

## THE FRESHWATER MACROINVERTEBRATES OF FLORIDA: A GUIDE TO REFERENCES FOR THEIR IDENTIFICATION

MICHAEL D. HUBBARD, MANUEL L. PESCADOR, ANDREW K. RASMUSSEN,  
INGOLF S. ASKEVOLD, JEROME JONES, R. WILLS FLOWERS, AND JOHN H. EPLER  
Entomology, Center for Water Quality, Florida A&M University,  
Tallahassee, FL 32307

### ABSTRACT

A list of identification guides is presented, including keys, descriptions, and other information, many with attached annotations. We have found these manuscripts useful in the determination of the freshwater macroinvertebrates of Florida.

Key Words: Keys, macroinvertebrates, aquatic, freshwater, Florida fauna

### RESUMEN

Es presentada una lista de guías de identificación que incluye claves, descripciones y otras informaciones, muchas con anotaciones adjuntas, que son útiles para la determinación de macroinvertebrados de agua dulce de la Florida.

---

Identification of the freshwater macroinvertebrate fauna of many areas is often a difficult process. Florida is certainly no exception. For most groups there are no comprehensive keys to the Florida fauna and other useful keys are usually scattered and hard to find for the non-specialist.

This paper contains a list of publications and keys, many annotated, which we have found useful for identifying the freshwater macroinvertebrates of Florida. It is an attempt to make these references more available to researchers who need to identify the freshwater macroinvertebrates of Florida. Some of the groups of Florida freshwater macroinvertebrates are not well known and this is reflected in the lack of adequate literature for identifying these groups.

The number of papers listed for the different groups varies widely. This is related to, among other factors, the number of species present in Florida, the difficulty in actually determining the identity of these species, and the recency and availability of comprehensive revisions of the various taxa.

We have tried to include all taxa of truly aquatic macroinvertebrates; i.e., those with at least one aquatic life history stage. We have also included some semiaquatic taxa which are likely to be found in aquatic collections.

In order to facilitate use, taxa in this paper are arranged alphabetically within groups, starting with phyla and working down the taxonomic hierarchy.

### GENERAL REFERENCES

- BORROR, D. J., C. A. TRIPLEHORN, AND N. F. JOHNSON. 1989. An introduction to the study of insects. Sixth edition. Saunders College Publ., Philadelphia. 875 pp.
- BRIGHAM, A. R., W. U. BRIGHAM, AND A. GNILKA (eds.). 1982. Aquatic insects and oligochaetes of North and South Carolina. Midwest Aquatic Enterprises, Mahomet, Illinois. 837 pp.
- CHENG, L. (ed.). 1976. Marine insects. American Elsevier Publ. Co., New York.

This article is from *Florida Entomologist Online*, Vol. 78, No. 1 (1995).  
FEO is available from the Florida Center for Library Automation gopher (sally.fcla.ufl.edu)  
and is identical to *Florida Entomologist (An International Journal for the Americas)*.  
FEO is prepared by E. O. Painter Printing Co., P.O. Box 877, DeLeon Springs, FL. 32130.

- EDMONDSON, W. T. 1959. *Freshwater biology*. J. Wiley and Sons, Inc., New York. 1248 pp.
- LEHMKUHL, D. M. 1979. *How to know the aquatic insects*. Wm. C. Brown Co. Publ., Dubuque, Iowa.
- MCCAFFERTY, W. P. 1981. *Aquatic entomology*. Jones and Bartlett Publ., Inc., Boston.
- MERRITT, R. W., AND K. W. CUMMINS (eds.) 1984. *An introduction to the aquatic insects of North America*. Second edition. Kendall/Hunt, Dubuque, Iowa.
- PARRISH, F. E. 1975. *Keys to water quality indicative organisms of the southeastern United States*. Office of Res. and Develop., U. S. Environ. Monitoring and Support Lab., Cincinnati. 195 pp.
- PECKARSKY, B. L., P. R. FRAISSINET, M. A. PENTON, AND D. J. CONKLIN, JR. 1990. *Freshwater macroinvertebrates of northeastern North America*. Cornell Univ. Press, Ithaca, New York. 442 pp.
- PENNAK, R. W. 1989. *Fresh-water invertebrates of the United States: Protozoa to Mollusca*. Third edition. John Wiley & Sons, New York. 628 pp.
- STACHOWISTCH, M. 1992. *The invertebrates. An illustrated glossary*. Wiley-Liss, Inc. New York. 605 pp.
- STEHR, F. W. (ed.) 1978. *Immature insects. Volume I* Kendall/Hunt Publ. Co., Dubuque, Iowa. 768 pp.
- THORP, J. H., AND A. P. COVICH (eds.) 1991. *Ecology and classification of North American freshwater invertebrates*. Academic Press, San Diego, California. 911 pp.
- WILLIAMS, D., AND B. FELTMATE. 1992. *Aquatic insects*. The Univ. of Arizona Press, Tucson.

#### PHYLUM ANNELIDA

- BRINKHURST, R. O. 1986. *Guide to the freshwater aquatic microdrile oligochaetes of North America*. Canadian Special Publ. in Fisheries and Aquatic Sci. 84: 259 pp.
- BRINKHURST, R. O., AND B. G. M. JAMESON, 1971. *Aquatic Oligochaeta of the world*. Univ. of Toronto Press, Toronto. 860 pp.
- BRINKHURST, R. O., AND M. J. WETZEL. 1984. *Aquatic Oligochaeta of the world: Supplement. A catalogue of new freshwater species, descriptions, and revisions*. Canadian Dept. of Fisheries and Oceans, Canadian Tech. Rep. of Hydrography and Ocean Sci. No. 44. v + 101 pp.
- HILTUNEN, J. K., AND D. J. KLEMM. 1980. *A guide to the Naididae (Annelida: Clitellata: Oligochaeta) of North America*. U. S. Environ. Monitoring and Support Lab., Cincinnati. EPA-600/4-80-033. 48 pp.
- KLEMM, D. J. 1982. *Leeches (Annelida: Hirudinea) of North America*. U. S. Environ. Monitoring and Support Lab., Cincinnati. EPA-600/382-025. 177 pp.
- KLEMM, D. J. 1985. *A guide to the freshwater Annelida (Polychaeta, Naidid and Tubificid Oligochaeta, and Hirudinea) of North America*. Kendall/Hunt Publ. Co., Dubuque, Iowa. 198 pp.
- STIMPSON, K. S., D. J. KLEMM, AND J. K. HILTUNEN. 1982. *A guide to the freshwater Tubificidae (Annelida: Clitellata: Oligochaeta) of North America*. U. S. Environ. Monitoring and Support Lab., Cincinnati. EPA-600/3-82-033. 61 pp.

#### PHYLUM ARTHROPODA

##### CRUSTACEA

- BOUSFIELD, E. L. 1963. *New fresh-water amphipod crustaceans from Florida*. National Museum of Canada, Natural History Papers No. 18:1-9.  
[Although somewhat old, the data are still valid]
- HOBBS, H. H., JR. 1942. *The crayfishes of Florida*. Univ. of Florida Bio. Sci. Series 3:1-179.
- HOBBS, H. H., JR. 1972. *Crayfishes (Astacidae) of North and Middle America*. U. S. Environ. Protection Agency Water Pollution Control Res. Series 18050 ELD05/72. 173 pp.

- HOLSINGER, J. R. 1972. The freshwater amphipod crustaceans (Gammaridae) of North America. U. S. Environ. Protection Agency Water Pollution Control Res. Series 18050 ELD04/72. 89 pp.
- PENNAK, R. W. 1989. Fresh-water invertebrates of the United States: Protozoa to Mollusca. Third edition. John Wiley & Sons, New York. 628 pp.
- WILLIAMS, W. D. 1972. Freshwater isopods (Asellidae) of North America. U. S. Environ. Monitoring and Support Lab., Cincinnati. EPA Water Pollution Control Res. Series 18050 ELD05/72. 45 pp.

