

AQUATIC OLIGOCHAETA (ANNELIDA: LUMBRICULIDAE, HAPLOTAXIDAE, NAIDIDAE, TUBIFICIDAE) OF UTAH

Douglas R. Spencer¹ and Richard L. Denton²

ABSTRACT.—Thirty-six species of aquatic Oligochaeta (Lumbriculidae, Haplotaxidae, Naididae, Tubificidae) are now known from Utah. Aquatic habitats in 27 counties were sampled, with 32 oligochaete species identified. An additional 4 species were added from other published investigations. The majority of species are cosmopolitan and occur in other areas of North America. *Nais barbata*, *N. alpina*, and *N. pardalis* are reported from the western United States for the first time. *Ilyodrilus frantzi* was found to be a major component of the oligochaete fauna in the Great Basin lentic environment. The North American distribution of *Telmatodrilus vej dovskyi* is extended significantly eastward. Two undetermined species of Tubificidae are discussed.

Key words: North America, Utah, Annelida, Oligochaeta, Lumbriculidae, Haplotaxidae, Naididae, Tubificidae, distribution.

The aquatic Oligochaeta are poorly known for the state of Utah. Only 4 published sources are known to us that document the aquatic worm fauna within the state. Brinkhurst (1965) noted *Pelosclex multisetosus* being collected “near Salt Lake City”; and Spencer (1978) documented *Potamothrix bavaricus* from the Sevier River in Sevier County. A North American taxonomic key to the freshwater oligochaetes mentions Oligochaeta occurring in Utah (Kathman and Brinkhurst 1999); however, no details were given on specific locations within the state. Fend and Brinkhurst (2000) recently published an extensive paper on the Lumbriculidae, which included data on several species of aquatic oligochaetes collected from Utah.

One of us (RLD) was able to gain access to a number of oligochaete collections from a variety of aquatic habitats in the state. Thirty-two species of worms from 4 families were identified from those and other samples made available to us from Utah.

METHODS AND MATERIALS

Collections for this report originated from several sources. We obtained the majority of specimens from benthos samples taken by the Utah Department of Environmental Quality (formerly Department of Health), Division of Water Quality, from a variety of areas through-

out the state during 1976 and 1977 (UDWQ). Additional collections were taken in 1977 by the authors (DRS and RLD, or RLD), including samples from Utah and Bear Lakes. Recently, other Utah oligochaete collections were made available to us courtesy of Aquatic Biology Associates (ABA), the Illinois Natural History Survey (INHS), and Brigham Young University (BYU).

Oligochaetes collected by the authors were initially fixed in the field with 10% formalin and then transferred to 70% alcohol. The worms were then mounted in Ammans lactophenol and allowed to clear for several days or dehydrated and placed in Canada balsam prior to identification. Specimens were examined microscopically under 100X to 1000X magnification.

The taxonomy of certain North American genera within the Tubificidae is confused (Brinkhurst 1979, 1981, 1986, Holmquist 1978, 1979, 1985). We have chosen to follow that of Brinkhurst and Jamieson (1971) and Brinkhurst (1986) for that group to maintain continuity with previously published North American literature.

We also collected specimens of Enchytraeidae; however, classification below the family level was not possible due to the lack of reliable taxonomic keys and descriptions for aquatic material.

We have attempted to provide an initial summary and description of the Utah fauna along

¹Oligochaete taxonomist. By request of the author, his contact information has been omitted.

²Utah Department of Environmental Quality, Division of Water Quality, PO Box 144870, 288 North 1460 West, Salt Lake City, UT 84114-4870. Corresponding author.

with pertinent published and unpublished distribution records for these species from the western United States (localities west of the Continental Divide excluding Alaska and Hawaii).

RESULTS AND DISCUSSION

Thirty-six species of aquatic Oligochaeta (Lumbriculidae, Haplotaxidae, Tubificidae, and Naididae) are now recorded from Utah (Appendix). The aquatic oligochaete fauna of Utah appears to consist mainly of cosmopolitan species that are found in many other regions of the continental United States. However, the discovery of 2 tubificid species in our collections is particularly noteworthy.

In Utah and Bear Lakes, *Ilyodrilus frantzi* was by far the dominant oligochaete species, especially in the profundal regions of both lakes (Bear Lake: ca. 35–60 m; Utah Lake: ca. 3–4 m). This species is presently recognized as a western North American endemic species and now appears to be a major component of the large lentic habitats of the Great Basin. In addition to published accounts of the species from Lake Tahoe (Brinkhurst 1965), the senior author discovered it in a collection from Pyramid Lake, Nevada. It appears to survive in fairly eutrophic waters (Utah Lake) as well as under oligotrophic conditions (Bear Lake, Pyramid Lake, and Lake Tahoe).

Telmatodrilus vejdoskyi is considered to be endemic to western North America. The records from Utah reported here indicate that the species is found in both the southern and northern portions of the state. The authors also collected *T. vejdoskyi* from Franklin County in southern Idaho. This species has not previously been found east of the Sierra Nevada range in California, being mainly found along the Pacific coastal region. Records reported here significantly increase the eastern distribution of this species in the continental United States.

Several genera previously recorded from the western United States were not collected from Utah. Missing from our preliminary list are the following: the lumbriculid genera *Eclipidrilus*, *Lumbriculus*, *Phagodrilus*, and *Stylodrilus*; the naidid genera *Specaria*, *Pristina*, and *Arcteonais*; and the tubificid genera *Tasserkidrilus*, *Isochaetides*, *Psammoryctides*, *Teneridrilus*, *Varichaetadrilus*, *Spirosperma*, and

Branchiura. As further collections are taken from other localities in Utah, these and other genera may be added to future lists from the state.

ACKNOWLEDGMENTS

The authors wish to thank Ralph O. Brinkhurst, Aquatic Resources Center, Franklin, Tennessee; Trefor B. Reynoldson, Environment Canada, Canadian Center for Inland Waters, Burlington, Ontario; and Mark J. Wetzel, Illinois Natural History Survey, Champaign, Illinois, who reviewed an earlier version of the manuscript and provided many helpful criticisms. Wetzel also loaned us specimens from his collections. We appreciate the generosity of the state of Utah, Department of Environmental Quality, for their diligence in collecting samples. The authors also acknowledge the efforts of Mark Coleman, Fish and Wildlife Service, Colorado Cooperative Fishery Research Unit, Colorado State University, Fort Collins, Colorado, for providing the senior author with specimens from Pyramid Lake several years ago. The senior author expresses his deepest appreciation to Charles R. Goleman, professor of limnology, University of California–Davis, for permitting him to examine the Lake Tahoe material in 1979. We appreciate Robert E. Wisseman, Aquatic Biology Associates, Corvallis, Oregon, for providing the collection from the Ogden area. We also give special thanks to Richard W. Baumann, Monte L. Bean Life Science Museum, Brigham Young University, Provo, Utah, for providing the senior author oligochaete specimens from the university collections. Our gratitude is also extended to the reviewers, who provided many helpful suggestions and comments on our manuscript, especially the associate editor of the *Western North American Naturalist*. We thank Lynn T. Lesko, Chelsea, Michigan, for her expertise with the photomicrographs, and the Great Lakes Science Center, United States Geological Survey, Ann Arbor, Michigan, for use of their photographic equipment.

LITERATURE CITED

- BRINKHURST, R.O. 1964. Studies on the North American aquatic Oligochaeta. I: Naididae and Opisthocystidae. *Proceedings of the Academy of Natural Sciences, Philadelphia* 116:195–230.
- . 1965. Studies on the North American aquatic Oligochaeta II: Tubificidae. *Proceedings of the Academy of Natural Sciences, Philadelphia* 117:117–172.

