Southern California Association of
Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

July, 1992 . Vol. 11, No. 3

NEXT MEETING: Further Discussion on Provisional Species

GUEST SPEAKER: None

DATE: August 10, 1992
9:30am - 3:00pm

LOCATION: Cabrillo Marine Museum
San Pedro, California

AUGUST 10 MEETING: This meeting will again address the master species list of the Southern California benthos, the provisional species list, and the SCAMIT literature library and librarian.

MINUTES FROM SPECIAL MEETING ON JUNE 22:

Tony Phillips of Hyperion asked that lists of Diastylids commonly occurring in the Southern California Bight be sent to him at Hyperion Treatment Plant, Biology Laboratory, 12000 Vista del Mar, Playa del Rey, CA 90293. Please include depth distributions and station information.

Asellote Isopod Workshop: Dr. Buz Wilson from Australian Museum, Sydney started the meeting by dedicating it to Dr. J. L. Barnard. The main objective of the meeting was to provide a broader perspective on Asellote taxonomy based on his most recent research. Dr. Wilson reviewed the "basic format" for each Asellote family, and discussed the most useful taxonomic traits for separating super families; largely from the form of the male pleopods and

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pleotelson. Females of different species within a genus are difficult to distinguish because they lack pleopod 1; looking at the form of pereopod 1 is a useful alternative. Of the families discussed, the Stenetriidae, Munnidae, Paramunnidae, and Janiridae are basically found in shallow water in the Santa Maria Basin and Western Santa Barbara Channel. Desmosomatidae are dominant in deeper water with Prochelator being the dominant genus. Please note that Joeropsis concava, previously known only from central California (91.5-221 m), has also been found as far south as Point Loma in depths of 60-116 m.

If you are is interested in receiving a copy of the "Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and Western Santa Barbara Channel, Volume NN: The Isopoda, Part 2, Suborder Asellota, by George D.F. Wilson, Australian Museum, Sydney, 1992" please contact Diane O'Donohue at the City of San Diego, Marine Biology Lab, 4077 N. Harbor Drive MS-45A, San Diego, Ca 92101.

MINUTES FROM MEETING ON JULY 13:

Don Cadien announced that all of his literature has been entered into Procite 2.0. He recommends that if anyone is planning to upgrade to version 2.0 that they wait because there are still lots of glitches and version 2.02 will be out soon. He is now in the process of creating a list of keywords, and will send this list to anybody who is interested.

Miscellaneous Phyla workshop: John Ljubenkov discussed various problem animals. One of the animals discussed was Paranemertes. Coe described Paranemertes californica twice, once in 1904 and again in 1940. John examined his material and came to the conclusion that Paranemertes sp. A (SCAMIT) is actually a synonymy of Paranemertes californica sensu Coe 1904. He noticed that there were variations in the pattern of the ocelli, but that the stylets were the same in all specimens. John and Tony have found at some river mouth stations specimens of Paranemertes that are similar to the 1940 description by Coe. These specimens are most likely a new species. Voucher sheets will be written by John for both P. californica and P. sp. B?.

The bivalve mollusk Tellina was also discussed. John believes that there is a new species that displays a different color characteristic than T. carpenteri, but more closely resembles T. modesta in its morphology. The question remains whether it's a hybrid between T. carpenteri and T. modesta or a separate species. Dr. E. Coan and Paul Scott are looking at specimens of all three. The following table depicts the differences among the three specimens:

Tellina

	T. carpenteri	*T.* sp. A?	*T. modesta*
Sculpture	few concentric lines, mainly smooth	pronounced concentric lines with juvenile in proportions	like *T.* sp. A?, evenly concentric
Pallial line	see Coan(1971)	like *T. modesta*	see Coan(1971)
Color	pink	"variegated" pink and yellow	ivory white
Depth	occurs at 60 m	occurs at 60 m	occurs at 60 m more common shallower

John also demonstrated another technique for identifying Bullomorpha, which involves looking at gizzard plates. They typically have 3 gizzard plates located just behind the mouth. In *Cylichnella*, there are two plates of equal size and shape forming a pair while the third plate is different. These plates vary in shape and size for each of the different species. *Philine* and *Cylichna* both have 3 equal plates though *Cylichna*'s plates are more elongated. See attached sheet for further details.

FUTURE MEETINGS:

The September 14 meeting will have a report on the Fourth International Polychaete Conference by attending members of SCAMIT, Phillip Barrington of California Department of Fish and Game will give a talk on the Distribution of Invertebrate Fauna on Pinnacles in Carmel Bay, California and Drs. Mas Dojiri and Kirk Fitzhugh will lead a workshop on the preparation of taxonomic publications. This will be held at the Allan Hancock Foundation, University of Southern California, Los Angeles, California

The October 19 meeting (note not second Monday of month) will be on Diastylid Cumaceans with Tony Phillips of the Hyperion Treatment Plant at Cabrillo Marine Museum, San Pedro, Ca.

SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers.

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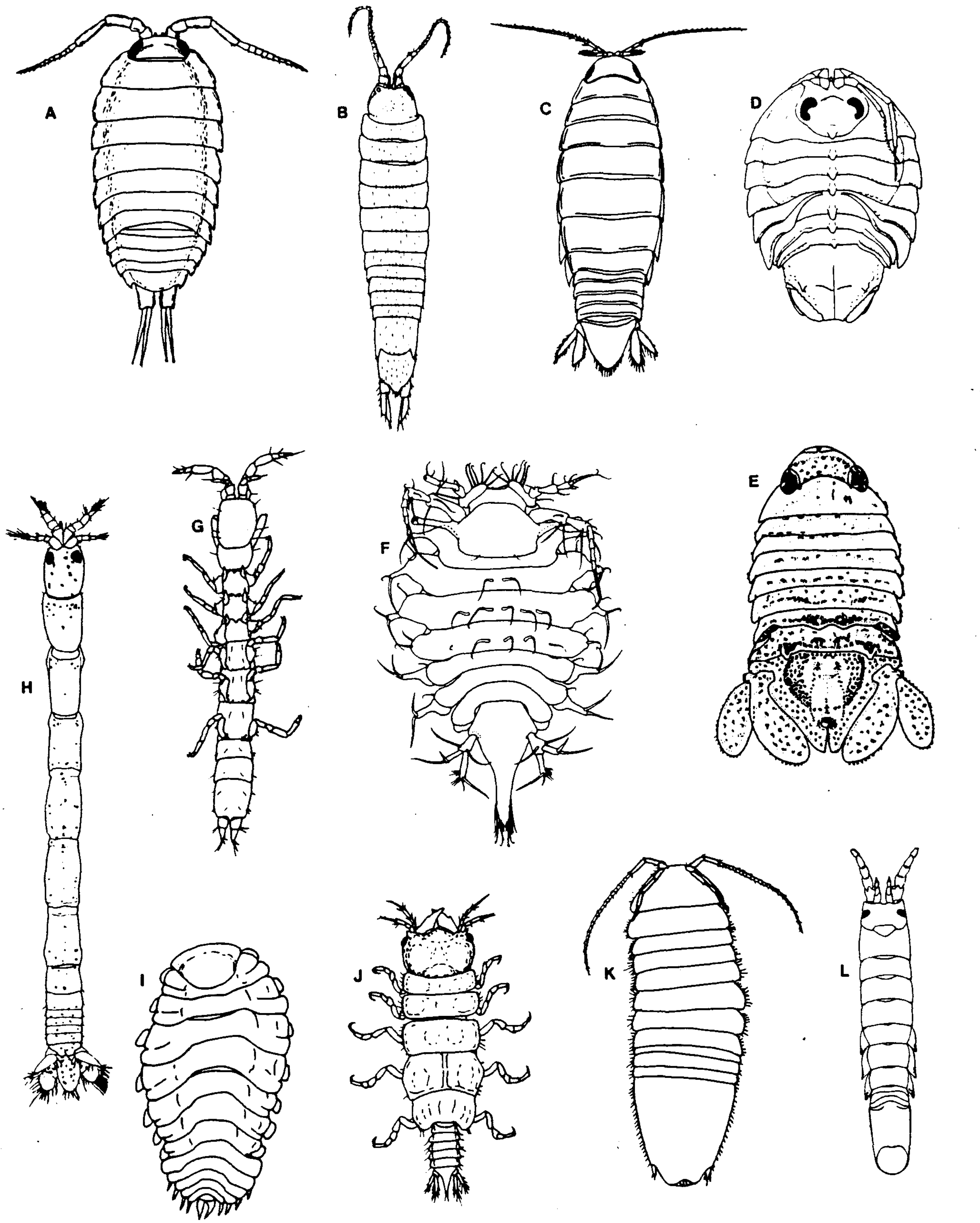
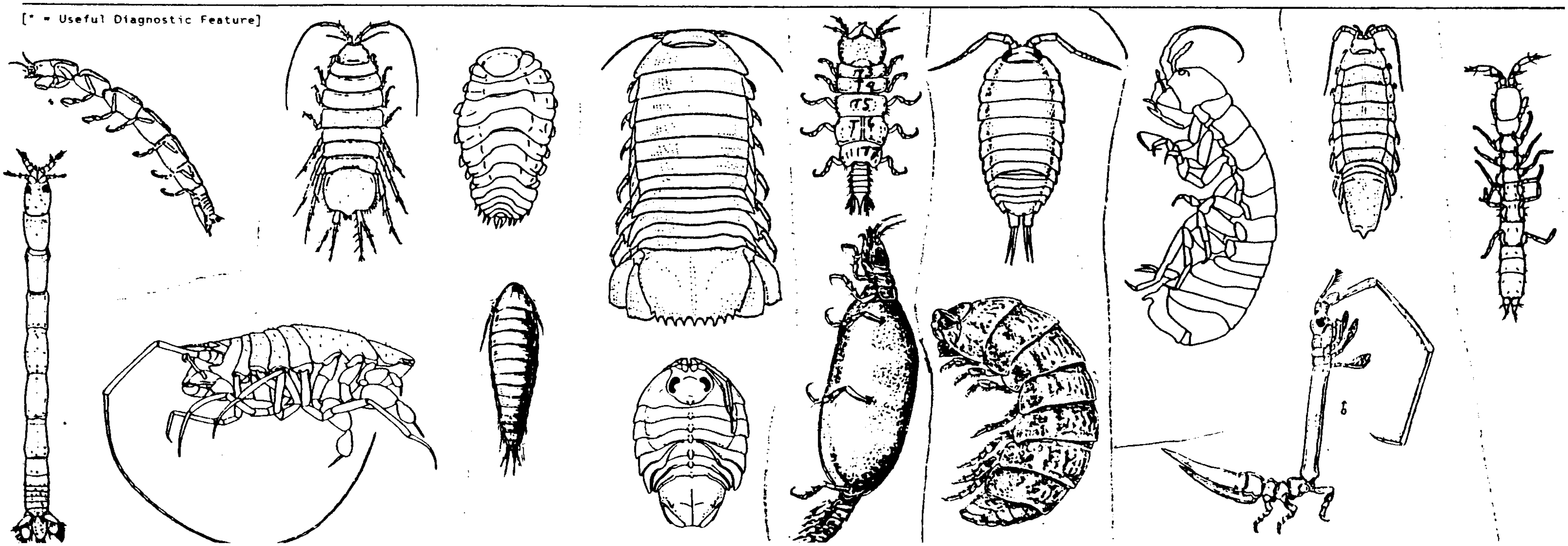


