

**An Identification Guide
to the Macroscopic Invertebrates
of the
Lake Pontchartrain Estuary, Louisiana**

by
Michael A Poirrier

Edited by Carol Franze



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by
Michael A. Poirrier

Illustrations by
Ralph W. Holzenthal, Nathan Levy, Diana Stein and Lorene Smith

Department of Biological Sciences
University of New Orleans
Lakefront
New Orleans, Louisiana 70148

Edited by Carol Franze

FOREWORD

Michael A. Poirrier passed away before this identification guide was finalized and published. His notations were used to update this version. The laboratory guide was originally developed in 1984 and used throughout the rest of his career by undergraduate and graduate students, colleagues and others.

His study of macroscopic invertebrates in the Lake Pontchartrain Estuary began, likely, as a youngster and formalized as a student in 1969 when he earned his Ph.D. from Louisiana State University. He became a professor in 1988 at the University of New Orleans, Department of Biological Sciences where he retired after 34 years, and served as Professor Emeritus until his death in 2023.

His endless curiosity and devotion to the pursuit of knowledge led to numerous scientific journal articles, technical reports, hundreds of presentations and several book chapters. He is credited with discovering previously unknown species of sponge while traveling the Americas. His passion for the study of aquatic life inspired his invertebrate zoology and limnology classes and more than 30 graduate students.

His unwavering curiosity and love for the Lake Pontchartrain estuary earned him the name Doctor Lake.

This guide has been posthumously published for recognition of his contributions in aquatic science, specifically those contributions made in the Pontchartrain basin, his own backyard.

Carol Franze

Marine Extension Program Agent,
Louisiana Sea Grant
Former student and Research Associate in
Dr. Poirrier's Laboratory

INTRODUCTION

This guide was prepared to facilitate the identification of invertebrates from the Lake Pontchartrain estuary. It should also be useful in the identification of the invertebrate fauna of similar oligohaline estuaries of the northern Gulf of America. When compared to other aquatic habitats, relatively few invertebrates occur in the oligohaline salinity zone (salinity 0.5 - 5 ppt). In spite of this paucity of species, this fauna is poorly known, and available information is scattered in diverse technical journals. The purpose of this guide is to bring together information about these diverse taxa and to provide taxonomic keys and illustrations for their identification.

This guide is limited to macroscopic invertebrates. Only organisms retained on a 0.5 mm² mesh sieve are included. Parasitic invertebrates both internal and external, and planktonic organisms both large and small are not included.

Lake Pontchartrain is an open ecosystem with faunal changes occurring because of the seasonal movements of organisms to and from adjacent higher-salinity waters. Faunal changes also occur because of salinity fluctuations. During periods of high salinity species which occur in the more saline estuaries east of Lake Pontchartrain become established, and occasionally, transient higher-

salinity species may enter Lake Pontchartrain. Salinity at times may be very low or essentially fresh due to flooding of rivers which drain into Lake Pontchartrain and the occasional opening of the Bonnet Carre Spillway. During these times, higher salinity forms are eliminated, and fresh-water forms may become established. Expansion of this guide to include all species which may occasionally be found in Lake Pontchartrain was not attempted because it would have resulted in adding numerous essentially fresh-water species and species which occur in higher salinity zones. However, most all published records including rare occurrences are included in this guide.

Organisms included in this guide include those reported in prior literature and those obtained from University of New Orleans collecting trips since 1973. No attempt was made to present the authors who were first to report a species. However, all papers upon which these records are based are cited in the bibliography.

I regard this edition of this key as preliminary and expect to produce revised editions in the future. Information or suggestions on improving the current draft are welcomed. Scientific works that make new discoveries easier for future students are the main contributors to their obsolescence. I sincerely hope that this work is no exception.

PORIFERA

(Figure Numbers Refer to Plate 1, Pages 18-19)

1. Gemmule spicules birotulate (Fig. 1, 3), dermal spicules absent 2
Gemmule spicules acerate (Fig. 2), small acerate spined dermal spicules present *Spongilla alba*
2. Gemmule spicules small birotulates with smooth rotule margins (Fig. 3) *Trochospongilla leidyi*
Gemmule spicules large birotulates with serrated rotule margins (Fig. 1)..... *Ephydatia fluviatilis*

COELENTERATA, HYDROIDA

(Figure Numbers Refer to Plate 1, Pages 18-19)

1. Hydrothecum absent, operculum absent..... 2
Hydrothecum present, operculum present (Fig. 4)..... *Campanulina* sp.
2. Tentacles scattered, perisarc not covering base of hydranth..... 3
Tentacles in one or more distinct whorls, perisarc covering base of hydranth *Garveia franciscana*
3. Colony unbranched, perisarc thin, annulations absent, hydranth ovate, buds sometimes present below tentacles (Fig. 6)..... *Moerisia lyonsi*
Colony branched with well developed stem, annulations present, gonophores fixed (Fig. 7)..... *Cordylophora caspia* (= *C. lacustris*)

PLATYHELMINTHES

(Figure Numbers Refer to Plate 1, Pages 18-19)

1. Dorsal tentacles present in brain region, marginal eyes present, body elliptical, gut with numerous branches, adult size greater than 5 mm (Fig. 8)..... *Stylochus ellipticus*
2. Dorsal tentacles absent in brain region; marginal eyes absent, body elongate (may become elliptical when preserved), gut with 3 branches, adult size less than 5 mm (Fig. 9)..... *Pentacoelum* sp.

NEMERTINEA

Nemerteans are proboscis worms with soft, unsegmented bodies. Preserved specimens fragment easily, and the long, tubular proboscis may become separated from the worm. One species in Lake Pontchartrain is relatively large (generally 10-60 mm long). Another species is less than 1 cm in length and has longitudinal and transverse stripes. An illustration of a generalized nemertean is presented in Plate 2, Fig. 1.

ENTOPROCTA

(Figure Numbers Refer to Plate 2, Pages 20-21)

1. Colony develops from a creeping, branching stolon; stalk long, not joined and not branched 2
Colony consisting of a few zooids which rise from a common base; stalks long, jointed and branched
(Fig. 3) *Urnatella gracilis*
2. Stalk with a barrel-shaped muscular enlargement at its base (Fig. 4).....*Barentsia* sp.
Stalk without a barrel-shaped muscular enlargement at its base (Fig. 5).....*Pedicellina* sp.

ECTOPROCTA

(Figure Numbers Refer to Plate, Pages 20-21)

1. Zooecia tubular..... 2
Zooecia oval to rectangular (Fig. 6)*Conopeum* sp.
2. Zooecia recumbent on substratum, lophophore horseshoe-shaped, statoblasts present (Fig. 7) ... *Plumatella repens*
Zooecia erect on substratum, lophophore circular, true statoblasts absent (Fig. 8)..... *Vitrella pavida*

NEMATODA

Nematodes are roundworms with white, slender, spindle-shaped bodies. Most are less than 2 mm in length. A diagram of a generalized nematode is presented on Plate 2, Fig. 2.

POLYCHAETA

(Figure Numbers Refer to Plates 3, 4, 5, and 6, Pages 22-29)

1. Anterior end without well developed appendages including antennae, tentacles, palpi, or tentacular cirri
(Figs. 1, 2, and 3) 2
Anterior end with well developed appendages including antennae, tentacles, palpi or tentacular cirri..... 4
2. Anterior end bulbous with a bifid tip and small parapodia (Fig. 1)..... *Pilargidae, Parandalia americana*
Anterior end conical without bifid tip and without parapodia (Fig. 2 and 3) Capitellidae 3

3. Eleven thoracic segments present, anterior asetigerous segment present, ten thoracic setigers present (Fig. 2) *Mediomastus* sp.
 Nine thoracic segments, anterior asetigerous segment absent, 9 thoracic setigers present (Fig. 3) *Capitella* sp.
4. Prostomium and head well developed; head with antennae, cirri and eyes; parapodia well developed; body long with segments more or less alike throughout (Figs. 4, 5, 6 and 8)..... 5
 Prostomium and head reduced or hidden by a concentration of tentacular appendages; parapodia reduced; body short (Figs. 10, 12, 14, 16, and 17) 8
5. Prostomium with two large palps, with two antennae, and with 4 eyes; pharynx armed with teeth and jaws (Figs. 5, 6 and 8) 6
 Prostomium without palps, with four short antennae at anterior end, and with 2 eyes; pharynx without teeth and jaws (Fig. 4)..... *Phyllodoceidae Eteone*
6. Peristomial cirri long; pharynx with horny paragnaths (Figs. 6 and 8) 7
 Peristomial cirri short; pharynx with soft papillae in tufts (Fig. 5) *Laeonereis culveri*
7. Parapodia gradually decreasing in size from anterior to posterior end giving the worm a tapered appearance; dorsal lingule of parapodium not strap like (Fig. 7) and decreasing in size toward the posterior end; notopodia with homogomph falcigers (Fig. 6) *Nereis falsa*
 Parapodia not decreasing in size from anterior to posterior end; dorsal lingule of parapodium strap like (Fig. 9) and increasing in size toward posterior end; notopodia without homogomph falcigers (Fig. 8).... *Neanthes succinea*
8. Head with 2 long palpi, with one or a few pairs of filamentous branchiae, without numerous tentacular appendages (Figs. 10, 12 and 14)..... *Spionidae*....9
 Head with numerous tentacular appendages (Figs. 16 and 17)..... 11
9. Second setiger with transverse collar, with a pair of branchiae dorsal to palps (Figs. 10 and 11) *Streblospio benedicti*
 Second setiger without transverse collar, without a pair of branchiae dorsal to palps (Fig. 2 and 14) 10
10. Fifth setiger with large dorsal setae (Fig. 12), posterior end disc shaped (Fig. 13) *Polydora websteri*
 Fifth setiger unmodified (Fig. 14), posterior end not disc shaped but tapered (Fig. 15) *Boccardia hamata*
11. Tentacular appendages pinnate and concentrated in 2 semicircular lobes, tubes calcareous; one tentacle modified to a plug-like, stalked operculum (Fig. 16)..... *Ficopomatus miamiensis*
 Tentacular appendages not pinnate and not concentrated in two distinct lobes, appendages retractile, no calcareous tube or operculum present (Figs. 17 and 18) *Ampharetidae Amphicteis florious*

GASTROPODA

(Figure Numbers Refer to Plate 7, Pages 30-31)

1. Shell absent, cerata or parapodia present (Figs. 1 and 2)..... 2
Shell present, cerata or parapodia absent 3
2. Lateral projections of body (parapodia) absent, color white, cerata abundant (Fig. 1)*Tenellia pallida*
Lateral projections of body (parapodia) present, color green, cerata absent (Fig. 2) *Elysia* sp.
3. Shell ovate, operculum absent (Fig. 3).....*Melampus bidentatus*
Shell not ovate, operculum present..... 4
4. Shell height equal or less than 1.5 times width, adult shell height greater than 4 mm 5
Shell height greater than 1.5 times width, adult shell height less than 4 mm..... 6
5. Shell with deep umbilicus, partly closed by a heavy callus; color glossy gray to tan (Fig. 4)*Polynices duplicatus*
Shell without umbilicus, color brownish green or brownish yellow (Fig. 5)*Neritina reclinata*
6. Shell white, spire obtuse (angle from apex near 90°), suture impressed
(Fig. 6)..... (updated from *Probythinella louisiana*) *Probythinella protera*
Shell vitreous, color brown to gray, spire cone shaped (angle from apex less than 90°), suture not
impressed*Texadina*
7. Aperture in adults with margin continuous, free from parietal wall and oval to round; aperture in young specimens
with margin not continuous but interrupted at parietal wall; aperture reflected in adults and reflected near
umbilicus in young; umbilicus absent in adults but present in young; animal without vivid pink coloration but
translucent; terminal bristles on antennae absent; shell color gray (Fig. 7).....*Texadina sphinctostoma*
Aperture in adults not continuous and with columbellar and parietal walls at slight angles to each other; lip of
aperture slightly thickened but not reflected; umbilicus absent; animal with vivid pink buccal mass and columbellar
area; base of tentacles and head with a pink flush; cluster of short bristles or short setae at tip of tentacles; shell
color vitreous (Fig. 8)..... *Texadina barretti*

Notes:

Elysia sp. is rare in Lake Pontchartrain. It was collected once from grass beds near the Rigolets pass.

