (record for state only), Koehn and Cole 1964 (Apache, Maricopa, Yavapai), Moore and Young 1964 (Maricopa-Pinal [assignment to one of these two adjacent counties is uncertain as mapped], Yuma), Maeda-Martinez et al. 1997 (Gila, Navajo); CA-Dexter

1953 (San Bernardino), Eriksen and Belk 1999 (Imperial, Riverside, San Diego); CO-Cockerell 1912 (Boulder), Pearse 1912 (Otero), Saunders 1981 (Denver, Morgan, Washington); KS-Packard 1877 (Ellis), Creaser 1930b (Haskell), Leonard and Ponder 1949 (Douglas); MO-Dexter 1956 (Boone), Hazelwood and Hazelwood 1985 (Howard); NE-Dexter 1959 (record for state only), Dodson and Frey 1991 (McPherson); NM-Dexter 1953 (Curry, McKinley), Moore and Young 1964 (Roosevelt, Valencia); NV-Dexter 1953 (Clark); OK-Creaser 1930b (Cimarron), Mackin 1936 (Ellis, Woods), Prophet 1963 (Harper, Tillman); TX-Dexter 1959 (record for state only), Moore and Young 1964 (Cameron, Crockett, Gillespie, Schleicher), Horne 971 (Hays); UT-Dexter 1959 (record for state only), Moore and Young 1964 (San Juan); WY-Moore and Young 1964 (Natrona), Maeda-Martinez et al. 1997 (Fremont, Sweetwater).

Published Illustrations: Dexter (1959) Fig. 24.15; Dodson and Frey (1991) Fig. 20.66; Eriksen and Belk (1999) Fig. 7.3; Leonard and Ponder (1949) Pl. II Fig. 14; Moore and Young (1964) Figs. 1-2; Mura (1992) Pl. 3.1 and 3.2 [cysts]; Pennak (1989) Fig. 14A-C; Saunders (1981) Figs. 27-30.

Remarks: Habitat--prairie lake (photograph #8) (Dexter, 1953); seasonally astatic pools including playas, borrow pit, roadside ditch, tank, and swale (Eng et al., 1990). Suggested common name--beavertail fairy shrimp (Eriksen and Belk, 1999).

SUMMARY

This treatment of fairy shrimps from the 48 contiguous U.S. states includes 43 species from eight genera and six anostracan families. *Streptocephalus sealii* is the most widely distributed (27 states), followed by *Branchinecta lindahli*, *Eubranchipus bundyi*, and *E. serratus* (17 states each). Eighteen of these 43 species (41.9%) are reported from a single state each. The top ranked states, in terms of currently recorded numbers of species, are California (22 [with 3 still-to-be-described *Branchinecta* species soon to be added to this total, according to Eriksen and Belk, 1999]) and Texas (16), followed by Arizona, Nebraska, Oregon and Utah with twelve apiece. A total of nine states, all of them west of the Mississippi River, report ten or more species. The highest number of species per state reported from east of the Mississippi is four (5 states). Half of the U.S. states have fairy shrimp records from only two or fewer of their counties. Table 1 summarizes distributions in terms of limnological regions, which are modified from Frey (1963) and depicted on the accompanying Table 1 Map.

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APPENDICES

APPENDIX I: UNITED STATES FAMILIES AND SPECIES

Class Crustacea, Subclass Branchiopoda, Superorder Sarsostraca
Order Anostraca (43)

Family Artemiidae (3 species)

Artemia franciscana Kellogg 1906
Artemia gracilis Verrill 1869
Artemia monica Verrill 1869

Family Branchinectidae (14 species)

Branchinecta campestris Lynch 1960
Branchinecta coloradensis Packard 1874
Branchinecta conservatio Eng, Belk & Eriksen 1990
Branchinecta cornigera Lynch 1958
Branchinecta dissimilis Lynch 1972
Branchinecta gigas Lynch 1937
Branchinecta lindahli Packard 1883
Branchinecta longiantenna Eng, Belk & Eriksen 1990
Branchinecta lynchi Eng, Belk & Eriksen 1990
Branchinecta mackini Dexter 1956
Branchinecta packardi Pearse 1912
Branchinecta paludosa O.F. Muller 1788
Branchinecta potassa Belk 1979
Branchinecta sandiegonensis Fugate 1993

Family Chirocephalidae (9 species)

Eubranchipus bundyi Forbes 1876
Eubranchipus holmanii (Ryder 1879)
Eubranchipus intricatus Hartland-Rowe 1967
Eubranchipus moorei Brtek 1967
Eubranchipus neglectus Garman 1926
Eubranchipus oregonus Creaser 1930
Eubranchipus ornatus Holmes 1910
Eubranchipus serratus Forbes 1876
Eubranchipus vernalis Verrill 1869

Family Linderiellidae (3 species)

Dexteria floridana (Dexter 1953)
Linderiella occidentalis (Dodds 1923)
Linderiella santarosae Thiery & Fugate 1994

Family Streptocephalidae (8 species)

Streptocephalus dorothae Mackin 1942
Streptocephalus linderi Moore 1966
Streptocephalus mackini Moore 1966
Streptocephalus mattoxi Maeda-Martinez, Belk, Obregon-Barboza & Dumot 1995
Streptocephalus sealii Ryder 1879
Streptocephalus similis Baird 1852
Streptocephalus texanus Packard 1871

Streptocephalus woottoni Eng, Belk & Eriksen 1990

Family Thamnocephalidae (6 species)

Branchinella acacioidea Belk & Sissom 1992
Branchinella alachua Dexter 1953
Branchinella lithaca Creaser 1940
Branchinella sublettei Sissom 1976
Thamnocephalus mexicanus Linder 1941
Thamnocephalus platyurus Packard 1877

APPENDIX II: STATE SPECIES LISTS

This section presents anostracan species checklists by state for the 48 contiguous United States, as compiled from the published literature. The order of presentation is alphabetical by the two letter abbreviations used in the Species Treatments. Following each state name is a numbered alphabetical listing of the counties from which fairy shrimps have been recorded. Following each species name are the counties (parishes in the case of Louisiana) from which it has been recorded, as given in the references which appear under the Species Treatments. The phrase "record for state only" means that no county level record has yet appeared in the literature.

Reference maps are provided as an aid for geographically locating the counties within the states. Each SAS-generated (version 6.12) state map has all counties in the state outlined, but names and identifying numbers are given only for those counties from which there are records in the literature. Straight line state boundaries are not shown parallel to the page because this software selects each state from an overall projection of the United States as a whole. Map scale varies widely and is not specified, as the states are pictorial depictions intended only for locating counties.

The following states were not mapped, because either no county-level records or no records at all were found in the literature:

DE Delaware (1 species) *Eubranchipus vernalis* - record for state only
IA Iowa (1 species) *Branchinecta lindahli* - record for state only
ID Idaho (0 species) - no records in the literature
ME Maine (0 species) - no records in the literature
MS Mississippi (1 species) *Streptocephalus sealii* - record for state only
PA Pennsylvania (2 species) *Eubranchipus holmanii* - record for state only
Eubranchipus vernalis - record for state only
RI Rhode Island (0 species) - no records in the literature
WV West Virginia (0 species) - no records in the literature.

A U.S. map giving the number of species per state precedes the state maps.

Abbreviations and order of presentation for states mapped

AL	Alabama (4 species)
AR	Arkansas (7 species)
AZ	Arizona (12 species)
CA	California (22 species)
CO	Colorado (7 species)
CT	Connecticut (3 species)
FL	Florida (3 species)
GA	Georgia (4 species)
IL	Illinois (3 species)
IN	Indiana (3 species)
KS	Kansas (6 species)
KY	Kentucky (2 species)
LA	Louisiana (2 species)
MA	Massachusetts (3 species)
MD	Maryland (4 species)
MI	Michigan (2 species)
MN	Minnesota (4 species)
MO	Missouri (4 species)
MT	Montana (9 species)
NC	North Carolina (2 species)
ND	North Dakota (6 species)
NE	Nebraska (12 species)
NH	New Hampshire (1 species)
NJ	New Jersey (3 species)
NM	New Mexico (7 species)
NV	Nevada (6 species)
NY	New York (4 species)
OH	Ohio (4 species)
OK	Oklahoma (9 species)
OR	Oregon (12 species)
SC	South Carolina (2 species)
SD	South Dakota (3 species)
TN	Tennessee (2 species)
TX	Texas (16 species)
UT	Utah (12 species)
VA	Virginia (3 species)
VT	Vermont (1 species)
WA	Washington (11 species)
WI	Wisconsin (3 species)
WY	Wyoming (11 species)

NUMBER OF ANOSTRACAN SPECIES PER STATE

ALABAMA

AL ALABAMA (4 species): 1) Baldwin, 2) Lauderdale, 3) Lawrence, 4) Madison

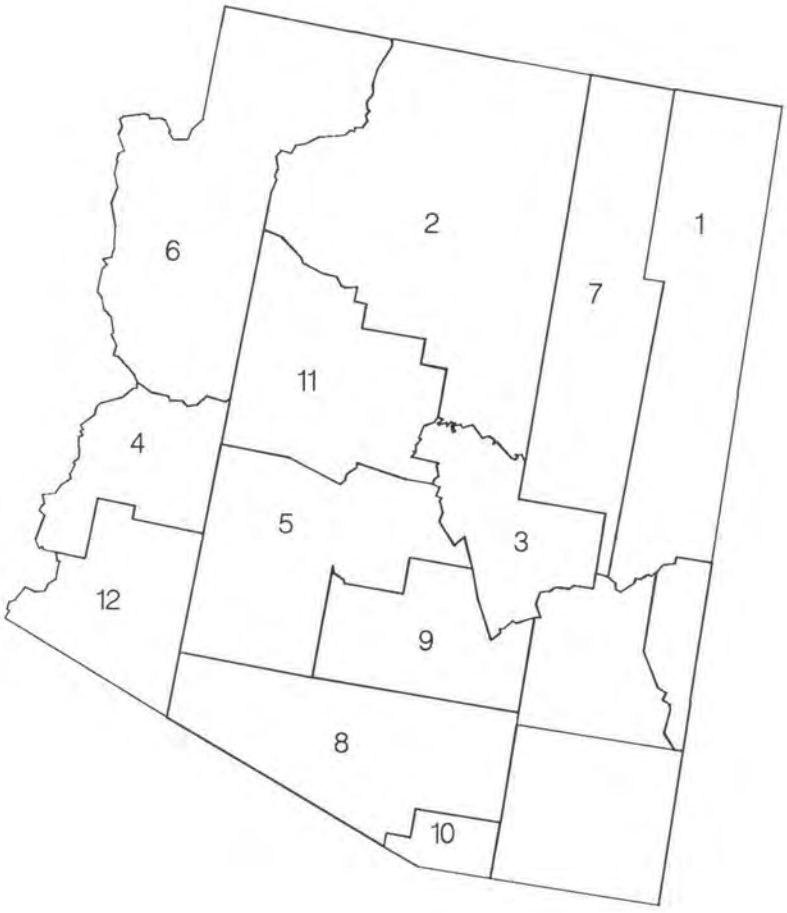
Eubranchipus holmanii - 3, 4
Eubranchipus moorei - record for state only
Eubranchipus neglectus - 2, 4
Streptocephalus sealii - 1

ARKANSAS

AR ARKANSAS (7 species): 1) Craighead, 2) Greene, 3) Jackson, 4) Johnson, 5) Lawrence, 6) Mississippi, 7) Poinsett, 8) Stone

Branchinecta packardi - 3, 8
Eubranchipus moorei - 3, 5
Eubranchipus neglectus - 1, 2, 6
Eubranchipus serratus - 4, 6
Streptocephalus sealii - 7
Streptocephalus texanus - 4
Thamnocephalus platyurus - 4