CHELICERATA (ACARI: HYDRACARINA)

- COOK, D. R. 1976. New North American species of the genus *Arrenurus*, mostly from Florida (Acarina: Arrenuridae). Contributions of the American Entomol. Institute 11(4):1-58.  
[Contains keys, description, and discussions for 35 species of *Arrenurus*]
- COOK, D. R. 1976. North American species of the genus *Koenikea* (Acarina: Unionicolidae). Contributions of the American Entomol. Institute 11(4):59-100. [Contains keys, description, and discussions for 20 species of *Koenikea*, many from Florida]
- COOK, D. R. 1976. North American species of the genus *Mideopsis* (Acarina: Mideopsidae). Contributions of the American Entomol. Institute 11(4):101-148.  
[Contains keys, description, and discussions for 25 species of *Mideopsis*, many from Florida]
- PLUCHINO, E. S. 1984. Guide to the common water mite genera of Florida. Florida Dept. of Environmental Regulation Tech. Series 7(1): 45 pp.  
[Contains key to common Florida genera; includes basic biological information]

INSECTA (COLEOPTERA: GENERAL)

- ARNETT, R. H. 1963. The beetles of the United States. Catholic Univ. of America Press, Washington, D.C. xi + 1112 pp.  
[Includes keys to families, subfamilies and genera of the beetles of North America north of the Rio Grande, with brief notes about numbers of species for each genus. It is now extremely out of date, and was fraught with numerous difficulties when first published; many of the keys do not work]
- BRIGHAM, W. U. 1982. Aquatic Coleoptera. Pp 10.1-10.136 In A.R. Brigham, W.U. Brigham, and A. Gnilka, (eds.), Aquatic insects and oligochaetes of North and South Carolina. Midwest Aquatic Enterprises, Mahomet, Illinois.  
[Keys are fairly simple; some taxonomy is outdated]
- DILLON, E. S., AND L. S. DILLON. 1972. A manual of the common beetles of eastern North America. Volume 1. Dover Publ., New York. x + pp 1-434.  
[Somewhat out of date taxonomically; illustrations are provided that could be of use]
- DILLON, E. S., AND L. S. DILLON. 1972. A manual of the common beetles of eastern North America. Volume 2. Dover Publ., New York, pp 435-894.  
[Somewhat out of date taxonomically; illustrations are provided that could be of use]
- HATCH, M. H. 1971. The Beetles of the Pacific Northwest Part V. Rhipiceroidea, Sternoxi, Phytophaga, Rhynchophora, and Lamellicornia. Univ. of Washington Publ. in Biology, Volume 16. xiv + 662 pp.  
[Includes figures and keys to genera of beetles; while geared specifically to that region, most of the genera are common to Florida, and it is far better illustrated than Arnett, 1963]
- LAWRENCE, J. L., A. HASTINGS, M. DALLWITZ, AND T. PAINE. 1993. Beetle larvae of the world. Interactive identification and information retrieval for families and subfamilies. CSIRO Div. of Entomol.

[An illustrated expert system for the identification of larvae of Coleoptera to family and subfamily; requires CD ROM system]

YOUNG, F. N. 1954. The water beetles of Florida. Univ. of Florida Biological Sci. Series 5(1):1-238.

[Nice volume but quite out of date; includes all the "water beetles", strictly speaking, the Dytiscidae, etc., and certain non-Adephaga families: Hydrophilidae, Hydraenidae, Dryopidae and Elmidae; Hydrochidae were separated from the Hydrophilidae]

INSECTA (COLEOPTERA: CHELONARIIDAE)

ARNETT, R. H. 1963. The beetles of the United States. Catholic Univ. of America Press, Washington, D.C.

INSECTA (COLEOPTERA: CHRYSOMELIDAE)

[A number of subfamilies include somewhat aquatic species, such as the flea beetle *Agasicles* that has been introduced on alligator weed, and *Mantura* that is often collected in roadside ditches. However, only the Donaciinae are entirely aquatic]

ARNETT, R. H. 1963. The beetles of the United States. Catholic Univ. of America Press, Washington, D.C.

[Needed to key specimens to subfamily]

ASKEVOLD, I. S. 1987. The identity of *Donacia caerulea* Olivier, 1795 (Coleoptera: Chrysomelidae). Coleopterists Bull. 41(4):345-349.

ASKEVOLD, I. S. 1987. The identity of *Donacia cuprea* Kirby, 1837, and *Donacia quadricollis* Say, 1827, with a taxonomic revision of members of the *D. subtilis* Kunze-group (Coleoptera: Chrysomelidae: Donaciinae) Canadian Entomol. 19:629-645.

ASKEVOLD, I. S. 1990. Reconstructed phylogeny and reclassification of the genera of Donaciinae (Coleoptera: Chrysomelidae). Quaestiones Entomologicae 26:601-664.

ASKEVOLD, I. S. 1991a. Classification, reconstructed phylogeny and geographic history of the New World members of *Plateumaris* Thomson, 1859 (Coleoptera: Chrysomelidae). Memoirs of the Entomol. Soc. of Canada 157:5-175.

ASKEVOLD, I. S. 1991b. An annotated list of Nearctic Donaciinae (Coleoptera: Chrysomelidae): the generic classification and type specimens of the New World species. Psyche 98:165-192.

BALSBAUGH, E. U., JR., AND K. L. HAYS, 1972. The leaf beetles of Alabama (Coleoptera: Chrysomelidae). Agric. Exp. Stn., Auburn Univ., Bull. 441, pp 1-223. [includes keys to subfamilies and many of the species that occur in Florida]

MARX, E. J. F. 1957. A Review of the subgenus *Donacia* in the Western Hemisphere (Coleoptera: Donaciidae). Bull. of the American Museum of Natural History 112:191-278.

[Key to species, distributional and host data for species of what is now restricted to *Donacia* (*Donacia*) and *Donacia* (*Donaciomima*); keys work fairly well, and taxonomy can be updated using Askeveld, 1991b)

WILCOX, J. A. 1972. A review of the North American chrysomeline leaf beetles. New York State Museum and Science Service, Albany, Bull. 421, pp 1-37.

[includes a few genera that often occur in semiaquatic habitats]

WILCOX, J. A. 1975. Checklist of the beetles of North and Central America and the West Indies. Volume 8, fam. 129, Chrysomelidae. Flora and Fauna Publ., Gainesville, Florida 166 pp.

[Assists in correct taxonomic placement of species to genus, but provides no references or aids to identification]

INSECTA (COLEOPTERA: CURCULIONIDAE)