Polynices duplicatus is rare in Lake Pontchartrain. It was reported by Tarver et al. (1976) from waters near the I.H.N.C [Inner Harbor Navigation Canal].

Amnicola sp. was reported by G.S.R.I. (1974) from many localities but not reported by other investigators. Their report was probably based on a misidentification.

Texadina barretti is apparently rare in Lake Pontchartrain. It was reported from eastern Lake Pontchartrain by Morrison (1965) but has not been reported by other investigators. The shells of this species are difficult to distinguish from young *T. sphinctostoma*.

PELECYPODA

(Figure Numbers Refer to Plate 8, Pages 32-33)

1. Byssus present (mussels and false mussels)..... 2
Byssus absent (clams and oysters) 4
2. Shell with clearly defined external radial ribbing 3
Shell without clearly defined external radial ribbing (Fig. 1)..... *Congerina* (= *Mytilopsis leucophaeta*)
3. Shell with ribs rounded; anterior end strongly hooked in adults; color black (Fig. 2)..... *Ischadium recurvum* (= *Brachidontes recurvus*)
Shell with ribs beaded; anterior end not hooked; tan to brown color (Fig. 3)..... *Geukensia demissa*
4. Shell usually cemented to substratum by left valve; valves unequal; one large, central muscle scar present (Fig. 4) (oysters)..... *Crassostrea virginica*
Shell not cemented to substrate by left valve; valves equal; two muscle scars present (clams)..... 5
5. Shell subrectangular, length over twice as long as height (Fig. 5) *Tagelus plebeius*
Shell ovoid or triangular, length less than twice as long as height..... 6
6. Shell length distinctly longer than height and more or less ovoid (Fig. 6) *Macoma mitchelli*
Shell length about equal to shell height and more or less circular or triangular in outline..... 7
7. External ligament present; large internal flat hinge plate present; chondrophore absent; periostracum heavy black brown, velvetlike with a concentric pattern (Fig. 7)..... *Polymesoda caroliniana*
External ligament absent, large internal flat hinge plate absent, chondrophore present, periostracum smooth 8
8. Adult shell length up to 63 mm; shell obliquely ovate; breath of clam greater than one half height (Fig.9) umbones high; posterior shell ridge high and curved; posterior lateral tooth serrated, very long, and almost reaching to ventral margin of shell; pallial sinus small (Fig. 8) *Rangia cuneata*
*Adult shell length up to 11 mm; shell trigonal; breath of clam about one half height (Fig.11) umbones low; posterior shell ridge low, somewhat biangulate; posterior lateral tooth serrated, not long, and not reaching to ventral margin of shell; pallial sinus small (Fig. 10 and 11)..... *Mulinia pontchartrainensis*

Notes:

*Suggested a review for *Mulinia pontchartrainensis*, this specimen was determined to be *Mulinia lateralis* - indicating a need to update the key description to reflect proper characteristics.

MAJOR CRUSTACEAN GROUPS

1. Body enclosed in a conical shell composed of calcareous plates permanently attached to substratum; barnacles Subclass Cirripedia
Not as above..... 2
2. Body with a distinct carapace over the thorax, abdomen either elongate or reduced and reflexed under abdomen 3
Body with a small carapace or without a carapace, thorax and abdomen not sharply distinguishable..... 4
3. First three pairs of thoracic appendages modified as maxillipeds and remaining five pairs uniramous legs Order Decapoda
First and sometimes second pair of thoracic appendages maxillipeds, remaining six or seven thoracic appendages more or less similar and biramous Order Mysidacea
4. Small carapace covering 2 thoracic segments present and first pair of legs chelate.....Order Tanaidacea *Hargeria rapax* (Plate 10, Figs. 7 and 8)
No carapace present, first pair of legs not chelate..... 5
5. Body usually dorsoventrally flattened, thoracic legs similar, abdomen with 5 pairs of pleopods with unsegmented rami and 1 pair of uropods Order Isopoda
Body usually laterally compressed, thoracic limbs of more than one form, with 2nd and 3rd pairs usually modified for grasping, abdominal appendages consist of 3 pairs of pleopods and 3 pairs of uropods..... Order Amphipoda

CIRRIPEDIA

(Figure numbers Refer to Plate 9, Pages 34-35)

1. Tergum with spur furrow, radii narrow, summits thin, smooth, arched; tergal spur less than ¼ width of basal margin (Fig. 1).....*Amphibalanus improvises*
Tergum without spur furrow, radii narrow to wide, summits usually rough; tergal spur at least ¼ width of basal margin (Fig. 2)..... *Amphibalanus subalbidus*

ISOPODA

(Figure Numbers Refer to Plate 10, Pages 36-37)

1. Uropods attached to the posterior body margin; antennae longer than body width (Figs. 1 and 2) 2
Uropods attached to the lateral or ventral body margin; antennae shorter than body width (Figs. 3, 4, 5, and 6) 3
2. Abdomen (pleon) a single segment; adult body less than 5 mm long; aquatic (Fig. 2)*Uromunna reynoldsi*

- 3. Uropods lateral, visible from above, pleotelson not tapering to a point..... 4
 Uropods ventral, not visible from above; pleotelson tapers to a point (Fig. 3)*Edotea montosa*
- 4. Body elongate with length greater than 7 times the width; exopod of uropod reflexed over telson (Fig. 4) *Cyathura polita*
 Body oval with length 2 to 3 times the width; exopod of uropod not reflexed over telson; both exopod and endopod flattened 5
- 5. Uropod with exopod much shorter than endopod; no tubercles present on dorsal surface (Fig. 5) *Cassidinidea ovalis*
 Uropod with endopod and exopod of about equal length; tubercles present on the dorsal surface (Fig. 6) *Sphaeroma terebrans*

AMPHIPODA

(Figures Refer to Plates 11, 12 and 13, Pages 38-43)

- 1. Coxal plates small; body elongate and dorsoventrally depressed (Fig. 1); animal lives in tubes (Fig. 2) 2
 Coxal plates large; body usually laterally compressed (Fig. 12); animal not living in tubes 5
- 2. Gnathopod 1 larger than gnathopod 2; accessory flagellum of antennae 1a minute scale (Fig. 1).....*Aoridae Grandidierella bonnieroides*
 Gnathopod 2 larger than gnathopod 1; accessory flagellum of antennae 1 (Fig. 4) Corophiidae 3
- 3. Antennae 1 and 2 similar in size and shape; gnathopod 2 of male complexly subchelate (Fig. 3) (Fig. 2)*Cerapus benthophilis*
 Antennae 1 shorter and smaller than 2; gnathopod 2 of male simple (Fig. 4)*Apocorophium* 4
- 4. Setae on antennae of males short and sparse (Fig. 6); acute inner protuberance and hook on lower, proximal end of most proximal segment present on antennae 1 of males (Fig. 8); rostrum short in males; females without tooth near fourth joint of antennae 2*Apocorophium louisianum*
 Setae on antennae of males long and abundant (Fig. 5); acute inner protuberance and hook on lower proximal end of most proximal segment absent in antennae 1 of males; rostrum long in males; females with tooth near fourth joint of antennae 2 (Fig. 7)*Apocorophium lacustre*
- 5. Peraeopods specialized for burrowing, spinose; antennae short; eyes unpigmented (Fig. 9).....*Haustoriidae Lepidactylus* sp.
 Combination not so..... 6
- 6. Accessory flagellum of antennae 1 large and composed of several distinct segments (Figs. 10 and 11)..... 7
 Assessory flagellum of antennae 1 very small or absent (Figs. 14 and 15) 9

- 7. Eyes nearly round; gnathopod 2 distinctly larger than gnathopod 1 (especially in males).....(Fig. 10) *Melita* sp.
Eyes kidney-shaped; gnathopod 2 about the same size as gnathopod 1 Gammaridae 8
- 8. Dorsal teeth present on abdomen (Fig. 11) *Mucrogrammarus mucronatus* (= *Gammarus mucronatus*) and an
undescribed species.
Dorsal teeth absent from abdomen*Gammarus* sp.
- 9. Eyes dorsal and almost fused together (Fig. 15)..... Oedicerotidae *Monoculodes* sp.
Eyes lateral, separated..... 10
- 10. Antennae 1 much shorter than antennae 2, uropod 3 very short uniramous, rami 1-segmented
(Figs. 12 and 14)..... Talitroidea 11
Antennae 1 and 2 about the same size, uropod 3 not short, biramous (Fig. 13).....Amphilochidae *Gitanopsis* sp.
- 11. Length of antennae 1 greater than peduncle of antennae 2, coxal plate 1 the same size as plates 2 to 4; primarily
aquatic; (Fig. 14)..... Hyalellidae *Hyalella azteca*
Length of antennae 1 less than peduncle of antennae 2; coxal plate 1 smaller than 2 to 4; semiterrestrial
(Fig. 12) Talitridae *Orchestia* sp.