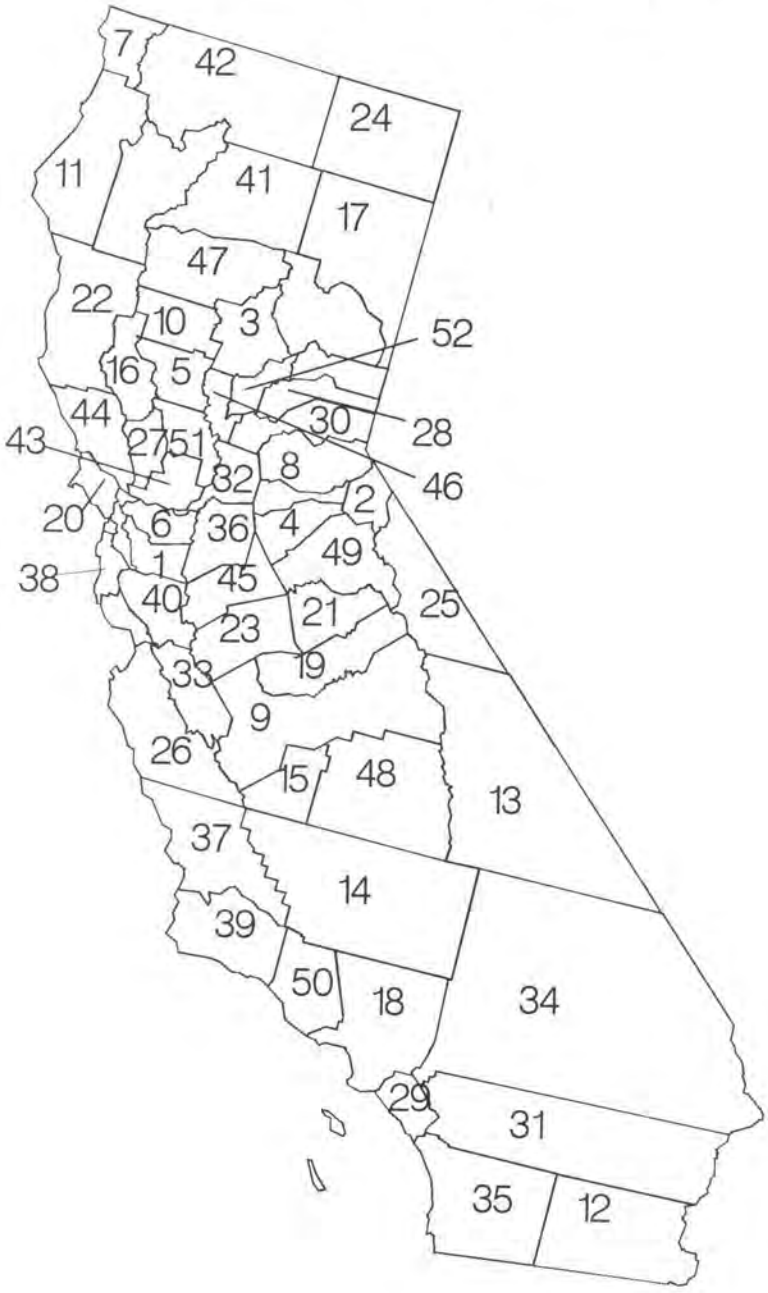
ARIZONA



AZ ARIZONA (12 species): 1) Apache, 2) Coconino, 3) Gila, 4) La Paz (carved from Yuma 1983), 5) Maricopa, 6) Mohave, 7) Navajo, 8) Pima, 9) Pinal, 10) Santa Cruz, 11) Yavapai, 12) Yuma

Artemia franciscana - 1
Branchinecta coloradensis - 2
Branchinecta lindahli - 1, 2, 5, 7, 8, 9
Branchinecta packardi - 1, 2, 6, 7
Eubranchipus bundyi - 1, 2, 3, 7
Eubranchipus serratus - 2
Streptocephalus dorothae - 1, 2, 5, 7, 11
Streptocephalus mackini - 2, 4, 5, 8, 9, 10, 11
Streptocephalus sealii - 2
Streptocephalus texanus - 1, 5, 11, 12
Thamnocephalus mexicanus - 5/9*, 12
Thamnocephalus platyurus - 1, 3, 5/9*, 7, 11, 12
* literature records do not allow a distinct assignment to one of these two adjacent counties

CALIFORNIA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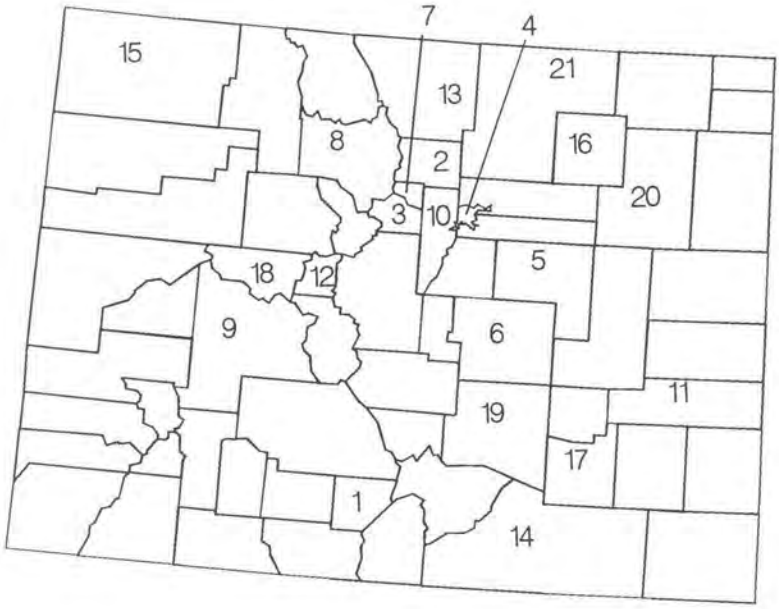
CA CALIFORNIA (22 species): 1) Alameda, 2) Alpine, 3) Butte, 4) Calaveras, 5) Colusa, 6) Contra Costa, 7) Del Norte, 8) El Dorado, 9) Fresno, 10) Glenn, 11) Humboldt, 12) Imperial, 13) Inyo, 14) Kern, 15) Kings, 16) Lake, 17) Lassen, 18) Los Angeles, 19) Madera, 20) Marin, 21) Mariposa, 22) Mendocino, 23) Merced, 24) Modoc, 25) Mono, 26) Monterey, 27) Napa, 28) Nevada, 29) Orange, 30) Placer, 31) Riverside, 32) Sacramento, 33) San Benito, 34) San Bernardino, 35) San Diego, 36) San Joaquin, 37) San Luis Obispo, 38) San Mateo, 39) Santa Barbara, 40) Santa Clara, 41) Shasta, 42) Siskiyou, 43) Solano, 44) Sonoma, 45) Stanislaus, 46) Sutter, 47) Tehama, 48) Tulare, 49) Tuolumne, 50) Ventura, 51) Yolo, 52) Yuba

Artemia franciscana - 6, 13, 14, 15, 23, 26, 27, 35, 37, 38, 43
Artemia monica - 25
Branchinecta campestris - 37
Branchinecta coloradensis - 5, 9, 10, 13, 17, 24, 45
Branchinecta conservatio - 3, 10, 23, 43, 45, 47, 50
Branchinecta dissimilis - 24
Branchinecta gigas - 14, 18, 24, 34
Branchinecta lindahli - 1, 6, 9-10, 13-15, 17-18, 23, 29, 31, 35, 37, 39, 45-46, 48, 50-51
Branchinecta longiantenna - 1, 6, 37
Branchinecta lynchi - 1, 3, 5-6, 9-10, 19, 23, 26, 30-33, 36-37, 41, 43, 45-48, 52
Branchinecta mackini - 1, 6, 9, 10, 13, 14, 15, 17, 18, 24, 25, 31, 34, 37, 45, 48
Branchinecta sandiegonensis - 29, 35
Eubranchipus bundyi - 42
Eubranchipus oregonus - 11, 42, 49
Eubranchipus serratus - 17, 41
Linderiella occidentalis - 1, 3, 4, 6, 9, 10, 16, 19, 20, 22, 26, 27, 30, 32, 33, 36, 38, 39, 40, 41, 43, 44, 45, 46, 47, 48, 50, 52
Linderiella santarosae - 31
Streptocephalus dorothae - 31
Streptocephalus sealii - 2, 4, 7, 8, 9, 13, 17, 19, 21, 25, 28, 30, 41, 42, 47, 49
Streptocephalus texanus - 12, 31
Streptocephalus woottoni - 29, 31, 35
Thamnocephalus platyurus - 12, 31, 34, 35

COLORADO



CO COLORADO (7 species): 1) Alamosa, 2) Boulder, 3) Clear Creek, 4) Denver, 5) Elbert, 6) El Paso, 7) Gilpin, 8) Grand, 9) Gunnison, 10) Jefferson, 11) Kiowa, 12) Lake, 13) Larimer, 14) Las Animas, 15) Moffat, 16) Morgan, 17) Otero, 18) Pitkin, 19) Pueblo, 20) Washington, 21) Weld

Branchinecta coloradensis - 2, 3, 6, 7, 8, 9, 12, 13, 18
Branchinecta lindahli - 1, 5, 14, 15, 21
Branchinecta packardi - 2, 5, 14, 17, 21
Branchinecta paludosa - 15
Streptocephalus sealii - 2, 11, 13
Streptocephalus texanus - 2, 4, 10, 13, 14, 16, 17, 19
Thamnocephalus platyurus - 2, 4, 16, 17, 20

CONNECTICUT

CT CONNECTICUT (3 species): 1) New Haven, 2) New London

Artemia gracilis - 1
Eubranchipus holmanii - 1
Eubranchipus vernalis - 1, 2

FLORIDA

FL FLORIDA (3 species): 1) Alachua, 2) Lee, 3) Leon

Branchinella alachua - 1, 2
Dexteria floridana - 1
Streptocephalus sealii - 3

GEORGIA

GA GEORGIA (4 species): 1) Baker, 2) De Kalb

Branchinella lithaca - 2
Eubranchipus holmanii - record for state only
Eubranchipus moorei - 1
Streptocephalus sealii - record for state only

ILLINOIS

IL ILLINOIS (3 species): 1) Champaign, 2) Jackson, 3) St. Clair

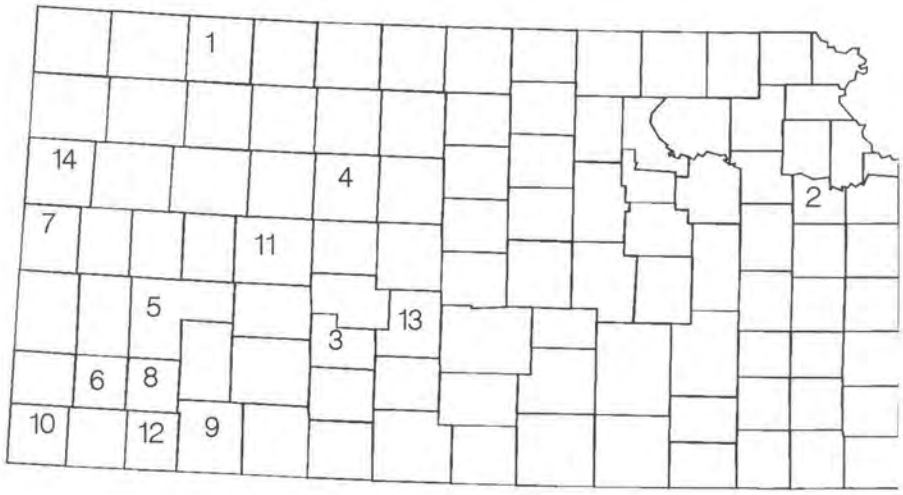
Eubranchipus bundyi - 1
Eubranchipus serratus - record for state only
Streptocephalus sealii - 2, 3

INDIANA

IN INDIANA (3 species): 1) Marion, 2) Tippecanoe

Eubranchipus bundyi - record for state only
Eubranchipus neglectus - 1
Eubranchipus serratus - 2

KANSAS



KS KANSAS (6 species): 1) Decatur, 2) Douglas, 3) Edwards, 4) Ellis, 5) Finney, 6) Grant, 7) Greeley, 8) Haskell, 9) Meade, 10) Morton, 11) Ness, 12) Seward, 13) Stafford, 14) Wallace

Branchinecta lindahli - 5
Branchinecta packardi - 3, 12
Eubranchipus serratus - 2
Streptocephalus sealii - 4
Streptocephalus texanus - 1, 2, 4, 6, 7, 8, 9, 10, 11, 13, 14
Thamnocephalus platyurus - 2, 4, 8

KENTUCKY

KY KENTUCKY (2 species): 1) Fayette

Eubranchipus neglectus - 1
Streptocephalus sealii - record for state only

LOUISIANA

LA LOUISIANA (2 species): 1) St. Tammany

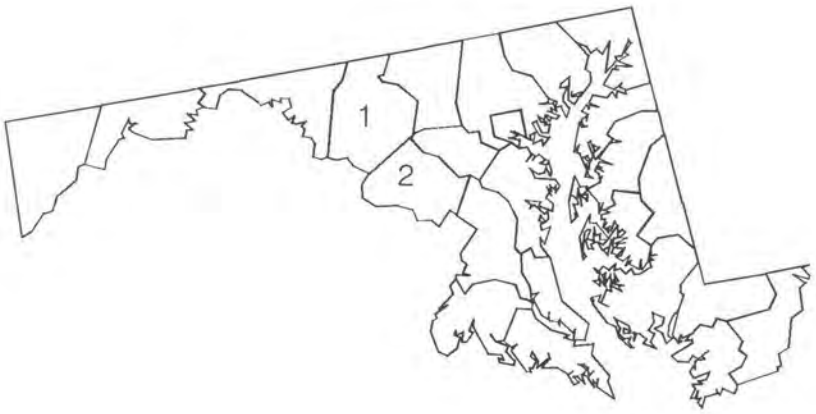
Eubranchipus moorei - 1
Streptocephalus sealii - 1