- [There are many genera and species of aquatic weevils, and they are very difficult to identify. Most genera are poorly studied, with numerous undescribed species, even from Florida alone. There are also a number of aquatic weevils introduced as biocontrol agents, and these are not covered by most available literature]
- BLATCHLEY, W. S AND C. W. LENG. 1916. Rhynchophora or weevils of north eastern North America. Nature Publ. Co., Indianapolis. 682 pp.  
[Very out of date, but some of the keys and descriptions are useful; taxonomy needs to be carefully traced using O'Brien & Wibmer, 1982; many of the aquatic weevils of Florida are treated]
- BOARD, V. V. 1972. Taxonomy and biology of *Endalus* Laporte and *Onychylis* LeConte in America north of Mexico. Ph.D. Thesis, Texas A&M Univ., College Stn., TX. [*Endalus* is no longer valid; *Notiodes* Schönherr is the valid name].
- KISSINGER, D. G. 1964. Curculionidae of America north of Mexico. A key to the genera. v + 143 pp. S. Lancaster, MA.  
[The only published key to all genera of North American weevils; some taxonomy out of date]
- KUSCHEL, W. 1952. Révision de *Lissorhoptrus* LeConte y géneros vecinos de América (Ap. 11 de Coleoptera Curculionidae). Revista Chilena de Entomología 1:23-74.
- O'BRIEN, C. W. 1976. A taxonomic revision of the New World subaquatic genus *Neochetina* (Coleoptera: Curculionidae: Bagoini). Ann. Entomol. Soc. America 69(2):165-174.
- O'BRIEN, C. W. 1981. The larger (4.5+ mm) *Listronotus* of America, north of Mexico (Cylindrorhininae, Curculionidae, Coleoptera). Transactions of the American Entomol. Soc. 107:69-123.
- O'BRIEN, C. W., AND I. S. ASKEVOLD. 1992. Systematics and evolution of weevils the genus *Bagous* Germar (Coleoptera: Curculionidae), I. Species of Australia. Transactions of the American Entomol. Soc. 118:331-452.  
[One species, *Bagous hydrillae*, has been introduced into Florida for biocontrol of *Hydrilla*]
- O'BRIEN, C. W., AND G. B. MARSHALL. 1979. U.S. *Bagous*, bionomic notes, a new species, and a new name (Bagoini, Eirrhininae, Curculionidae, Coleoptera). Southwestern Entomol. 4(2):141-149.
- O'BRIEN, C. W., AND G. J. WIBMER. 1982. Annotated checklist of the weevils (Curculionidae *sensu lato*) of North America, Central America, and the West Indies (Coleoptera: Curculionoidea). Memoirs of the American Entomol. Institute Volume 34 ix + pp 1-382.  
[An essential reference to trace taxonomy, identifications and distributions, from older literature]
- TANNER, V. M. 1943. A study of the subtribe Hydronomi with description of new species, (Curculionidae) study No. VI. Great Basin Naturalist 4(12):1-38.  
[Outdated, keys difficult to use; many species in Florida, distribution poorly known; keys genera of most aquatic weevils, treated as a single group, but this is a polyphyletic assemblage; contains a number of very good and accurate habitus illustrations, however]
- WIBMER, G. J. 1981. Revision of the New World weevil genus *Tyloderma* in America north of Mexico (Coleoptera: Curculionidae: Cryptorhynchinae). Southwestern Entomol. Supplement 3:1-95.

INSECTA (COLEOPTERA: DRYOPIDAE)

- BROWN, H. P. 1970. A key to the genera of the beetle family Dryopidae of the New World. Entomol. News 81:171-175.

- BROWN, H. P. 1972. Aquatic dryopid beetles (Coleoptera of the United States. U. S. Environmental Protection Agency Water Pollution Control Res. Series. ix + 82 pp.
- BROWN, H. P. 1983. A catalogue of the Coleoptera of America north of Mexico. Family: Dryopidae. U. S. Dept. of Agric., Agric. Handbook Number 529-49, pp 1-8.

## INSECTA (COLEOPTERA: DYTISCIDAE)

- FALL, H. F. 1923. A revision of the North American *Hydroporus* and *Agaporus*. John D. Sherman, Mt. Vernon, New York. 129 pp.
- HILSENHOFF, W. L. 1980. *Coptotomus* (Coleoptera: Dytiscidae) in eastern North America with descriptions of two new species. Transactions of the American Entomol. Soc. 105:461-471.
- MATTA, J. F., AND A. G. MICHAEL. 1976. A new subspecies of *Acilius* (Coleoptera: Dytiscidae) from the southeastern United States. Entomol. News 87:11-16.
- ROUGHLEY, R. E. 1990. A systematic revision of species of *Dytiscus* Linnaeus (Coleoptera: Dytiscidae) Part 1. Classification based on adults. Quaestiones Entomologicae 26:383-557.  
[One species probably occurs in northernmost Florida]
- ROUGHLEY, R. E., AND D. H. PENGELLY. 1982. Classification, phylogeny, and zoogeography of *Hydaticus* Leach (Coleoptera: Dytiscidae) of North America. Quaestiones Entomologicae 17:249-309.
- YOUNG, F. N. 1953. The types of *Hydradephaga* in the W.S. Blatchley collection, with generic reassignments and synonymies (Coleoptera: Noteridae, Dytiscidae, Gyridae, Haliplidae). Canadian Entomol. 85:113-119.
- YOUNG, F. N. 1953. Two new species of *Matus*, with a key to the known species and subspecies of the genus (Coleoptera: Dytiscidae). Ann. Entomol. Soc. America 46:49-55.
- YOUNG, F. N. 1969. A checklist of the American Bidessini (Coleoptera: Dytiscidae: Hydroporinae). Smithsonian Contributions to Zoology 33:1-5.
- YOUNG, F. N. 1981. Predaceous water beetles of the genus *Desmopachria* Babington: the *leechi-glabricula* group (Coleoptera: Dytiscidae). Pan-Pacific Entomol. 57:57-64.
- YOUNG, F. N. 1981. Predaceous water beetles of the genus *Desmopachria*: the *convexagrana* group (Coleoptera: Dytiscidae). Occasional Papers of the Florida State Collection of Arthropods 2:1-11.
- WOLFE, G. W., AND R. E. ROUGHLEY. 1990. A taxonomic, phylogenetic, and zoogeographic analysis of *Laccornis* Gozis (Coleoptera: Dytiscidae) with the description of *Laccornini*, a new tribe of Hydroporinae. Quaestiones Entomologicae 26:273-354.

## INSECTA (COLEOPTERA: ELMIDAE)

- BROWN, H. P. 1983. A catalogue of the Coleoptera of America north of Mexico. Family: Elmidae. U. S. Dept. of Agric., Agric. Handbook Number 529-41, pp 1-23.
- SCHMUDE, K. L., C. B. BARR AND H. P. BROWN. 1992. *Stenelmis lignicola* and *Stenelmis xylomastis*, two new North American species of wood-inhabiting riffle beetles (Coleoptera: Elmidae). Proc. Entomol. Soc. Washington 94:580-594.

## INSECTA (COLEOPTERA: GYRINIDAE)

- OCHS, G. 1924 On the West Indian Gyrinidae and a new species of *Gyretes* from northern Brazil. American Museum Novitates 125:1-8.
- OCHS, G. 1938. Additional remarks on West Indian Gyrinidae. Psyche 45:8593.
- OYGUR, S., AND G. W. WOLFE. 1991. Classification, distribution, and phylogeny of North American (north of Mexico) species of *Gyrinus* Müller (Coleoptera: Gyrinidae). Bull. American Museum of Natural History 207, 97 pp.

- WALLS, J. G. 1974. Distribution and recognition of United States whirligig beetles of the genus *Gyretes* (Coleoptera: Gyrrinidae). Studies in Arthropoda 1:1-10.
- WOOD, F. E. 1962. A synopsis of the genus *Dineutus* (Coleoptera: Gyrrinidae) in the western Hemisphere. M.S. Thesis, Univ. of Missouri. 100 pp + plates I to VIII.
- WOOD, F. E. 1968. The taxonomic status of *Dineutus serrulatus* and *Dineutus analis* in North America (Gyrrinidae: Coleoptera). Proc. of the United States National Museum 124:1-9.

INSECTA (COLEOPTERA: HALIPLIDAE)

- YOUNG, F. N. 1961. Pseudosibling species in the genus *Peltodytes* (Coleoptera: Haliplidae). Ann. Entomol. Soc. America 54:214-222.

INSECTA (COLEOPTERA: HETERO CERIDAE)

- MILLER, W. V. 1988. A new species of *Heterocerus* recorded from Florida and Canada (Coleoptera: Heteroceridae). Florida Entomol. 71:30-33.
- PACHECO, F. 1964. Sistemática, filogenia y distribución de los Heteroceridos de América (Coleoptera: Heteroceridae). Monografías del Colegio de Postgraduados, Chapingo, Mexico. 115 pp.
- PACHECO, F. 1969. A new species of Heterocerini (Coleoptera: Heteroceridae). Florida Entomol. 52:37-39.
- PACHECO, M. F. 1978. A catalog of the Coleoptera of America north of Mexico. Family Heteroceridae. U. S. Dept. of Agric., Agric. Handbook Number 529-47.