- _____. 1967. The distribution of aquatic oligochaetes in Saginaw Bay, Lake Huron. *Limnology and Oceanography* 12:137–143.
- _____. 1978. Freshwater Oligochaeta in Canada. *Canadian Journal of Zoology* 56:2166–2175.
- _____. 1979. On the types in the genus *Peloscolex* Leidy (Oligochaeta: Tubificidae). *Proceedings of the Biological Society of Washington* 92:677–681.
- _____. 1981. A contribution to the taxonomy of the Tubificinae (Oligochaeta, Tubificidae). *Proceedings of the Biological Society of Washington* 94:1042–1067.
- _____. 1986. Guide to the freshwater aquatic microdrile oligochaetes of North America. *Canadian Special Publication, Fisheries and Aquatic Sciences* 84:1–259.
- BRINKHURST, R.O., AND K.A. COATES. 1985. The genus *Paranais* (Oligochaeta, Naididae) in North America. *Proceedings of the Biological Society of Washington* 98:303–313.
- BRINKHURST, R.O., AND D.G. COOK. 1966. Studies on the North American aquatic Oligochaeta III: Lumbriculidae and additional notes and records of other families. *Proceedings of the Academy of Natural Sciences, Philadelphia* 118:1–33.
- BRINKHURST, R.O., AND R.J. DIAZ. 1985. *Isochaetides columbiensis*: new species (Oligochaeta, Tubificidae) from the Columbia River, Oregon. *Proceedings of the Biological Society of Washington* 98:949–953.
- BRINKHURST, R.O., AND B.G.M. JAMIESON. 1971. *Aquatic Oligochaeta of the world*. University of Toronto Press, Toronto, Ontario. 860 pp.
- BRINKHURST, R.O., AND R.D. KATHMAN. 1983. A contribution to the taxonomy of the Naididae (Oligochaeta) of North America. *Canadian Journal of Zoology* 61:2307–2312.
- BRINKHURST, R.O., AND M.J. WETZEL. 1984. *Aquatic Oligochaeta of the world: supplement*. *Canadian Technical Report of Hydrography and Ocean Science* 44:1–101.
- CANFIELD, T.J., N.E. KEMBLE, W.G. BRUMBAUGH, F.J. DWYER, C.G. INGERSOLL, AND J.F. FAIRCHILD. 1994. Use of benthic invertebrate community structure and the sediment quality triad to evaluate metal-contaminated sediment in the upper Clark Fork River, Montana. *Environmental Toxicology and Chemistry* 13:1999–2012.
- CANTON, S.P. 1982. Comparative limnology and biota of mine spoils ponds in Colorado. *Southwestern Naturalist* 27:33–42.
- CANTON, S.P., AND J.V. WARD. 1981. Benthos and zooplankton of coal strip mine ponds in the mountains of northwestern Colorado, USA. *Hydrobiologia* 85:23–31.
- CARTER, J.L., S.V. FEND, AND S.S. KENNELLY. 1996. The relationships among three habitat scales and stream benthic invertebrate community structure. *Freshwater Biology* 35:109–124.
- ERMAN, D.C., AND N.A. ERMAN. 1975. Macroinvertebrate composition and production in some Sierra Nevada minerotrophic peatlands. *Ecology* 56:591–603.
- ERSEUS, C., J.K. HILTUNEN, R.O. BRINKHURST, AND D.W. SCHLOESSER. 1990. Redefinition of *Teneridrilus* Holmquist (Oligochaeta: Tubificidae), with descriptions of two new species from North America. *Proceedings of the Biological Society of Washington* 103:839–846.
- FAST, A.W. 1973. Effects of artificial destratification on primary production and zoobenthos of El Capitan reservoir, California. *Water Resources Research* 9:607–623.
- FEND, S.V., AND R.O. BRINKHURST. 2000. New species of *Rhynchelmis* (Clitellata, Lumbriculidae), with observations on the Nearctic species. *Hydrobiologia* 428:1–59.
- FRANTZ, T.C., AND A.J. CORDONE. 1966. A preliminary checklist of invertebrates collected from Lake Tahoe, 1961–1964. *Occasional Papers of the Biological Society of Nevada* 8:1–12.
- _____. 1996. Observations on the macrobenthos of Lake Tahoe, California–Nevada. *California Fish and Game* 82:1–41.
- GALAT, D.L., E.L. LIDER, S. VIGG, AND S.R. ROBERTSON. 1981. Limnology of a large, deep North American terminal lake, Pyramid Lake, Nevada, U.S.A. *Hydrobiologia* 82:281–317.
- HOLMQUIST, C. 1978. Revision of the genus *Peloscolex* (Oligochaeta, Tubificidae) 1. Morphological and anatomical scrutiny; with discussion on the generic level. *Zoologica Scripta* 7:187–208.
- _____. 1979. Revision of the genus *Peloscolex* (Oligochaeta, Tubificidae) 2. Scrutiny of the species. *Zoologica Scripta* 8:37–60.
- _____. 1985. A revision of the genera *Tubifex* Lamarck, *Ilyodrilus* Eisen, and *Potamothrix* Vejdovsky & Mrazek (Oligochaeta, Tubificidae), with extensions to some connected genera. *Zoologische Jahrbuecher Systematik* 112:311–366.
- KATHMAN, R.D., AND R.O. BRINKHURST. 1999. *Guide to the freshwater oligochaetes of North America*. Aquatic Resources Center, College Grove, TN. 264 pp.
- NEWELL, R.L., D.L. ANDERSEN, AND D.A. HANZEL. 1978. Bottom fauna as an indicator of lake typology in Flathead Lake, Montana. *Northwest Science* 52:119–126.
- SMITH, M.E. 1984. *Aquatic Oligochaeta (Naididae) of Washington*. *Northwest Science* 58:165–170.
- SPENCER, D.R. 1978. The Oligochaeta of Cayuga Lake, New York with a redescription of *Potamothrix bavaricus* and *P. bedoti*. *Transactions of the American Microscopical Society* 97:139–147.
- SPENCER, D.R., AND R.E. WISSEMAN. 1993. Some new records of Naididae and Tubificidae (Annelida: Oligochaeta) from Washington. *Great Basin Naturalist* 53:395–401.
- SMITH, M.E. 1984. *Aquatic Oligochaeta (Naididae) of Washington*. *Northwest Science* 58:165–170.
- STIMPSON, K.S., D.J. KLEMM, AND J.K. HILTUNEN. 1982. A guide to the freshwater Tubificidae (Annelida: Clitellata: Oligochaeta) of North America. Publication EPA-600/3-82-033, United States Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Office of Research and Development, Cincinnati, OH. x + 61 pp.
- TAYLOR, T.P., AND D.C. ERMAN. 1980. The littoral bottom fauna of high elevation lakes in Kings Canyon National Park. *California Fish and Game* 66:112–119.
- THUT, R.N. 1969. A study of the profundal bottom fauna of Lake Washington. *Ecological Monographs* 39:79–100.
- WETZEL, M.J., G.E. OBERLIN, AND D.W. BLINN. 1999. The aquatic Oligochaeta (Annelida: Clitellata) of Montezuma Well, Arizona: a near thermally constant limnocrone. *Southwestern Naturalist* 44:514–518.

APPENDIX

AQUATIC OLIGOCHAETA OF UTAH

LUMBRICULIDAE

Kincaidiana hexatheca Altman, 1936

LOCALITY.—**UTAH Co.:** American Fork, spring (several stations), 18–20 April 2001, 11 specimens (BYU).

DISTRIBUTION.—**California** (Erman and Erman 1975); **Oregon** (Brinkhurst and Cook 1966, Brinkhurst 1986, Kathman and Brinkhurst 1999, Fend and Brinkhurst 2000); **Washington** (Brinkhurst and Cook 1966, Brinkhurst 1986, Spencer and Wisseman 1993, Kathman and Brinkhurst 1999, Fend and Brinkhurst 2000).

REMARKS.—Three mature specimens were found. Brinkhurst (1986) noted that *K. hexatheca* has a pseudo-segmented proboscis, the anterior chaetae bifid, and an atria that is contained within the male segment. The anterior chaetae on our specimens appeared, initially, to be simple pointed; however, on further examination they are very minutely bifid, hence the tentative placement of our specimens here. If our material does prove to be *K. hexatheca*, the eastward distribution of this species will be significantly increased.

Rhynchelmis utahensis Fend and Brinkhurst, 2000

REMARKS.—Fend and Brinkhurst (2000) recently described this species from Cache County in several springs near the Logan River.