MASSACHUSETTS

MA MASSACHUSETTS (3 species): 1) Barnstable, 2) Middlesex

Eubranchipus bundyi - record for state only
Eubranchipus intricatus - 2
Eubranchipus vernalis - 1, 2

MARYLAND



MD MARYLAND (4 species): 1) Frederick, 2) Montgomery

Eubranchipus holmanii - 1, 2
Eubranchipus serratus - 2
Eubranchipus vernalis - 2
Streptocephalus sealii - record for the state only

MICHIGAN

MI MICHIGAN (2 species): 1) Baraga, 2) Barry, 3) Berrien, 4) Clinton, 5) Gratiot, 6) Kalamazoo, 7) Oakland, 8) Washtenaw

Eubranchipus bundyi - 1, 2, 4, 5, 6, 7, 8
Eubranchipus neglectus - 3

MINNESOTA

MN MINNESOTA (4 species): 1) Hennepin, 2) Ramsey, 3) St. Louis

Eubranchipus bundyi - 2, 3
Eubranchipus holmanii - record for state only
Eubranchipus ornatus - record for state only
Streptocephalus sealii - 1

MISSOURI

MO MISSOURI (4 species): 1) Boone, 2) Cooper, 3) Howard, 4) St. Louis

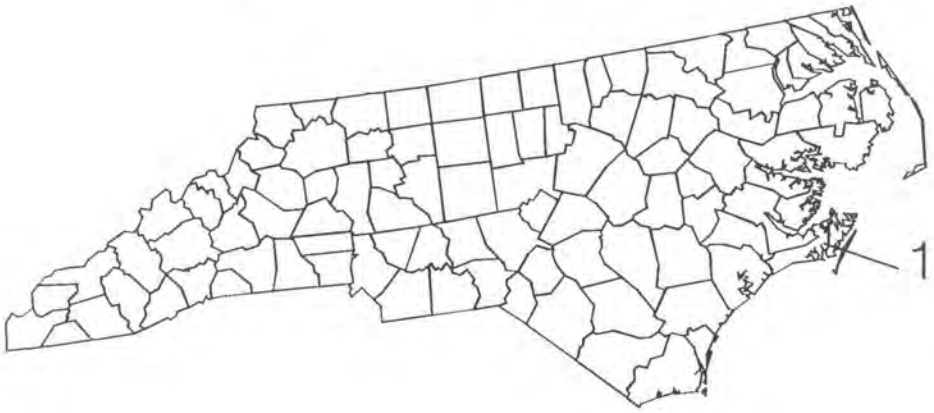
Eubranchipus serratus - 3, 4
Streptocephalus sealii - 1, 2
Streptocephalus texanus - 1
Thamnocephalus platyurus - 1, 3

MONTANA

MT MONTANA (9 species): 1) Teton, 2) Valley

Branchinecta coloradensis - record for state only
Branchinecta gigas - record for state only
Branchinecta lindahli - 1
Branchinecta packardi - record for state only
Branchinecta paludosa - record for state only
Eubranchipus ornatus - record for state only
Eubranchipus serratus - record for state only
Streptocephalus sealii - 2
Streptocephalus texanus - 2

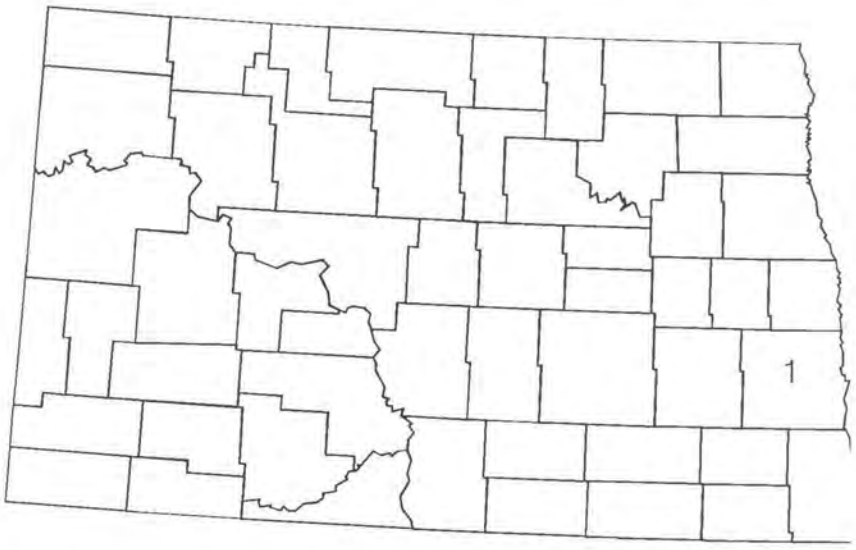
NORTH CAROLINA



NC NORTH CAROLINA (2 species): 1) Carteret

Eubranchipus holmanii - record for state only
Streptocephalus sealii - 1

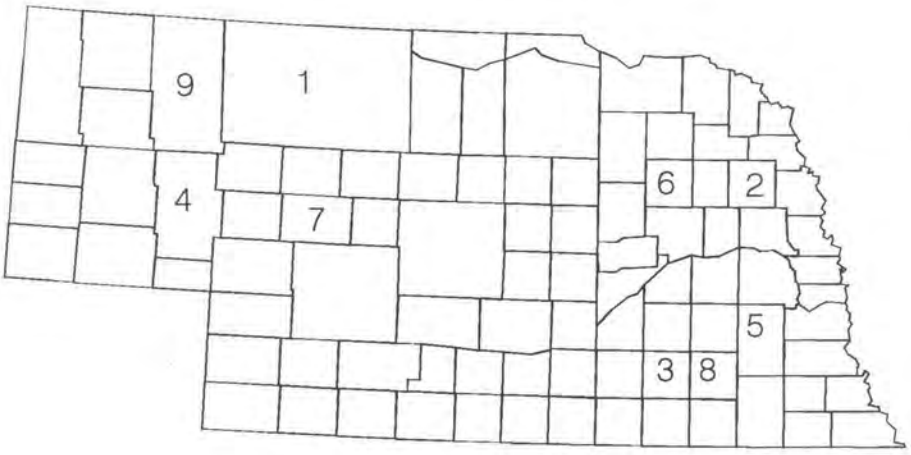
NORTH DAKOTA



ND NORTH DAKOTA (6 species): 1) Cass

Artemia franciscana - record for state only
Branchinecta gigas - record for state only
Branchinecta lindahli - record for state only
Branchinecta packardi - record for state only
Eubranchipus ornatus - record for state only
Streptocephalus sealii - 1

NEBRASKA



NE NEBRASKA (12 species): 1) Cherry, 2) Cuming, 3) Fillmore, 4) Garden, 5) Lancaster, 6) Madison, 7) McPherson, 8) Saline, 9) Sheridan

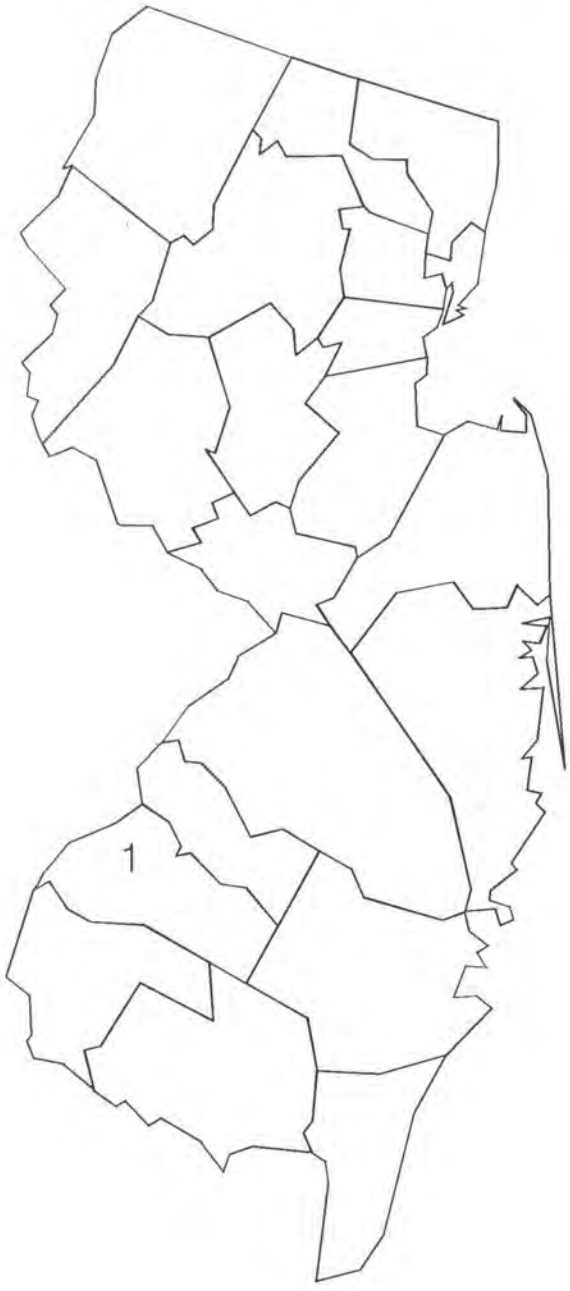
Artemia franciscana - 4, 9
Branchinecta campestris - 9
Branchinecta lindahli - 1, 8, 9
Branchinecta mackini - 9
Branchinecta packardi - record for state only
Branchinecta potassa - 1, 9
Eubranchipus bundyi - 2, 3, 6
Eubranchipus ornatus - record for state only
Eubranchipus serratus - 5
Streptocephalus sealii - 1
Streptocephalus texanus - 8
Thamnocephalus platyurus - 7

NEW HAMPSHIRE

NH NEW HAMPSHIRE (1 species): 1) Grafton

Eubranchipus bundyi - 1

NEW JERSEY



NJ NEW JERSEY (3 species): 1) Gloucester

Eubranchipus holmanii - 1
Eubranchipus vernalis - record for state only
Streptocephalus sealii - 1

MILWAUKEE PUBLIC MUSEUM

Contributions

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and
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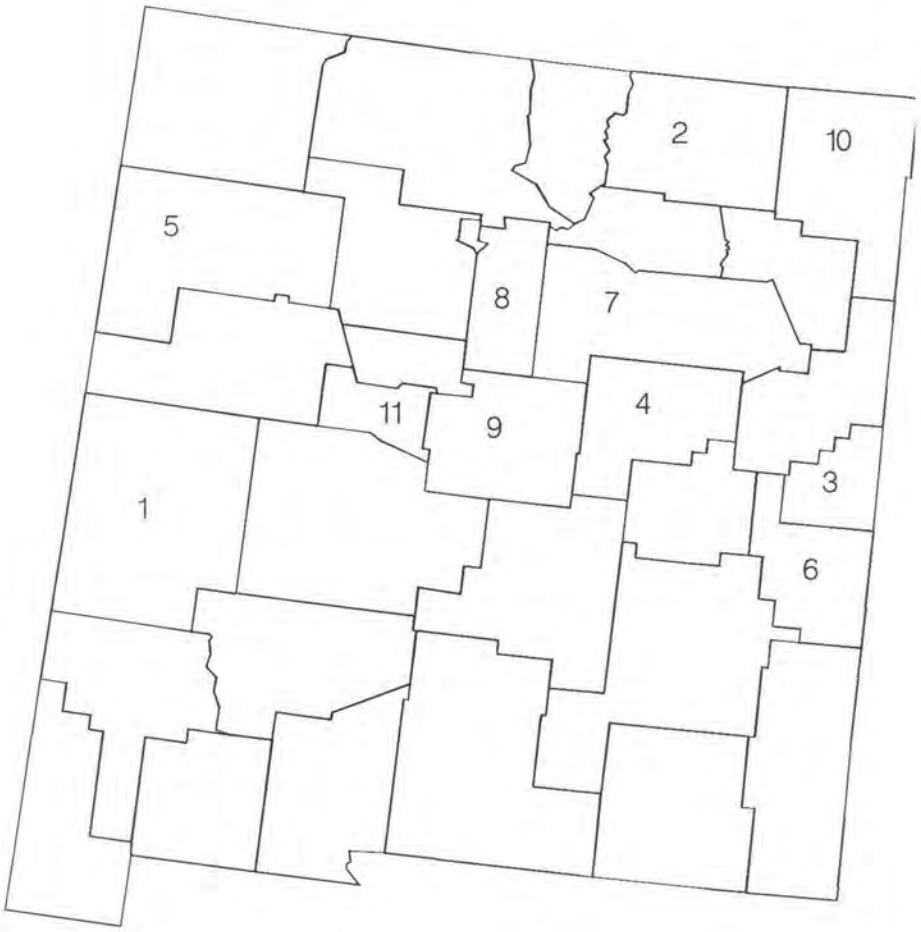
Number 94 August 28, 2000