INSECTA (COLEOPTERA: HYDRAENIDAE)

- PERKINS, P. D. 1980. Aquatic beetles of the family Hydraenidae in the Western Hemisphere: Classification, biogeography and inferred phylogeny (Insecta: Coleoptera). Quaestiones Entomologicae 16:3-554.
- YOUNG, F. N. 1954. The water beetles of Florida. Univ. of Florida Biological Science Series 5(1):1-238.  
[Refers to this family as the Limnebiidae; quite out of date but may be useful for supplementary information]

INSECTA (COLEOPTERA: HYDROPHILIDAE)

- MILLER, D. C. 1974. Revision of the New World *Chaetarthria* (Coleoptera: Hydrophilidae). Entomologica Americana 49:1-123
- SMETANA, A. 1974. Revision of the genus *Cymbiodyta* Bed. (Coleoptera: Hydrophilidae). Memoirs of the Entomol. Soc. of Canada 93:1113.
- SMETANA, A. 1975. Revision of the New World genera of the tribe Omicrini trib. nov. of the hydrophilid subfamily Sphaeridiinae (Coleoptera). Studies on the Neotropical Fauna 10:153-182.
- SMETANA, A. 1978. Revision of the subfamily Sphaeridiinae of America north of Mexico (Coleoptera, Hydrophilidae). Memoirs of the Entomol. Soc. of Canada 105:1-292.
- SMETANA, A. 1980. Revision of the genus *Hydrochara* Berth. (Coleoptera: Hydrophilidae). Memoirs of the Entomol. Soc. of Canada 111:1-100.
- SMETANA, A. 1984. Revision of the subfamily Sphaeridiinae of America north of Mexico (Coleoptera: Hydrophilidae). Supplementum 2. Canadian Entomol. 116:555-566.
- SMETANA, A. 1985. Revision of the subfamily Helophorinae of the Nearctic region (Coleoptera: Hydrophilidae). Memoirs of the Entomol. Soc. of Canada 131:1-154.
- SMETANA, A. 1988. Review of the family Hydrophilidae of Canada and Alaska (Coleoptera). Memoirs of the Entomol. Soc. of Canada 142:1-316.

## INSECTA (COLEOPTERA: LIMNICHIDAE)

- WOOLDRIDGE, D. P. 1978. New World Limnichinae IV. *Eulimnichus* Casey. A. Synonymies, lectotype designations and redescriptions (Coleoptera: Limnichidae). Great Lakes Entomol. 11:163-173.
- WOOLDRIDGE, D. P. 1979. New World Limnichinae V. *Eulimnichus* Casey. B. Descriptions of new species (Coleoptera: Limnichidae). Great Lakes Entomol. 12:1-11.
- WOOLDRIDGE, D. P. 1981. New World Limnichinae VI. A revision of *Limnichoderus* Casey (Coleoptera: Dryopoidea: Limnichidae). J. Kansas Entomol. Soc. 54:171-191.
- WOOLDRIDGE, D. P. 1986. A Catalogue of the Coleoptera of America north of Mexico. Family: Limnichidae. U. S. Dept. of Agric., Agric. Handbook Number 529-48, pp 1-8.

## INSECTA (COLEOPTERA: NOTERIDAE)

- SPANGLER, P. J., AND G. W. FOLKERTS. 1973. Reassignment of *Colpius inflatus* and a description of its larva (Coleoptera: Noteridae). Proc. of the Biological Soc. of Washington 86:501-509.
- YOUNG, F. N. 1978. The New World species of the water-beetle genus *Notomicrus* (Noteridae). Systematic Entomol. 3:285-293.
- YOUNG, F. N. 1979. Water beetles of the genus *Suphisellus* Crotch in the Americas north of Colombia (Coleoptera: Noteridae). Southwestern Naturalist 24:409-429.
- YOUNG, F. N. 1985. A key to the American species of *Hydrocanthus* Say, with descriptions of new taxa (Coleoptera: Noteridae). Proc. of the Academy of Sci. of Philadelphia 137:90-98.

## INSECTA (COLEOPTERA: PSEPHENIDAE)

- BROWN, H. P. 1983. A catalogue of the Coleoptera of America north of Mexico. Family: Psephenidae. U. S. Dept. of Agric., Agric. Handbook Number 529-41, pp 1-8.
- BROWN, H. P., AND C. M. MURVOSH. 1974. A revision of the genus *Psephenus* (water penny beetles) of the United States and Canada (Coleoptera, Dryopoidea, Psephenidae). Transactions of the Entomol. Soc. of America 100:289-340.

## INSECTA (COLEOPTERA: PTILODACTYLIDAE)

- JOHNSON, V., AND P. H. FREYTAG. 1978. Two new species of *Ptilodactyla* (Coleoptera: Ptilodactylidae). Entomol. News 89:125-128
- JOHNSON, V., AND P. H. FREYTAG. 1982. A review of the species of *Ptilodactyla* in the United States with descriptions of three new species (Coleoptera: Ptilodactylidae). Entomol. News 93:129-135.
- STRIBLING, J. B. 1986. Revision of *Anchytarsus* (Coleoptera: Dryopoidea) with a key to the New World genera of Ptilodactylidae. Ann. Entomol. Soc. America 79:219-234.

## INSECTA (COLLEMBOLA)

- CHRISTIANSEN, K. A., AND P. F. BELLINGER. 1980-1981. The Collembola of North America North of the Rio Grande. Grinnell College, Grinnell, Iowa. 1322 pp. [with supplements, available from K. Christiansen, Grinnell College, this includes all described North American species]
- CHRISTIANSEN, K. A., AND R. J. SNIDER. 1984. Aquatic Collembola. Pages 82-91 in R. W. Merritt and K. W. Cummins (eds), An introduction to the aquatic insects of North America. Second edition. Kendall/Hunt Publ. Co., Dubuque, Iowa.
- WALTZ, R. D., AND W. P. McCAFFERTY. 1979. Freshwater springtails (Hexapoda: Collembola) of North America. Purdue Univ. Agric. Exp. Stn. Res. Bull. 960. 32 pp., 135 figs.



[Good illustrated key including most North American species which regularly occur on water]

INSECTA (DIPTERA: GENERAL)

- JOHANNSSEN, O. A. 1934-1937. Aquatic Diptera. Cornell Univ. Agric. Exp. Stn. Memoir. 369 pp.  
[Outdated, but still useful for illustrations]
- MCALPINE, J. F., et al. 1981. Manual of Nearctic Diptera. Volume 1. Agric. Canada Res. Branch Monograph no. 27, 674 pp. [Treats adults to genus; Chironomidae key is outdated]
- TESKEY, H. J. 1984. Aquatic Diptera. Part one. Larvae of aquatic Diptera. Pages 448-466 in R. W. Merritt and K. W. Cummins (eds), An introduction to the aquatic insects of North America. Second edition. Kendall/Hunt Publ. Co., Dubuque, Iowa.  
[Keys to genus for many larvae; good general reference]
- MERRITT, R. W., AND E. I. SCHLINGER. 1984. Aquatic Diptera. Part two. Adults of aquatic Diptera. Pages 467-490 in R. W. Merritt and K. W. Cummins (eds), An introduction to the aquatic insects of North America. Second edition. Kendall/Hunt Publ. Co., Dubuque, Iowa
- WEBB, D. W., AND W. U. BRIGHAM. 1982. Aquatic Diptera. Pages 11.1-11.111 in A. R. Brigham, W. U. Brigham, and A. Gnilka, (eds.), Aquatic insects and oligochaetes of North and South Carolina. Midwest Aquatic Enterprises, Mahomet, Illinois.