Rhynchelmis rostrata (Eisen, 1888)

DISTRIBUTION.—**California** (Brinkhurst and Cook 1966, Frantz and Cordone 1966, 1996, Brinkhurst 1978, 1986, Fend and Brinkhurst 2000); **Idaho** (Fend and Brinkhurst 2000); **Nevada** (Brinkhurst and Cook 1966, Frantz and Cordone 1966, Brinkhurst 1978, 1986, Fend and Brinkhurst 2000); **Oregon** (Fend and Brinkhurst 2000); **Wyoming** (Brinkhurst and Cook 1966, Brinkhurst 1978).

REMARKS.—Fend and Brinkhurst (2000) collected this species from Cache County in the Little Bear River at Paradise, in a spring along Blacksmith Fork near Logan, and also in Wasatch County at Cascade Springs.

Rhynchelmis elrodi Smith and Dickey, 1918

DISTRIBUTION.—**Idaho** (Brinkhurst and Cook 1966, Fend and Brinkhurst 2000); **Montana** (Brinkhurst and Cook 1966, Brinkhurst 1986, Fend and Brinkhurst 2000); **Wyoming** (Brinkhurst and Cook 1966, Brinkhurst 1986, Fend and Brinkhurst 2000); **Washington** (Brinkhurst and Cook 1966, Brinkhurst 1978, Spencer and Wisseman 1993).

REMARKS.—Fend and Brinkhurst (2000) collected this species from Cache County in the Little Bear River at Paradise.

HAPLOTAXIDAE

Haplotaxis gordioides (Hartmann, 1821)

LOCALITY.—**CACHE Co.:** Little Bear River below Porcupine Reservoir, 6 July 1977, 1 immature specimen (UDWQ).

DISTRIBUTION.—**Arizona** (Wetzel et al. 1999); **California** (Brinkhurst 1986, Brinkhurst and Wetzel 1984), (as *Haplotaxis* sp.; Frantz and Cordone 1966, 1996); **Idaho**

(Salmon River, Spencer and Denton unpublished data); **Nevada** (as *Haplotaxis* sp.; Brinkhurst and Cook 1966, Frantz and Cordone 1966, 1996); **Utah** (Kathman and Brinkhurst 1999); **Washington** (Brinkhurst 1986, Spencer and Wisseman 1993).

REMARKS.—Fully mature specimens have not been described from North America.

NAIDIDAE

Chaetogaster diastrophus (Gruithuisen, 1828)

LOCALITY.—**SEVIER Co.:** Fish Lake (3 m), 1 specimen (UDWQ).

DISTRIBUTION.—**Washington** (Brinkhurst and Kathman, 1983, Spencer and Wisseman 1993).

Chaetogaster diaphanus (Gruithuisen, 1828)

LOCALITY.—**PIUTE Co.:** Otter Creek near Angle, 9 September 1976, 1 specimen (UDWQ). **RICH Co.:** Bear Lake (10 m), 19 July 1977, 2 specimens (DRS & RLD). **SEVIER Co.:** Fish Lake (3 m), 41 specimens (UDWQ). **WEBER Co.:** Plain City Canal, Defense Distribution Center, Ogden, 2 October 1993 (ABA).

DISTRIBUTION.—**Arizona** (Wetzel et al. (1999); **Washington** (Brinkhurst 1964, Smith 1984, Spencer and Wisseman 1993).

Amphichaeta leydigi Tauber, 1879

LOCALITY.—**RICH Co.:** Bear Lake (20 m), 19 July 1977, 3 specimens (DRS & RLD).

DISTRIBUTION.—**Washington** (Brinkhurst and Kathman 1983, Spencer and Wisseman 1993).

Paranais frici Hrabě, 1941

LOCALITY.—**BOX ELDER Co.:** Bear River near Corinne, 15 November 1977, 1 specimen (UDWQ). **CACHE Co.:** Bear River west of Fairview, Idaho, 7 April 1977 (UDWQ); Summit Creek above confluence with Bear River, 7 April 1977 (UDWQ); Cub River above confluence with Bear River, 7 April 1977, 3 specimens (UDWQ). **DAVIS Co.:** Jordan River at Newstate Road crossing, 11 August 1976, 21 April 1977, 34 specimens (UDWQ). **MILLARD Co.:** DMAD Reservoir at top end of reservoir (S19, R5W, T16S), 8 June 1977, 1 specimen (UDWQ). **SANPETE Co.:** Sevier River above Yuba Reservoir southwest of Fayette, 9 November 1976; 15 November 1977, 6 specimens (UDWQ). **UTAH Co.:** marsh at southwest corner of Utah Lake, 29 April 1981, 17 specimens (INHS).

DISTRIBUTION.—**California** (Brinkhurst and Coates 1985); **Montana** (Newell et al. 1978).

Ophidonais serpentina (Müller, 1773)

LOCALITY.—**CACHE Co.:** Bear River west of Fairview, Idaho, 7 April 1977 (UDWQ); Summit Creek above confluence with Bear River, 7 April 1977 (UDWQ); Little Bear River below confluence with the Logan River, 3 November 1976, 6 April 1977, 29 specimens (UDWQ); Blacksmith River above confluence with the Logan River, 6 April 1977, 6 specimens (UDWQ); Cub River above confluence with Bear River, 7 April 1977, 17 specimens (UDWQ); Newton Creek above Newton Reservoir, 4 November 1976, 2 specimens (UDWQ); Little Bear River below Porcupine Reservoir, 4 November 1976, 1 specimen (UDWQ). **DAVIS Co.:** Jordan River at Newstate

Road crossing, 11 August 1976, 21 April 1977, 2 specimens (UDWQ). **JUAB Co.:** Sevier River below Yuba Reservoir at I-15 crossing, 7 September 1976, 2 specimens (UDWQ). **MILLARD Co.:** Lake Creek above Pruess Lake, 12 October 1976, 4 specimens (UDWQ). **PIUTE Co.:** Otter Creek near Angle, 9 September 1976, 6 specimens (UDWQ). **SALT LAKE Co.:** Jordan River near Bluffdale Road crossing (U-155), 21 April 1977, 6 specimens (UDWQ). **SAN JUAN Co.:** East Coyote Wash south of LaSal, 26 November 1977, 5 specimens (UDWQ). **SEVIER Co.:** Sevier River at U-24 crossing near Sigurd, 9 September 1976, 2 specimens; Fish Lake (3–18 m), 14 specimens (UDWQ). **UTAH Co.:** Provo River at U-114 bridge crossing, 21 April 1977, 3 specimens (UDWQ); Provo River at road east of Utah Lake State Park, 29 April 1981, 19 specimens (INHS); marsh at southwest corner of Utah Lake, 29 April 1981, 31 specimens (INHS). **WASHINGTON Co.:** Santa Clara River, north of Gunlock Lake, 30 April 1981, 9 specimens (INHS). **WEBER Co.:** Plain City Canal, Defense Distribution Center, Ogden, 2 October 1993 (ABA).

DISTRIBUTION.—**Montana** (Canfield et al. 1994); **Washington** (Spencer and Wisseman 1993).

Uncinaiis uncinata (Ørsted, 1842)

LOCALITY.—**PIUTE Co.:** Otter Creek Reservoir approximately 3.5 km above dam midlake off camping area, 8 June 1977, 1 specimen (UDWQ).

DISTRIBUTION.—**California** (Frantz and Cordone 1966, 1996); **Montana** (Brinkhurst 1964, Canfield et al. 1994); **Nevada** (Brinkhurst 1964, Frantz and Cordone 1966, 1996); **Washington** (Spencer and Wisseman 1993).

Stylaria lacustris (Linnaeus, 1767)

LOCALITY.—**RICH Co.:** Bear Lake (2–35 m), 19 July 1977, 45 specimens (DRS & RLD). **UTAH Co.:** marsh at southwest corner of Utah Lake, 29 April 1981, 1 specimen (INHS).

DISTRIBUTION.—**Washington** (Smith 1984, Spencer and Wisseman 1993).

REMARKS.—The material from Bear Lake had a rough body wall resembling that of *Paranais frici*.