ATLAS AND BIBLIOGRAPHY OF THE FIRST STATE AND COUNTY RECORDS FOR ANOSTRACANS (CRUSTACEA:BRANCHIOPODA) OF THE CONTIGUOUS UNITED STATES

Joan Jass

Barbara Klausmeier

NEW MEXICO



NV NEVADA (6 species): 1) Churchill, 2) Clark, 3) Esmeralda, 4) Washoe

Artemia franciscana - 1
Branchinecta coloradensis - 2, 4
Branchinecta gigas - 4
Branchinecta lindahli - record for state only
Branchinecta mackini - 3, 4
Thamnocephalus platyurus - 2

NEW YORK

NY NEW YORK (4 species): 1) Kings, 2) Nassau, 3) Onondaga, 4) Queens, 5) Suffolk, 6) Tompkins

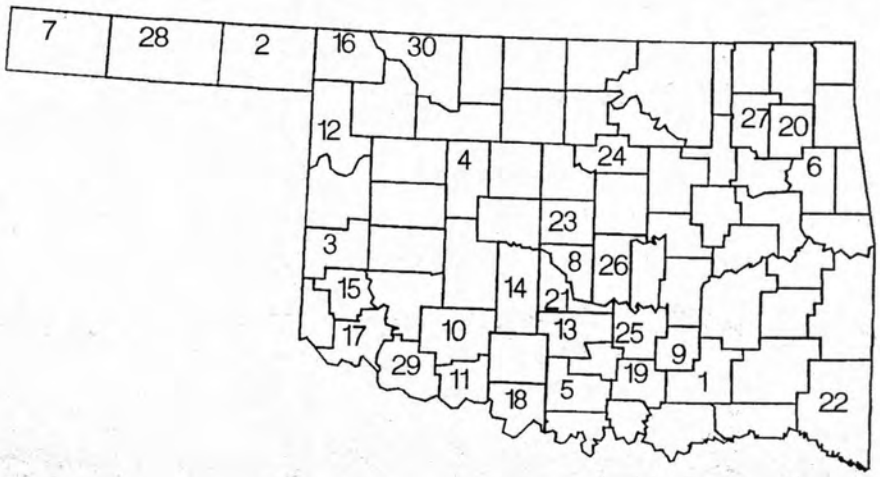
Eubranchipus bundyi - 3, 6
Eubranchipus holmanii - 1, 2, 4, 5
Eubranchipus vernalis - record for state only
Streptocephalus sealii - record for the state only

OHIO

OH OHIO (4 species): 1) Butler, 2) Columbiana, 3) Cuyahoga, 4) Franklin, 5) Geauga, 6) Hamilton, 7) Hardin, 8) Lake, 9) Medina, 10) Montgomery, 11) Pickaway, 12) Portage, 13) Stark, 14) Summit, 15) Tuscarawas

Eubranchipus bundyi - 4, 5, 7, 12, 13
Eubranchipus holmanii - 13
Eubranchipus neglectus - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15
Eubranchipus serratus - record for state only

OKLAHOMA

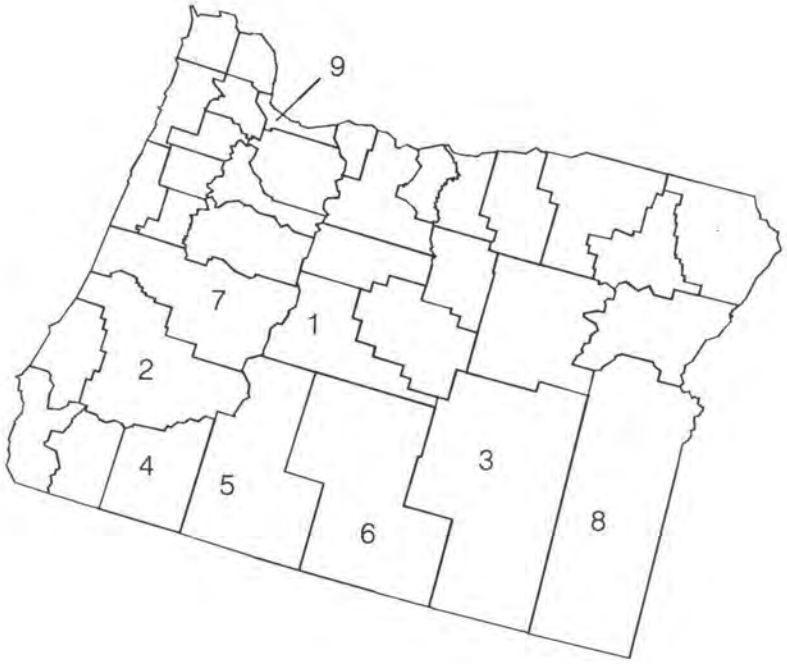


CORRECTED PAGE

OK OKLAHOMA (9 species): 1) Atoka, 2) Beaver, 3) Beckham, 4) Blaine, 5) Carter, 6) Cherokee, 7) Cimarron, 8) Cleveland, 9) Coal, 10) Comanche, 11) Cotton, 12) Ellis, 13) Garvin, 14) Grady, 15) Greer, 16) Harper, 17) Jackson, 18) Jefferson, 19) Johnston, 20) Mayes, 21) McClain, 22) McCurtain, 23) Oklahoma, 24) Payne, 25) Pontotoc, 26) Pottawatomie, 27) Rogers, 28) Texas, 29) Tillman, 30) Woods

Branchinecta coloradensis - 10, 17
Branchinecta lindahli - record for state only
Branchinecta packardi - record for state only
Eubranchipus oregonus - 1, 9, 24, 25
Eubranchipus serratus - 20, 23, 27
Streptocephalus dorothae - 2, 6, 7, 28
Streptocephalus sealii - 5, 8, 10, 13, 14, 15, 18, 19, 21, 23, 24, 25, 29
Streptocephalus texanus - 3, 4, 7, 8, 10, 11, 12, 16, 22, 26, 29, 30
Thamnocephalus platyurus - 7, 12, 16, 29, 30

OREGON



OR OREGON (12 species): 1) Deschutes, 2) Douglas, 3) Harney, 4) Jackson, 5) Klamath, 6) Lake, 7) Lane, 8) Malheur, 9) Multnomah

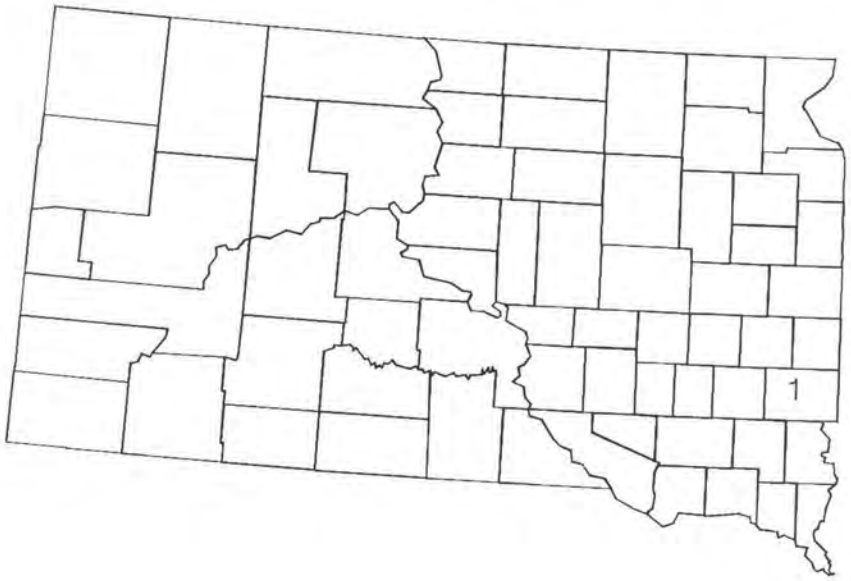
Artemia franciscana - record for state only
Branchinecta campestris - record for state only
Branchinecta coloradensis - 6, 8
Branchinecta cornigera - record for state only
Branchinecta dissimilis - 1, 3, 6
Branchinecta gigas - record for state only
Branchinecta lindahli - record for state only
Branchinecta lynchi - 4
Branchinecta mackini - 6
Eubranchipus oregonus - 7, 9
Eubranchipus serratus - 5
Streptocephalus sealii - 2, 5

SOUTH CAROLINA

SC SOUTH CAROLINA (2 species): 1) Richland

Eubranchipus vernalis - 1
Streptocephalus sealii - record for state only

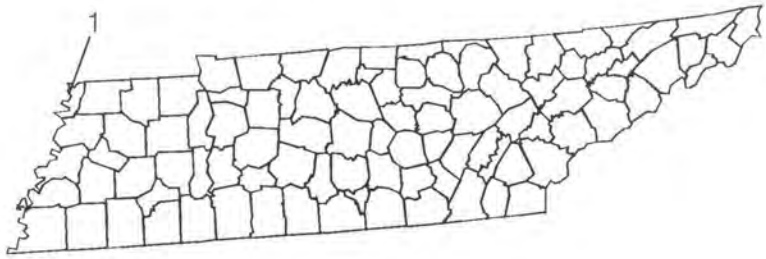
SOUTH DAKOTA



SD SOUTH DAKOTA (3 species): 1) Minnehaha

Branchinecta lindahli - record for state only
Eubranchipus bundyi - 1
Streptocephalus texanus - record for state only

TENNESSEE



TX TEXAS (16 species): 1) Blanco, 2) Brooks, 3) Cameron, 4) Crockett, 5) Culberson, 6) Dallas, 7) Deaf Smith, 8) Erath, 9) Gaines, 10) Gillespie, 11) Hays, 12) Hidalgo, 13) Hudspeth, 14) Kenedy, 15) Kleberg, 16) Llano, 17) Lynn, 18) McLennan, 19) Parmer, 20) Schleicher, 21) Shelby, 22) Terrell, 23) Webb

Artemia franciscana - record for state only
Branchinecta campestris - 17
Branchinecta coloradensis - record for state only
Branchinecta lindahli - record for state only
Branchinecta packardi - 11
Branchinella acacioidea - 2, 12, 15
Branchinella sublettei - 9, 13, 17
Streptocephalus dorothae - 7, 19
Streptocephalus linderi - 4
Streptocephalus mackini - 5, 22
Streptocephalus mattoxi - 14
Streptocephalus sealii - 6, 21
Streptocephalus similis - 14, 22
Streptocephalus texanus - 1, 5, 8, 10, 11, 16, 18, 22, 23
Thamnocephalus mexicanus - 3, 20
Thamnocephalus platyurus - 3, 4, 10, 11, 20

UTAH

UT UTAH (12 species): 1) Box Elder, 2) Davis, 3) Garfield, 4) Grand, 5) Millard, 6) Salt Lake, 7) San Juan, 8) Tooele, 9) Uintah, 10) Wayne, 11) Weber

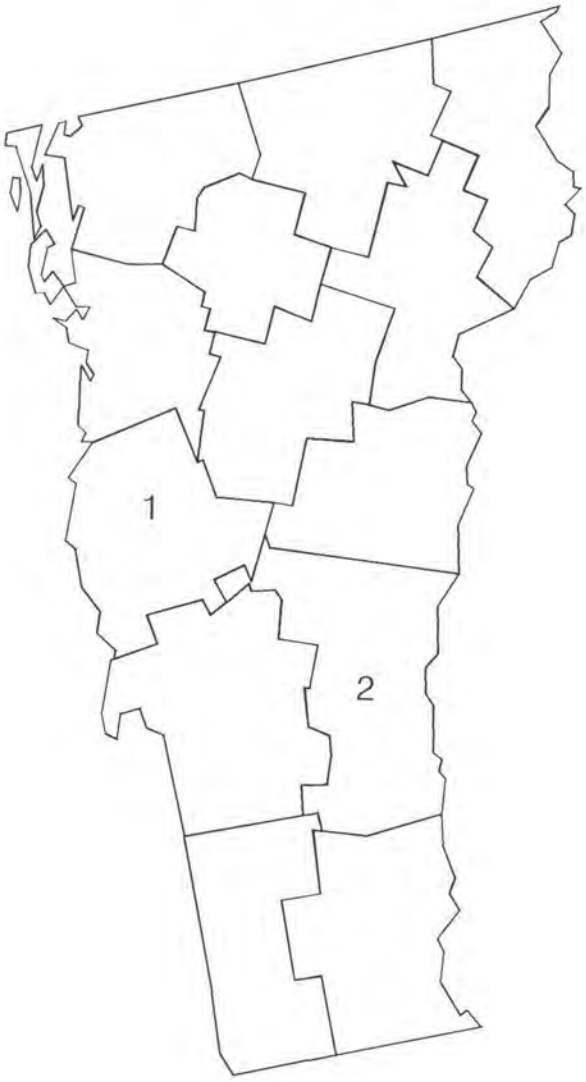
Artemia franciscana - 1, 2, 6, 8, 11
Branchinecta campestris - 6
Branchinecta coloradensis - 4
Branchinecta gigas - 5, 6
Branchinecta lindahli - 10
Branchinecta mackini - 6
Branchinecta packardi - 4, 7
Branchinecta paludosa - 4, 6
Eubranchipus bundyi - 9
Streptocephalus dorothae - 3, 10
Streptocephalus texanus - 4
Thamnocephalus platyurus - 7

