SOUTHERN CALIFORNIA ASSOCIATION OF MARINE INVERTEBRATE TAXONOMISTS

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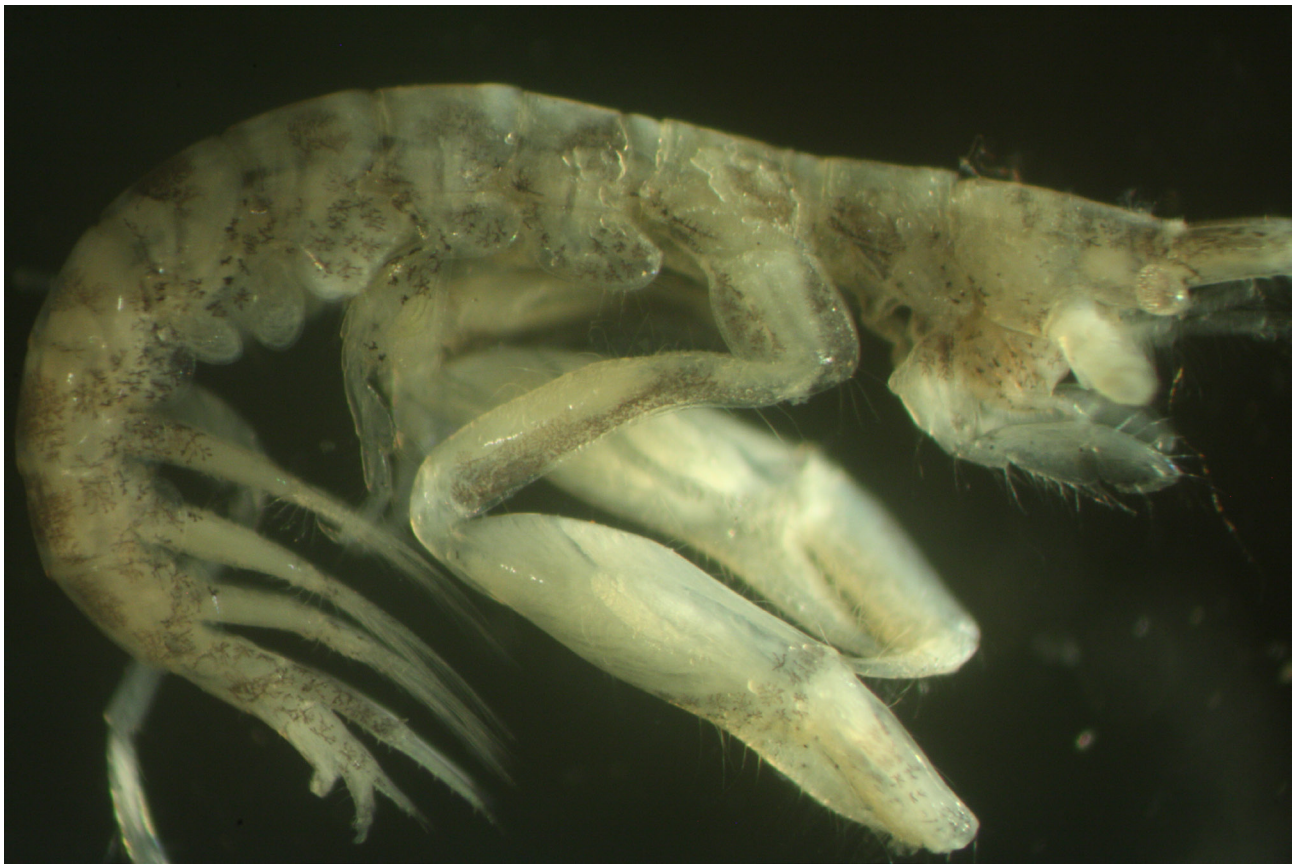

Ericthonius brasiliensis - Male specimen collected from a settling plate in San Diego Bay (NIWC Stn9 9Jul2021). Photo by D. Pasko.

This Issue

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10 MAY 2021 ECHINODERM TOOLBOX REVIEW, LEAD M. LILLY, ZOOM

Attendance: Don Cadien, Terra Petry, Chase McDonald, Jovairia Loan, Brent Haggin, LACSD; Mary Wicksten, Texas A&M; Megan Lilly, Andrew Davenport, CSD; Erin Oderlin, Greg Lyon, CLAEMD; Angelica Zavala Lopez, MTS; Ernie Ruckman, OCSD; Erica Keppel, Smithsonian.

UPCOMING MEETINGS

Visit the SCAMIT website at: www.scamit.org for the most current meetings announcements.

Kelvin started by giving an overview of his database meeting with Wi-Lin. One of the major take-aways from the meeting was that, initially, we should concentrate on basic functionality allowing the species list to work online. We need to prioritize what is needed in terms of primary features as each additional feature will add complications and cost. To that end Kelvin will be asking members for input. For example, should we create an option for members to comment on the list, e. g., flag errors, make change suggestions, etc., online? Realistically money is going to be an issue with a quote ranging from10k to 100k; SCAMIT will need to find funding.