INSECTA (DIPTERA: CERATOPOGONIDAE)

- BLANTON, F. S., AND W. W. WIRTH. 1979. The sand flies (*Culicoides*) of Florida (Diptera: Ceratopogonidae). Florida Dept. of Agric. and Consumer Services, Div. of Plant Industry, Arthropods of Florida 10:1-203.
- WILKENING, A. J., D. L. KLINE, AND W. W. WIRTH. 1985. An annotated checklist of the Ceratopogonidae (Diptera) of Florida with a new synonymy. Florida Entomol. 68:511-537.

INSECTA (DIPTERA: CHIRONOMIDAE)

- BORKENT, A. 1984. The systematics and phylogeny of the *Stenochironomus* complex (*Xestochironomus*, *Harrisius*, and *Stenochironomus*) (Diptera: Chironomidae). Memoirs of the Entomol. Soc. of Canada 128:1-269.  
[Keys and descriptions for adults, pupae, and larvae]
- COFFMAN, W. P., AND L. C. FERRINGTON, JR. 1984. Chironomidae. Pages 551-652 in R. W. Merritt and K. W. Cummins (eds), An introduction to the aquatic insects of North America. Second edition. Kendall/Hunt Publ. Co., Dubuque, Iowa.  
[Keys for pupal and larval Chironomidae to generic level; a bit outdated]
- EPLER, J. H. 1987. Revision of the Nearctic *Dicrotendipes* Kieffer, 1913 (Diptera: Chironomidae). Evolutionary Monographs 9, 102 pp + 37 pl.  
[Keys and descriptions for adults, pupae, and larvae]
- EPLER, J. H. 1992. Identification manual for the larval Chironomidae (Diptera) of Florida. Florida Dept. of Environmental Regulation. 302 pp.  
[Illustrated keys to larvae; most up-to-date reference available for Chironomidae larvae]
- GRODHAUS, G. 1987. *Endochironomus* Kieffer, *Tribelos* Townes, *Synendotendipes*, n. gen., and *Endotribelos*, n. gen. (Diptera: Chironomidae) of the Nearctic region. J. Kansas Entomol. Soc. 60:167- 247.  
[Keys and descriptions for adults, pupae, and larvae]
- ROBACK, S. S. 1971. The adults of the subfamily Tanypodinae (= Pelopiinae) in North America (Diptera: Chironomidae). Monographs of the Academy of Natural Sci.

- of Philadelphia 17:1-410.  
[Keys and descriptions for adults; some taxonomy outdated]
- ROBACK, S. S. 1976. The immature chironomids of the eastern United States. I. Introduction and Tanypodinae - Coelotanypodinae. Proc. of the Academy of Natural Sci. of Philadelphia 127:147-201.  
[Keys and descriptions for pupae and larvae]
- ROBACK, S. S. 1977. The immature chironomids of the eastern United States. II. Tanypodinae - Tanypodini. Proc. of the Academy of Natural Sci. of Philadelphia 128:55-87.  
[Keys and descriptions for pupae and larvae]
- ROBACK, S. S. 1978. The immature chironomids of the eastern United States. III. Tanypodinae - Anatópyniini, Macropelopiini, and Natarsiini. Proc. of the Academy of Natural Sci. of Philadelphia 129:151-202.  
[Keys and descriptions for pupae and larvae]
- ROBACK, S. S. 1978. The immature chironomids of the eastern United States. IV. Tanypodinae - Procladiini. Proc. of the Academy of Natural Sci. of Philadelphia 132:1-63.  
[Keys and descriptions for pupae and larvae]
- ROBACK, S. S. 1980. The immature chironomids of the eastern United States. V. Pentaneurini - *Thienemannimyia* group. Proc. of the Academy of Natural Sci. of Philadelphia 133:73-128.  
[Keys and descriptions for pupae and larvae; taxonomy outdated]
- ROBACK, S. S. 1985. The immature chironomids of the eastern United States. VI. Pentaneurini - Genus *Ablabesmyia*. Proc. of the Academy of Natural Sci. of Philadelphia 137:153-212.  
[Keys and descriptions for pupae and larvae]
- ROBACK, S. S. 1986. The immature chironomids of the eastern United States. VII. Pentaneurini - Genus *Monopelopia*, with redescription of the male adults and description of some Neotropical material. Proc. of the Academy of Natural Sci. of Philadelphia 138:350-365.  
[Keys and descriptions for pupae and larvae]
- ROBACK, S. S. 1986. The immature chironomids of the eastern United States. VIII. Pentaneurini - Genus *Nilotanypus*, with the description of a new species from Kansas. Proc. of the Academy of Natural Sci. of Philadelphia 138:443-465.  
[Keys and descriptions for pupae and larvae]
- ROBACK, S. S. 1987. The immature chironomids of the eastern United States. IX. Pentaneurini - Genus *Labrundina* with the description of some Neotropical material. Proc. of the Academy of Natural Sci. of Philadelphia 139:159-209.  
[Keys and descriptions for pupae and larvae]
- SÆTHER, O. A. 1981. Orthocladiinae (Chironomidae: Diptera) from the British West Indies with descriptions of *Antillocladius* n. gen., *Lipumetriocnemus* n. gen., and *Diplosmittia* n. gen. Entomologica Scandinavica Supplement 16:1-46.  
[Adults only]
- SÆTHER, O. A. 1982. Orthocladiinae (Chironomidae: Diptera) from SE U.S.A., with descriptions of *Plhudsonia*, *Unniella* and *Platysmittia* n. genera and *Ate-lopodella* n. subgen. Entomologica Scandinavica 13:465-510.  
[Mostly adults]
- SÆTHER, O. A. 1985. A review of the genus *Rheocricotopus* Thienemann & Harnisch, 1932, with the description of three new species (Diptera: Chironomidae). Spixiana Supplement 11:59-108.  
[Keys for adults, pupae, and larvae]
- SÆTHER, O. A. 1990. A review of the genus *Limnophyes* Eaton from the Holarctic and Afrotropical regions (Diptera: Chironomidae, Orthocladiinae). Entomologica Scandinavica Supplement 35:1-139.  
[Keys and descriptions for adults, pupae, and larvae]
- SÆTHER, O. A., AND J. E. SUBLETTE. 1983. A review of the genera *Doithrix* n. gen., *Georthocladius* Strenzke, *Parachaetoclaeus* Wülker, and *Pseudorthocladius*

- Goetghebuer (Diptera: Chironomidae, Orthocladiinae). *Entomologia Scandinavica Supplement* 20:1-100.  
[Mostly adults, but some information of immature stages]
- SIMPSON, K. W., AND R. W. BODE. 1979. Common larvae of Chironomidae (Diptera) from New York State streams and rivers with particular reference to the fauna of artificial substrates *Bull. of the New York State Museum* 439:1-105.  
[Keys to some larvae; only marginally useful because of extralimital nature; some taxonomy outdated]
- SIMPSON, K. W., R. W. BODE, AND P. ALBU. 1982. Keys for the genus *Cricotopus* adapted from "Revision der Gattung *Cricotopus* van der Wulp und ihrer Verwandten (Diptera: Chironomidae)" by M. Hirvenoja. *Bull. of the New York State Museum* 450:1-133.  
[Keys for adults, pupae, and larvae deals mostly with European species]
- SOPONIS, A. R. 1977. A revision of the Nearctic species of *Orthocladius* (*Orthocladius*) van der Wulp (Diptera: Chironomidae). *Memoirs of the Entomol. Soc. of Canada* 102:1-187.  
[Keys and descriptions for adults, pupae, and larvae]
- TOWNES, H. K. 1945. The Nearctic species of Tendipedini (Diptera: Tendipedidae (= Chironomidae)). *American Midland Naturalist* 34:1-206.  
[Keys for adults; some taxonomy outdated]
- WIEDERHOLM, T. (ed.) 1983. Chironomidae of the Holarctic region. Keys and diagnoses. Part 1. Larvae. *Entomologia Scandinavica Supplement* 19:1-457.  
[Keys and diagnoses; a necessary reference in any lab]
- WIEDERHOLM, T. (ed.) 1986. Chironomidae of the Holarctic region. Keys and diagnoses. Part 2. Pupae. *Entomologia Scandinavica Supplement* 28:1-482.  
[Keys and diagnoses; a necessary reference in any lab]
- WIEDERHOLM, T. (ed.) 1989. Chironomidae of the Holarctic region. Keys and diagnoses. Part 3. Adult males. *Entomologia Scandinavica Supplement* 34:1-524.  
[Keys and diagnoses; a necessary reference in any lab]

INSECTA (DIPTERA: CULICIDAE)

- CARPENTER, S. J. AND W. J. LACASSE. 1955. Mosquitoes of North America (north of Mexico). Univ. of California Press, Berkeley. 360 pp, 127 pl.
- KING, W. V., G. H. BRADLEY, C. N. SMITH, AND W. C. MCDUFFIE. 1960. A handbook of the mosquitoes of the southeastern United States. U. S. Dept. of Agric., Agric. Handbook 173:1-188.
- MATHESON, R. 1944. Handbook of the mosquitoes of North America. Second edition. Comstock Publ. Co., Ithaca. 314 pp.