VIRGINIA

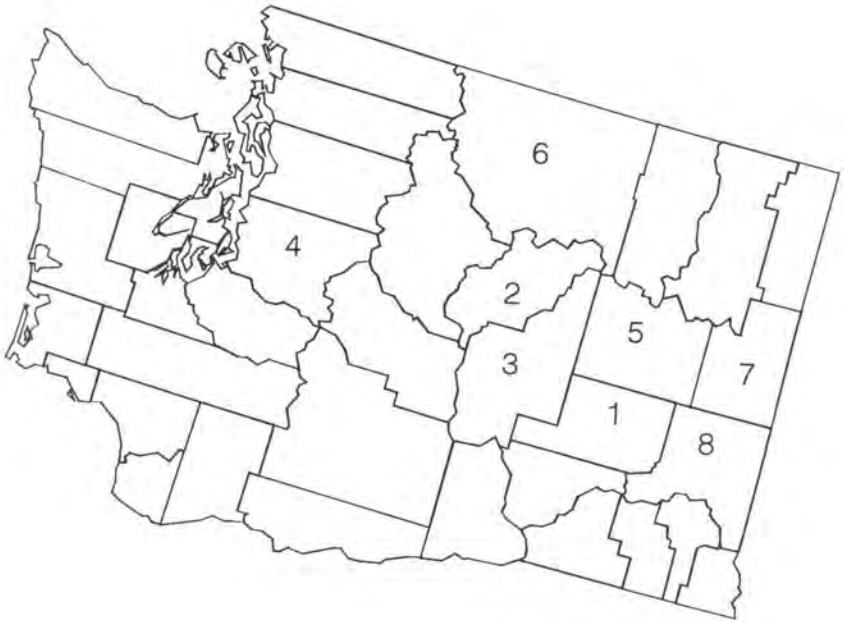
VA VIRGINIA (3 species): 1) Accomac, 2) Loudoun

Eubranchipus holmanii - 1
Eubranchipus serratus - 2
Streptocephalus sealii - record for state only

VERMONT



WASHINGTON



WA WASHINGTON (11 species): 1) Adams, 2) Douglas, 3) Grant, 4) King, 5) Lincoln, 6) Okanogan, 7) Spokane, 8) Whitman

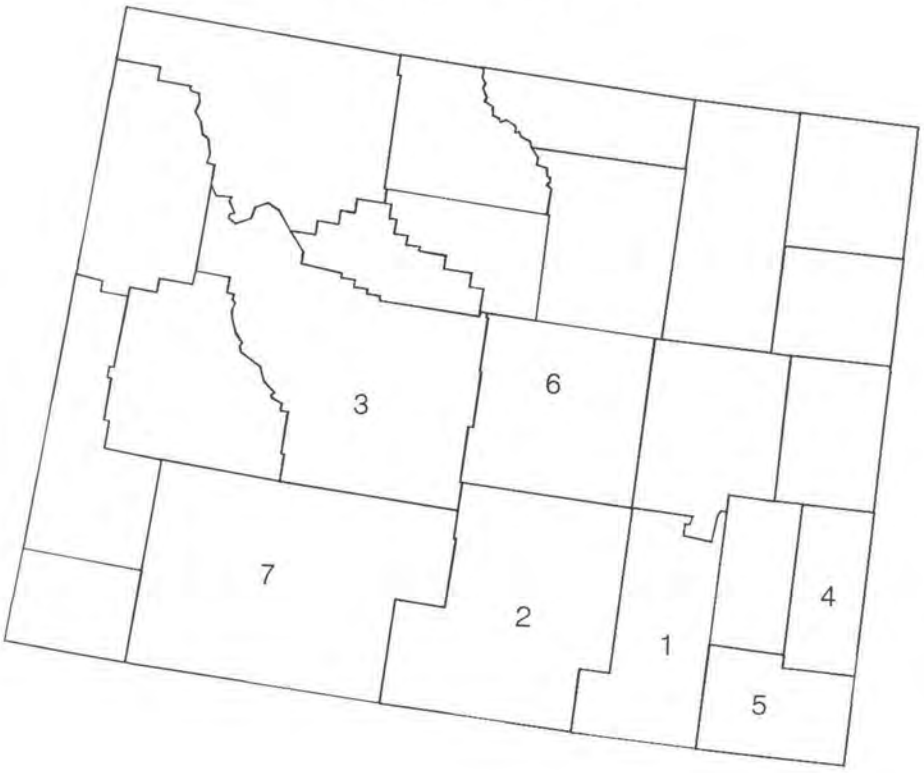
Artemia franciscana - 6
Branchinecta campestris - 1, 3, 6
Branchinecta coloradensis - record for state only
Branchinecta cornigera - 1, 3, 5, 7
Branchinecta gigas - 1, 3, 8
Branchinecta lindahli - record for state only
Branchinecta mackini - 1, 2, 3, 8
Eubranchipus bundyi - record for state only
Eubranchipus oregonus - 4
Eubranchipus serratus - record for state only
Streptocephalus sealii - record for state only

WISCONSIN

WI WISCONSIN (3 species): 1) Dane, 2) Jefferson, 3) Racine

Eubranchipus bundyi - 2
Eubranchipus ornatus - 1
Eubranchipus serratus - 3

WYOMING



WY WYOMING (11 species): 1) Albany, 2) Carbon, 3) Fremont, 4) Goshen, 5) Laramie, 6) Natrona, 7) Sweetwater

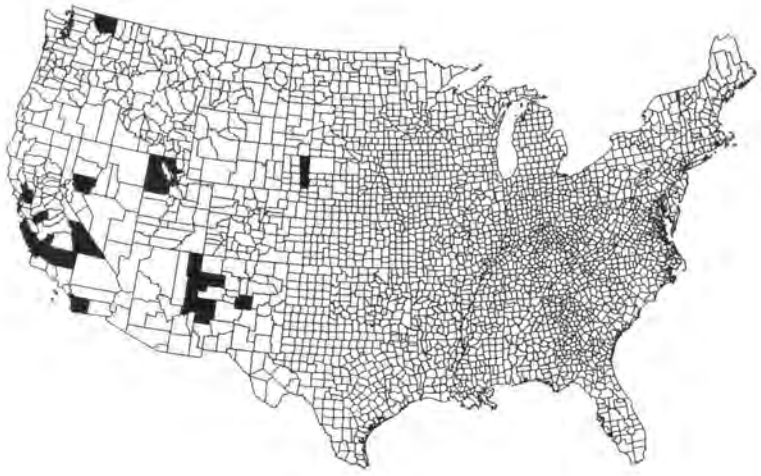
Branchinecta campestris - 2
Branchinecta coloradensis - 2
Branchinecta lindahli - 1, 6
Branchinecta packardi - 1, 5, 6
Branchinecta paludosa - 1
Eubranchipus bundyi - 1
Eubranchipus serratus - record for state only
Streptocephalus dorothae - 4
Streptocephalus sealii - record for state only
Streptocephalus texanus - 6
Thamnocephalus platyurus - 3, 6, 7

SPECIES	LIMNOLOGICAL REGIONS (adapted from Frey, 1963) 1 2 3 4 5 6 7 8 9 10 11
Artemia franciscana	1 2 3 4 5
Artemia gracilis	10
Artemia monica	2
Branchinecta campestris	1 2 3
Branchinecta coloradensis	1 2 3 4
Branchinecta conservatio	2
Branchinecta cornigera	2
Branchinecta dissimilis	2
Branchinecta gigas	.....2 3.....5
Branchinecta lindahli	1 2 3 4 5
Branchinecta longiantenna	2
Branchinecta lynchi	2
Branchinecta mackini	.....2 3 4
Branchinecta packardi	1.....3 4.....6
Branchinecta paludosa	1.....3
Branchinecta potassa	4
Branchinecta sandiegonensis	2
Branchinella acacioidea	1
Branchinella alachua	7
Branchinella lithaca	7
Branchinella sublettei	1
Dexteria floridana	7
Eubranchipus bundyi	1 2 3 4 5.....8 9 10 11
Eubranchipus holmanii	.....5 6 7 8 9 10
Eubranchipus intricatus	.....3.....5.....10
Eubranchipus moorei	.....6 7
Eubranchipus neglectus	.....6.....8.....11
Eubranchipus oregonus	.... 2..... 4
Eubranchipus ornatus	.....3 4 5.....11
Eubranchipus serratus	1 2 3 4.....6 7 8 9 10
Eubranchipus vernalis	.....7 8 9 10
Linderiella occidentalis	2
Linderiella santarosae	2
Streptocephalus dorothae	1.....3 4
Streptocephalus linderi	1
Streptocephalus mackini	1
Streptocephalus mattoxi	1
Streptocephalus sealii	1 2 3 4 5 6 7 8 9.....11
Streptocephalus similis	1
Streptocephalus texanus	1 2 3 4 5 6
Streptocephalus woottoni	2
Thamnocephalus mexicanus	1
Thamnocephalus platyurus	1 2 3 4.....6

TABLE 1—MAP: LIMNOLOGICAL REGIONS

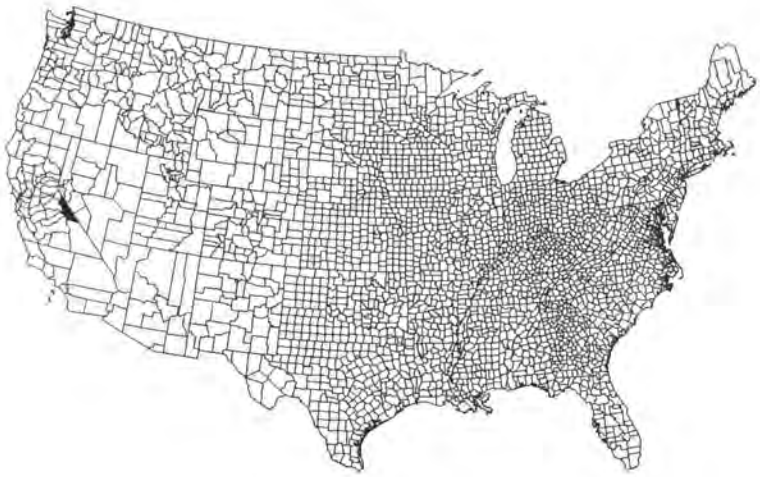
TABLE 1. Distribution by limnological region: #1 Southwest (AZ, NM, TX), #2 Pacific Coast & Great Basin (CA, NV, OR, WA), #3 Rocky Mountain (CO, ID, MT, UT, WY), #4 Mid-continent (IA, KS, MO, NE, OK), #5 Northern Plains (MN, ND, SD), #6 Central Gulf (AL, AR, LA, MS), #7 South Atlantic (FL, GA, NC, SC, VA), #8 Central (IN, KY, OH, TN, WV), #9 Middle Atlantic (DE, MD, NJ, NY, PA), #10 New England (CT, MA, ME, NH, RI, VT), #11 Great Lakes (IL, MI, WI).