Danny Tang then gave a p-code update. He attended the CTAG meeting last week (May 2021) where the issues of p-codes were raised. He asked Ken Schiff if SCCWRP was using Edition 5 in their tool. Ken said, "no", they are updating the tool with every Bight cycle. Don noted that it is the SQO that is tied to Ed 5. Greg Lyon pointed out, however, that SCCWRP has a calculator on their website and it uses Ed 5. Ken agreed that SCCWRP could facilitate a p-code discussion if needed. They are amenable to assisting but not leading. It was asked that Don or Wendy attend a CTAG meeting in the future to discuss revitalizing the BATMAN (SCCWRP Benthic AssessmenT MANagement) group and harmonization of p-codes and why it is needed. Don mentioned that this is a CTAG concern since the p-codes and BRI are featured in regulatory control over programs and keeping them up to date is important. The POTW group has an interest in maintaining p-codes and have been doing so as individual agencies but have not coordinated their efforts since BATMAN stopped meeting. Subsequently, the agencies' p-codes have probably diverged; it would be a good idea to get back to a coordinated effort. Danny stated that BATMAN ran a test in 2010 of datasets from various agencies and the results were not inconsequential and pointed to a need for coordination. This doesn't necessarily have to happen through SCCWRP. Shelly Walther (LACSD) offered to take charge if needed instead of asking Dave Gillette (SCCWRP). Danny then asked who uses the SCCWRP tool? Greg noted that CLAEMD uses their web-based calculation tool and in order to do so they have had to add an "Ed 5 name" field to their internal species list. Problems arise if they add a new species as they have to determine what Ed 5 name would or would not apply to that taxon; it needs to have a "BRI name".

Megan started the taxonomy portion of the day noting that it was going to be focused on reviewing the echinoderm portion of the Toolbox but that if people had questions regarding problematic species, to please raise them.

She shared her protocol for identifying juvenile ophiuroids and offered to send it to other agencies for review.

There was a question about the Holothuroidea species *Ypsilothuria bitentaculata*. This animal has been recorded by CSD from B'13, B'18 and a CSD Regional station, with all occurrences being >500 m. Megan offered to create an ID sheet for the species.

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Questions arose about the creation of provisional species *Amphioplus* sp A. Megan has scanned a hard copy of the original descriptive email by Lisa Haney in 2003. A copy of it is attached at the end of this newsletter.

14 JUNE 2022, ARTHROPODS, LEAD D. PASKO, ZOOM

Attendance: Brent Haggin, Don Cadien, Chase McDonald, LACSD; Dean Pasko, DCE; Craig Campbell, JoAnne Linnenbrink, CLAEMD; Danny Tang, OCSD; Katie Beauchamp, CSD; Angelica Zavala Lopez, MTS; Dany Burgess, WADOE.

The meeting opened with Brent turning over control of the Zoom meeting to Dean as there was little SCAMIT business to relate to the small group of arthropod taxonomists in attendance.

Dean then began the meeting by discussing local *Nebalia* spp of the Order Leptostraca. Craig Williams and JoAnne Linnenbrink had raised the question of how to distinguish *N. hessleri* from other potential species. This problem had also bothered Dean. He shared an ID sheet and key to species. In short, there are three taxa potentially present in the SCB: *N. daytoni, N. hessleri*, and *N. pugettensis* Cmplx. Dean discussed the ID sheet (a collage of images of the described species) and reviewed the characters of the key used to distinguish the three local species (eye shape, body size, articles on antenna 1 flagellum, and number of robust spines present on article 4 of the antennule). The two other species formally described from northern California include *N. kensleyi* and *N. gerkenae*. These two species are quite easily differentiated by the length of the caudal furca relative to the telson, along with the shape of the posterior marginal teeth of the pleonites, broad and rounded relative to thin and strongly tapering, respectively. Neither of these species is yet reported from Southern California and were presented for comparative purposes.