MYSIDACEA

(Figure Numbers Refer to Plate 9, Pages 34-35)

- 1. Telson with posterior end cleft (Figs. 3 and 4).....*Taphromysis louisianae*
Telson with posterior end entire (Fig. 5)*Mysidopsis almyra*

DECAPODA

(Figure Numbers Refer to Plates 14, 15 and 16, Pages 44-49)

- 1. Abdomen and pleopods well developed (penaeid shrimp, grass shrimp, and other shrimplike forms)..... 2
Abdomen either well developed or small, pleopods small or absent (crabs, crayfish, mudshrimp and hermit
crabs)..... 11
- 2. Rostrum very small; eyestalks more than five times as long as wide.....*Ogyrides limicola*
Rostrum long, high and toothed; eyestalks less than twice as long as wide (Fig. 1)..... 3
- 3. First three pairs of thoracic legs chelate; pleura of second abdominal segment not overlapped by those of the first
segment (Fig. 1); grooves present on carapace at base of rostrum (Fig. 12)..... Penaeidae 4
First two pairs of thoracic legs chelate; pleura of second abdominal segment overlapped by those of the first
segment (Fig. 1) grooves absent on carapace..... Palaemonidae 5

4. Carapace with grooves near base of rostrum which extend to posterior margin of rostrum.....*Litopenaeus setiferous*
Carapace with grooves near base which extend almost the length of the carapace
(Fig. 13)..... *Farfantpenaeus aztecus* and *F. duorarum*.
(For characters used to distinguish *F. aztecus* from *F. duorarum* consult Williams 1965. *F. duorarum* is rare in Lake Pontchartrain).
5. Length of second leg only slightly greater than first (Fig. 1) (Grass shrimp) *Palaemonetes* 6
Length of second leg much greater than first (Fig. 1) (River shrimp)..... *Macrobrachium* 10
6. First antenna with fused section of unequally, branched, upper flagellum longer than short free branch. Carpus
(leg segment above claw) of second leg longer than claw (Fig. 1) 7
First antenna with fused section of unequally, branched, upper flagellum shorter than short free branch. Carpus of
second leg shorter than claw (Fig. 4)..... 8
7. Posterior pair of dorsal spines on telson located midway between anterior pair and end telson
(Fig. 5)..... *Palaemonetes paludosus*
Posterior pair of dorsal spines on telson located near end of telson (Fig. 6) *Palaemonetes kadiakensis*
8. Dorsal surface of rostrum with two teeth posterior to orbit (Fig. 8) *Palaemonetes vulgaris*
Dorsal surface of rostrum with one dorsal tooth behind orbit 9
9. Tip of rostrum with teeth (Fig.10) *Palaemonetes intermedius*
Tip of rostrum without teeth (Fig. 9)..... *Palaemonetes pugio*
10. Claw of second leg with thick hairy covering; rostrum with teeth extending up to tip *Macrobrachium acanthurus*
Claw of second leg with scattered hairs (Fig.2) rostrum without teeth near tip (Fig. 11) *Macrobrachium ohione*
11. Abdomen large, symmetrical, with well developed pleura and tail fan (crayfish and mud shrimp)..... 12
Abdomen well developed and coiled or reduced to a flap under the thorax; pleura and tail fan absent (crabs)..... 13
12. Abdomen with a thick, hard exoskeleton, pleura well developed (red swamp crawfish) *Procambarus clarki*
Abdomen with a thin, soft exoskeleton, pleura not well developed (Fig. 12)
(mud shrimp)..... *Lepidothalmus louisianensis*
13. Abdomen large and soft, uropods present but reduced in size, animal lives in gastropod shells (Fig. 7)
(hermit crab)..... *Clibanarius vittatus*
Abdomen small reduced to a flap-like structure under thorax, not living in gastropod shells 14
14. Distal end of last pair of legs paddlelike; sides of carapace ending in points (blue crab) (Fig. 14). *Callinectes sapidus*
Distal end of last pair of legs not paddlelike; sides of carapace flat or rounded 15

15. Dorsal carapace outline near oval or hexagonal in dorsal view (Fig. 15); both chelae robust (Fig. 21) 16
 Dorsal carapace outline almost square or trapezoidal (Fig. 17) (semiterrestrial crabs)..... 18
16. Fingers of claw dark (Fig.21), frontal margin of carapace (between eyes) with a single edge, not seeming double (Fig. 16)..... 17
 Fingers of claw whitish (Fig. 20), frontal margin of carapace transversely grooved so as to appear double; carapace with 3 or 4 distinct transverse lines of granules on anterior half (Fig. 15)..... *Rhithropanopeus harrisi*
17. Moveable finger of major cheliped with a heavy blunt tooth near base (Fig. 21), carapace convex anteriorly and posteriorly *Panopeus herbstii*
 Movable finger of major cheliped without a heavy blunt tooth (Fig. 22), finger of minor chela spooned, carapace rather flattened posteriorly and oval in outline (Fig. 16)..... *Eurypanopeus depressus*
18. Dorsal outline of carapace almost square (Fig. 19), eyestalks short length less than three times the width..... *Armases* 19
 Dorsal outline of carapace trapezoidal (Fig. 17), eyestalks long, length greater than four times the width; one cheliped of male very large (fiddler crab) *Uca* sp.
19. Anterior margin of carapace with lateral tooth (Fig. 18), distal portion of first three walking legs with dense hairs; dorsal surface of carapace convex..... *Sesarma reticulatum*
 Anterior margin of carapace without lateral tooth (Fig. 19), walking legs without dense hairs; dorsal surface of carapace flat..... *Armases cinereum*

CHIRONOMIDAE

Chironomids are a family of aquatic insects in order diptera. The larval forms of this family are vermiform. They can be distinguished from other worms by their segmented body and well-developed head. Several genera have been reported from Lake Pontchartrain. An illustration of a typical chironomid larva is presented on Plate 17, Fig. 1.

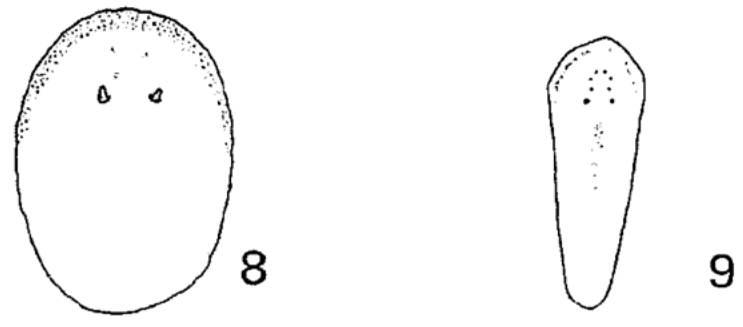
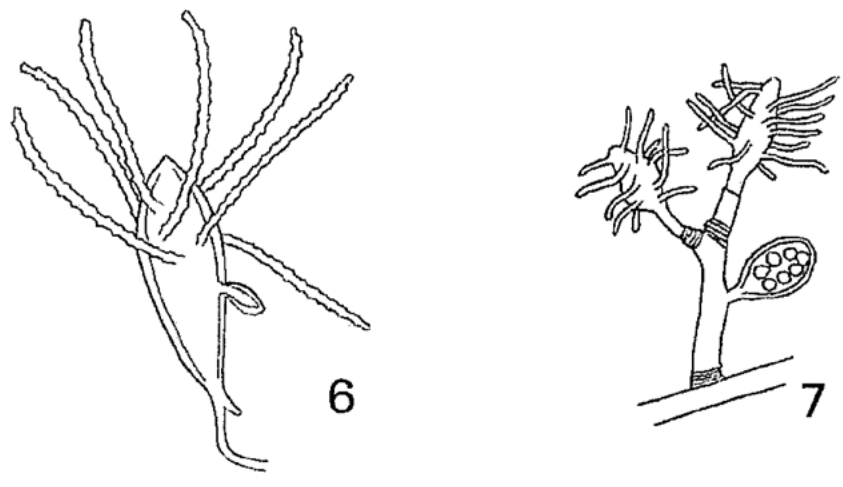
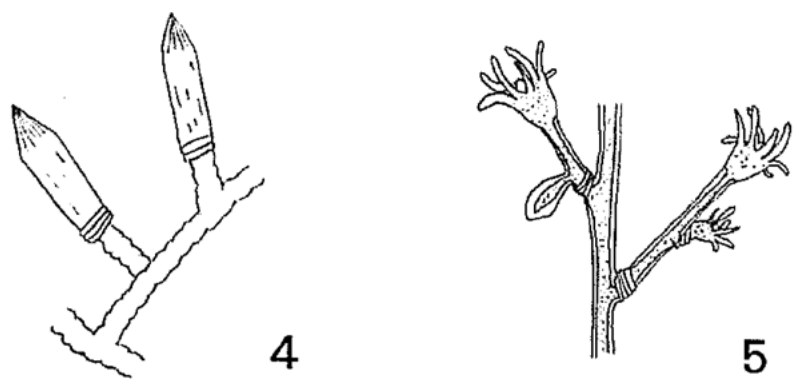
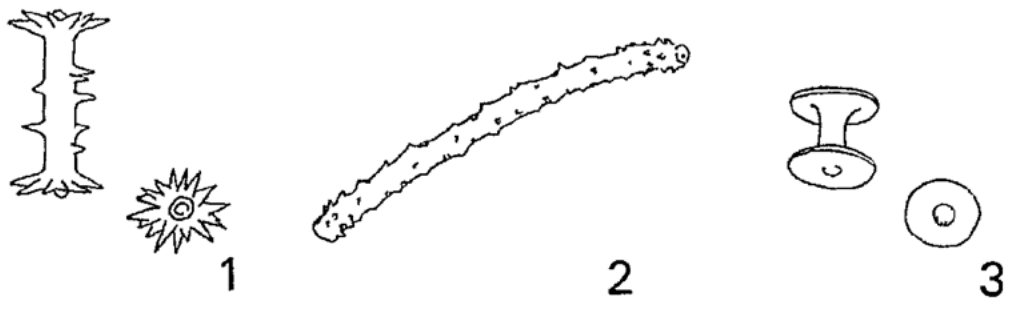


PLATE 1

PORIFERA, COELENTERATA AND PLATYHELMINTHES

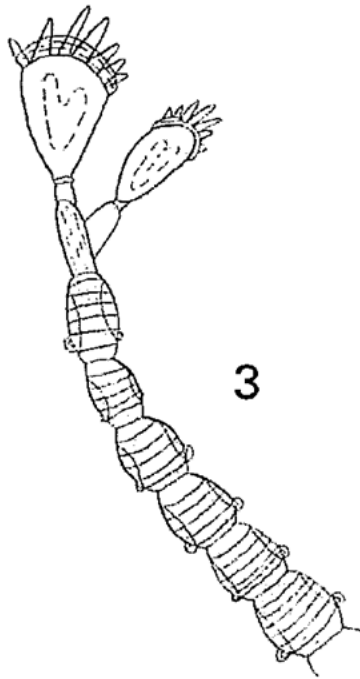
- Figure 1. *Ephydatia fluviatilis*, large birotulate gemmule spicules, 25-40 μ (X530).
2. *Spongilla alba*, acerate gemmule spicule, 80-130 μ (X100).
3. *Trochospongilla leidyi*, small birotulate gemmule spicules, 11-12 μ (X1000).
4. *Campanulina* sp., hydranths with closed operculum, hydranth 0-4 mm (X50).
5. *Garveia franciscana*, hydranths and gonangium, hydranth 0-8 mm (X40).
6. *Moerisia lyonsi*, ovate hydranth with bud, hydranth 1 mm (X50).
7. *Cordylophora caspia*, hydranths, hydranths 0.75 mm (X16).
8. *Stylochus ellipticus*.
9. *Pentacoelum* sp.