ARTEMIA FRANCISCANA



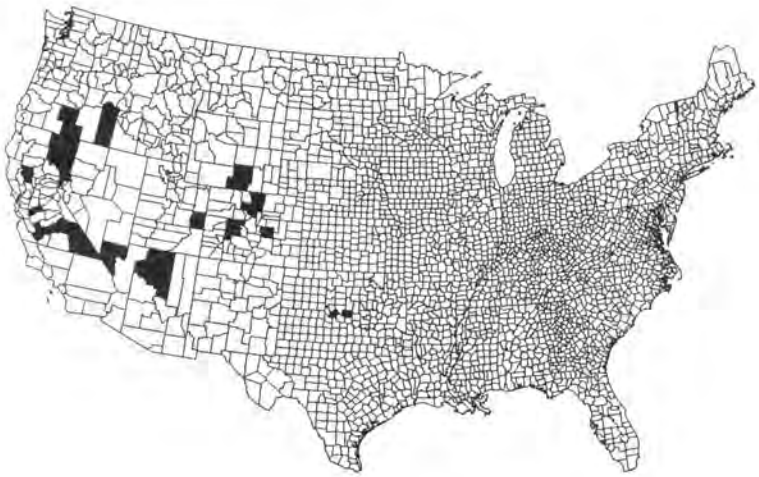
ARTEMIA GRACILIS

ARTEMIA MONICA



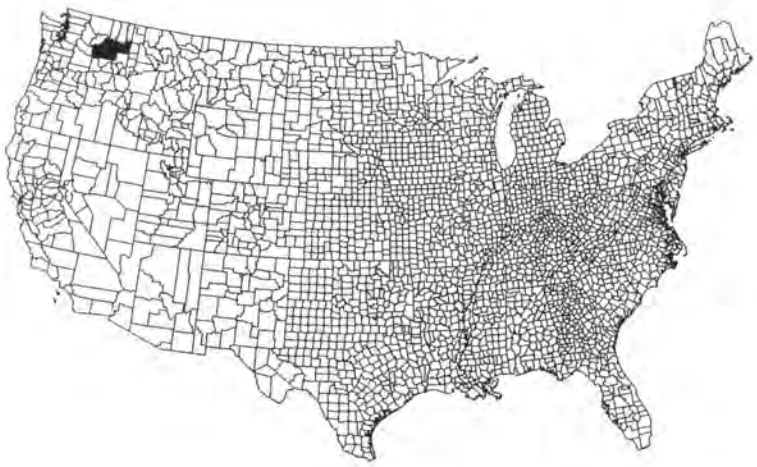
BRANCHINECTA CAMPESTRIS

BRANCHINECTA COLORADENSIS

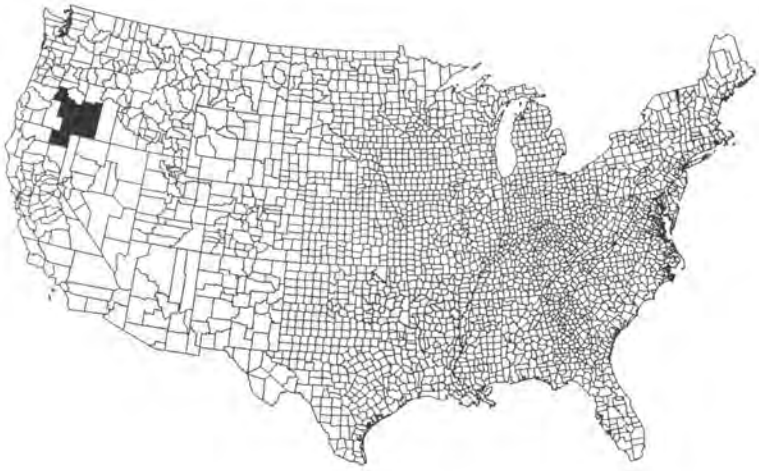


BRANCHINECTA CONSERVATIO

BRANCHINECTA CORNIGERA



BRANCHINECTA DISSIMILIS



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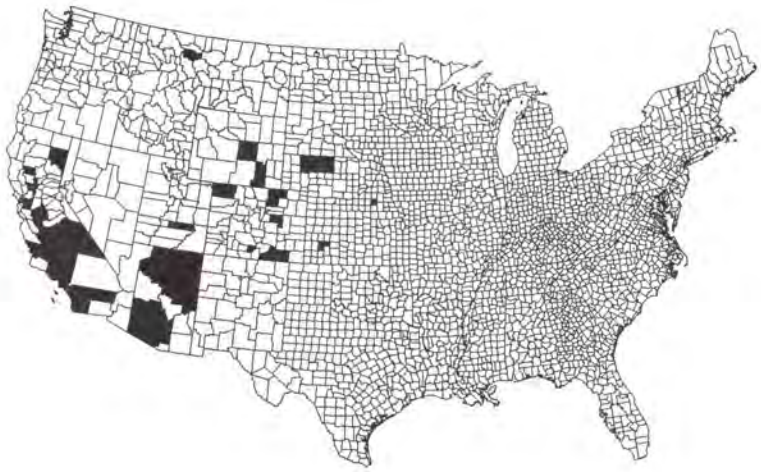

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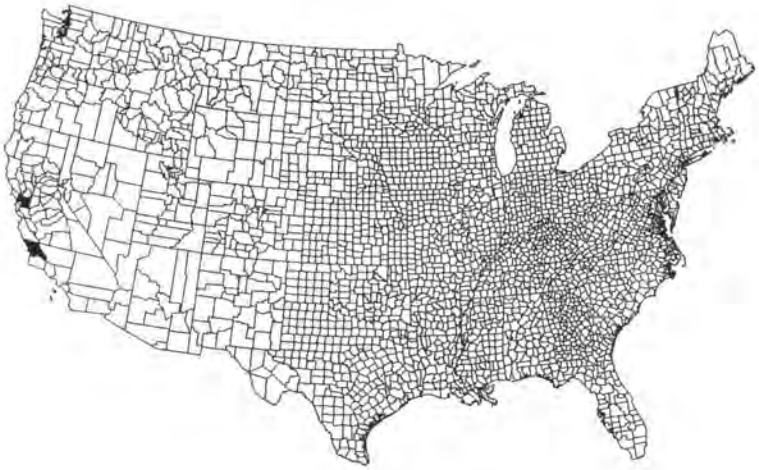

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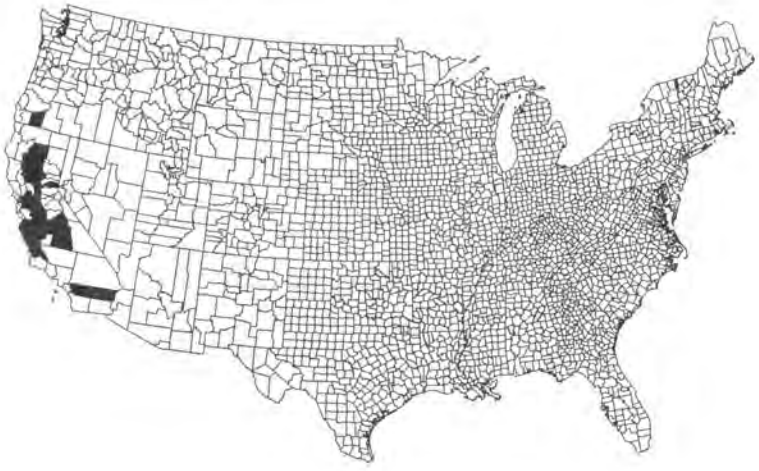

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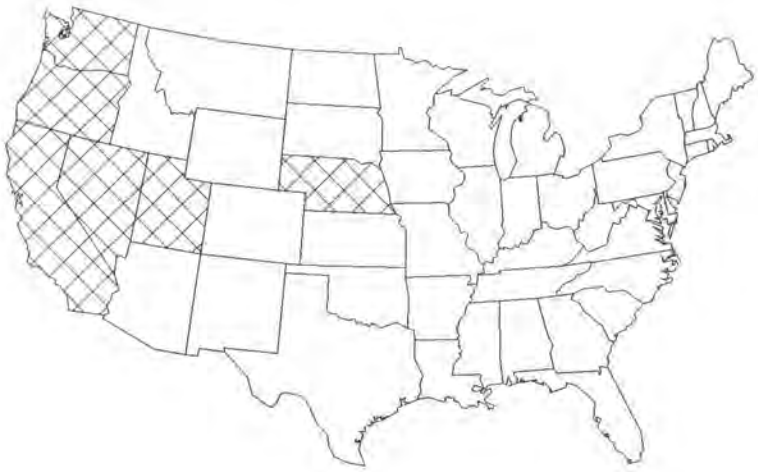

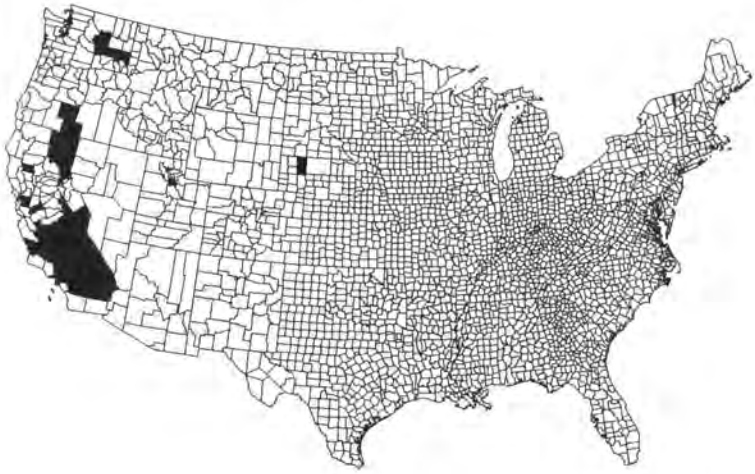

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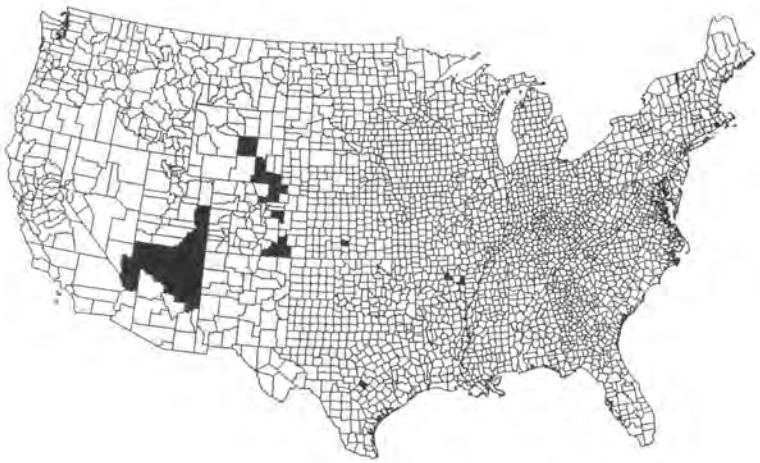

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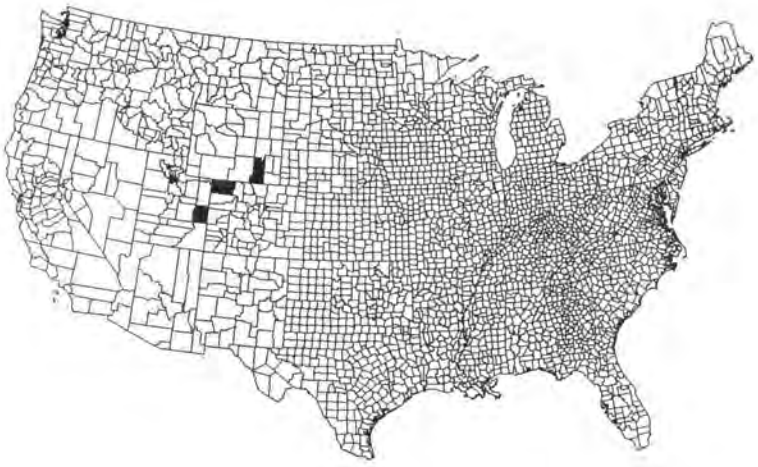

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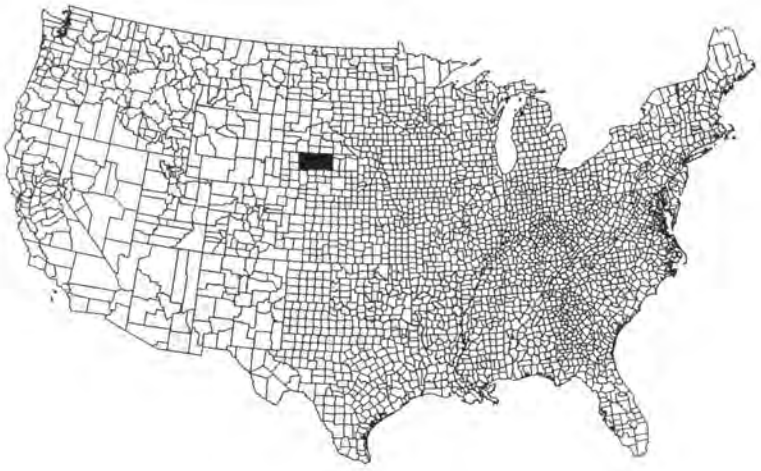