Dean then moved into a discussion of an uncommon group of lysianassoid amphipods, *Abyssorchomene* (Lysianassoidea: Lysianassidae), which had been collected in several deep-water Bight'18 samples but is not included in Ed 13. *Abyssorchomene* is not included in Dean's 2018 key to SCB lysianassids, and *Abyssorchomene* specimens would key to one or more species of *Orchomene*. However, Don Cadien (2007) included the genus in his 100+page overview of the Lysianassoids and the genus is clearly identified in his included key to the genera. *Abyssorchomene* can be distinguished from *Orchomene* and other closely related genera by the presence of small but distinct humps along the postero-dorsal margin of pereonites 1–7 and pleonites 1–2 along with blunt, mammiliform eyelobe. There are three described species from the NEP, and potentially two other provisional species that have yet to be fully fleshed out (see Cadien 2007). Dean provided the group a multi-page handout that included Don's discussion of the genus, and several figures pages representing the three described species of *Abyssorchomene* (*A. abyssorum*, *A. distinctus*, *A. gerulicorbis*) highlighting the characters that distinguish each from the most closely aligned *Orchomene* taxa (*O. anaquelus*, *O. limodes*, *O. obtusa*). Everyone was cautioned that they should reference this material if they encounter specimens that they believe to be members of the *Orchomene* group from deeper waters (>700m) since that is where they are more likely to encounter *Abyssorchomene*. [**Note**: Dean has subsequently revised his key to include *Abyssorchomene*, as well as another recently encountered lysianassoid covered in Don's review, *Shoemakerella* ?*cubensis* of the family Lysianassidae. Four specimens of this taxon were collected on settling plates within Alamitos Bay Marina in Long Beach, and one in Cat Harbor, Catalina Island. The "?" ahead of the species designates Dean's inability to confirm the specific identification, but after discussing the find with Don, Dean feels quite confident of the generic identification.]

Sticking with amphipods, Dean introduced a new key to the SCB *Ericthonius* (Corophiida: Photoidea: Ischyroceridae). Dean had recently encountered one of his old provisional species, *Ericthonius* sp SD1 in a set of shallow water samples from the Chevron Refinery discharge off Dockweiler Beach in the Santa Monica Bay. He had not seen the species in a while and took the opportunity to clarify how this species relates to other reported *Ericthonius* and share this information with the City of Los Angeles staff, who also process samples from Santa Monica Bay. For example, Dean had not originally noted that this species also has unpigmented eyes, like Don's *Ericthonius* sp A from northern California. The two taxa are easily distinguished by the presence of a vestigial endopod on uropod 3 in *Ericthonius* sp A which is absent from *Ericthonius* sp SD1. Don acknowledged that the presence of an endopod, vestigial as it may be, might place it into some other undetermined genus. The genus *Ericthonius* is defined, in part, by having a uniramus uropod 3. *Ericthonius* sp SD1 is similar to *E. brasiliensis* in that males of both species have a bifid defining tooth on gnathopod 2, but the two differ in overall size with *Ericthonius* sp SD1 being consistently less than 3 mm at maturity. In addition, *Erichthonius* sp SD1 differs from *E. brasiliensis* in the shape of the basis of gnathopod 1, length/width of the gnathopod 2 carpus, shape of uropod 3, and telson denticles, respectively.

Finally, Dean discussed his approach to working with SCB sphaeromatid isopods (Family Sphaeromatidae) from shallow water samples, particularly bays and harbors. Since many of the active members of SCAMIT come from the local monitoring agencies operating in coastal shelf waters, shallow water sphaeromatids are not often encountered. Since the Regional Bight Program has migrated to focus on embayments, some of these folks have encountered more of these diminutive, unfamiliar sphaeromatids, many of which are not covered in the most commonly used key, Stebbins (1999). Brusca et al (2007) key in Light's Manual is very clear and helpful, even in Southern California. Dean emphasized the utility of this resourceful key and explained one of the more useful characters used in the key, pleated vs. non-pleated pleopods. Don reminded everyone that Regina Wetzer (NHMLAC) and others have put out several recent sphaeromatid papers that everyone should become familiar with. Many of these are cited in the References section of this newsletter. Dean shared his *Gnorimosphaeroma* ID sheet (thankfully Don was present on the call to correctly pronounce this genus), which includes a key from Wetzer, et al. (2021) addressing *Gnorimosphaeroma oregonense* and other members of the genus.

Dean also introduced us to some problem crabs he encountered in SCB embayments. They appeared to be panopeids (Decapoda: Xanthoidea: Panopeidae), but not *Lophopanopeus*, despite appearances. They don't fit any of the local *Lophopanopeus* species, and when the male gonopod is examined, are not members of *Lophopanopeus* at all. It is more likely they are *Micropanope* (Decapoda: Xanthoidea: Xanthidae) although the structure of the gonopod does not match any of the described *Micropanope* either. Dean has separated out two similar taxa that differ in carapace morphology, treating them as "panopeid 1" and "panopeid 2", but has been unable to resolve their identity. It is possible that these represent an invasive species currently making entry into our waters. Dean said that Dr. Mary Wicksten (Texas A&M University) has agreed to examine the material and will undoubtedly have a useful analysis to add once she does. Stay tuned and be thankful our usual monitoring is offshore and beyond the many difficulties of working in embayments and particularly with fouling communities.

Most of the discussed ID aids, keys, sheets, etc, are attached at the end of this newsletter.