Examples of the Isopod Suborders: A, Ligia (Oniscidea); B, Mesamphisopus (Phreatoicidea); C, Cirolana (Flabellifera); D, Serolis (Flabellifera); E, Dynamenella (Flabellifera); F, Pleurocope (Asellota); G, Microcerberus (Asellota); H, Paranthura (Anthuridea); I, Pseudione (Epicaridea); J, Gnathia (Gnathiidea); K, Calabozoa (Calabozoidea); L, Cleantoides (Valvifera). All in dorsal view, not to scale.

MAJOR GROUPINGS OF THE ISOPODA AT A GLANCE

	Anthuridea	Asellota	Epicaridea	"Flabellifera"	Gnathiidea	Oniscidea	Phreatoicidea	Valvifera	Microcerberidae
Body Form & Locomotion	Elongate and slender* Swimming dimorphic	Flattened to variable Ambulatory	Distorted* to sac-like* degenerate	Flattened to enrollable good swimmers	Sexual dimorphism & metamorphosis	Flattened, often enrollable ambulatory only	Amphipod-like* Good swimmers	Flattened to caprellid-like some good swimmers	Elongate and slender* Ambulatory
Cephalon AII peduncle:	5 segments Mouthparts suctorial in some	eyes often absent 6 segments, scale* on seg.3 Mouthparts normal	3 segs.in male Mouthparts suctorial when present	5(6?) segments Mouthparts normal or suctorial. Mnd molar reduced or modified	4 segments Juv. mouthparts suctorial. Adults degenerate	AI tiny*, 3 segs. 4-5 segments M.parts normal Mxp palp distally reduced	5 segments Mouthparts normal	5 segments M.parts normal Mnd palp often absent Mxp palp reduced	Eyes absent 5-6 segments Mnd w/o palp
Pereon	T2-4 pereopods Subchelate*	Coxae small,unfused w/o epimeral plates anter./poster.Th.s may be fused	larval forms cf. flabelliferans* Adult Ths prehensile (hook-like),if pres.	Coxae epimeral and often fused to pereon	T2 fused to ceph*; T8 missing* only 5 free Th.s (adult manca)*	Coxae epimeral, fused to pereon	Coxae w/o epimeres T2-5 directed anter. T6-8 posterior T Bases 6-8 expanded	Coxae usually w. epimeres & fused to pereon	Coxae small, w/o epimeres Pers. rotated dorsally*
Pleon	Pl.1-2 normal Pl.I sometimes opercular Urs. sometimes block openings	Urs. styliform Pls.I-II modified & opercular Pls3-5,telson fused into single unit Pls.III-V branchial	All Pleopods branchial if pres. Pls.I-V for swimming in juveniles Urs. various	Pleonites free or fused Uropods sometimes form tail-fan	Pleonites all free. Urs. flat & biram. (but no tail-fan)	Pleonites rarely fused. Pleopods air breathing. Uropods styliform	Pleonites free Pls.I-V subeq., for resp. & swimming Uropods styliform	Pleonites fused variously to telson Uropods form operculum over pleopods	Pls.1-2 large Pl.3-5 & telson fused. Pleopods Uropods reduced or absent
Body Length	5-47mm	1-20mm	0.5-10mm	1-350mm	2-17mm	1-50mm	5-45mm	5-130mm	0.5-1.5mm
Fossil Record	Recent	Recent	Upper-Jurassic	Triassic	Recent	Eocene	Upper Carboniferous	Oligocene	Recent