Dero (Dero) digitata (Müller, 1773)

LOCALITY.—**BOX ELDER Co.:** Bear River near Corinne, 15 November 1977, 2 specimens (UDWQ). **CACHE Co.:** Porcupine Reservoir, 26 April 1977, many specimens (UDWQ); Cub River at the Utah-Idaho state line, 4 November 1976, 2 specimens (UDWQ); Bear River below confluence of Summit Creek, 2 November 1976, 2 specimens (UDWQ); Little Bear River below confluence with the Logan River, 3 November 1976, 1 specimen (UDWQ). **DAVIS Co.:** Jordan River at Newstate Road crossing, 21 April 1977, 11 August 1976, 19 specimens (UDWQ). **PIUTE Co.:** Piute Reservoir above the dam, 8 June 1977, 4 specimens (UDWQ). **RICH Co.:** Bear Lake (14 m), 19 July 1977, 7 specimens (DRS & RLD). **SANPETE Co.:** San Pitch River at U-117 crossing 1 mile west of Chester, 2 September 1976, 1 specimen; San Pitch River west of Manti above Gunnison Reservoir at county road crossing, 1 specimen (UDWQ). **SEVIER Co.:** Fish Lake (3–18 m), 5 specimens (RLD). **UTAH Co.:** Provo River at road east of Utah Lake State Park, 29 April 1981, 15 specimens (INHS); marsh at southwest corner of Utah Lake, 29 April 1981, 1 specimen (INHS). **WEBER Co.:**

Weber River at U-40 bridge crossing just south of Plain City, 15 October 1977, 1 specimen (UDWQ).

DISTRIBUTION.—**California** (Brinkhurst 1964); **Montana** (Canfield et al. 1994); **Washington** (Spencer and Wisseman 1993).

Slavina appendiculata (d'Udekem, 1855)

LOCALITY.—**SEVIER Co.:** Fish Lake (3 m), 1 specimen (RLD). **UTAH Co.:** Provo River at road east of Utah Lake State Park, 29 April 1981, 1 specimen (INHS). **WEBER Co.:** Plain City Canal, Defense Distribution Center, Ogden, 2 October 1993 (ABA).

DISTRIBUTION.—**California** (Brinkhurst 1964, Erman and Erman 1975); **Montana** (Newell et al. 1978, Canfield et al. 1994); **Washington** (Spencer and Wisseman 1993).

Vejevskyella intermedia (Bretschler, 1896)

DISTRIBUTION.—**Utah** (Kathman and Brinkhurst 1999).

REMARKS.—Kathman and Brinkhurst (1999) reported this species as part of the Utah fauna.

Nais behningi (Michaelsen, 1923)

LOCALITY.—**BOX ELDER Co.:** Raft River at Narrows Crossing, 25 October 1977, 1 specimen (UDWQ); Goose River at road junction to Nevada, 26 October 1977, 2 specimens (UDWQ). **CACHE Co.:** Little Bear River below confluence with the Logan River, 6 April 1977, 1 specimen (UDWQ); Newton Creek above Newton Reservoir, 4 November 1976, 12 specimens (UDWQ). **DUCHESNE Co.:** Strawberry River above Starvation Reservoir, 21 September 1976, 9 specimens (UDWQ). **MORGAN Co.:** Weber River at gateway from bridge to powerhouse, 11 August 1976, 8 specimens (UDWQ). **UINTAH Co.:** White River at U-45 bridge crossing near Bonanza, 3 May 1977, 29 specimens (UDWQ). **WEBER Co.:** Weber River at U-40 bridge crossing south of Plain City, 15 October 1977, 1 specimen (UDWQ); Plain City Canal, Defense Distribution Center, Ogden, 2 October 1993 (ABA).

DISTRIBUTION.—**Montana** (Clark Fork River; Spencer and Wisseman unpublished data); **Washington** (Smith 1984, Spencer and Wisseman 1993, Carter et al. 1996, Fend and Brinkhurst 2000).

Nais barbata Müller, 1773

LOCALITY.—**SEVIER Co.:** Fish Lake (3–18 m), 245 specimens (RLD). **UTAH Co.:** Provo River at U-114 bridge crossing, 21 April 1977, 1 specimen (UDWQ); Provo River at road east of Utah Lake State Park, 29 April 1981, 13 specimens (INHS); marsh at southwest corner of Utah Lake, 29 April 1981, 12 specimens (INHS). **WASHINGTON Co.:** Santa Clara River, north of Gunlock Lake, 30 April 1981, 2 specimens (INHS). **WEBER Co.:** Weber River at U-40 bridge crossing south of Plain City, 15 October 1977, 3 specimens (UDWQ).

DISTRIBUTION.—Our records here of *N. barbata* may be the first from the western United States, as a previous report from Montana is questionable (Newell et al. 1978).

Nais alpina (Sperber, 1948)

LOCALITY.—**CACHE Co.:** Newton Creek above Newton Reservoir, 4 November 1976, 1 specimen; Little Bear River below Porcupine Reservoir, 4 November 1976, 1 specimen (UDWQ). **RICH Co.:** Bear Lake (14 m), 19 July 1977, 8 specimens (DRS & RLD). **UTAH Co.:** marsh at

southwest corner of Utah Lake, 29 April 1981, 11 specimens (INHS).

DISTRIBUTION.—Utah (Kathman and Brinkhurst 1999).

Nais simplex Pignet, 1906

LOCALITY.—CACHE Co.: Newton Creek above Newton Reservoir, 4 November 1976, 1 specimen (UDWQ); Cub River at Utah-Idaho state line, 4 November 1976, 2 specimens (UDWQ). PIUTE Co.: Piute Reservoir, 8 June 1977, 1 specimen (UDWQ).

DISTRIBUTION.—Washington (Carter et al. 1996).

Nais pardalis Pignet, 1906

LOCALITY.—DAVIS Co.: Jordan River at Newstate Road crossing, 21 April 1977 (UDWQ). UTAH Co.: Provo River at road east of Utah Lake State Park, 29 April 1981, 2 specimens (INHS); marsh at southwest corner of Utah Lake, 29 April 1981, 2 specimens (INHS).

DISTRIBUTION.—Our record of *N. pardalis* is the first documentation of the species from the western United States.

Nais elinguis Müller, 1773

LOCALITY.—BOX ELDER Co.: Pole River at Utah-Idaho state line, 26 October 1977, 2 specimens (UDWQ). CACHE Co.: Bear River west of Fairview, Idaho, 7 April 1977 (UDWQ); Summit Creek above confluence with Bear River, 7 April 1977 (UDWQ); Little Bear River below confluence of south fork, 6 April 1977, 2 specimens (UDWQ); Little Bear River below confluence with Logan River, 3 November 1976, 6 April 1977, 5 specimens (UDWQ); Cub River above confluence with Bear River, 6–7 April 1977, 12 specimens (UDWQ). DAGGETT Co.: Green River at Brown's Park Bureau of Reclamation gaging station, 22 September 1976, 4 May 1977, 87 specimens (UDWQ). DAVIS Co.: Jordan River at Newstate Road crossing, 21 April 1977 (UDWQ). DUCHESNE Co.: Strawberry River above Starvation Reservoir, 21 September 1976, 3 specimens (UDWQ). GARFIELD Co.: Deer Creek above confluence with East Fork of the Sevier River, 11 November 1976, 1 specimen (UDWQ). SAN JUAN Co.: East Coyote Wash south of LaSal, 26 November 1977, 1 specimen (UDWQ). SANPETE Co.: Sevier River above Yuba Reservoir southwest of Fayette, 15 November 1977, 13 specimens (UDWQ). UTAH Co.: Spanish Fork at junction of Diamond Fork, 5 miles southeast of Moark junction on US 6 and 89, 29 April 1981, 4 specimens (INHS); marsh at southwest corner of Utah Lake, 29 April 1981, 1 specimen (INHS). WASHINGTON Co.: Santa Clara River, north of Gunlock Lake, 30 April 1981, 1 specimen (INHS). WAYNE Co.: Fremont River below Hickman Bridge trail, 26 April 1977, 2 specimens (UDWQ).

DISTRIBUTION.—Arizona (Wetzel et al. 1999).