INSECTA (DIPTERA: TABANIDAE)

- AXTELL, R. C. 1976. Coastal horse flies and deer flies (Diptera: Tabanidae). Pages 415-445 in L. Cheng (ed.), *Marine Insects*. North-Holland Publ. Co., Amsterdam.
- JONES, C. M. AND D. W. ANTHONY. 1964. The Tabanidae (Diptera) of Florida. U. S. Dept. of Agric., Agric. Res. Service Tech. Bull. No. 1295:1-85.

INSECTA (DIPTERA: TIPULIDAE)

- BYERS, G. W. 1984. Tipulidae. Pages 491-514 in R. W. Merritt and K. W. Cummins (eds), *An introduction to the aquatic insects of North America*. Second edition. Kendall/Hunt Publ. Co., Dubuque, Iowa.

INSECTA (EPHEMEROPTERA)

- BERNER, L., AND M. L. PESCADOR. 1988. The mayflies of Florida. Revised edition. Univ. Presses of Florida, Tallahassee/Gainesville.

[This book is indispensable for identifying the Florida mayflies. It is comprehensive and the keys are quite useful]

- EDMUNDS, G. F., JR., S. L. JENSEN, AND L. BERNER. 1976. The mayflies of North and Central America. Univ. of Minnesota Press, Minneapolis. x + 330 p.  
[Useful for additional information, descriptions, and figures; most helpful used in conjunction with the book by Berner & Pescador (1988)]

#### INSECTA (HETEROPTERA)

- BLATCHLEY, W. S. 1926. Heteroptera or true bugs of eastern North America with especial reference to the faunas of Indiana and Florida. The Nature Publ. Co., Indianapolis, Indiana. 1116p.
- BOBB, M. L. 1974. The Aquatic and Semi-Aquatic Hemiptera of Virginia. Res. Div. Bull. of the Virginia Polytechnic Univ. and State Univ. no. 87. 196 pp.
- CHAPMAN, H. C. 1958. Notes on the identity, habitat and distribution of some semiaquatic Hemiptera of Florida. Florida Entomologist 41:117-124.
- ELLIS, L. L. 1952. The aquatic Hemiptera of southeastern Louisiana (exclusive of the Corixidae). American Midland Naturalist 48:302-329.
- HERRING, J. L., AND P. D. ASHLOCK. 1971. A key to the nymphs of the families of Hemiptera (Heteroptera) of America north of Mexico. Florida Entomologist 54:207-213.
- HUNGERFORD, H. B. 1948. The Corixidae of the Western Hemisphere (Hemiptera). Univ. of Kansas Science Bull. 32:1-827.
- HUNGERFORD, H. B., AND R. MATSUDA. 1960. Keys to subfamilies, tribes, genera and subgenera of the Gerridae of the world. Kansas Univ. Science Bull. 61(1):3-23.
- POLHEMUS, J. T. 1984. Aquatic and semiaquatic Hemiptera. Pages 321-260 in R. W. Merritt and K. W. Cummins (eds), An introduction to the aquatic insects of North America. Second edition. Kendall/Hunt Publ. Co., Dubuque, Iowa.
- SANDERSON, M. W. 1982. Aquatic and semiaquatic Heteroptera. Pages 6.1-6.94 in A. R. Brigham, W. U. Brigham, and A. Gnilka, (eds.), Aquatic insects and oligochaetes of North and South Carolina. Midwest Aquatic Enterprises, Mahomet, Illinois.
- SITES, R. W., AND J. T. POLHEMUS. 1994. Nepidae (Hemiptera) of the United States and Canada. Ann. Entomol. Soc. America 87:26-42.
- SMITH, C. L., AND J. T. POLHEMUS. 1978. The Veliidae of America north of Mexico - keys and checklist. Proc. Entomol. Soc. Washington 80:56-68.
- STONEDAHL, G. M., AND W. R. DOLLING. 1991. Heteroptera identification: a reference guide, with special emphasis on economic groups. J. Natural History 25:1027-1066.
- USINGER, R. L. 1956. Aquatic Hemiptera. Pages 182-228 in R. L. Usinger, (ed.), Aquatic insects of California, Univ. of California Press.

#### INSECTA (HYMENOPTERA)

- HAGEN, K. S. 1984. Aquatic Hymenoptera. Pages 438-447 in R. W. Merritt and K. W. Cummins (eds), An introduction to the aquatic insects of North America. Second edition. Kendall/Hunt Publ. Co., Dubuque, Iowa.

#### INSECTA (LEPIDOPTERA)

- BRIGHAM, A. R., AND D. D. HERLONG. 1982. Aquatic and semiaquatic Lepidoptera. Pages 12.1-12.36 in A. R. Brigham, W. U. Brigham, and A. Gnilka, (eds.), Aquatic insects and oligochaetes of North and South Carolina. Midwest Aquatic Enterprises, Mahomet, Illinois.  
[Keys work with most Florida species]
- LANGE, W. H., JR. 1984. Aquatic and semiaquatic Lepidoptera. Pages 348-360 in R. W. Merritt and K. W. Cummins (eds), An introduction to the aquatic insects of

- North America. Second edition. Kendall/Hunt Publ. Co., Dubuque, Iowa.  
MONROE, E. G. 1972-1973. Pyraloidea. Pyralidae (in part). Pages 72-134, Fasc. 13.1 in R. B. Dominick, (ed.), *The moths of America north of Mexico*, E. W. Calssey Ltd., London.  
[Most complete treatment of adult Pyralidae available; excellent application to Florida fauna]

INSECTA (MEGALOPTERA)

- BAKER, J. R., AND H. H. NEUNZIG. 1968. The egg masses, eggs, and first-instar larvae of eastern North American Corydalidae. *Ann. Entomol. Soc. America* 61:1181-1187.  
BRIGHAM, W. U. 1982. Megaloptera. Pages 7.1-7.12 in A. R. Brigham, W. U. Brigham, and A. Gnilka, (eds.), *Aquatic insects and oligochaetes of North and South Carolina*. Midwest Aquatic Enterprises, Mahomet, Illinois.  
EVANS, E. D., AND H. H. NEUNZIG. 1984. Megaloptera and aquatic Neuroptera. Pages 261-270 in R. W. Merritt and K. W. Cummins (eds), *An introduction to the aquatic insects of North America*. Second edition. Kendall/Hunt Publ. Co., Dubuque, Iowa.