Habitat	Marine Estuarine and fresh water	Marine, fresh water (incl. caves), rarely brackish	Marine & Estuarine	Marine, Fresh water, Some cavernicolous (Hot springs!)	Fish parasites as juveniles benthic & cryptic as adults	Terrestrial*, Amphibious, & fresh water	Fresh water (surface & ground) Relict Gondwanaland distribution*	Marine benthic	Interstitial*: marine & FW beaches & ground waters
Feeding	Carnivorous	Omnivorous Detritovorous	Ecto/endoparsites on Crustacea*	Carniv., fish parasites to Omniv.	Ectoparsites Adults non-feed.	Detritivorous Herbivorous	Detritivorous	Herbivorous & Omnivorous	Detritivorous
Num. Families	3	29	4	16	1	35	3	7	1

[* = Useful Diagnostic Feature]



Genera of Asellota (some recent new genera not included)
Data from Torben Wolff's catalogue

Abyssijaera
Abyssoniscus
Acanthaspidia
Acanthocope
Acanthomunna
Angeliera
Anneckella
Antennuloniscus
Antennulosignum
Asellus
Aspidarachna
Aspidoniscus
Astrurus
Austrogonium
Austroniscus
Austrosignum
Bacromesus
Bactromesus
Bagatus
Balbidocolon
Bathyopsurus
Betamorpha
Caecianiropsis
Caecijaera
Caecostenetroides
Chelator
Coperonus
Coulmannia
Dactylostylis
Dendromunna
Dendronunna
Dendrotion
Desmosoma
Disconectes
Disparella
Echinomunna
Echinopleura
Echinosone
Echinothambema
Echinozone
Ectias
Eugerda
Eugerdella
Eurycope
Exacanthaspidia
Fritzianira
Gnathostenetroides
Gomphomesus
Halacarasantia
Haplomesus
Haplomunna
Haploniscus
Hapsidohedra
Hawaianira
Hebefustis
Helomesus
Heterias
Heteromesus
Hydroniscus
Iais
Ianiroides
Ianiropsis
Ianisera
Ianthopsis
Iathrippa
Santia
Ilyarachna
Iolanthe
Iolella
Ischnomesus
Jaera
Jaerella
Janaira
Janira
Janiralata
Janirella
Janirella (Parjanirella)
Janthura
Joeropsis
Katianira
Kuphomunna
Lionectes
Lipomera
Lipomera (Lipomera)
Lipomera
(Paralipomera)
Lipomera (Tetracope)
Mackinia
Macrostylis
Maresia
Mesosignum
Microcharon
Microjaera
Microjanira
Micromesus
Microparasellus
Microprotus
Microthambema
Mictosoma
Mimocopelates
Mirabilicoxa
Mixomesus
Momedossa
Munella
Munna (Metamunna)
Munna (Munna)
Munna (Neomunna)
Munneurycope
Munnicope
Munnogonium
Munnopsis
Munnopsoides
Munnopsurus
Nannoiniscus
Nannoniscidae
Nannoniscoides
Nannonisconus
Nannoniscus
Neasellus
Neojaera
Notasellus
Notoxenoides
Notoxenus
Oecidiobranchus
Paracanthaspidia
Paramunna
Paramunnopsis
Paropsurus
Pleurocope
Pleurogoniuim
Pleurogonium
Pleurosignum
Prochelator
Protocharon
Protojanira
Pseudarachna
Pseudojanira
Pseudomesus
Pseudosellus
Rhacura
Santia
Stenasellus
Stenetrium
Stenobermuda
Storthyngura
Stylomesus
Sugoniscus
Synasellus
Syneurycope
Thambema
Thaumastosoma
Thylakogaster
Torwolia
Trichopleon
Tytthocope
Urias
Uromunna
Vemathamben
Whoia
Xostylus
Zoromunna