Nais communis Pignet, 1906

LOCALITY.—BOX ELDER Co.: Malad River, south of Plymouth, 16 April 1977, 1 specimen (UDWQ); Raft River at Narrows Crossing, 25 October 1977, 1 specimen (UDWQ); Birch River at Utah-Idaho state line, 25 October 1977, 15 specimens (UDWQ); Bear River near Corinne, 15 November 1977, 1 specimen (UDWQ); Cotton-Thomas Creek near Lynn, 26 October 1977, 2 specimens (UDWQ). CACHE Co.: Summit Creek above confluence with Bear River, 7 April 1977 (UDWQ); Newton

Creek above Newton Reservoir, 4 November 1976, 8 specimens (UDWQ). DAVIS Co.: Jordan River at Newstate Road crossing, 21 April 1977, 11 August 1976, 2 specimens (UDWQ). GRAND Co.: Colorado River near Cisco at U-128 crossing, 10 November 1977, 1 specimen (UDWQ). KANE Co.: Flooded grassy depression on U-14, 0.5 mile west of turnoff to Stout Canyon, 2 May 1981, 9 specimens (INHS). SAN JUAN Co.: East Coyote Wash south of LaSal, 26 November 1977, 1 specimen (UDWQ). SANPETE Co.: Manti Creek at road crossing 4 miles east of Manti, 2 September 1976, 20 specimens (UDWQ). SEVIER Co.: Fish Lake (3 m), 7 specimens (RLD). UTAH Co.: Provo River at U-114 bridge crossing, 21 April 1977, 2 specimens (UDWQ); Provo River at road east of Utah Lake State Park, 29 April 1981, 8 specimens (INHS); marsh at southwest corner of Utah Lake, 29 April 1981, 3 specimens (INHS). WASHINGTON Co.: Santa Clara River, north of Gunlock Lake, 30 April 1981, 2 specimens (INHS). WEBER Co.: Weber River at U-40 bridge crossing south of Plain City, 15 October 1977, 2 specimens (UDWQ); Plain City Canal, Defense Distribution Center, Ogden, 1 October 1993 (ABA).

DISTRIBUTION.—Montana (Clark Fork River; Spencer and Wisseman unpublished data); Washington (Brinkhurst 1964, Smith 1984, Spencer and Wisseman 1993, Carter et al. 1996).

Nais variabilis Pignet, 1906

LOCALITY.—CACHE Co.: Summit Creek above confluence with Bear River, 7 April 1977 (UDWQ); Newton Creek above Newton Reservoir, 4 November 1976, 2 specimens (UDWQ); Cub River at Utah-Idaho state line, 4 November 1976, 5 specimens (UDWQ); Bear River below confluence with Smithfield (Summit) Creek, 2 November 1976, 3 specimens (UDWQ). DAVIS Co.: Jordan River at Newstate Road crossing, 11 August 1976, 21 April 1977, 28 specimens (UDWQ). GRAND Co.: Colorado River near Cisco above Dewey bridge, 16 May 1977, 15 specimens (UDWQ). JUAB Co.: Sevier River below Yuba Reservoir at I-15 crossing, 7 September 1976, 32 specimens (UDWQ). PIUTE Co.: Otter Creek near Angle, 9 September 1976, 10 specimens (UDWQ). RICH Co.: Bear Lake (10–27 m), 19 July 1977, 105 specimens (DRS & RLD). SAN JUAN Co.: LaSal Creek east of LaSal, 25 April 1977, 1 specimen (UDWQ). SEVIER Co.: Fish Lake (3 m), 3 specimens (RLD). UTAH Co.: Provo River at road east of Utah Lake State Park, 29 April 1981, 14 specimens (INHS); marsh at southwest corner of Utah Lake, 29 April 1981, 13 specimens (INHS). WASHINGTON Co.: Santa Clara River, north of Gunlock Lake, 30 April 1981, 13 specimens (INHS). WEBER Co.: Weber River at U-40 bridge crossing south of Plain City, 15 October 1977, 3 specimens (UDWQ); Plain City Canal, Defense Distribution Center, Ogden, 1 October 1993 (ABA).

DISTRIBUTION.—Montana (Clark Fork River, Spencer and Wisseman unpublished data); Washington (Smith 1984, Spencer and Wisseman 1993, Carter et al. 1996).

TUBIFICIDAE

Tubifex tubifex (Müller, 1774)

LOCALITY.—CACHE Co.: Cub River at Utah-Idaho state line, 4 November 1976, 2 specimens (UDWQ); Little Bear River below Porcupine Reservoir, 6 July 1976, 7 specimens (UDWQ); Porcupine Reservoir, 26 April 1977 (UDWQ). CARBON Co.: Price River at bridge above

North American Coal, 15 October 1976, 1 specimen (UDWQ). **EMERY Co.:** Price River at Woodside US 50 and 6 crossing, 27 April 1977, 18 specimens (UDWQ). **GARFIELD Co.:** Sevier River, 6 miles southwest of Circleville, 9 September 1976, 1 specimen (UDWQ); Sevier River at Hatch, 1 November 1976, 1 specimen (UDWQ). **GRAND Co.:** Colorado River near Cisco at U-128 crossing, 10 November 1977, 3 specimens (UDWQ); Delores River, 9 miles upstream from river mouth, 28 October 1976, 1 specimen (UDWQ). **KANE Co.:** Kanab Creek, 100 feet below wastewater treatment outfall, 8 September 1976, 3 specimens (UDWQ). **PIUTE Co.:** Otter Creek near Angle, 9 September 1976, 9 specimens (UDWQ). **SAN JUAN Co.:** San Juan River at US 160 bridge crossing, 27 October 1976, 1 specimen (UDWQ). **SANPETE Co.:** San Pitch River, 2.5 miles west of Mt. Pleasant at U-116 crossing, 2 September 1976, 2 specimens (UDWQ); San Pitch River 1 mile west of Chester at U-117, 15 November 1977, 38 specimens (UDWQ); Sevier River above Yuba Reservoir southwest of Fayette, 17 specimens (UDWQ), pool at culvert, west side of US 89, 2 miles southwest of Indianola, 1 May 1981, 1 specimen (INHS). **SEVIER Co.:** Fish Lake (3–18 m), 4 specimens (RLD). **UINTAH Co.:** White River near Ouray at U-88 crossing, 2 November 1977, 1 specimen (UDWQ). **UTAH Co.:** Spanish Fork at junction of Diamond Fork, 5 miles southeast of Moark junction on US 6 and 89, 29 April 1981, 3 specimens (INHS); marsh at southwest corner of Utah Lake, 29 April 1981, 16 specimens (INHS). **WEBER Co.:** Plain City Canal, Defense Distribution Center, Ogden, 30 September 1993 (ABA).

DISTRIBUTION.—**Arizona** (Wetzel et al. 1999); **California** (Fast 1973); **Colorado** (Canton and Ward 1981); **Montana** (Canfield et al. 1994); **Washington** (Thut 1969, Spencer and Wisseman 1993).

Potamothenix bavaricus (Öschmann, 1913)

LOCALITY.—**BOX ELDER Co.:** Locomotive Springs, 26 October 1977, 9 specimens (UDWQ). **GRAND Co.:** Colorado River near Cisco at U-128 crossing, 10 November 1977, 3 specimens (UDWQ). **SEVIER Co.:** Sevier River at U-24 crossing at Sigurd, 9 September 1976, 4 specimens (UDWQ). **WEBER Co.:** Plain City Canal, Defense Distribution Center, Ogden, 2 October 1993 (ABA).

DISTRIBUTION.—**California** (Brinkhurst 1965, 1967, Fast 1973, Spencer 1978, Stimpson et al. 1982); **Utah** (Spencer 1978, Stimpson et al. 1982).

REMARKS.—*Potamothenix bavaricus* was reported from Utah by the senior author (Spencer 1978) from Sevier County. Specimens for that record originated from the collections reported here.

Limnodrilus udekemianus Claparède, 1862

LOCALITY.—**GARFIELD Co.:** Sevier River at Hatch, 1 November 1976, 2 specimens (UDWQ); Sevier River, 6 miles southwest of Circleville, 9 September 1976, 2 specimens (UDWQ). **KANE Co.:** Flooded grassy depression on U-14, 0.5 mile west of turnoff to Stout Canyon, 2 May 1981, 1 specimen (INHS). **MILLARD Co.:** Lake Creek above Pruess Lake, 12 October 1976 (UDWQ). **SANPETE Co.:** Sevier River above Yuba Reservoir southwest of Fayette, 9 November 1976, 6 specimens (UDWQ); pool at culvert, west wide of US 89, 2 miles southwest of Indianola, 1 May 1981, 1 specimen (INHS). **SEVIER Co.:** Sevier River at U-24 crossing at Sigurd, 9 September

1976 (UDWQ). **UTAH Co.:** marsh at southwest corner of Utah Lake, 29 April 1981, 5 specimens (INHS). **WEBER Co.:** Plain City Canal, Defense Distribution Center, Ogden, 30 September 1993 (ABA).