1



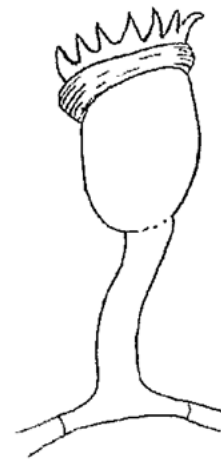
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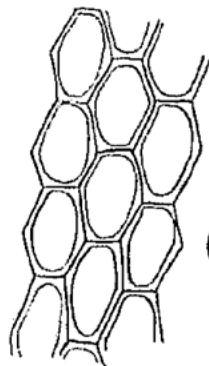
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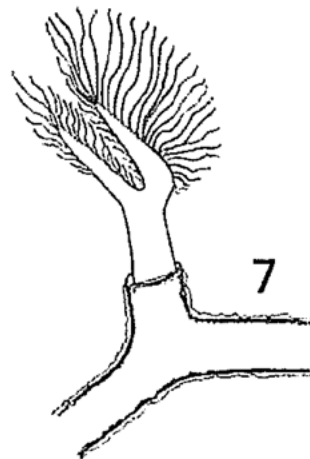
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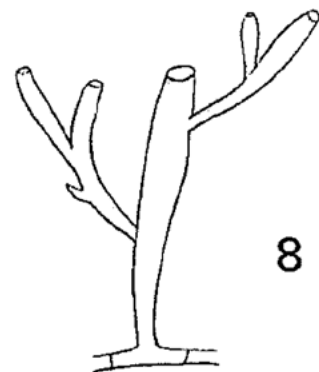
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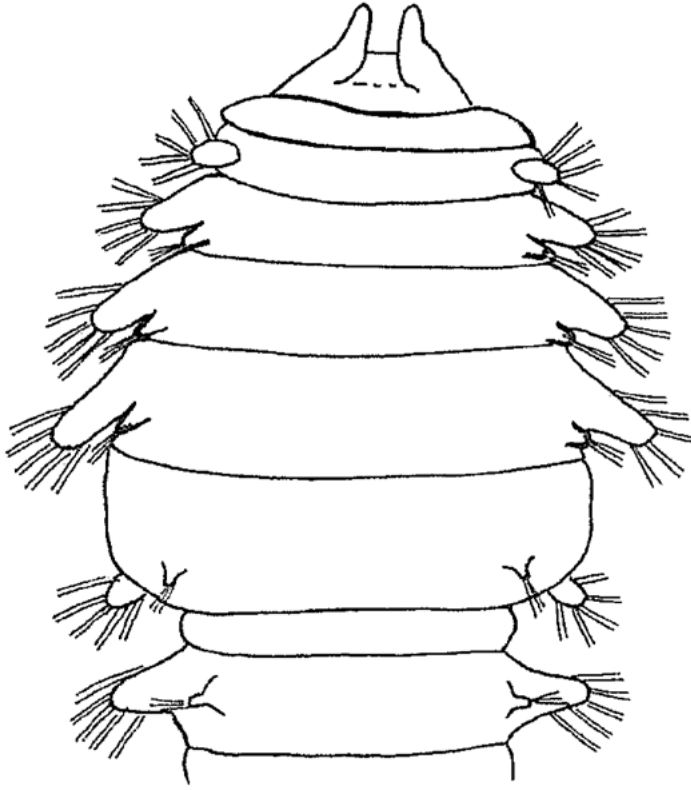


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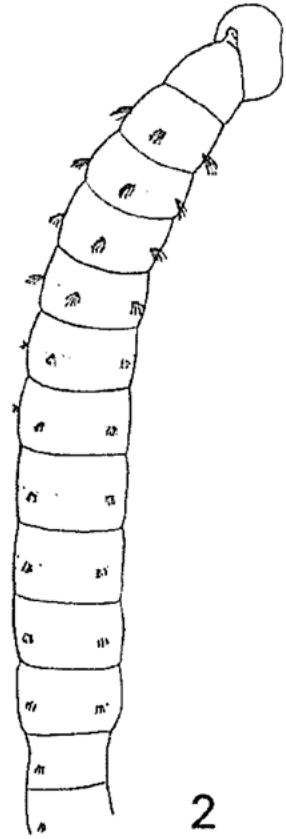
PLATE 2

NEMERTEA, NEMATODA, ENTOPROCTA AND ECTOPROCTA

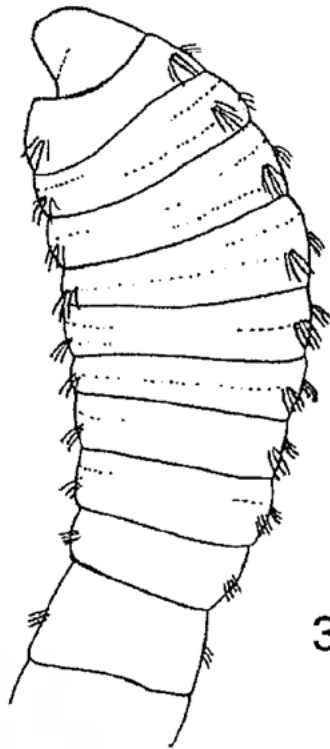
- Figure 1. Generalized nemertean, 10-60 mm.
2. Generalized nematode, 1 mm.
3. *Urnatella gracilis*, zooids, 5 mm (X10).
4. *Barentsia* sp., zooid.
5. *Pedicellina* sp., zooid.
6. *Conopeum* sp., colony with numerous zooecia.
7. *Plumatella repens*, zooids, 2.5 mm (X12).
8. *Victorella pavida*.



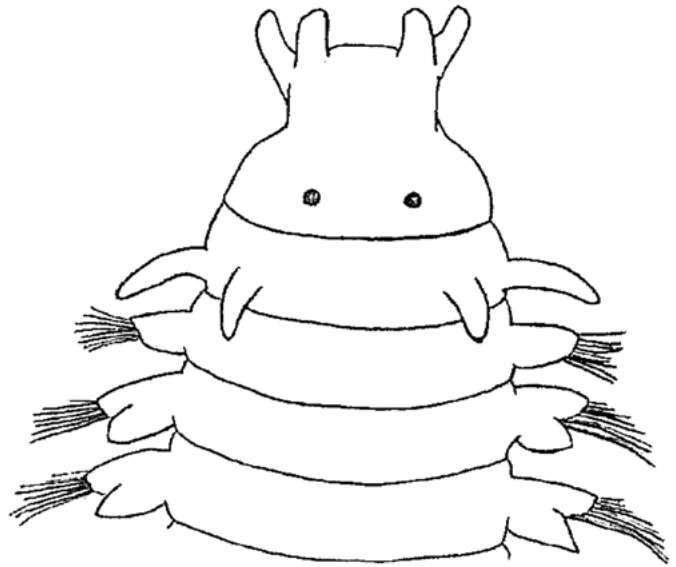
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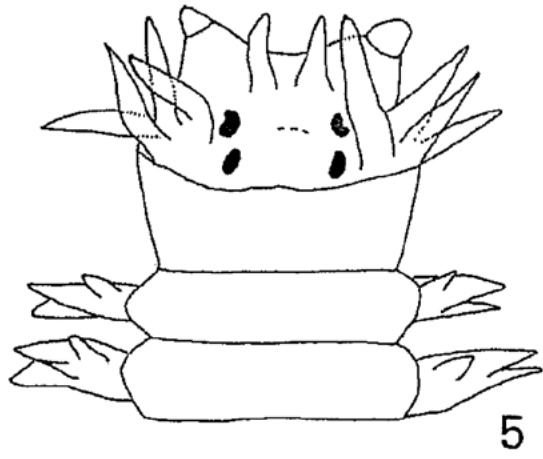
PLATE 3 POLYCHAETA

Figure 1. *Parandalia americana*, anterior.

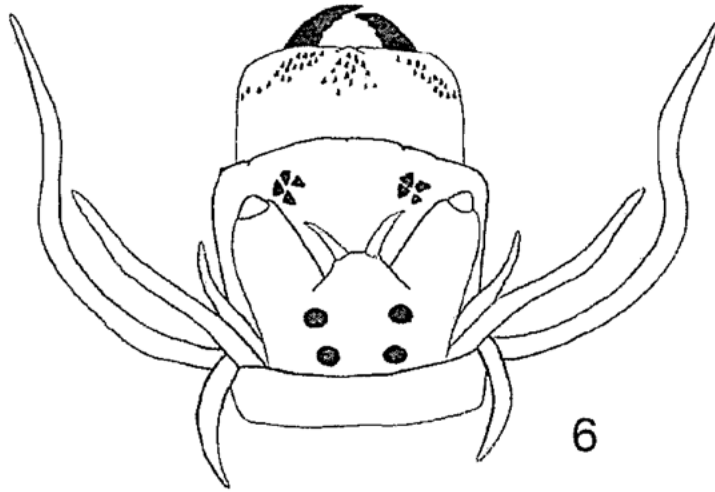
2. *Mediomastus* sp., anterior.

3. *Capitella* sp., anterior.

4. *Eteone* sp., anterior.



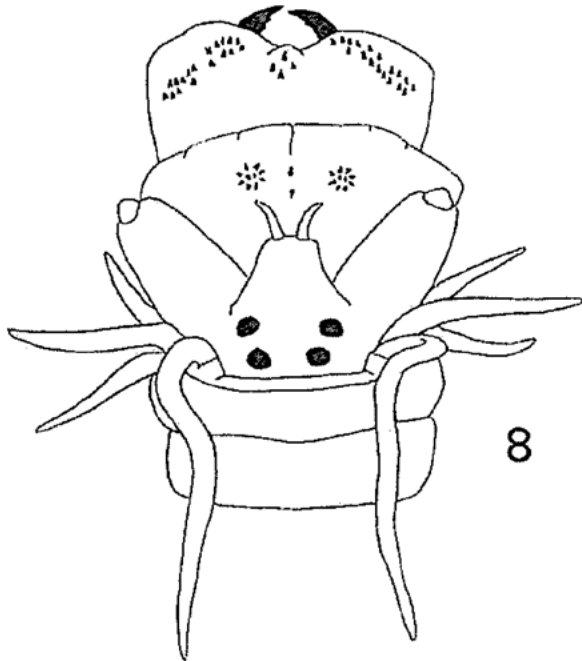
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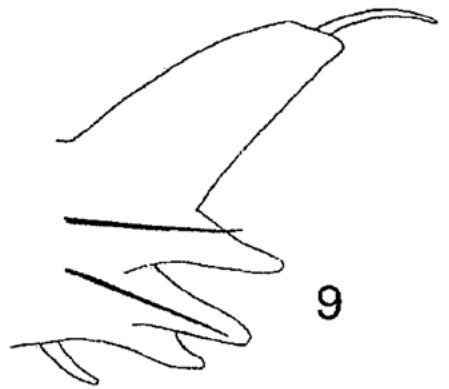
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PLATE 4 POLYCHAETA (Cont.)

Figure 5. *Laeonereis culveri*, head with pharynx contracted.

6. *Nereis falsa*, head with pharynx everted.

7. *N. falsa*, parapodium, from posterior body region.

8. *Neanthes succinea*, head with pharynx everted.

9. *N. succinea*, parapodium from posterior body region.