Composition of the Janiridae

Genera Included by Wolff (1962). The broad definition of the Janiridae (Wolff, 1962) permitted the inclusion of a great deal of morphological diversity. Wolff's concept of the family recognized the following genera as valid members of the Janiridae:

Abyssijaera Menzies, 1962b (= *Katianira* Hansen, 1916)
Acanthaspidia Stebbing, 1893
Angeliera Chappuis and Delamare, 1954
Bagatus Nobili, 1906
Caecianiropsis Menzies and Pettit, 1956
Caecijaera Menzies, 1951a
Carpias Richardson, 1902
Ectias Richardson, 1906
Heterias Richardson, 1904b
Iais Bovallius, 1886
Ianiropsis G.O.Sars, 1897b
Ianthopsis Beddard, 1886b
Iathrippa Bovallius, 1886 (senior synonym of *Notasellus* Pfeffer, 1887)
Iolella Richardson, 1905a
Jaera Leach, 1814
Jaerella Richardson, 1911b
Janiralata Menzies, 1951b
Janira Leach, 1814
Janirella Bonnier, 1896
Janthura Wolff, 1962
Katianira Hansen, 1916.
Mackinia Matsumoto, 1956
Microcharon Karaman, 1934
Microjaera Bocquet and Levi, 1955
Microparasellus Karaman, 1933
Microprotus Richardson, 1909 (not Vanhöffen, 1914 as in Wolff, 1962)
Neojaera Nordenstam, 1933
Protocharon Delamare and Chappuis, 1956
Protojanira Barnard, 1927
Pseudasellus Chappuis, 1951 (= *Heterias* Richardson, 1904b)
Pseudojanira Barnard, 1925
Rhacura Richardson, 1908
Spinianirella Menzies, 1962b (= *Dactylostylis* Richardson, 1911a)
Trichopleon Beddard, 1886a
Xostylus Menzies, 1962b

Genera added since 1962. The following genera have been assigned to the Janiridae by various authors. Some of these genera are junior synonyms of earlier taxa (given here in parentheses).

Austrofilius Hodgson, 1910 (brought out of synonymy by Schultz, 1976)
Austroniscoides Birstein, 1963 (= *Janthura* Wolff, 1962)
Fritzianira De Castro and Lima, 1977 (= *Heterias* Richardson, 1904b)
Hawaianira Miller, 1967
Ianiroides Kensley, 1976 (= *Ectias* Richardson, 1906)
Ianisera Kensley, 1976 (= *Neojaera* Nordenstam, 1933)
Janaira Moreira and Pires, 1977a
Janatus Carvacho, 1983 (= *Bagatus* Nobili, 1906)
Janthurella Kussakin, 1982 (= *Katianira* Hansen, 1916)
Microjanira Schiecke and Fresi, 1970

Microthambema Birstein, 1961 (included by Kussakin, 1988)
Natalianira Kensley, 1984a
Thambema Stebbing, 1912 (included by Kussakin, 1988)
Vermectias Sivertsen and Holthuis, 1980.

Adjustments to the composition of the Janiridae. We here limit the Janiridae to a smaller group of genera. The following paragraphs indicate the current placement of genera removed from the janirids. These adjustments are made based on reasons external to the definition of the Janiridae.

Microprotus, despite its complete lack of swimming pereopods, is a derived member of the Munnopsidae *sensu lato* (Wilson, 1989; Wilson, Kussakin, and Vasina, 1989). Its closest relative in the Munnopsidae seems to be *Storthyngura* Vanhöffen, 1914.

The genera *Abyssijaera*, *Janthurella*, *Katianira*, and *Natalianira* have been removed to the new family Katianiridae by Svavarsson (1987), and are reduced to two genera. *Katianira* now contains the species of *Janthurella* and *Abyssijaera*. *Natalianira* is retained as a valid genus of the Katianiridae.

Protojanira and *Pseudojanira* have been removed from the Janiroidea. *Protojanira* is placed in its own family with the genera *Enckella* Fresi, Idato and Scipione, 1980, and *Anneckella* Chappuis and Delamare, 1957; this family is considered to belong to either the Protojaniroidea (Sket, 1982; Wägele, 1983) or the Gnathostenetroidoidea (Wilson, 1987). *Pseudojanira* has been placed in its own monotypic family and superfamily (Wilson, 1986a, 1987), although the superfamily assignment is subject to revision when more specimens and species are found.