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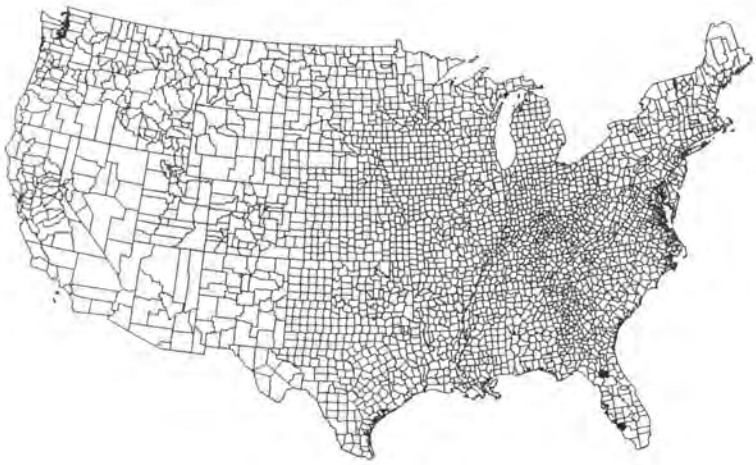

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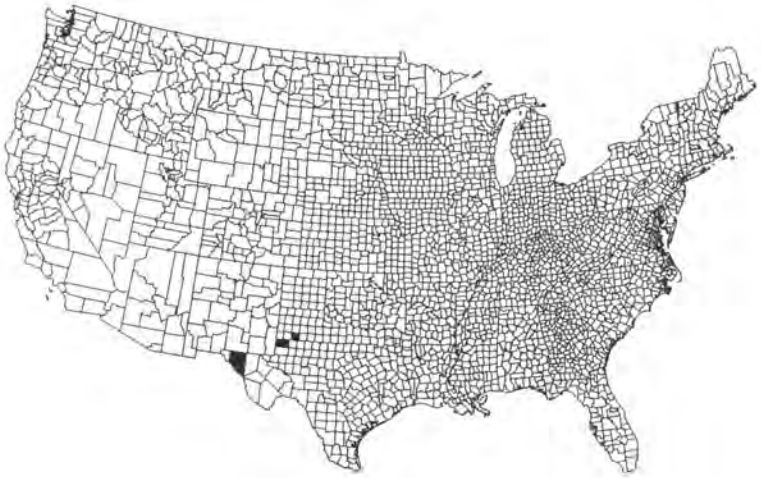

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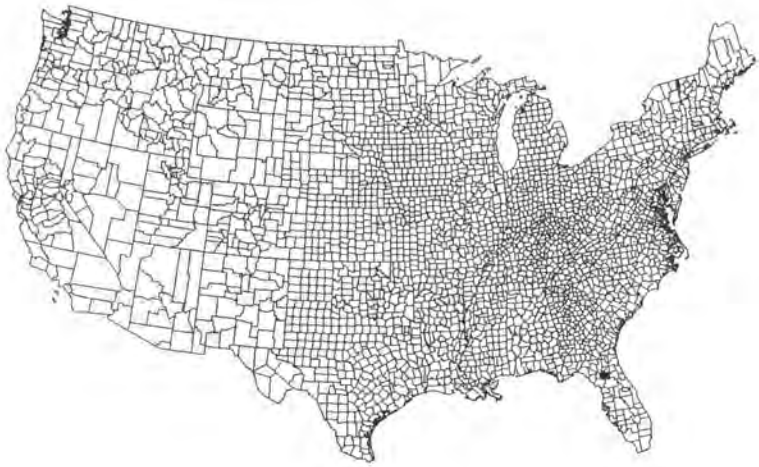
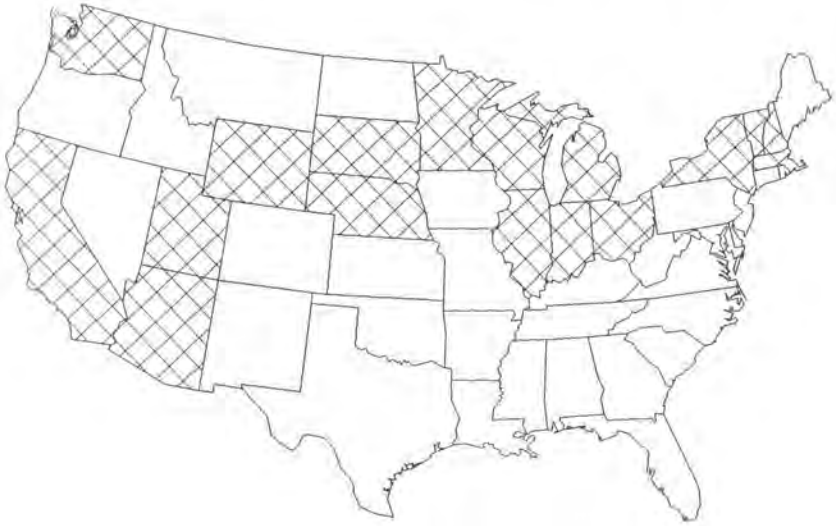
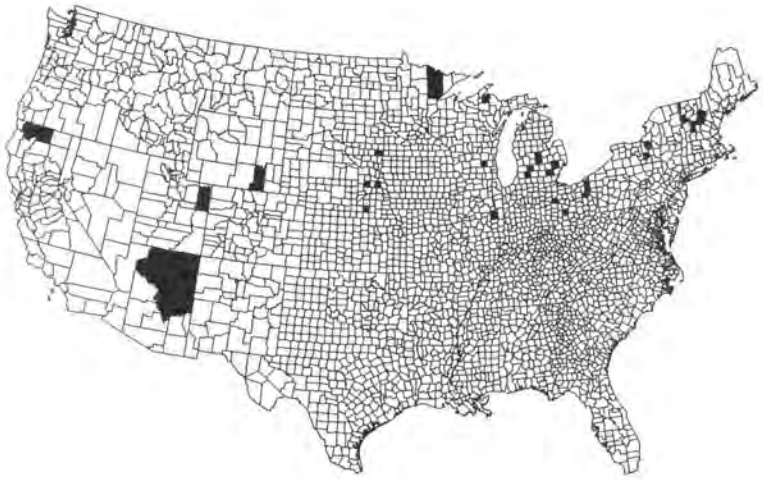


EUBRANCHIPUS BUNDYI





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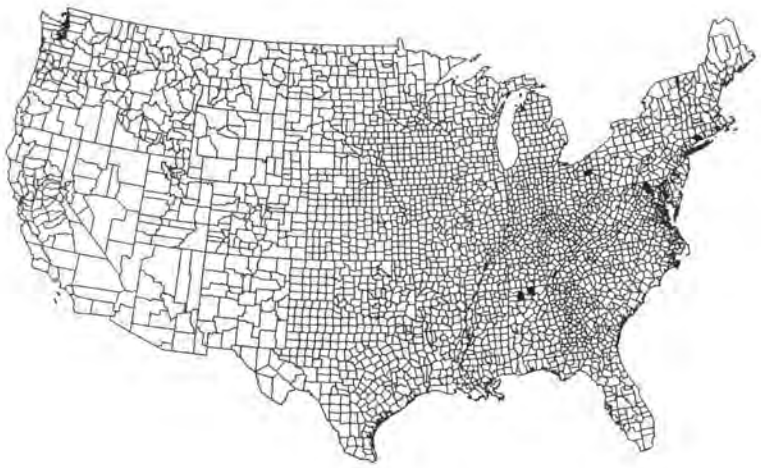
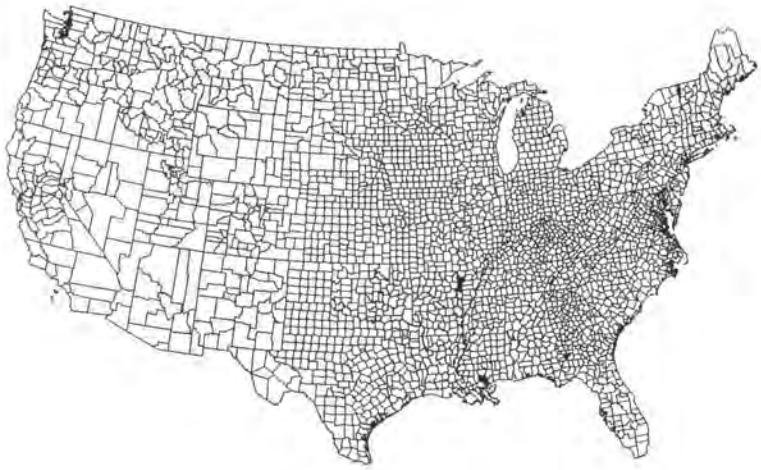


EUBRANCHIPUS INTRICATUS

EUBRANCHIPUS MOOREI



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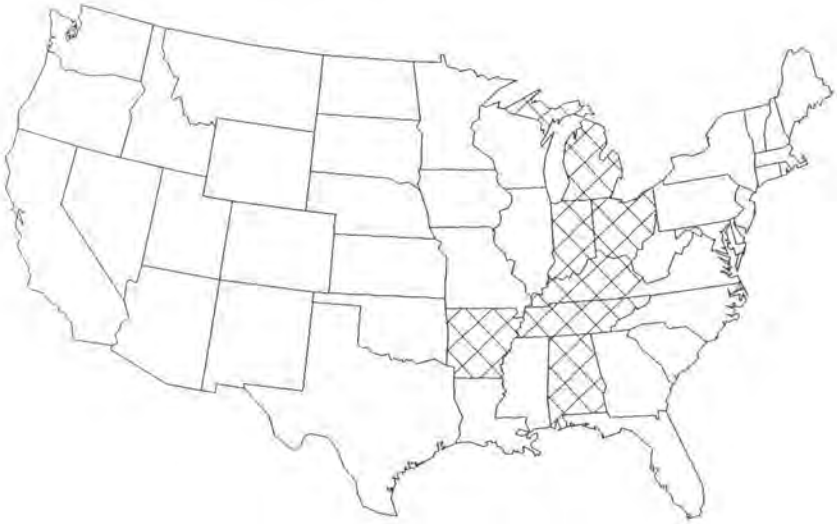

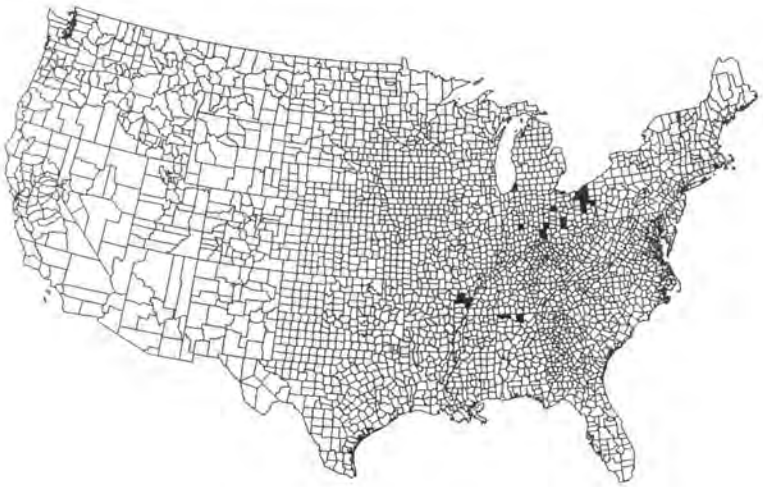

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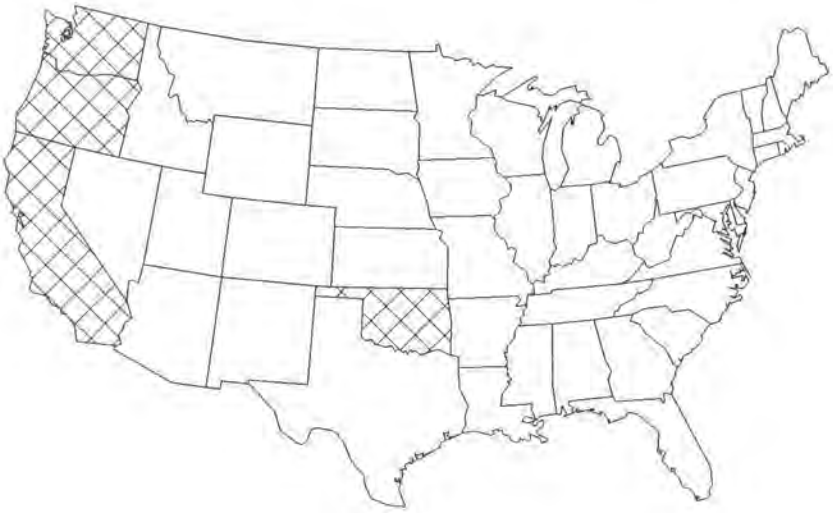