DISTRIBUTION.—**Arizona** (Wetzel et al. 1999); **California** (Brinkhurst 1965); **Idaho** (Brinkhurst 1965); **Montana** (Canfield et al. 1994); **Nevada** (Brinkhurst and Cook 1966); **Oregon** (Brinkhurst and Diaz 1985).

Limnodrilus hoffmeisteri Claparède, 1862

LOCALITY.—**BOX ELDER Co.:** Locomotive Springs, 26 October 1977, 1 specimen (UDWQ); Bear River near Corinne, 15 November 1977, 1 specimen (UDWQ). **CACHE Co.:** Porcupine Reservoir, 26 April 1977 (UDWQ); Logan River above confluence with Little Bear River, 6 April 1977, 2 specimens (UDWQ); Newton Creek above Newton Reservoir, 4 November 1976, 5 specimens (UDWQ); Cub River at Utah-Idaho state line, 4 November 1976, 1 specimen (UDWQ); Bear River below confluence with Smithfield (Summit) Creek, 2 November 1976, 4 specimens (UDWQ). **DAGGETT Co.:** Green River at Brown's Park Bureau of Reclamation gaging station, 22 September 1976, 2 specimens (UDWQ). **DAVIS Co.:** Jordan River at Newstate Road crossing, 21 April 1977 (UDWQ). **DUCHESNE Co.:** Strawberry River above Starvation Reservoir, 21 September 1976, 2 specimens (UDWQ). **EMERY Co.:** Price River at Woodside, US 50 and 6 crossing, 27 April 1977, 1 specimen (UDWQ). **GARFIELD Co.:** Sevier River at Hatch, 1 November 1976, 2 specimens (UDWQ); Sevier River, 6 miles southwest of Circleville, 9 September 1976, 2 specimens (UDWQ); Sevier River near Osiris, 8 miles upstream from Antimony, 26 April 1977, 2 specimens (UDWQ). **GRAND Co.:** Colorado River near Cisco above Dewey bridge, 15 July 1977, 8 specimens (DRS & RLD); Colorado River near Cisco at U-128 crossing, 10 November 1977, 7 specimens (UDWQ). **KANE Co.:** Kanab Creek about 100 feet below the wastewater treatment plant outfall, 8 September 1976, 2 specimens (UDWQ). **MILLARD Co.:** Sevier River above Gunnison Bend Reservoir at U-99 crossing, 7 September 1976, 1 specimen (UDWQ), 10 November, 1976, 1 specimen (UDWQ); DMAD Reservoir, 200 m above dam at midlake, 8 June 1977, 6 specimens (UDWQ); DMAD Reservoir (S19, R5W, T16S), 8 June 1977, 4 specimens (UDWQ). **PIUTE Co.:** Otter Creek Reservoir approximately 500 m above dam northwest of boat ramp at midlake, 8 June 1977, 7 specimens (UDWQ); Otter Creek Reservoir approximately 3.5 km above dam off camping area at midlake, 8 June 1977, 6 specimens (UDWQ); Piute Reservoir, 8 June 1977, 6 specimens (UDWQ). **RICH Co.:** Bear Lake (2–60 m), 19 July 1977, 66 specimens (DRS & RLD). **SALT LAKE Co.:** Jordan River at Bluffdale Road crossing (U-155), 21 April 1977, 1 specimen (UDWQ). **SANPETE Co.:** Sevier River above Yuba Reservoir southwest of Fayette, 9 November 1976, 8 specimens (UDWQ); 15 November 1976, 1 specimen (UDWQ); San Pitch River west of Manti above Gunnison Reservoir at county road crossing, 8 June 1977, 7 specimens (UDWQ); San Pitch River 1 mile west of Chester at U-117, 15 November 1977, 1 specimen (UDWQ). **SEVIER Co.:** Sevier River at U-24 crossing at Sigurd, 11 November 1976, 3 specimens (UDWQ); Fish Lake (3–30 m), 16 specimens (RLD). **SUMMIT Co.:** Weber River above Wanship Reservoir at U-32 crossing near Peoa, 15 November 1977, 3 specimens (UDWQ). **UTAH Co.:** Utah Lake (2–4 m), 21 July 1977, 29 specimens (DRS & RLD); Provo River at road east of

Utah Lake State Park, 29 April 1981, 15 specimens (INHS); Spanish Fork at junction of Diamond Fork, 5 miles southeast of Moark junction on US 6 and 89, 29 April 1981, 2 specimens (INHS); marsh at southwest corner of Utah Lake, 29 April 1981, 25 specimens (INHS). **WASATCH Co.:** Deer Valley, spring (several stations), 25 May 2001, 1 specimen (BYU). **WEBER Co.:** Weber River at U-40 bridge crossing south of Plain City, 15 October 1977 (UDWQ); Plain City Canal, Defense Distribution Center, Ogden, 30 September 1993 (ABA).

DISTRIBUTION.—**Arizona** (Wetzel et al. 1999); **California** (Erseus et al. 1990, Fast 1973, Frantz and Cordone 1966, 1996, Taylor and Erman 1980); **Colorado** (Canton and Ward 1981, Canton 1982); **Montana** (Newell et al. 1978, Canfield et al. 1994); **Nevada** (Frantz and Cordone 1966, 1996, Galat et al. 1981); **Oregon** (Brinkhurst and Diaz 1985); **Washington** (Thut 1969, Spencer and Wisseman 1993).

Limnodrilus claparedianus Ratzel, 1868

LOCALITY.—**CACHE Co.:** Bear River below confluence of Smithfield (Summit) Creek, 2 November 1976, 4 specimens (UDWQ). **GRAND Co.:** Colorado River near Cisco at U-128 crossing, 10 November 1977, 1 specimen (UDWQ). **PIUTE Co.:** Otter Creek near Angle, 9 September 1976, 1 specimen (UDWQ); Otter Creek Reservoir approximately 500 m above dam, northwest of boat ramp at midlake, 5 specimens (UDWQ); Piute Reservoir above the dam, 8 June 1977, 4 specimens (UDWQ); Piute Reservoir upper end, 8 June 1977, 7 specimens (UDWQ). **SANPETE Co.:** Sevier River above Yuba Reservoir southwest of Fayette, 9 November 1976, 1 specimen (UDWQ). **SEVIER Co.:** Sevier River at U-24 crossing at Sigurd, 11 November 1976, 3 specimens (UDWQ). **UINTAH Co.:** White River near Ouray at U-88 crossing, 2 November 1977, 1 specimen (UDWQ). **UTAH Co.:** marsh at southwest corner of Utah Lake, 29 April 1981, 4 specimens (INHS). **WEBER Co.:** Plain City Canal, Defense Distribution Center, Ogden, 30 September 1993 (ABA).

DISTRIBUTION.—**California** (Brinkhurst 1965); **Montana** (Newell et al. 1978, Canfield et al. 1994); **Washington** (Brinkhurst 1965, Spencer and Wisseman 1993).

Ilyodrilus templetoni (Southern, 1909)

LOCALITY.—**BOX ELDER Co.:** Cotton-Thomas Creek near Lynn, 26 October 1977, 3 specimens (UDWQ). **CACHE Co.:** Porcupine Reservoir, 26 April 1977 (UDWQ). **DAGGETT Co.:** Green River at Brown's Park at Bureau of Reclamation gaging station, 22 September 1976, 1 specimen (UDWQ). **MILLARD Co.:** DMAD Reservoir, 200 m above dam at midlake, 8 June 1977, 3 specimens (UDWQ); DMAD Reservoir, top end of reservoir (S19, R5W, T16S), 8 June 1977, 1 specimen (UDWQ). **PIUTE Co.:** Otter Creek Reservoir approximately 500 m above dam northwest of boat ramp, midlake, 4 specimens (UDWQ); Piute Reservoir above the dam, 8 June 1977, 14 specimens (UDWQ). **SANPETE Co.:** San Pitch River west of Manti above Gunnison Reservoir at county road crossing, 8 June 1977, 1 specimen (UDWQ). **UTAH Co.:** Utah Lake at 2 m depth, 21 July 1977, 1 specimen (DRS & RLD); Provo River at road east of Utah Lake State Park, 29 April 1981, 2 specimens (INHS); marsh at southwest corner of Utah Lake, 29 April 1981, 26 specimens (INHS). **WEBER Co.:** Plain City Canal, Defense Distribution Center, Ogden, 30 September 1993 (ABA).