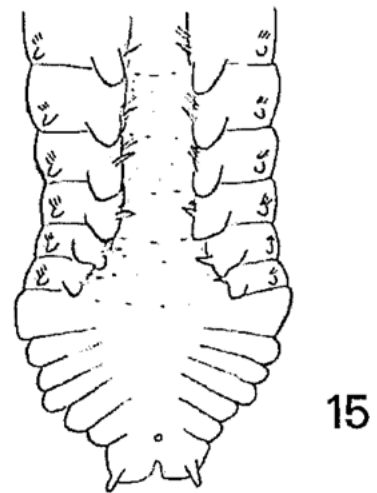
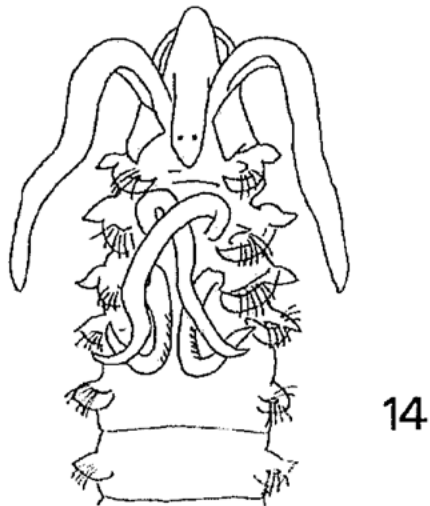
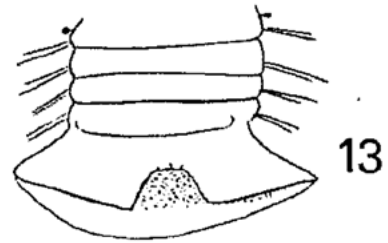
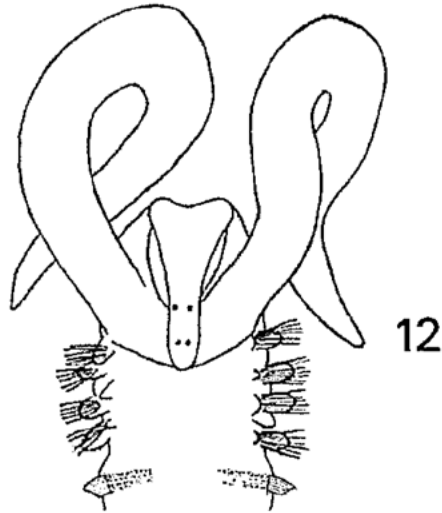
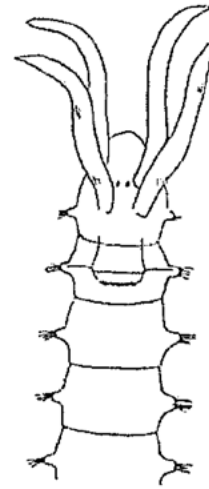
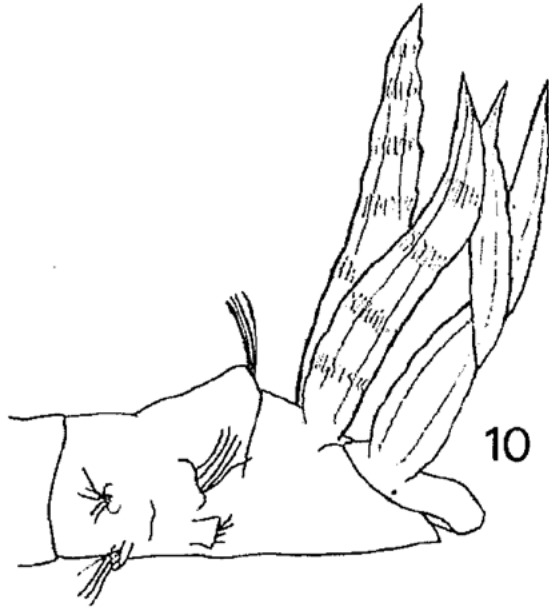


PLATE 5 POLYCHAETA (Cont.)

Figure 10. *Streblospio benedicti*, anterior.

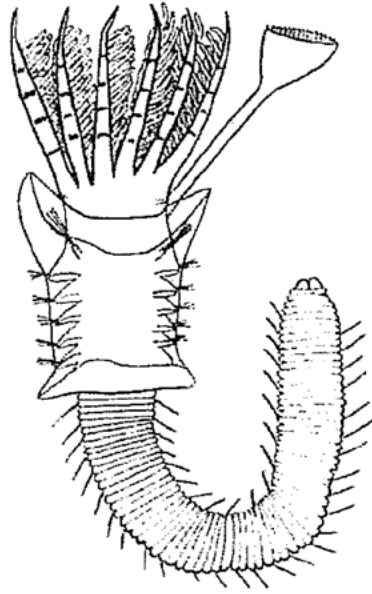
11. *S. benedicti*, dorsal view.

12. *Polydora websteri*, anterior.

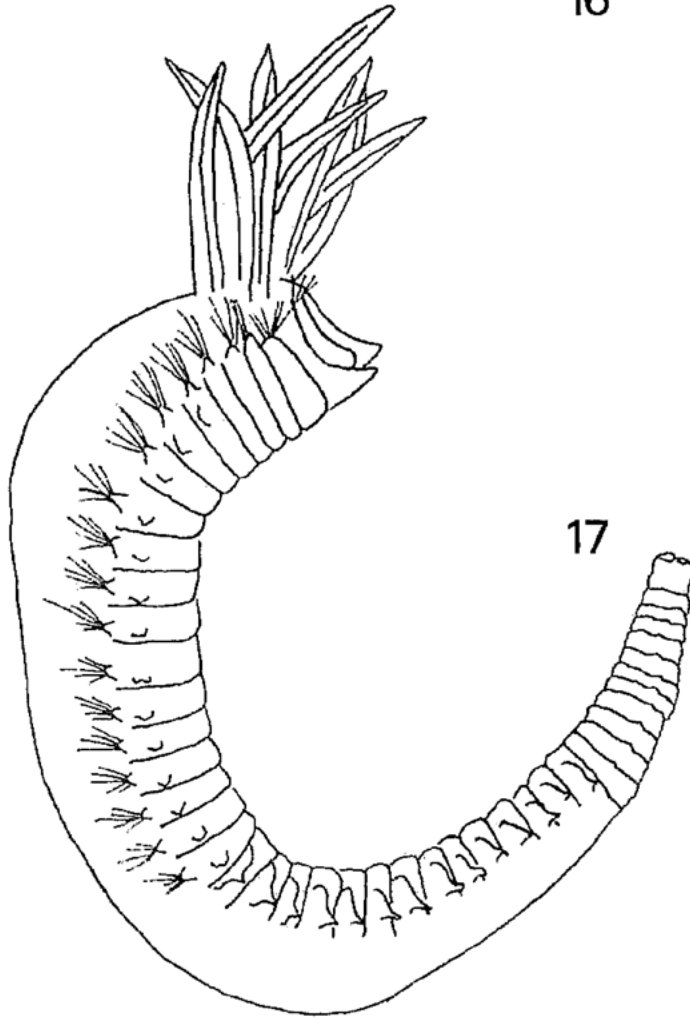
13. *P. websteri*, posterior end.

14. *Boccardia hamata*, anterior.

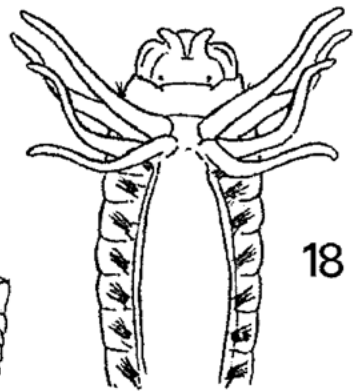
15. *B. hamata*, posterior end.



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PLATE 6
POLYCHAETA (Cont.)

Figure 16. *Ficopomatus miamiensis*, without calcareous tube.

17. *Amphicteis floridus*.

18. *A. floridus*, dorsal view.



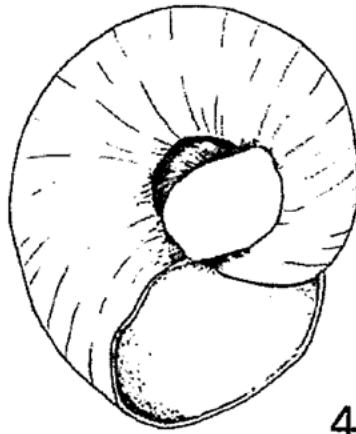
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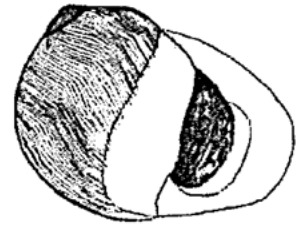
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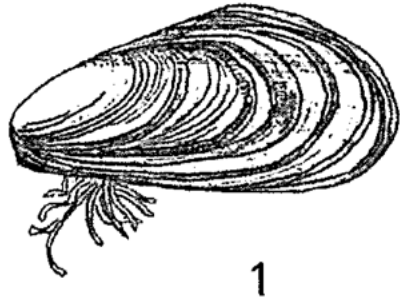
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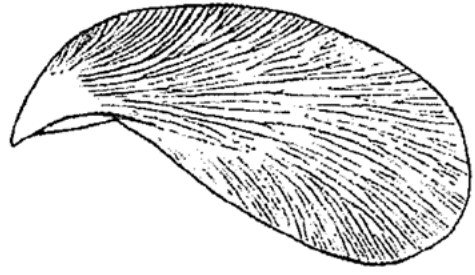
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PLATE 7 GASTROPODA

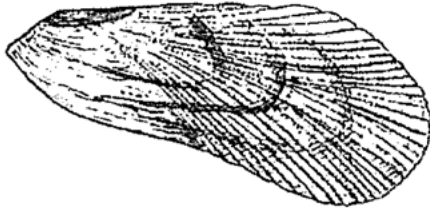
- Figure 1. *Tenellia ventilubrum*.
2. *Elysia* sp., 12 mm (X4).
 3. *Melampus bidentatus*, 18 mm (X2.5).
 4. *Polinices duplicatus*, 26-37 mm (X0.6)
 5. *Neritina reclinata*, 15 mm (X3).
 6. *Probythinella protera*, 3.3 mm (X14)
 7. *Texadina sphinctostoma*, 2-3 mm (X22).
 8. *Texadina barretti*, 2.1 mm (X24).



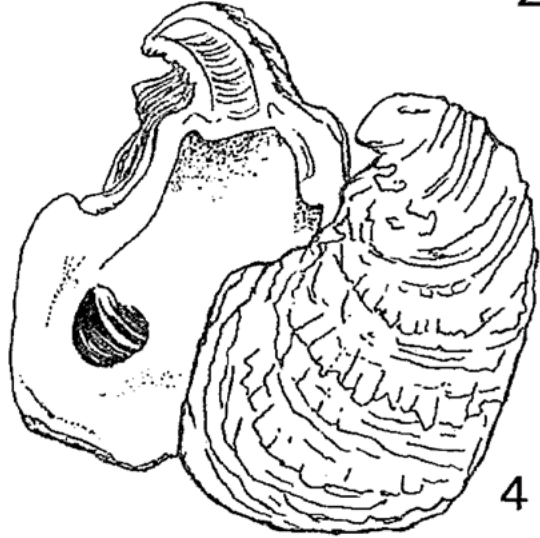
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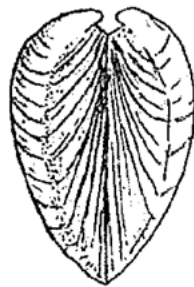
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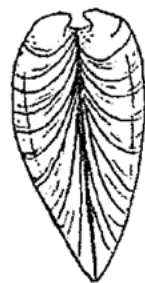
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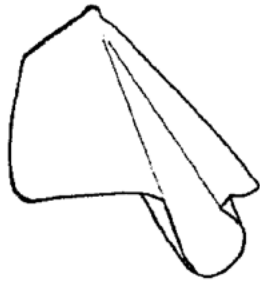
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PLATE 8 PELECYPODA