JULY 2021 – NO MEETING DUE TO FIELD SAMPLING

23 AUGUST 2021, PROBLEMATIC POLYCHAETES – PART 2, LEAD L. HARRIS, ZOOM

Attendance: Brent Haggin, Bill Furlong, Christine Boren, Norbert Lee, LACSD; Leslie Harris, NHMLAC; Adam Webb, Ricardo Lara, Veronica Rodriguez, CSD; Ashley Loveland, Diane O'Donohue, Heather Peterson SFPUC; Greg Lyon, CLAEMD; Kelvin Barwick, OCSD; Theresa Diaz, MBC; Larry Lovell, Tony Phillips, DCE; Rod Velasquez, Angelica Lopez, MTS; Chip Barret, EcoAnalyst; Tom Biksey, retired; Dot Norris, retired.

Norbert presented on a specimen of what he thought might be an *Arctonoe* in the Family Polynoidea. Attendees suggested it may be a *Lepidasthenia.* Norbert will work on getting some better images.

Veronica presented a possible new SCAMIT record for *Goniadopsis* sp (Family Goniadidae):

- anterior parapodia uniramous, posteriorly biramous
- 1 kind of probiscideal organ
- Without chevrons
- Long ventral cirri.

Leslie suggested checking for damage to the proboscis to determine if the chevrons are lacking or if the animal lost its chevrons.

Adam presented more images of his problematic *Anotomastus* (Family Capitellidae). Kelvin provided images of *Anotomastus gordiodes* for comparison. Leslie said it was different and Adam should erect a provisional species.

Leslie presented material on the following species:

Within the Family Terebellidae *Pista pacifica* is listed as *Pista cf pacifica* Ed 13. Leslie provided images of confirmed local specimens of *Pista pacifica*. Therefore, it is proposed that the "*cf*" designation be removed from future species lists. Good characters to separate this species from others include:

- large uncini in anterior chaetigers
- 3 pairs of branchiae
- multiple pairs of nephridia

Within the Family Lumbrineridae, *Scoletoma luti* has been reported from both San Francisco Bay and shallow bays and harbors of southern California. It is most likely to only be encountered during Bight sampling. This species has long post-setal lobes which extend beyond the chaete in the posterior chaetigers and the worm is long and thin (30 X 0.5 mm). Also found in shallow water, bays and harbors are *Scoletoma* sp A, *Scoletoma* sp B and *Scoletoma* sp C. All three were described as SCAMIT species by L. Lovell in 2001. These are separated by the starting chaetiger of the hooded hooks, the length of the pre- & post-chaetal lobes of the posterior chaetigers and the presence of a sensory palpode on the tip of the prostomium.

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Glycinde sp SF1 (Family Goniadidae) – this organism is pale, yellow-greenish and has 2 types of probiscideal papillae (1 row of "duck feet" & 1 row of "cigar" shaped). Compared to *Glycinde picta* which has brown banding and 1 type of proboscideal organ (2 rows of "duck feet").

Malmgreniella macginitiei (Family Polynoidea) – Leslie presented images of freshly preserved specimens that still retained most of their pigment.

In the Family Phyllodocidae a comparison of three species of *Phyllodoce* were presented. Perhaps *Phyllodoce multipapillata* should be more on our radar. The three species discussed were:

Phyllodoce cuspidata

- no pigment on tentacular segments
- dorsal banding incomplete
- anterior with paired ventral dots
- proboscis with abrupt papillae transition

Phyllodoce multipapillata (= Phyllodoce sp SF2*)*

- with pigment on tentacular segments
- dorsal banding complete
- without paired ventral dots
- proboscis with gradual papillae transition

Phyllodoce sp SF3

- no pigment on tentacular segments
- dorsal banding incomplete
- without paired ventral dots
- proboscis with abrupt papillae transition

Next up was the Family Orbiniidae. *Scoloplos* sp SF1 was revisited and determined to be a valid provisional. Brent will update his Orbiniid key and redistribute. *Leitoscoplo*s sp SF1 was presented. It has very long abdominal neuropodia. Brent suggested checking the posterior thoracic neuropodia for the number of post-chaetal processes and for the presence of the ventral pigment cluster/band in the anterior thorax to determine if it is a current provisional.

For the Family Magelonidae Leslie presented a table and images to show that most of the local *Magelona* spp can be ID'd using only the notopodial and neuropodial lamellae, and the chaetal arrangement is not necessary for most of the species.

Within the Family Maldanidae *Euclymeninae* sp B appears to be fairly common in San Francisco Bay and may be a central California species. Easily ID'd by the rectangular pigment patch on chaetiger 7. Along the same lines, Kelvin asked about *Euclymeninae* sp SF2 and it was determined that it was actually *Petaloclymene pacifica*.