DISTRIBUTION.—? **California** (Brinkhurst 1965); **Montana** (Newell et al. 1978, Canfield et al. 1994); **Washington** (Brinkhurst 1965, Spencer and Wisseman 1993).

Ilyodrilus frantzi Brinkhurst, 1965

LOCALITY.—**CACHE Co.:** Logan River above confluence with Little Bear River, 3 November 1976, 1 specimen (UDWQ). **RICH Co.:** Bear Lake (2–60 m), 19 July 1977, 224 specimens (DRS & RLD). **UTAH Co.:** Utah Lake at 2–4 m depth, 21 July 1977, 105 specimens (UDWQ).

DISTRIBUTION.—**California** (Brinkhurst 1965, Frantz and Cordone 1966, 1996); **Nevada** (Brinkhurst 1965, Frantz and Cordone 1966, 1996); **Washington** (Brinkhurst and Cook 1966, Thut 1969, Spencer and Wisseman 1993).

Quistadrilus multisetosus (Smith, 1900)

LOCALITY.—**BEAVER Co.:** Beaver River above Minersville City, 7 September 1976, 9 specimens (UDWQ). **CACHE Co.:** Logan River above confluence with Little Bear River, 6 April 1977, 1 specimen (UDWQ). **SEVIER Co.:** Fish Lake (18 m), 12 specimens (RLD). **UTAH Co.:** Provo River at road east of Utah Lake State Park, 29 April 1981, 26 specimens (INHS); cold springs along US 6 and 89, 3.3 miles southeast US 89 near Spanish Fork, 29 April 1981, 3 specimens (INHS). **WEBER Co.:** Plain City Canal, Defense Distribution Center, Ogden, 2 October 1993 (ABA).

DISTRIBUTION.—**Arizona** (Wetzel et al. 1999); **Utah** (Brinkhurst 1965, Kathman and Brinkhurst 1999); **Washington** (Brinkhurst 1986, Spencer and Wisseman 1993).

REMARKS.—*Quistadrilus multisetosus* was noted by Brinkhurst (1965) as being collected from Utah (near Salt Lake City) by P.S. Welch on 8 February 1922.

Aulodrilus limnobius Bretscher, 1899

LOCALITY.—**WEBER Co.:** Plain City Canal, Defense Distribution Center, Ogden, 1 October 1993 (ABA).

DISTRIBUTION.—**California** (Erseus et al. 1990); **Montana** (Canfield et al. 1994); **Washington** (Spencer and Wisseman 1993).

Telmatodrilus vejdoskyi Eisen, 1879

LOCALITY.—**BEAVER Co.:** Beaver River, 4.5 miles east of Beaver City at USFS boundary, 7 September 1976, 1 specimen (UDWQ). **RICH Co.:** Swan Creek above confluence of Bear Lake, 2 November 1976, 6 specimens (UDWQ). **WASATCH Co.:** Deer Valley, spring (several stations), 25 May 2001, 5 specimens (BYU).

DISTRIBUTION.—**California** (Brinkhurst 1965, 1978, 1986, Stimpson et al. 1982); **Idaho** (Mink Creek; Spencer and Denton unpublished data); **Oregon** (Brinkhurst and Diaz 1985); **Utah** (Kathman and Brinkhurst 1999).

REMARKS.—We were kindly loaned the lectotypes of *T. vejdoskyi* from the United States National Museum for comparative purposes. Our Utah specimens appear to be very similar to those from the type locality (California) and fit published descriptions given by previous investigators. Material sent to the senior author from Lake Tahoe also appeared morphologically to be *T. vejdoskyi*. The collection was labeled "Crystal Bay - 10 m." This record could be questionable, however, as only a posterior fragment of 1 specimen was found.

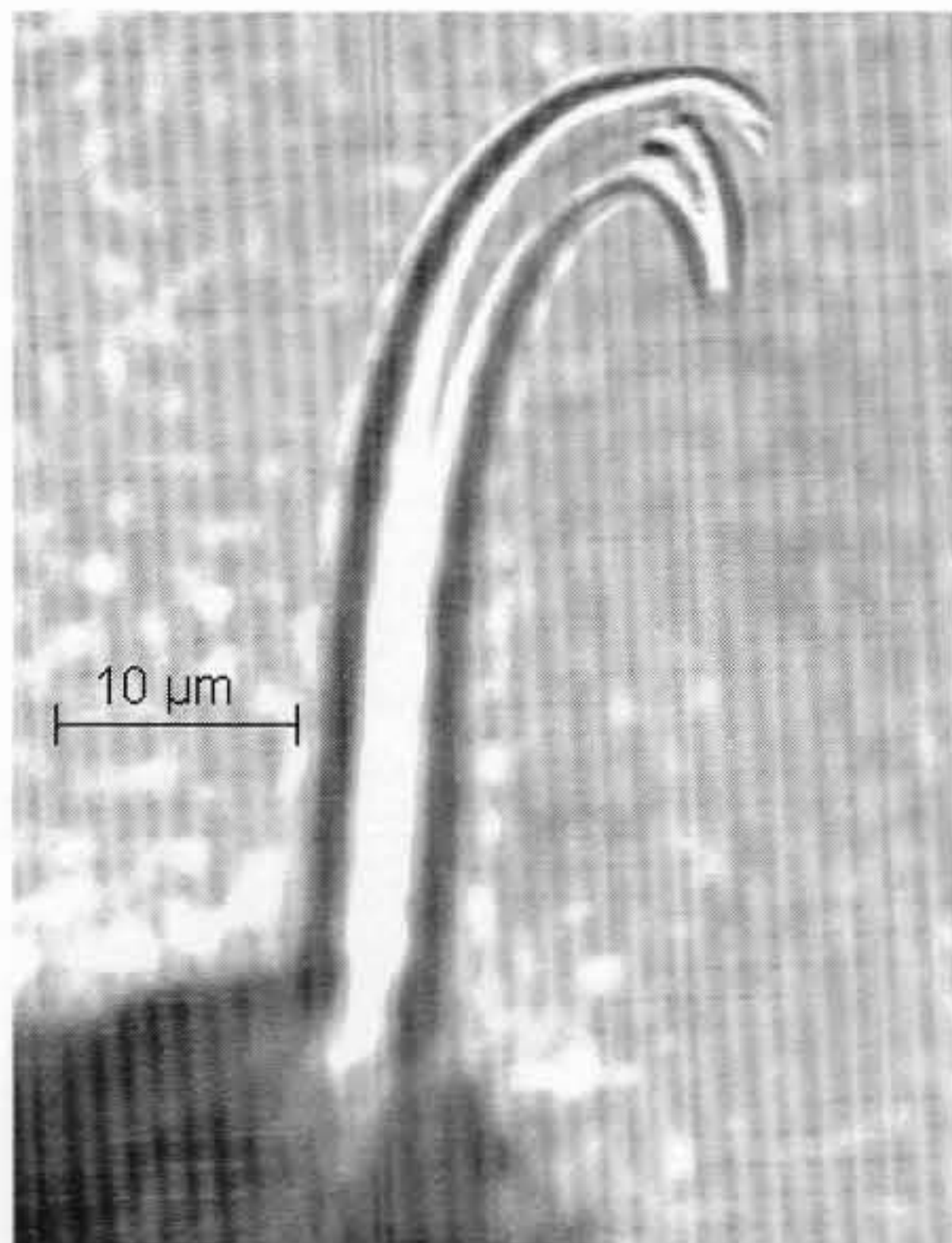


Fig. 1. Tubificiinae: posterior ventral chaetae.