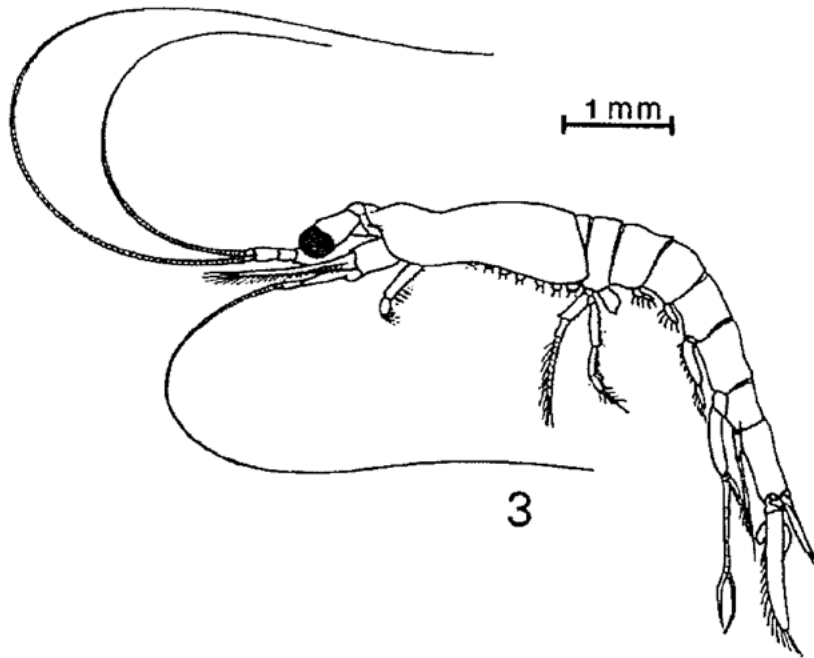
- Figure 1. *Congeria* (= *Mytilopsis*) *leucophaeta*, 18 mm (X4).
2. *Ischadium recurvum* (= *Brachidontes recurvus*), 25-63 mm (X1.5).
 3. *Geukensia demissa* (= *Modiolus demissus*), 60 mm (X1).
 4. *Crassostrea virginica*, 50-150 mm (X1).
 5. *Tagelus plebeius*, 50-68 mm (X1).
 6. *Macoma mitchelli*, 25 mm (X3).
 7. *Polymesoda caroliniana*, 25-38 mm (X2).
 8. *Rangia cuneata*, 25-63 mm (X1).
 9. *R. cuneata*, posterior edge.
 10. *Mulinia lateralis*, 11 mm (X4).
 11. *M. lateralis*, posterior edge.



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PLATE 9 CIRRIPEDIA AND MYSIDACEA

Figure 1. *Amphibalanus improvisus*, tergum, 3-7 mm.

2. *A. subalbidus*, tergum, 3-7 mm.

3. *Taphromysis louisiana*.

4. *T. louisiana*, telson.

5. *Mysidopsis almyra*, telson, (animal length 9 mm).

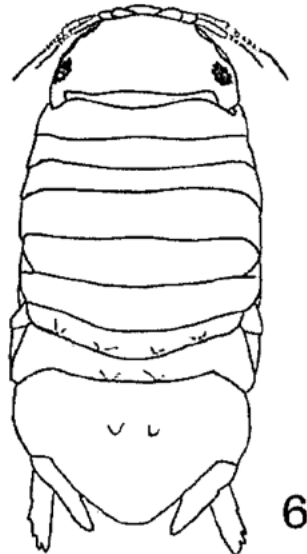
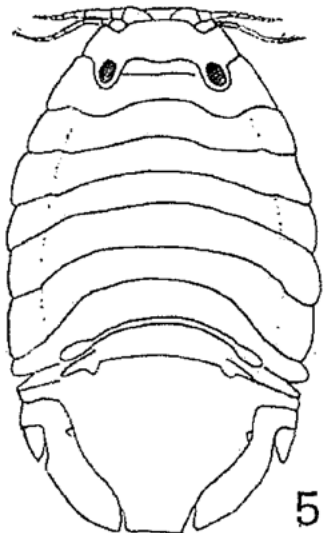
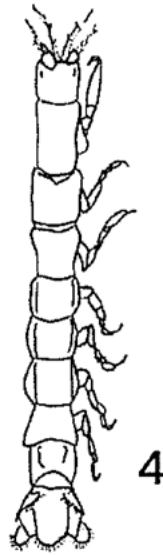
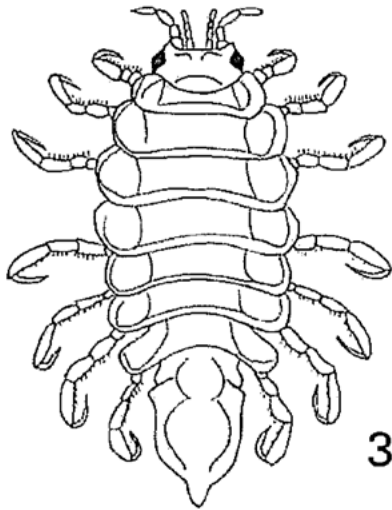
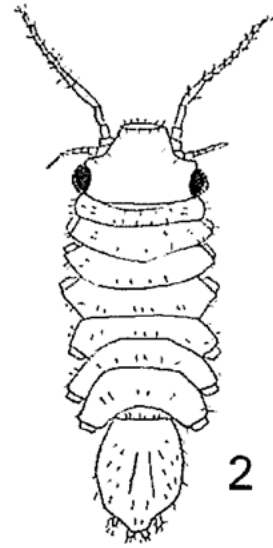
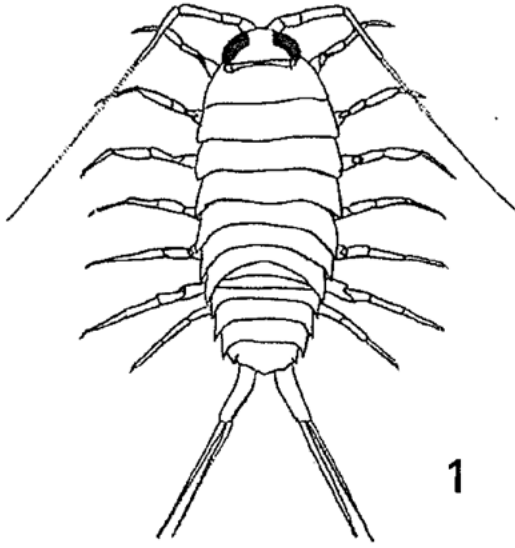


PLATE 10

ISOPODA AND TANAIDACEA

Figure 1. *Ligia exotica*.

2. *Uromunna reynoldsi*, 1.5 mm.

3. *Edotea montosa*, 9 mm.

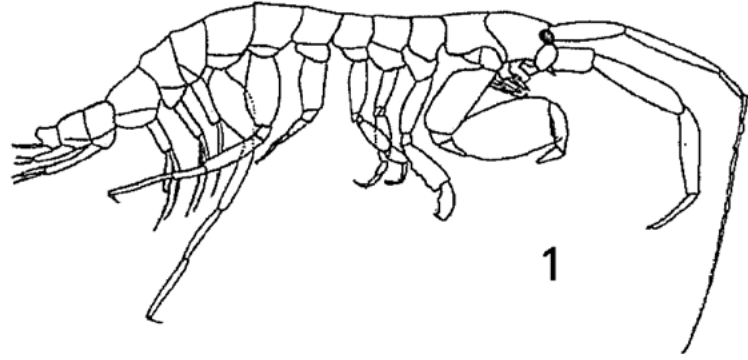
4. *Cyathura polita*, 25 mm.

5. *Cassidinedia ovalis*, 4 mm.

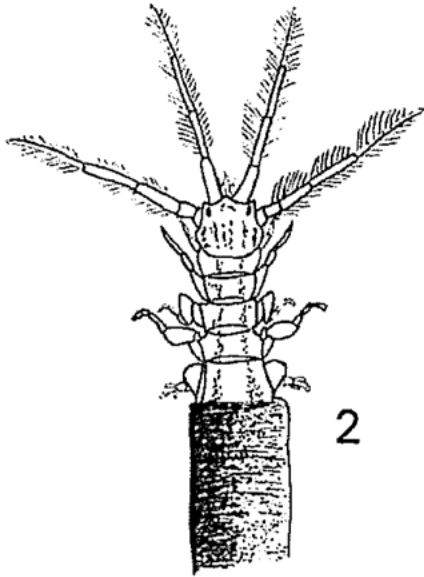
6. *Sphaeroma terebrans*, 10 mm.

7. *Hargeria rapax*, male, 4 mm.

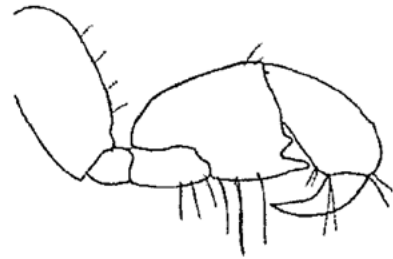
8. *H. rapax*, first leg of female.



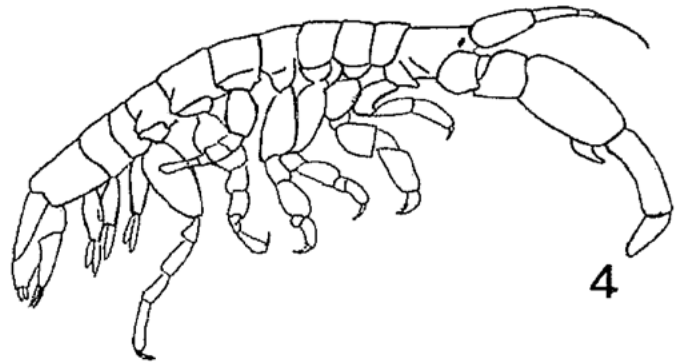
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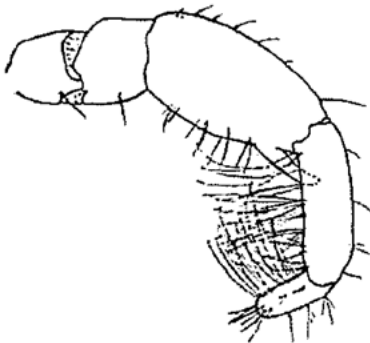
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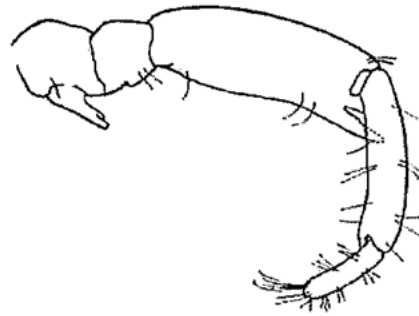
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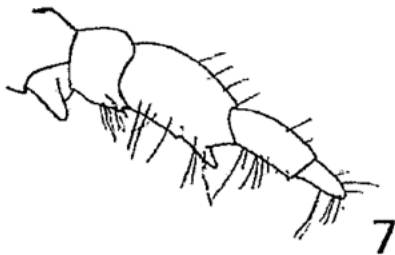
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PLATE 11 AMPHIPODA

- Figure 1. *Grandidierella bonnieroides*, male, 6 mm.
2. *Cerapus benthophilus* (in tube), 4 mm.
 3. *Cerapus benthophilus*, gnathopod 2 of male.
 4. *Apocorophium*, male, 4 mm.
 5. *Apocorophium lacustre*, antennae 2 of male.
 6. *A. louisianum*, antennae 2 of male.
 7. *A. lacustre*, antennae 2 of female.
 8. *C. louisianum*, antennae 1 of male, dorsal.