INSECTA (NEUROPTERA)

- BRIGHAM, W. U. 1982. Aquatic Neuroptera. Pages 8.1-8.4 in A. R. Brigham, W. U. Brigham, and A. Gnilka, (eds.), *Aquatic insects and oligochaetes of North and South Carolina*. Midwest Aquatic Enterprises, Mahomet, Illinois.  
EVANS, E. D., AND H. H. NEUNZIG. 1984. Megaloptera and aquatic Neuroptera. Pages 261-270 in R. W. Merritt and K. W. Cummins (eds), *An introduction to the aquatic insects of North America*. Second edition. Kendall/Hunt Publ. Co., Dubuque, Iowa.  
PARFIN, S. I., AND A. B. GURNEY. 1956. The spongilla-flies, with special reference to those of the Western Hemisphere (Sisyridae, Neuroptera). *Proc. U. S. National Museum* 105:421-529.  
PORRIER, M. A., AND Y. M. ARCENEUX. 1972. Studies on southern Sisyridae (Spongilla-flies) with a key to the third-instar larvae and additional sponge-host records. *American Midland Naturalist* 88:455-458.

INSECTA (ODONATA)

- BYERS, C. F. 1930. A contribution to the knowledge of Florida Odonata. *Univ. of Florida Publ.* 1(1):1-327.  
[Somewhat outdated, but contains ecological data on many Florida species; also general keys to adults and larvae]  
DAIGLE, J. J. 1991. Florida damselflies (Zygoptera): A species key to the aquatic larval stages. Florida Dept. of Environmental Regulation Tech. Series 11(1): 12 pp.  
[Most current and accurate key to Florida damselflies]  
DAIGLE, J. J. 1992. Florida dragonflies (Anisoptera): A species key to the aquatic larval stages. Florida Dept. of Environmental Regulation Tech. Series 12(1): 29 pp.  
[Most current and accurate key to Florida dragonflies]  
DUNKLE, S. W. 1989. *Dragonflies of the Florida Peninsula, Bermuda and the Bahamas*. Scientific Publishers, Nature Guide No. 1, 144 pp.  
DUNKLE, S. W. 1990. *Damselflies of Florida, Bermuda and the Bahamas*. Scientific Publishers, Nature Guide No. 3, 148 pp.  
[Excellent photographs of Florida species; excellent beginners' guide]  
DUNKLE, S. W. 1992. Distribution of dragonflies and damselflies (Odonata) in Florida. *J. Dragonfly Soc. of America* 1:29-50.  
[Excellent photographs of Florida species; excellent beginners' guide]

- HUGGINS, D. G., AND W. U. BRIGHAM. 1982. Odonata. Pages 4.1-4.100 in A. R. Brigham, W. U. Brigham, and A. Gnilka, (eds.), Aquatic insects and oligochaetes of North and South Carolina. Midwest Aquatic Enterprises, Mahomet, Illinois.  
[Good key to Carolina larvae; includes most Florida species that range northward into Carolinas]
- JOHNSON, C., AND M. J. WESTFALL. 1970. Diagnostic keys and notes on the damselflies (Zygoptera) of Florida. Bull. of the Florida State Museum, Biological Science Series, 15(2):45-89.  
[Excellent guide and key to adult Florida damselflies]
- LOUTON, J. A. 1982. Lotic dragonfly (Anisoptera: Odonata) nymphs of the southeastern United States. Identification, distribution and historical biogeography. Ph.D. Dissertation, Univ. of Tennessee, Knoxville. 357 pp.  
[Keys and line drawings of most southeastern lotic dragonflies; omits several rare or new Florida species]
- NEEDHAM, J. G., AND M. J. WESTFALL. 1955. A manual of the dragonflies of North America. Univ. of California Press. 615 pp.  
[Vital for any researcher of North American dragonflies]

## INSECTA (PLECOPTERA)

- CLAASSEN, P. W. 1931. Plecoptera nymphs of America (North of Mexico). Thomas Say Foundation, Baltimore. 199p.  
[Classic work on stonefly nymphs. Includes many illustration of eastern species and genera but nomenclature is outdated]
- FRISON, T. H. 1935. The stoneflies, or Plecoptera, of Illinois. Bull. of the Illinois Natural History Survey 20:1-471.  
[Classic work which gives an overview of biology for the order and includes excellent nymphal illustrations for genera and species found in Florida. The nomenclature is somewhat outdated]
- KONDRATIEFF, B. C., R. F. KIRCHNER, AND K. W. STEWART. 1988. A review of *Perlina* Banks (Plecoptera: Perlidae). Ann. Soc. America 81:19-27.  
[Includes a name change for *P. fumipennis* and records of *P. drymo* and *P. zwicki* from Florida]
- HARPER, P. P., AND K. W. STEWART. 1984. Plecoptera. Pages 182-230 in R. W. Merritt and K. W. Cummins (eds), An introduction to the aquatic insects of North America. Second edition. Kendall/Hunt Publ. Co., Dubuque, Iowa.
- RAY, D. H., AND B. P. STARK. 1981. The Nearctic species of *Hydroperla* (Plecoptera: Perlodidae). Florida Entomol. 764:385-395.  
[*H. phormidia* is described from Florida]
- STARK, B. P. 1983. The *Tallaperla maria* complex of eastern North America (Plecoptera: Peltoperlidae). J. Kansas Entomol. Soc. 56:398-410.  
[Includes Florida record of *T. cornelia*]
- STARK, B. P. 1986. The Nearctic species of Agnetina (Plecoptera: Perlidae). J. Kansas Entomol. Soc. 59:437-445.  
[Includes Florida records of *A. annulipes*]
- STARK, B. P., AND A. R. GAUFIN. 1979. The stoneflies (Plecoptera) of Florida. Transactions of the American Entomol. Soc. 104:391-433.  
[Species keys, distributions, and descriptions are provided. Needs to be revised with updated nomenclature and a few additions]
- STARK, B. P., AND D. H. RAY. 1983. A revision of the genus *Helopicus* (Plecoptera: Perlodidae). Freshwater Invertebrate Biology 2:16-27.  
[Includes Florida records of *H. bogaloosa*]
- STEWART, K. W., AND B. P. STARK. 1988. Nymphs of North American stonefly genera (Plecoptera). Thomas Say Foundation of the Entomol. Soc. of America. Hyattsville, Maryland. 460 pp.

[Includes illustrations and keys to all North American stonefly genera and a detailed overview of nymphal ecology]

- UNZICKER, J. D., AND V. H. MCCASKILL. 1982. Plecoptera. Pages 5.1-5.50 in A. R. Brigham, W. U. Brigham, and A. Gnilka, (eds.), Aquatic insects and oligochaetes of North and South Carolina. Midwest Aquatic Enterprises, Mahomet, Illinois.

[Outdated nomenclature, but good coverage of southeastern stoneflies include many Florida species]

INSECTA (TRICHOPTERA)