In the Family Capitellidae the two species*, Capitella teleta* and *Capitella capitata* Cmplx, were discussed. While the prostomium of *C. teleta* is somewhat distinctive compared to *C. capitata*

Cmplx, due to the overall variability within the *C. capitata* Cmplx and the need for DNA to confirm the presence of *C. teleta*, it is suggested that *C. capitata* Cmplx be the applied name. Below are some of the characters that can be useful to separate the species within the complex:

- prostomium smooth or annulated
- peristomium complete or incomplete
- total number of chaetigers
- number of capillary chaetigers
- number of chaetigers with hooded hooks
- genital spines in males or females or both

Next up for discussion were *Pseudopotamilla socialis* vs. *Pseudopotamilla* sp 1 Fitzhugh 1993 in the Family Sabellidae. *P. socialis* is typically found on hard substrates. The color of the crown and placement of the eyes is distinctive. *Pseudopotamilla* sp 1 is a soft-bottom organism and is likely the common *Pseudopotamilla* found in local SCAMIT samples.

The move of two genera within the Family Ampharetidae, *Sabellides* and *Asabellides,* into the genus *Ampharete* was discussed. These genera have previously been separated based on the presence or absence of palae and the number of thoracic chaetigers. Jirkov (2011), and numerous others have shown that size and number of palae are highly variable for this group. The presence or absence of palae within populations varies. These groups are now aligned based on the buccal tentacles being pinnate and a prostomium without glandular ridges, among other characters.

Also, in the Family Ampharetidae, our local records of *Ampharete acutifrons* is most likely a complex based on the starting chaetiger of the prolonged dorsal cirrus. Leslie is working on a character table to determine the number of local provisional species and proposes to stop using the name *A. acutifrons* for local species. Also, using the description of *A. acutifrons* in the MMS Atlas (Hilbig, 2000; pp 180 -182, fig, 8.3) should be avoided as it was based on the original description of the European species and a single specimen from central California.

The recent changes within the Family Eunicidae were discussed. The genus *Eunice* was recently split into *Eunice* and *Leodice*.

- *Leodice antenatta* is likely not present locally. Check instead *Leodice lucei*.
- *Leodice valens* is likely a northern California species.

The genus *Marphysa* (Family Eunicidae) was recently split into *Marphysa* and *Paucibranchia*. Both of these genera lack peristomial cirri but are separated based on the branchiae being present only on a limited number of anterior chaetigers in *Paucibranchia*.

- *Marphysa californica* (= *Marphysa* sp C Harris 2003) is a valid species that was recently removed from synonymy with *Marphysa sanguinea* Cmplx.
- *Marphysa stylobranchia* needs a redescription.

Local records of the genus *Lysidice,* also in the Family Eunicidae, are likely mis-identified juveniles as the number of prostomial antennae and the presence of peristomial cirri, both defining characters, are growth and size related.

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If you need any other information concerning SCAMIT please feel free to contact any of the officers at their e-mail addresses:

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Amphioplus sp A - 2003 Haney descriptive email

From: "Lisa Haney" <lhaney@lacsd.org>
To: "Bight list-server (E-mail)" <b03taxon@sccwrp.org>, "listserve SCAMIT (E-mail)" <SCAMIT@lserve.sbnature2.org>
Date: 12/30/2003 10:39 AM
Subject: [b03taxon] Discussion of specific ophiuroids (status ofAmphioplus hexacanthus)

Sorry for the cross-posting, I just want to ensure that this information was available to everyone.

I wanted to take a moment to present some findings on what has seemed to be a confusing subject for many concerning the status of Amphioplus hexacanthus. In a recent SCAMIT newsletter, Megan Lily reiterated the confusion in her ophiuroid article and solicited additional commentary. So here it is!

Without doubt, Amphioplus hexacanthus is a nomen dubium. (Not a valid name due to lack of complete type material and inability to distinguish it as something different)

History of Amphioplus hexacanthus: The type material was not sufficient to represent this as a new species and was therefore synonomized with Dougaloplus amphacanthus. The type material was lacking individuals with disks. Without disks the individuals could not be distinguished as different from D. amphacanthus. It was synonomized with Dougaloplus amphacanthus because of the forked tentacle spines found centrally along the arms. With the information at hand at that time, the only known species to have forked tentacle spines was D. amphacanthus, so the synonymy was appropriate. However, with recent information on a new species with a scaled disk and forked central arm spines, it is my recommendation that the synonymy be revoked and the name Amphioplus hexacanthus be designated as a nomen dubium. Either way the name Amphioplus hexacanthus is unavailable and would not be appropriate to use in an identification of any kind.

Another source of confusion seems to be the distinction between the two genera Dougaloplus and Amphioplus. Here are the basic diagnostic characters for each:

Amphioplus:

A pair of infradental papillae at tip of jaw and 3 or 4 oral papillae at each side.
Deeper in the mouth slit, on either side of the infradental pair, is a supplementary papilla (Buccal scale)
Of the lateral papillae, 1 or 2 emerge from the adoral shield.
Outermost oral papilla very small, not opercular
The disk is scaled, no spinelets.

Radial shields always divergent.
Arms very long and brittle with 3-6 spines on both sides of each joint
Tentacle scales vary from 1-2.