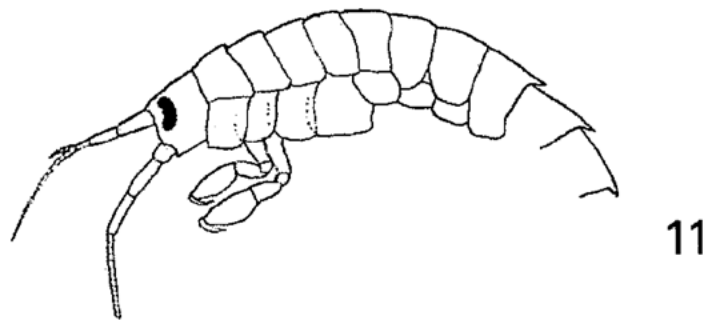
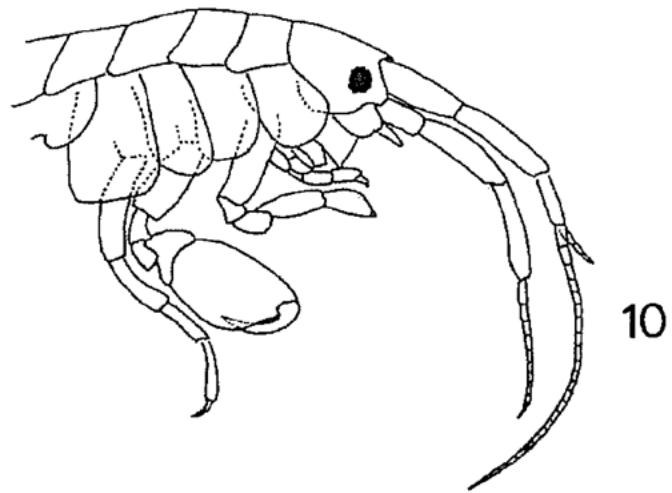
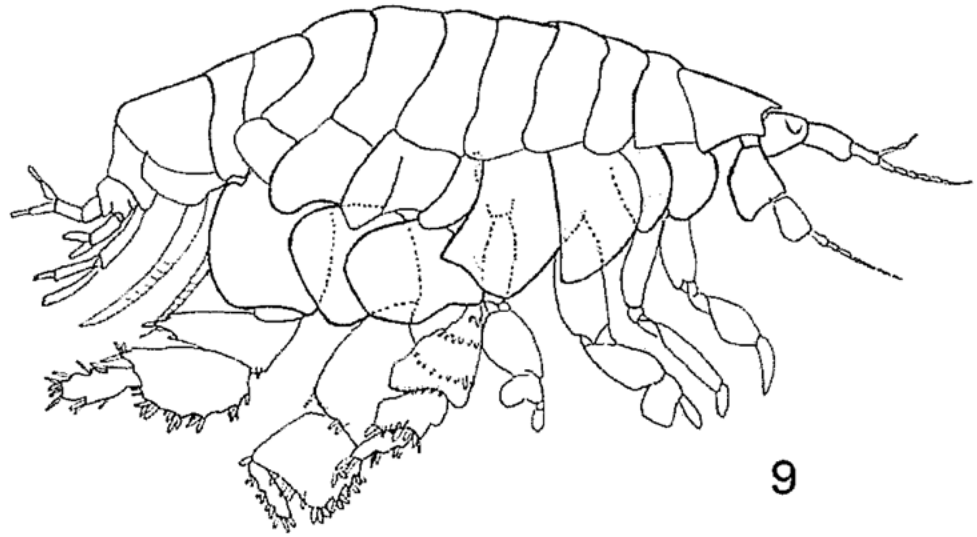
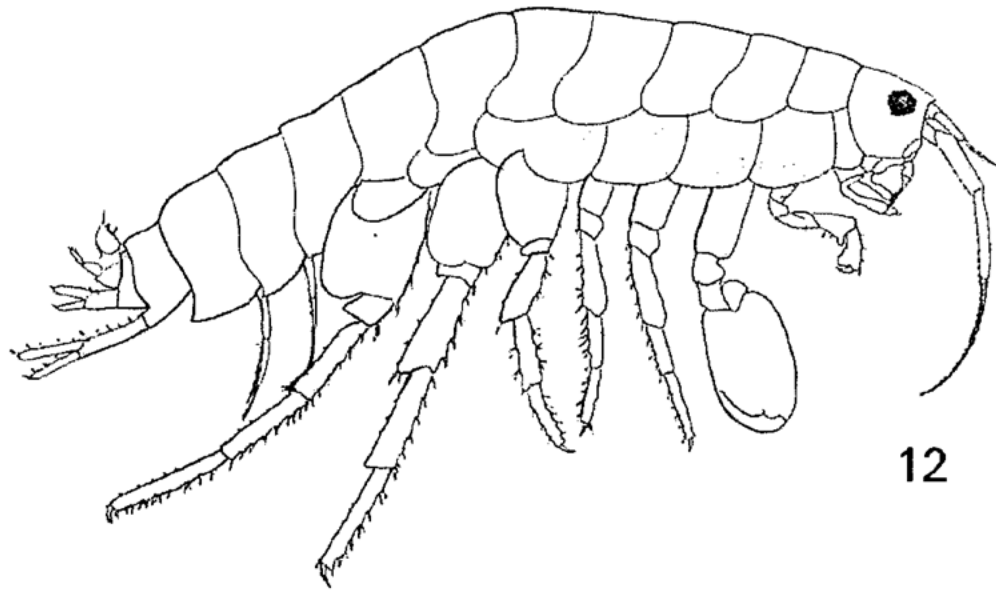


PLATE 12 AMPHIPODA (Cont.)

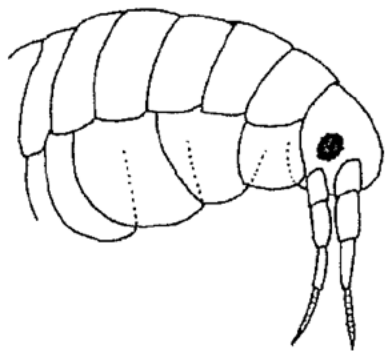
Figure 9. *Lepidactylus* sp.

10. *Melita* sp., anterior half, male.

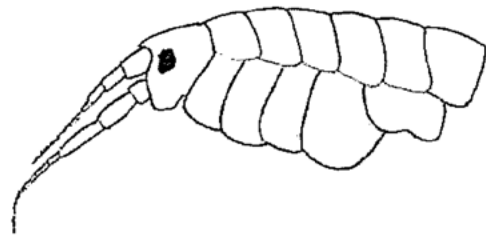
11. *Gammarus mucronatus*, showing dorsal mucronations and gnathopods 1 and 2, male, 9-13 mm.



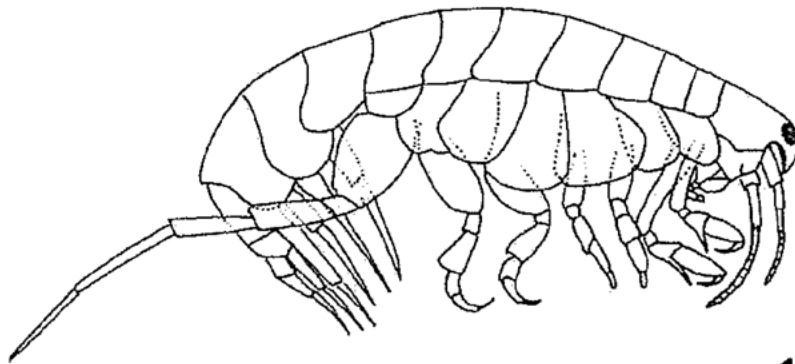
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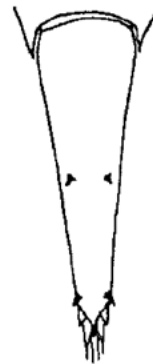
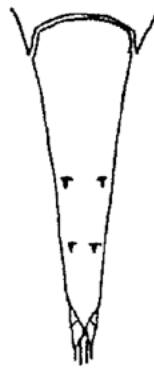
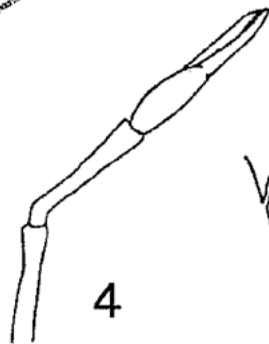
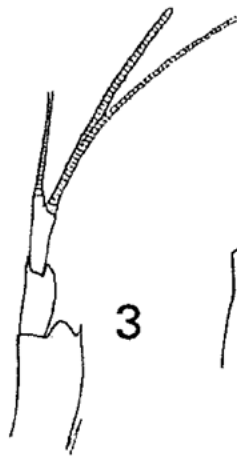
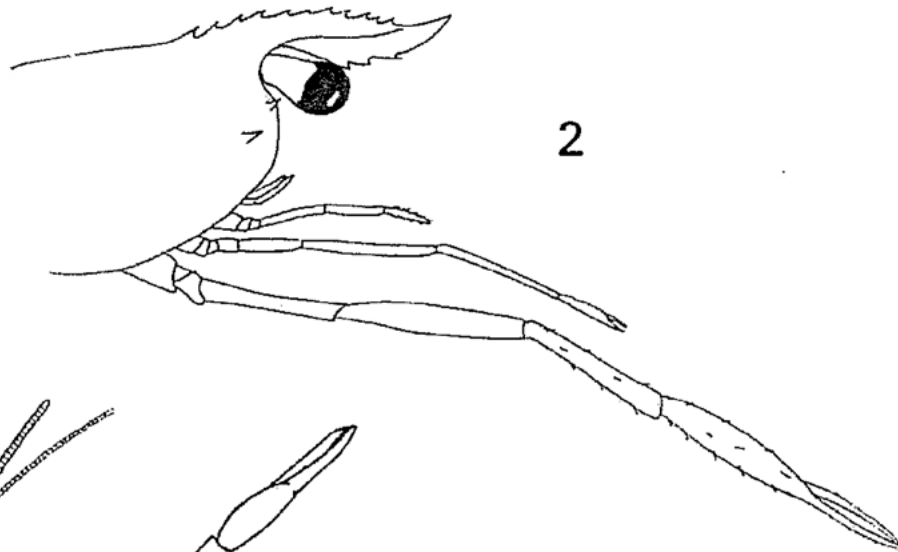
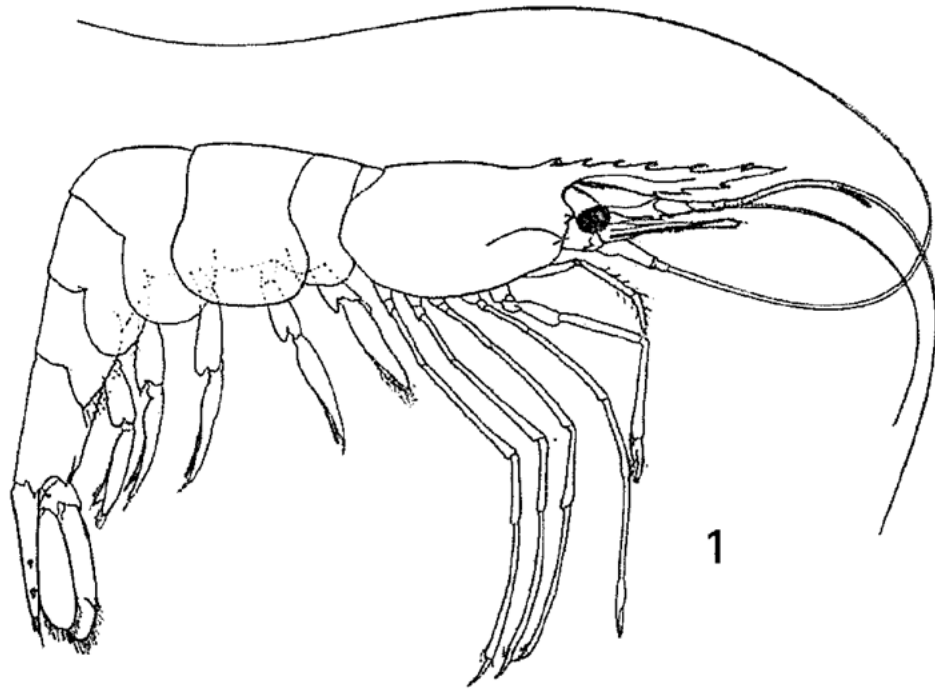
PLATE 13 AMPHIPODA (Cont.)