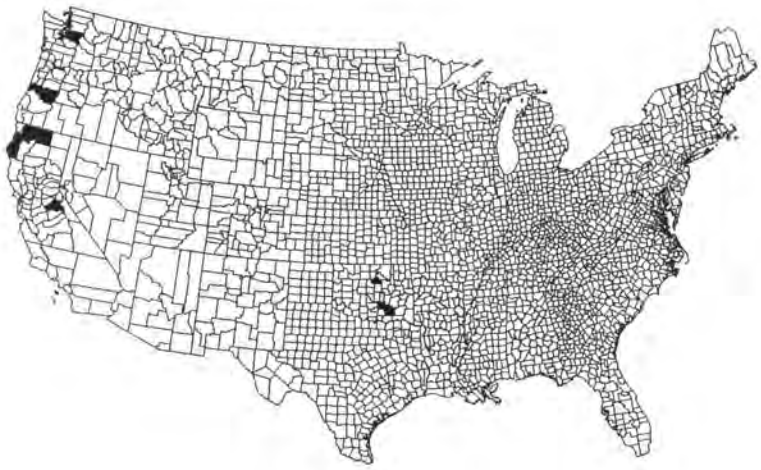

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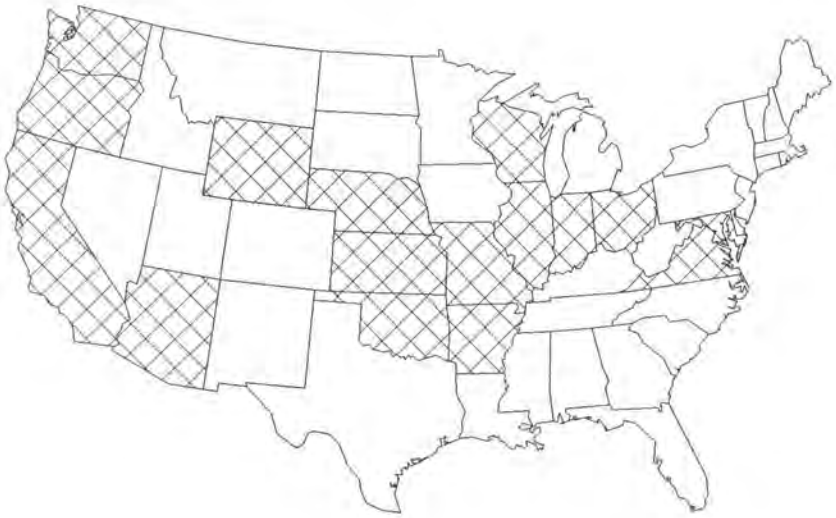
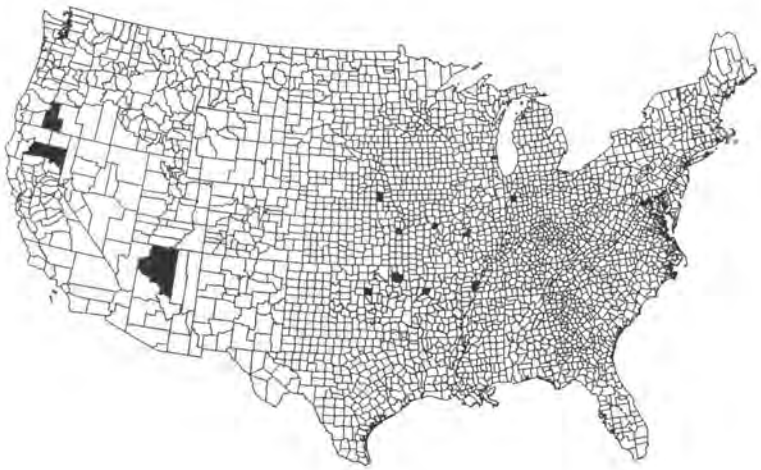
EUBRANCHIPUS SERRATUS



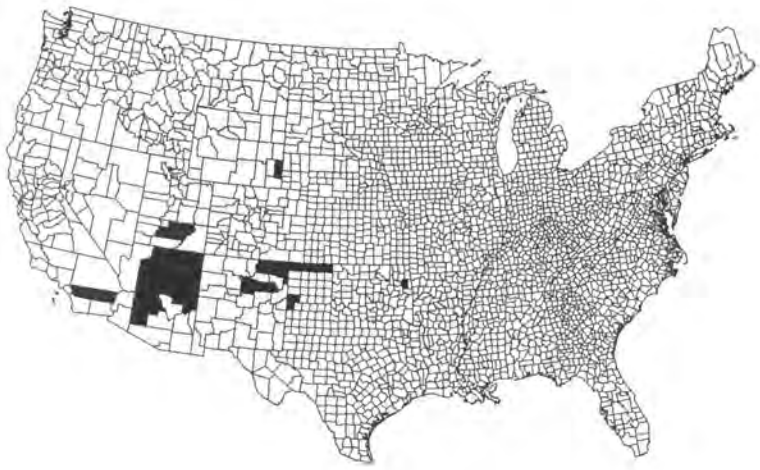


EUBRANCHIPUS VERNALIS

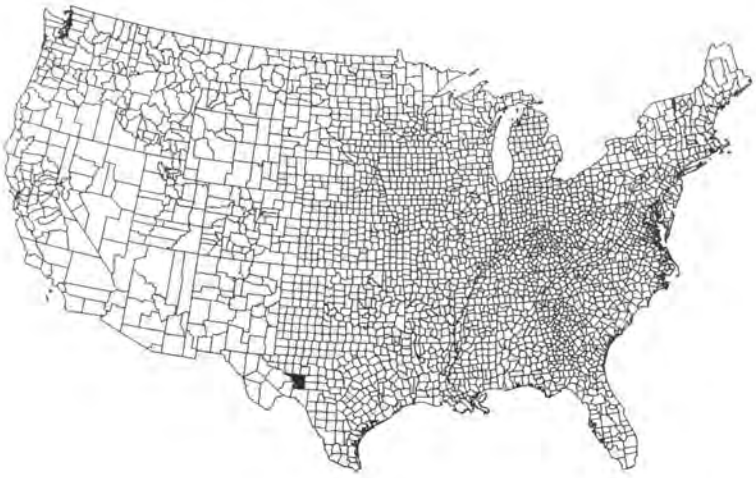
LINDERIELLA OCCIDENTALIS

LINDERIELLA SANTAROSAE

STREPTOCEPHALUS DOROTHAE



STREPTOCEPHALUS LINDERI



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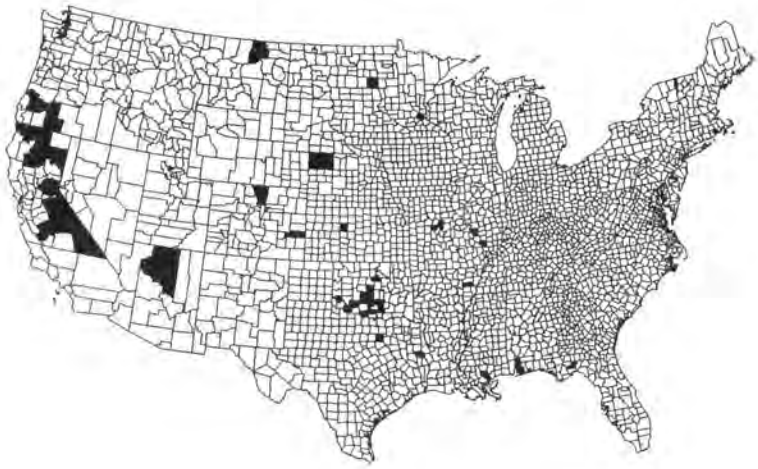
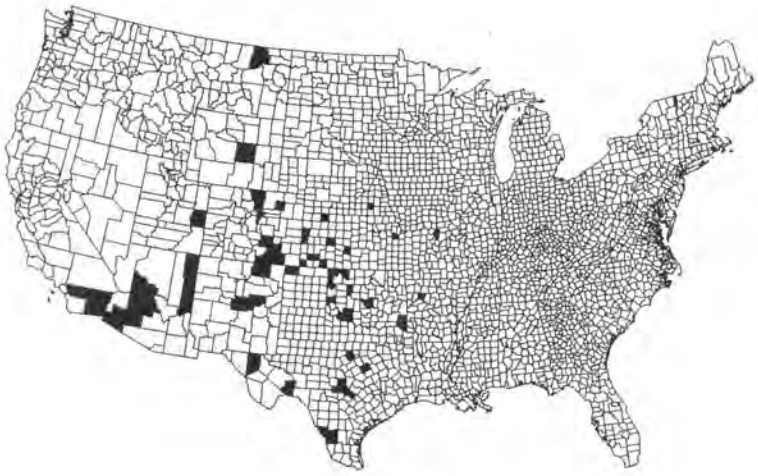
STREPTOCEPHALUS MATTOXI

STREPTOCEPHALUS SEALII

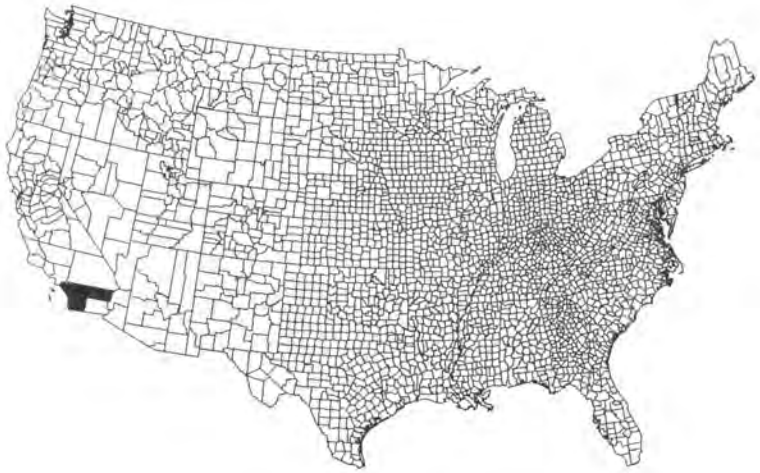


STREPTOCEPHALUS SIMILIS

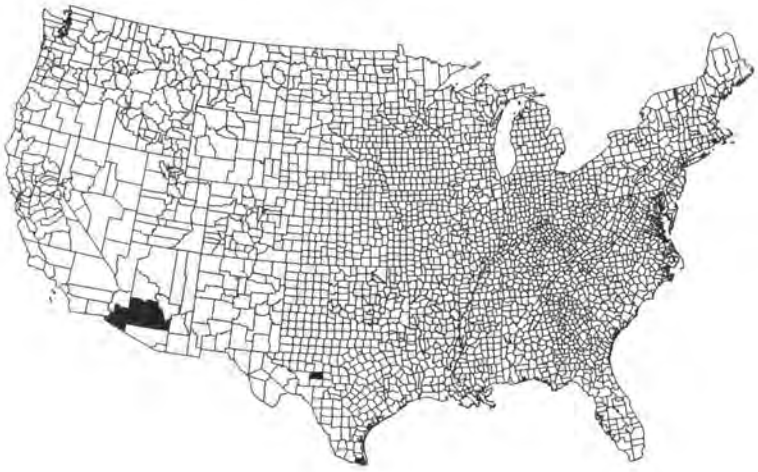
STEPTOCEPHALUS TEXANUS



STREPTOCEPHALUS WOOTTONI



THAMNOCEPHALUS MEXICANUS



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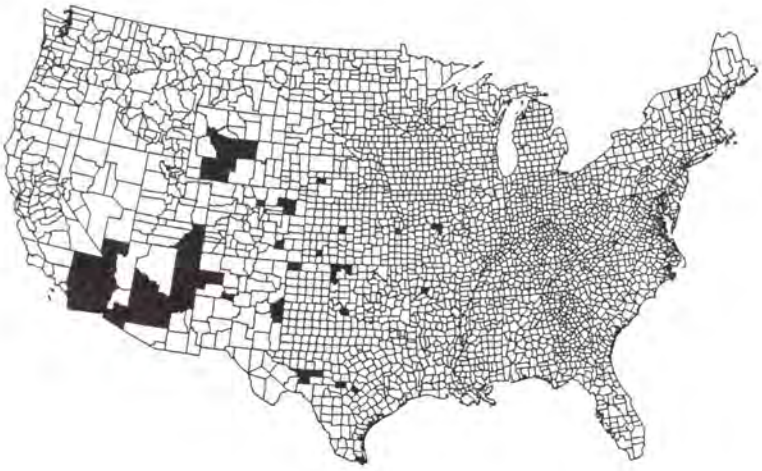

ADDITIONS:

Belk, D. 2000. Branchinecta readingi, new species name for a well-known fairy shrimp east of the North American Continental Divide. Journal of Crustacean Biology, v. 20(3), p. 566-570.

Belk, D. and Fugate, M. 2000. Two new Branchinecta (Crustacea:Anostraca) from the southwestern United States. The Southwestern Naturalist, v. 45(2), p. 111-117.

Mahoney, D.L., Mort, M.A., and Taylor, B.E. 1990. Species richness of calanoid copepods, cladocerans and other branchiopods in Carolina bay temporary ponds. American Midland Naturalist, v. 123, p. 244-258.