- ARMITAGE, B. J. 1991. Diagnostic atlas of the North American caddisfly adults. I. Philopotamidae. Second edition. The Caddis Press, Athens, Alabama. 72 pp.  
[Summarizes existing, published diagnostic information; keys with figures appearing at the couplets]
- ARMITAGE, B. J., AND S. W. HAMILTON. 1990. Diagnostic atlas of the North American caddisfly adults. II. Ecnomidae, Polycentropodidae, Psychomyiidae, and Xiphocentronidae. The Caddis Press, Athens, Alabama. 152 pp.  
[Families treated in the atlas pertinent for Florida include Polycentropodidae and Psychomyiidae]
- DAIGLE, J. J., AND J. D. HADDOCK. 1981. The larval description and ecological notes of a caddisfly, *Nectopsyche tavana* (Ross) from the central Florida refugium (Trichoptera:Leptoceridae). Pan-Pacific Entomologist 57:327-331.
- FLINT, O. S., JR. 1960. Taxonomy and biology of Nearctic limnephilid larvae (Trichoptera), with special reference to species in eastern United States. Entomologica Americana 40:1-117.
- FLINT, O. S., JR. 1962. Larvae of the caddisfly genus *Rhyacophila* in eastern North America (Trichoptera: Rhyacophilidae). Proc. of the United States National Museum 113:465-493.
- FLINT, O. S., JR. 1984. The genus *Brachycentrus* in North America, with a proposed phylogeny of the genera of Brachycentridae (Trichoptera). Smithsonian Institution Press, Washington D.C. 58 pp.
- FLOYD, M. A. 1994. Larvae of the caddisfly genus *Oecetis* (Trichoptera: Leptoceridae) in North America. Ph.D. Dissertation, Clemson Univ., Clemson, South Carolina. 163 pp.  
[Includes larval key to the majority of *Oecetis* species occurring in Florida]
- GLOVER, J. B. 1993. The taxonomy and biology of the larvae of the North American caddisflies in the genera *Triaenodes* and *Ylodes* (Trichoptera: Leptoceridae). Ph.D. Dissertation, Univ. of Louisville, Louisville, Kentucky. 252 pp.  
[Includes larval key to nearly all species of *Triaenodes* likely to occur in Florida]
- GORDON, A. E. 1984. The Trichoptera of Florida: A preliminary survey. Pages 161-166 in J. C. Morse (ed.), Fourth International Symposium on Trichoptera. Series Entomologica, Volume 30. Dr. W. Junk Publ., The Hague.  
[Unfortunately, this is the only state-wide survey conducted to date on Florida Trichoptera]
- HADDOCK, J. D. 1977. The biosystematics of the caddis fly genus *Nectopsyche* in North America, with emphasis on the aquatic stages. American Midland Naturalist 98:382-421.  
[Used in conjunction with Daigle and Haddock, 1981, all Florida species of *Nectopsyche* larvae except *N. paludicola* Harris can be identified]
- HARRIS, S. C., P. E. O'NEIL, AND P. K. LAGO. 1991. Caddisflies of Alabama. Geological Survey of Alabama, Biological Resources Div., Bull. 142:1-442.  
[Does not include taxonomic keys but is useful for checking species geographic distribution]
- MARSHALL, J. E. 1979. A review of the genera of the Hydroptilidae (Trichoptera). Bull. of the British Museum of Natural History 39:135-239.

- MORSE, J. C., AND R. W. HOLZENTHAL. 1984. Trichoptera genera. Pages 312-347 in R. W. Merritt and K. W. Cummins (eds), An introduction to the aquatic insects of North America. Kendall/Hunt Publ. Co., Dubuque, Iowa.
- RESH, V. H. 1975. The biology and immature stages of the caddisfly genus *Ceraclea* in eastern North America (Trichoptera: Leptoceridae). Ann. Entomol. Soc. America 69:1039-1061.  
[Includes a larval key and descriptions for most species of *Ceraclea* likely to occur in Florida]
- ROSS, H. H. 1944. The caddis flies, or Trichoptera, of Illinois. Bull. of the Illinois Natural History Survey 23:1-326.  
["Classic" work still very useful in the determination of both larvae and adults of many species including some from Florida]
- SCHUSTER, G. A., AND D. A. ETNIER. 1978. A manual for the identification of the larvae of the caddisfly genera *Hydropsyche* Pictet and *Symphitopsyche* Ulmer in eastern and central North America (Trichoptera: Hydropsychidae). U. S. Environmental Protection Agency, Cincinnati (EPA-600/4-78-060). 128 p.  
[Taxonomic key relies heavily on coloration patterns of the head capsule and with Florida material is often problematic]
- SHERBERGER, F. F., AND J. B. WALLACE. 1971. Larvae of the southeastern species of *Molanna*. J. Kansas Entomol. Soc. 44:217-224.  
[Includes a taxonomic key and descriptions for *M. blenda* and *M. tryphena* but does not include *M. ulmerina* Navás]
- UNZICKER, J. D., V. H. RESH, AND J. C. MORSE. 1982. Trichoptera. Pages 9.1-9.138 in A. R. Brigham, W. U. Brigham, and A. Gnilka, (eds.), Aquatic insects and oligochaetes of North and South Carolina. Midwest Aquatic Enterprises, Mahomet, Illinois.  
[Useful for Florida species which range north to the Carolinas; summarizes life history and ecological information for many species]
- WIGGINS, G. B. 1977. Larvae of the North American caddisfly genera (Trichoptera). Univ. of Toronto Press, Toronto. 401 p.  
[Essential reference for anyone working on caddisfly larvae; includes larval keys to genus for all families; excellent illustrations]
- WIGGINS, G. B. 1984. Trichoptera. Pages 271-311 in R. W. Merritt and K. W. Cummins (eds), An introduction to the aquatic insects of North America Second edition. Kendall/Hunt Publ. Co., Dubuque, Iowa.  
[Useful information on ranges]
- WIGGINS, G. B. 1987. Order Trichoptera. Pages 253-287 in F. W. Stehr (ed.), Immature Insects. Kendall/Hunt Publ. Co., Dubuque, Iowa.

#### PHYLUM BRYOZOA

- PENNAK, R. W. 1989. Fresh-water invertebrates of the United States: Protozoa to Mollusca. Third edition. John Wiley & Sons, New York. 628 pp.

#### PHYLUM COELENTERATA

- PENNAK, R. W. 1989. Fresh-water invertebrates of the United States: Protozoa to Mollusca. Third edition. John Wiley & Sons, New York. 628 pp.

#### PHYLUM MOLLUSCA

- BURCH, J. B. 1972. Freshwater sphaeriacean clams (Mollusca: Pelecypodea) of North America. Biota of Freshwater Ecosystems Identification Manual No. 3. U. S. Environ. Protection Agency Water Pollution Control Res. Series. 31 pp.
- BURCH, J. B. 1973. Freshwater mionacean clams (Mollusca: Pelecypoda) of North America. Biota of Freshwater Ecosystems Identification Manual No. 11. U. S. Environ. Protection Agency Water Pollution Control Res. Series. 176 pp.



- HEARD, W. H. 1979. Identification manual of the freshwater clams of Florida. Florida Dept. of Environ. Regulation Tech. Series 4(2): 83 pp.
- THOMPSON, F. G. 1983. An identification manual of the freshwater snails of Florida. Florida State Museum, Gainesville. 55 pp.

PHYLUM NEMATOMORPHA

- CHANDLER, C. M. 1985. Horsehair worms (Nematomorpha, Gordioidea) from Tennessee, with a review of the taxonomy and distribution in the United States. J. Tennessee Academy of Sci. 60:59-62.  
[One species reported from Florida: *Chordodes morgani* Montgomery, 1898]
- POINAR, G. O., JR. 1991. Nematoda and Nematomorpha. Pages 249-283 in J. H. Thorp and A. P. Covich (eds.), Ecology and Classification of North American Freshwater Invertebrates. Academic Press, San Diego, California.

PHYLUM PLATYHELMINTHES

- KENK, R. 1972. Freshwater planarians (Turbellaria) of North America. U. S. Environmental Protection Agency Water Pollution Control Res. Series 10850 ELD02/72. 81 pp.
- PENNAK, R. W. 1989. Fresh-water invertebrates of the United States: Protozoa to Mollusca. Third edition. John Wiley & Sons, New York. 628 pp.

PHYLUM PORIFERA

- ESHLEMAN, S. K. 1949. A key to Florida's freshwater sponges, with descriptive notes. Quarterly J. Florida Academy of Sci. 12:35-44.
- PENNAK, R. W. 1989. Fresh-water invertebrates of the United States: Protozoa to Mollusca. Third edition. John Wiley & Sons, New York. 628 pp.
- PENNY, J. T., AND A. A. RACEK. 1968. Comprehensive revision of a world-wide collection of fresh-water sponges (Porifera: Spongillidae). Bull. of the United States National Museum 272:1-184.

ACKNOWLEDGMENTS

This work could not have been accomplished without the many specialists who contributed their time and knowledge of the Florida fauna. We gratefully acknowledge the help of B. P. Stark, C. M. Chandler, D. Farrell, D. D. Herlong, D. L. Klemm, E. S. Pluchino, J. C. Morse, J. J. Daigle, P. F. Bellinger, R. O. Brinkhurst, R. W. Merritt, S. C. Harris, S. W. Dunkle, W. H. Heard, and W. W. Wirth.