Figure 12. *Orchestia*, male.

13. *Gitanopsis* sp., showing antennae.

14. *Hyalella azteca* (4.8 mm), showing antennae and coxal plates.

15. *Monoculodes* sp.



PLATES 14 DECAPODA

Figure 1. *Palaemonetes paludosus* 46 mm.

2. *Macrobrachium ohione*, anterior end (animal length 68 mm).

3. *Palaemonetes* spp., first antenna.

4. *Palaemonetes* spp., second leg showing claw and carpopodite.

5. *P. paludosus*, telson.

6. *P. kadiakensis*, telson (animal length 53 mm).

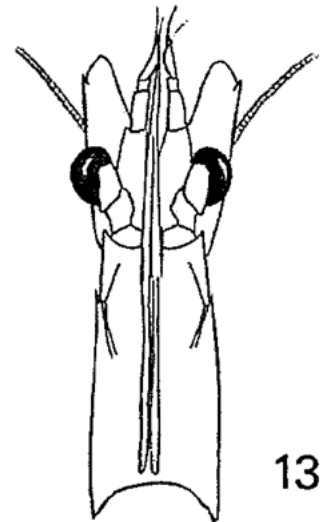
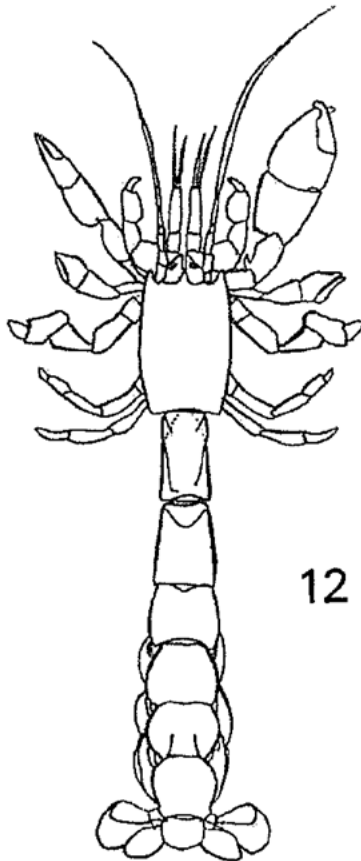
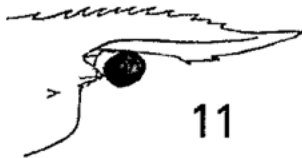
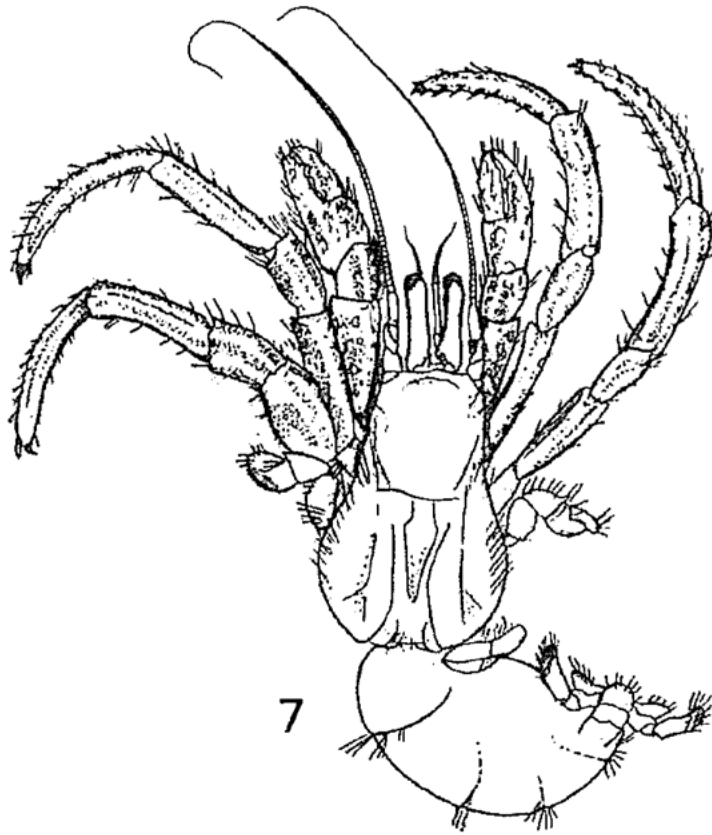


PLATE 15 DECAPODA (Cont.)

Figure 7. *Clibanarius vittatus*, 29 mm.

8. *Palaemonetes vulgaris*, rostrum (animal length 30 mm).

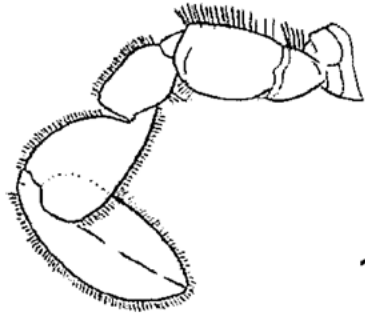
9. *P. paludosus*, *P. pugio*, rostra.

10. *P. intermedius*, rostrum, (animal length 30 mm).

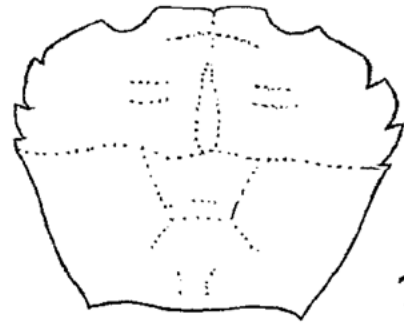
11. *Macrobrachium ohione*, rostrum.

12. *Lepidophthalmus louisianensis*.

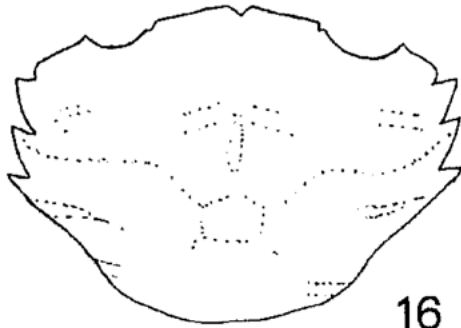
13. *Farfantepenaeus azteca*, dorsal view of carapace.



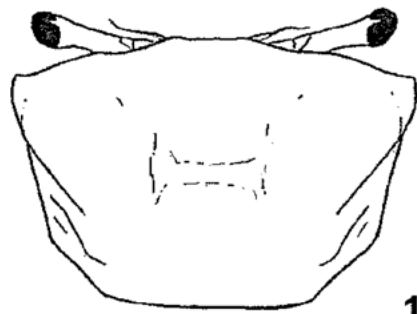
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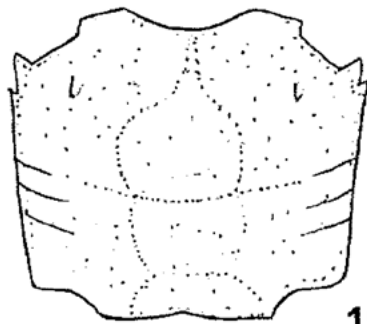
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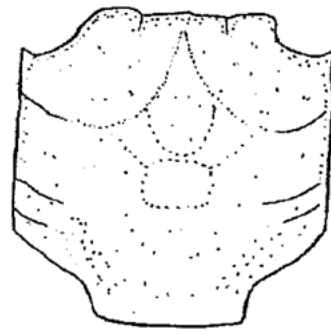
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PLATE 16 DECAPODA (Cont.)

Figure 14. *Callinectes sapidus*, 5th leg (carapace width 200 mm).

15. *Rhithropanopeus harrisi*, carapace width, 19 mm.

16. *Eurypanopeus depressus*, carapace width, 20mm.

17. *Uca*, carapace, showing eyestalks.

18. *Sesarma reticulatum*, carapace width, 28 mm.

19. *Armases cinereum*, carapace width, 28 mm.

20. *R. harrisi*, cheliped, carapace width, 19 mm.

21. *Panopeus herbstii*, major cheliped, carapace width, 38 mm.

22. *E. depressus*, major cheliped.

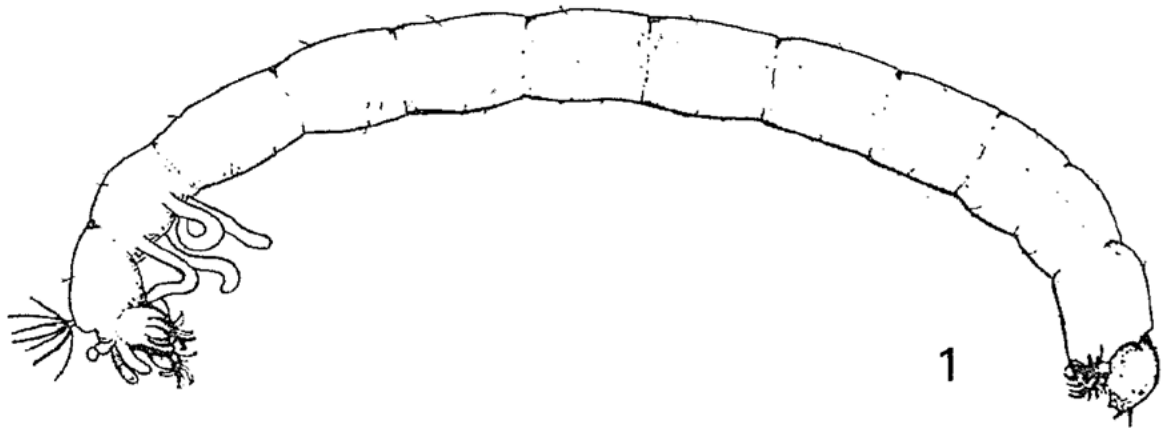


PLATE 17

CHIRONOMIDAE

Figure 1. Generalized chironomid showing blood gills, 10 mm (X15).

BIBLIOGRAPHY

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Michael A. Poirrier earned a Bachelor of Science degree in biology at the University of New Orleans in 1963, after which he received his Master of Science degree (1965) and doctorate (1969) in zoology from Louisiana State University. He joined the faculty in the Department of Biological Sciences at the University of New Orleans in 1969, where he had a 44-year career as a researcher, teacher and mentor in aquatic biology, invertebrate zoology and estuarine ecology. He authored more than 60 research articles, 14 book chapters and numerous technical reports and meeting presentations, many of which focused on the biology of Lake Pontchartrain and surrounding wetlands.



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