Dougaloplus:

Disk covered with fine imbricating scales and scattered spines.
Radial shields usually divergent, sometimes separated from each other.
Four or five pairs of oral papillae.
Apical infradental pair arise from dental plate and the outermost pair from the adoral shield.
Deeper in the mouth slit, on either side of the infradental pair, is a supplementary papilla (Buccal scale)
Arms long and slender, flattened with 3-6 arm spines
1-2 leaf-like tentacle scales.

In a nutshell.... the two genera are very similar and are really only separated by the morphology of the disk, with Dougaloplus having scales and spines while Amphioplus possesses only scales.

The forked arm spines found in Dougaloplus amphacanthus are a species level character.

As most of us already know, there is a species that looks pretty much exactly like Dougaloplus amphacanthus but it has a scaled disk. After extensive review of the collections at the Natural History Museum and review of voucher material from LACSD, I would like to comment on the status of this species.

First of all, I wanted to determine the variability of tentacle morphology in both Dougaloplus amphacanthus and Amphioplus strongyloplax through all life stages. Indeed, forked arm spines and a disk with scales and spines are present in all individuals of D. amphacanthus with disk diameters of 3 mm or greater. In no observed specimens of any size were forked arm spines present in Amphioplus strongyloplax.

So .....the presence of collected individuals that obviously possess characters from both of the aforementioned species might be somewhat confusing.

The individuals that we have been collecting in our surveys with a scaled disk but noticeable forked arm spines certainly represent a new species and the characters hold true for all specimens starting with a disk diameter of 3 mm. These are clearly differentiated from the other two species along the growth curve. Based on mouth parts and the morphology of the disk (scaled with no spinelets), this new species clearly belongs to genus Amphioplus. It looks very similar to Amphioplus strongyloplax but is differentiated by the presence of forked arm spines. LACSD is designating this as Amphioplus sp. LA 1 and I am currently taking many digital images and composing a corresponding voucher sheet for it. I hope to distribute this in late January for review and publish an article on this in the SCAMIT newsletter sometime in the near future.

A Key To *Nebalia** (Leptostraca: Nebaliidae)

D. Pasko, 12 June 2021

Adapted from Haney, T. J. Martin, and E. Vetter. 2007. Leptostraca. In Light's Manual, 4th Ed.)

1. Specimens from south of Point Conception, CA 2
– Specimens from north of Point Conception, CA.....4

2 Eyestalk distally truncate and acutely produced dorsally and ventrally; caudal furca shorter than telson + pleonite VII; pleonite IV with strong, acutely upturned distal tooth .....***N. daytoni***
– Eyestalk distally rounded or oblong; caudal furca equal to or longer than telson + pleonite VII; pleonite IV variously toothed 2

3. Specimen typically exceeds 6mm in total length, reaching to 15mm; antenna 1 flagellum with ≥14 articles, article 4 with 4 – 5 robust spines; caudal furca longer than telson + pleonite VII.....***N. hessleri***
− Specimen less than 6mm in total length; antenna 1 flagellum with ≤6 articles, article 4 with one robust spine; caudal furca subequal to telson + pleonite VII .... ***N. pugettensis Cmplx***

4. Caudal furca longer than telson + pleonite VII, terminal spines > cadual furca; posterior marginal teeth of pleonites wide, rounded; antenna 1, article 4 with 4 to 2-3 robust spines.....*N. kensleyi*
− Caudal furca longer subequal to telson + pleonite VII, terminal spines < cadual furca; posterior marginal teeth of pleonites pointed, but not distinctly narrowed, widely spaced, or strongly tapering; antenna 1, article 4 with 2 robust spines..... ..... *N. gerkenae*

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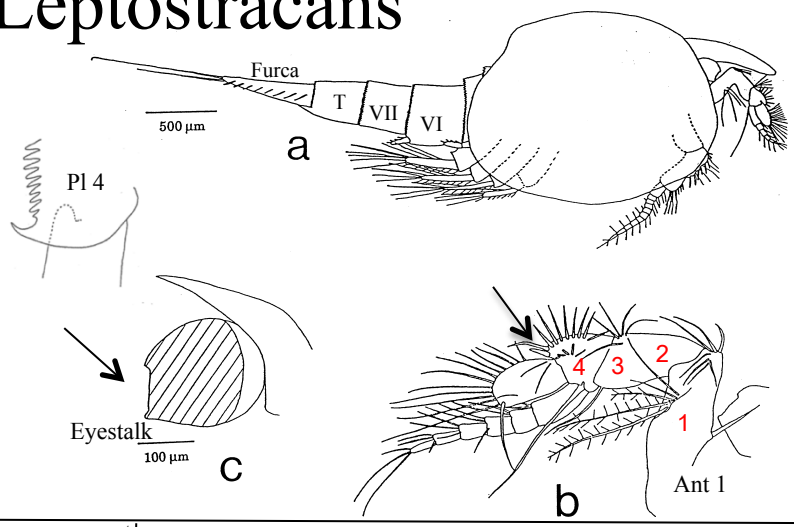
* **bolded** taxa reported in SCAMIT, Edition 12