The family Microparasellidae Karaman, 1934, has continued to be recognized (Birstein and Ljovuschkin, 1965a,b; Coineau, 1968, 1969, 1986), despite Wolff's elimination of the family. We discuss this family below.
The genera included in the Microparasellidae are *Microparasellus*, *Angeliera*, *Microcharon*, and *Paracharon* (Coineau, 1969).

Janirella and *Dactylostylis* (senior synonym of *Spinianirella*; see Hessler, 1968) belong to the Janirellidae Menzies, 1956, following the composition of family of Menzies (1962b). We, however, exclude the genus *Rhacura* from the Janirellidae until this genus can be more carefully described. These genera have synapomorphies that clearly separate them from the Janiridae, so their classification in this family by Kussakin (1988) is not used here.

The family Acanthaspidiidae Menzies, 1962 is currently recognized (Bowman and Abele, 1982), although Menzies and Schultz (1968), who added several new genera to it, offered no arguments rebutting Wolff's (1962) removal of the family. We do not follow Kussakin (1988) who included *Acanthaspidia* into the Janiridae, and instead assert that the family is indeed valid. Acanthaspidiids can be defined as janiroideans that have enlarged pereonal lappets, narrow or finger-like mandibular molars, broad maxillipedal endites with narrow palps, third pleopods with many plumose setae on both rami, and elongate uropodal sympods. Most species of this family also have dorsal spines. The family contains *Acanthaspidia* Stebbing, 1893, *Iolanthe* Beddard, 1886, *Paracanthaspidia* Menzies and Schultz, 1968, and *Exacanthaspidia* Menzies and Schultz, 1968. This family needs revision because the latter two genera are scarcely different from *Acanthaspidia*. The genus *Ianthopsis* is clearly a sister group of the Acanthaspidiidae, because it has most apomorphies that define this family. *Ianthopsis* is not a janirellid as suggested by Menzies (1962b), and it should not be classified in the Acanthaspidiidae because it has unreduced mandibular molars and functional eyes, which are lacking in the Acanthaspidiidae *sensu stricto*. Under a new definition of the flamily, however, *Ianthopsis* might be included in the Acanthaspidiidae. The correct classification of *Ianthopsis* will have to wait until a revision of the family.

The Thambematidae, including the genera *Thambema* and *Microthambema*, is a well-defined family (Harrison, 1987). Consequently, we do not follow Kussakin (1988) in including this family into the Janiridae.

Jaerella, Rhacura, Iolella have some characters in common but are assigned to *Incertae Sedis*. *Trichopleon* and *Xostylus* are both poorly described and are derived deep-sea genera that have no place in the Janiridae. These two genera need revision before their exact affinities can be resolved, so they are temporarily assigned to *Incertae Sedis*. *Vermectias* is so aberrant that it will require further study to determine its exact affinities. We do not favor its placement in the Janiridae. The composition of these genera are discussed nevertheless.

MUNNOPSIDAE Eurycopinae

Eurycope

sp. 1 — Somewhat similar to brevirostris, two large rostral spines, good spec. at station 1. Also at stas. 2, 4, 5, 6, 7, 9, 10

californiensis Schultz, 1966

It is probably this species - his description was really bad. Large, main-type Eurycope with robust natasome. Mxp epipod with lateral lobe, and 4 coupling hooks on endite. Uropod with strong medial lobe. Projecting medial lobe on AI with a few strong setae. Rostrum narrow, slightly overhanging with a few small setae. Fragmentary male at sta. 5 has pl.II with tiny "vermiform appendage" and odd stylet that has a sharp right angle approximately at the level of the sperm opening. Frags at sta. 2, 5, 10.

Munneurycope

pellucida Birstein, 1970

Pelagic species originally gotten over the Kurile Kamchatka Trench. Juvenile male individual was damaged but is similar to the described species. This species probably is not *Munneurycope sensu stricto* as in *E. murrayi* because it lacks the muscular bases to PII-IV. The uropod is elongate with a tiny exopod. At sta. 10.