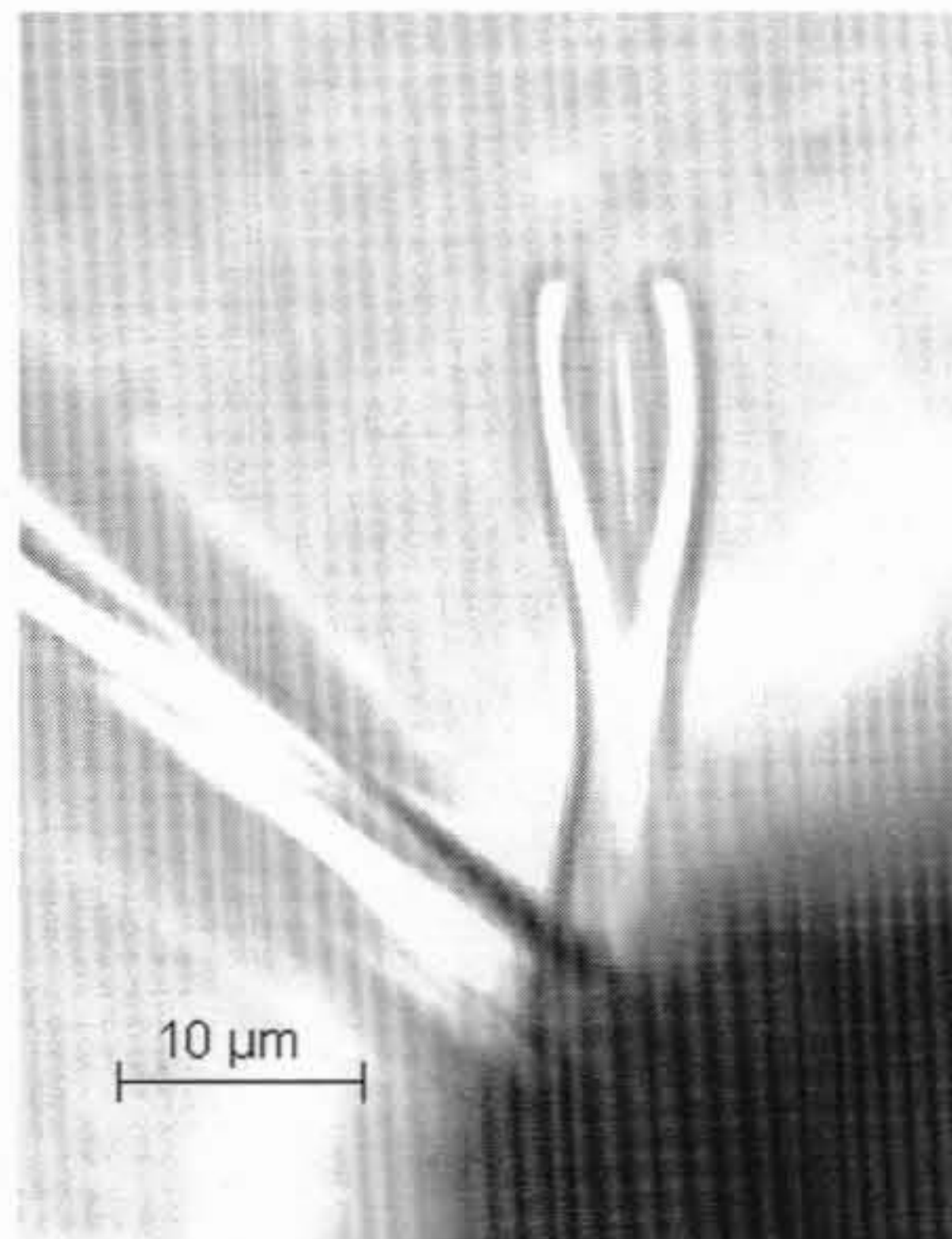


Fig. 2. Rhyacodrilinae: anterior dorsal pectinate chaetae.

Rhyacodrilus coccineus (Vejdovsky, 1875)

LOCALITY.—**KANE Co.**: Flooded grassy depression on U-14, 0.5 mile west of turnoff to Stout Canyon, 2 May 1981, 7 specimens (INHS). **SANPETE Co.**: Pool at culvert, west side of US 89, 2 miles southwest of Indianola, 1 May 1981, 4 specimens (INHS). **WASATCH Co.**: Deer Valley, spring (several stations), 25 May 2001, 25 specimens (BYU).

DISTRIBUTION.—**Idaho** (Fend and Brinkhurst 2000); **Montana** (Fend and Brinkhurst 2000); **New Mexico** (Fend and Brinkhurst 2000); **Utah** (Kathman and Brinkhurst 1999); **Washington** (Fend and Brinkhurst 2000).

Rhyacodrilus sodalis (Eisen, 1879)

LOCALITY.—**CACHE Co.**: Bear River west of Fairview, Idaho, 7 April 1977 (UDWQ); Little Bear River below Porcupine Reservoir, 6 July 1977 (UDWQ). **JUAB Co.**: Granite Creek on road up canyon at Ford, 21 October 1977, 1 specimen (UDWQ). **MILLARD Co.**: Ivie Creek, 1 March 1977, 1 specimen (UDWQ). **RICH Co.**: Bear River below Woodruff Reservoir, 23 September 1976, 1 specimen (UDWQ); ?Bear Lake (27 m), 19 July 1977, 20 specimens (DRS & RLD). **SANPETE Co.**: Manti Creek, 4 miles east of Manti, 2 September 1976, 1 specimen (UDWQ). **SEVIER Co.**: Fish Lake (3 m) (RLD); Redmond Reservoir, 1 March 1977, 1 specimen (UDWQ).

DISTRIBUTION.—**California** (Brinkhurst 1965, Frantz and Cordone 1966, 1996); **Nevada** (Brinkhurst 1965, Frantz and Cordone 1966, 1996).

REMARKS.—Some specimens fitting the morphological description of *R. sodalis* were collected from Bear Lake and tentatively assigned here. The specimens were not sexually mature and could not be identified with certainty.

Bothrioneurum vejdoskyanum Štolc, 1888

LOCALITY.—**WEBER Co.**: Plain City Canal, Defense Distribution Center, Ogden, 2 October 1993 (ABA).

DISTRIBUTION.—**California** (Brinkhurst 1965, Erseus et al. 1990, Fast 1973); **Oregon** (Brinkhurst 1965, Brinkhurst and Diaz 1985); **Washington** (Stimpson et al. 1982, Spencer and Wissman 1993, Carter et al. 1996).

OTHER MATERIAL

Tubificiinae

LOCALITY.—**RICH Co.**: Bear Lake (30–60 m), 19 July 1977, 281 specimens (DRS & RLD).

REMARKS.—These specimens were collected only from the profundal depths of Bear Lake (30–60 m) and need further investigation. The specimens have several characteristics of *Q. multisetosus typica*. However, some specimens were noted with a notched distal tooth on the posterior ventral chaetae (Fig. 1). Holmquist (1978) noted other species in the "*Peloscolex* complex," such as *ferox* and *tenuis*, as having bifid chaetae with more than 2 teeth, the phenomenon being irregular. The specimens were also without the extremely large papillae characteristic of *Q. multisetosus*.

Rhyacodrilinae

LOCALITY.—**CACHE Co.**: Little Bear River below Porcupine Reservoir, 4 November 1976, 1 specimen (UDWQ). **GARFIELD Co.**: Asay Creek at US 89 crossing, 16 November 1977, 3 specimens (UDWQ).

REMARKS.—Unfortunately, only a few immature specimens were collected, prohibiting any generic placement. The combination of the body cavity with coelomocytes and the unusual anterior pectinate chaetae (Fig. 2) is interesting for North American material. The chaetae resemble those found in the North American species *Psammoryctides californianus*. Stimpson et al. (1982) noted *Rhyacodrilus sodalis* as "[a]n uncommon species with extremely variable chaetal morphology that suggests taxonomic uncertainty. This species needs considerable attention in a generic revision to verify its correct taxonomic

rank or position." Brinkhurst (1986) concurs, noting *R. sodalis* being "of uncertain taxonomic status." Our material from Utah could prove to be a form or "variant" of *R. sodalis*, as we identified several specimens of that species

from the state. Unfortunately, additional collections taken by the authors from the above 2 locations in Utah contained no mature specimens.