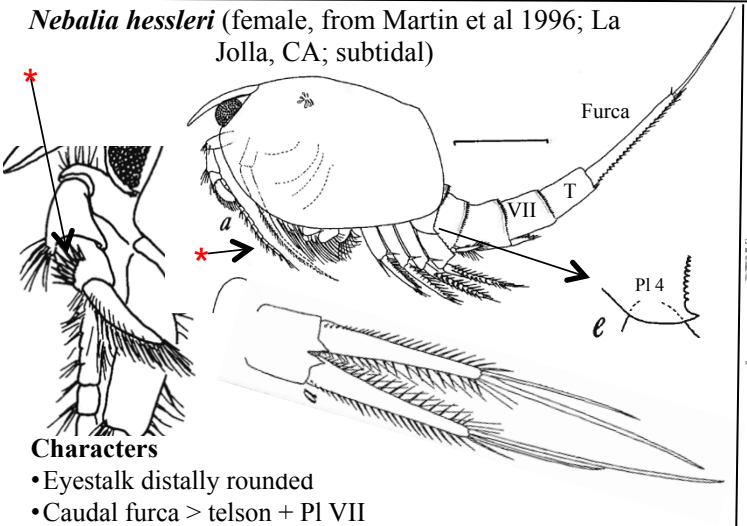
NEP Leptostracans

Nebalia daytoni (=*Nebalia* sp A SCAMIT)
(from Vetter 1996; La Jolla, CA; subtidal)



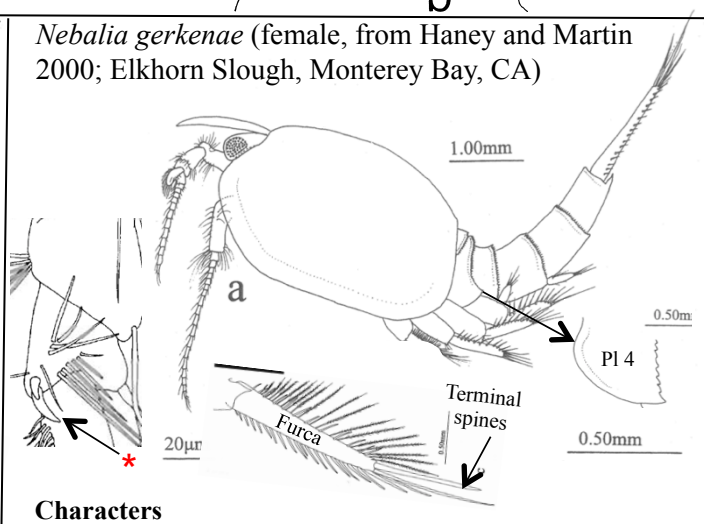
Characters
- Eyestalk distally truncate, distally produced both dorsally and ventrally
- Caudal furca < telson + Pl VII
- Pleonite IV with strong, upturned distal tooth
- Ant 1, Art 4 with 1 robust spine distally

Nebalia hessleri (female, from Martin et al 1996; La Jolla, CA; subtidal)



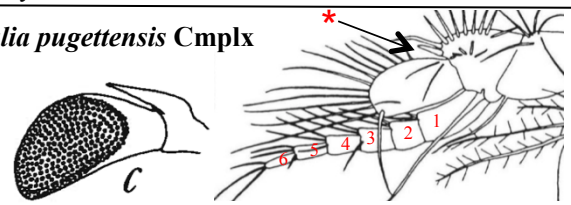
Characters
- Eyestalk distally rounded
- Caudal furca > telson + Pl VII
- Pleonite 4 with distal tooth
- Ant 1 flagellum with ≥14 articles; Art 4 with 3-5 robust spine distally*

Nebalia gerkenae (female, from Haney and Martin 2000; Elkhorn Slough, Monterey Bay, CA)

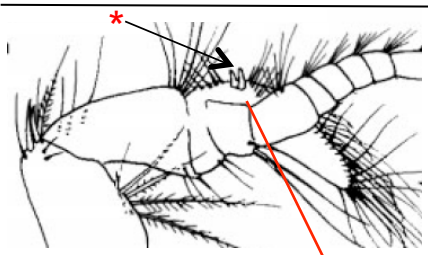


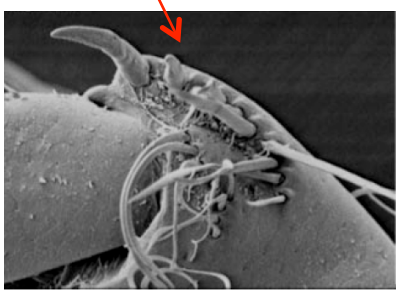
Characters
- Caudal furca ~ telson + Pl VII; terminal spines < furca
- Pleonite 6 strongly tapered posterior marginal teeth
- Ant 1, Art 4 with 2 robust spine distally*