Genus indet.

sp. 1 — Not well characterized yet. Manca only at sta. 4. Pleotelson curls down Munneurycope style. Intermediate width quadrate nonoverhanging rostrum. Uropodal rami thick, no medial lobe. AI without medial lobe. At stas. 4, 5

MUNNOPSIDAE Ilyarachninae

Ilyarachna

cf. *profunda* — Seems to be same species, but specimens so far don't show the strong marginal setae seen in the illustrations. Pereonite 4 is longer because of larger basal muscles for the pereopod IV: these produce a visible dorsal bulge in adults. At Stas. 1, 5 (frags), 10

Pseudarachna

sp. 1 — Row of broad setose bumps on pers 2-4. New species. At stas. 2,

MUNNOPSIDAE subfamily incertae sedis

Betamorpha

sp. 1 — Not like any other species, probably new. Vertex is straight, (barely sinuous). Uropod exopod is thicker than and as long as medial lobe of protopod; protopod has few setae. Probably most similar to longiramosa Mezhov 1981. At stas. 2, 5, 6, 9

NAVY Dumpsite 103 Isopod Descriptions

DESMOSOMATIDAE Desmosomatinae

Mirabilicoxa

sp. 1 — This species seems to best fit in this genus. Coxae are small to intermediate, small uropodal exopod, cephalic lateral spines, pereopods I-II like acuminata. Combination of features like M. richardsoni, but perepods are different and has spine on coxa I. Good spec at sta 1. Also at stas. 6, 8

sp. 2 — Male has much longer coxal spines. No cephalic spines. No uropodal exopod. Per II paucisetose. Male: small AII, narrow Per V-VII carpus-propodus, body translucent, opalescent. Good spec. at sta 1. Also at sta. 2, 6, 8, 10

Desmosoma

sp. 1 — Male: Intermediate length coxal spines, compact body and spines. No pleonal spines, broad rounded flange instead. Per I small but similar to per II. Heavy AII, pers V-VII with broad carpus-propodus. Females are larger and have better developed per II. Uropods uniramous (feature of genus). At Sta. 1, 6, 8, & Reference Sta.

Momedossa

symmetrica (Schultz, 1966) — Uropodal exopod thin. Pltn spines. Coxal spines triangular. Large smooth head, with lateral spines. Per I similar to that of *Mirabilacoxa*. At Sta. 1, 2, 3, 5, 8. Illustrated male in Sta. Maria Basin Atlas.

Eugerda

sp. 1 — Small ur exopod. Long thin body. Large. PI without setae. Easily broken. At Sta. 1, 2?, 8, 9, 10.

DESMOSOMATIDAE Eugerdellinae

Eugerdella

sp. 1 — Almost nannoniscid like. Heavy PI with 3 lg carpal spines. Pers II-IV are flattened, few setae. Uropod with tiny exopod. Triangular spines on coxae I-III. Pltn w. short broad lateral spines. At Sta. 1.

sp. 2 — pugillator type. Not well characterized: manca 3 only at sta 2.

Prochelator

sp. 1 — Cephalon, per I-III with spines. Uropod with tiny or?? absent exopod. Per I robust, with 4 large setae. Per 1 not especially enlarged. In male cephalon vaulted, with large AII. Small as adults. At Sta. 1, 5, 8.

sp. 2 — Per I-III coxae without spines. Cephalon with large lateral spines. Per 5 with anteriorly curved short spine. Per I with one large chelate seta and one smaller seta. Small as adults. At Stas. 1, 2, 3, 4, 5, 8, 9

NAVY Dumpsite 103 Isopod Descriptions

MESOSIGNIDAE

Mesosignum cf. *asperum* Menzies & Frankenburg, 1968

Appears to be very close to this species although the pltn spines are longer (this might be a variable trait). All lateral margins and projections with elongate thin spines. Only 2 spines on pleotelson. No spine-projections on per 1 and 7. Spine-projection on per 2 is thick, pointed and club-like. At stas. 2,

KATIANIRIDAE

Katianira

sp. 1 — Abyssijaera type, with robust pereopods. Dorsal surface relatively smooth. Cephalon frontal margin rounded. Uropods large, flat, rounded. At stas. 2,

JANIRELLIDAE

Janirella

cf. *ornata* Birstein 1960

Similar, but spines on dorsal surface and lateral projections are somewhat longer (variation?), and AI2 is larger. Pleotelson with 1 large and two anterior small spine/projections. Only one major (lightly spined) spine/projection on each lateral margin of each segment including cephalon. At stas. 2,

HAPLONISCIDAE

Haploniscus

sp. 1 — Cephalon with thick rostrum terminating in short dorsally curving point. AII spine tapering to thin point with one seta on posterior margin. Pers 5-7 & pltn with distinct sutures. Cuticle smooth, shiny. Lateral margins largely quadrangular. Only tiny teeth between pers 4 and 5. At stas. 2 (mancas), 4 (3 females), 5*,

ISCHNOMESIDAE

Ischnomesus

sp. 1 — Not well characterized yet (fragments at sta 2). Very large species with shiny opalescent cuticle. Rounded pleotelson posteriorly, no posterolateral spines. At stas. 2,

sp. 2 — No spines anywhere. Thin cuticle. Well developed, sharp clypeal ridge. Long thin setae projecting laterally from pereonites 4-5. At stas. 6, *Haplomesus*

sp. 1 — Similar to H. modestatenuis Menzies & George 1972. Rough cuticle. Pltn posterolateral points having truncate ends extended by fat setae. Spines on pers 1-4 long, shortX3. AI-II on short pedestal. At stas. 2, 9

NANNONISCIDAE

Nannoniscus

sp. 1 — Rostrum not protruding. Pleotelson with lateral sinuous flange. Uropods nearly covered by posterior rounded anal projection. Pleopod II operculum with large spine. Suspect per 6-7 fused. Probably large species: at sta 2 mancas only and these are large. In adult males, per 1-3 margins strongly projecting anteriorly. At stas 2, 5 (male), 6, 9

cristatus Mezhov (1986)

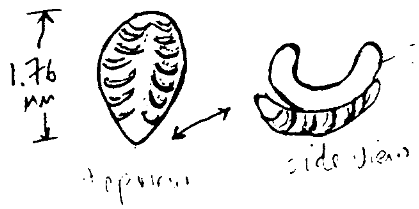
Nearly identical to Mezhov's drawings, although for some reason he doesn't illustrate the large ventral spine just in front of the pleotelson on ventral surface. Interesting feature of this species are the large tergal spines terminated by thick setae on pers 2-4. Pltn without posterolateral spines. Also spiny protrusions on ventral surface midline of pers 2-4. At stas. 6, 9

Exiliniscus

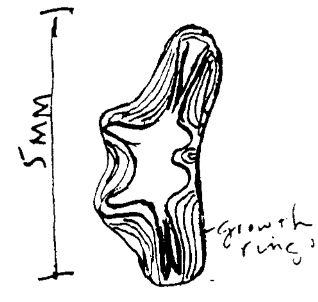
sp. 1 — Pereopods with few setae. Probably a new species. At stas. 4,

Gizzard Plates of some Bullomorpha

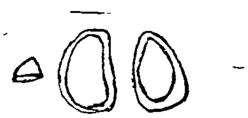
compiled by J. Ljubenkov 7/92



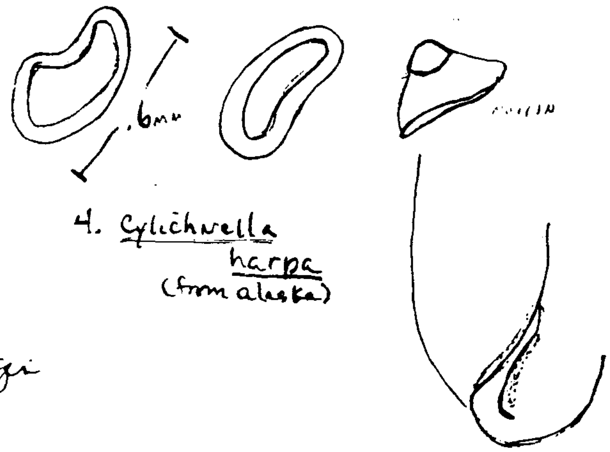
1. *Haminoea virescens*



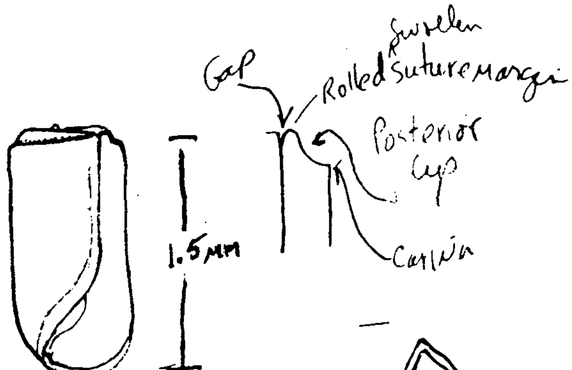
2. *Bulla gouldiana*



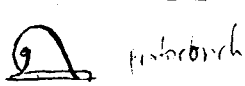
3. *Cylichnella culcitella*

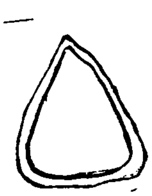


4. *Cylichnella harpa* (from alaska)

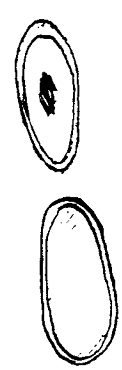


5. *Cylichnella inculta*





unpaired plate



6. *Cylichna diegensis*