Nebalia pugettensis **Cmplx**

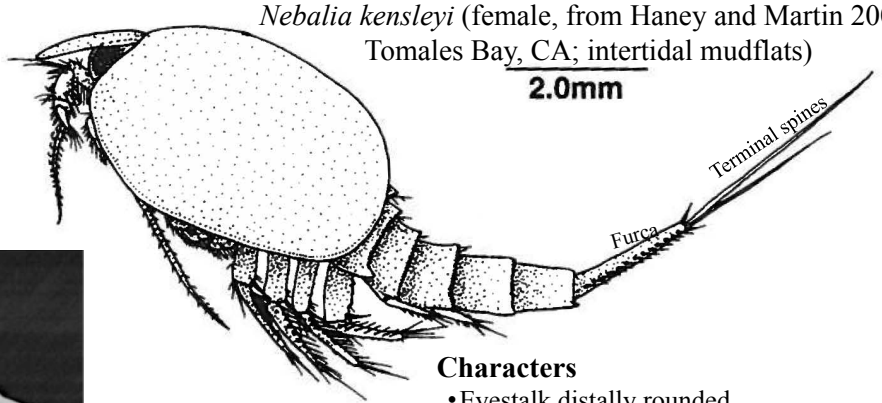


Characters
- Eyestalk elongate, oblong distally
- Caudal furca > short telson
- Pleonite 4 with distal tooth
- Ant 1, flagellum with ≤6 articles; art 4 with 1 robust spine distally*





Nebalia kensleyi (female, from Haney and Martin 2005; Tomales Bay, CA; intertidal mudflats)



Characters
- Eyestalk distally rounded
- Caudal furca > telson
- Pleonite 4 with distal tooth
- Ant 1, Art 4 with 2-3 robust spine distally*

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Lysianassoidea: Uristidae: Abyssorchomene

(extracted from: Cadien, D.B. (2007) Amphipoda of the Northeast Pacific (Equator to Aleutians, intertidal to abyss): XV. Lysianassoidea – an updated and revised review. (Revised 29Mar2015)

Abyssorchomene – Created by De Broyer based on a cladistic analysis of the complex of species centered on *Orchomene*, this genus has two members in the NEP, and at least three others elsewhere (Bellan-Santini 1990). The NEP taxa are treated in J. L. Barnard and Ingram (1990) as *Orchomene* species, with *Abyssorchomene* relegated to subgeneric status. This placement is rejected here based on De Broyer's findings, and *Abyssorchomene* is viewed as a valid generic level taxon (see discussion under *Orchomene*). They characterize the taxon as having a mandibular molar like that of *Orchomene*, a maxilliped like that of *Orchomenella* and a gnathopod 1 like that of *Orchomenopsis*. This sort of structural convergence is one of the factors that convinced J. L. Barnard that more information was needed before the systematics of the lysianassids could be firmly established. His untimely death prevented further contributions by him to this resolution. The effort has been ongoing in the group of researchers led by Jim Lowry in Australia. The fact that both *Orchomene* and *Abyssorchomene* species have been regarded as congeneric at some point, highlights the difficulty of handing the lysianassoids at a family level. *Orchomene* and *Orchomenella* are currently placed among the tryphosine Lysianassidae, while .*homene* is among the uristids. Other genera have provided similar difficulties, and Lowry & Kilgallen (2014c) characterized the genus *Waldeckia* as being intermediate between the uristids and the tryphosines, having some characters of each. Both *A. abyssorum* and *A. distinctus* occur on abyssal plains, and were taken in association with hydrothermal venting areas in the NEP. A key to the genus worldwide is provided by Lowry & Kilgallen (2014b)

It is not clear if either of the three reported species are identical with the forms reported by France (1994) from the San Clemente Basin. His maintenance of two morphologically separable forms, *Abyssorchomene* sp. 1 and *Abyssorchomene* sp. 2 is suggestive, but must remain inconclusive. Since both were taken at significantly shallower depths than either of the three other species reported from the NEP, and in a different ecological context, it is more likely that they represent as yet unnamed species in the genus from the area.

Diagnostic description: "*Antenna 1 peduncle article 1 without anterodistal lobe; accessory flagellum with an elongate article 1 (at least twice as long as article 2) partially covering callynophore. Antenna 2 with brush setae. Mandible molar setose with a triturating surface. Maxilla 1 outer plate a well developed 7/4 crown. Maxilla 2 inner plate slightly to significantly shorter than outer plate. Gnathopod 1 subchelate or parachelate; coxa 1 large, about as long as coxa 2, subrectangular with concave anterior margin or adze-shaped; ischium short (length less than 2 × breadth); carpus compressed; propodus margins subparallel. Uropod 2 inner ramus not constricted. Telson moderately to deeply cleft*." (from Lowry & Kilgallen 2014b)

Barnard, J.L. and C.L. Ingram. 1990. Lysianassoid Amphipoda (Crustacea) from deep-sea thermal vents. *Smithsonian Contributions to Zoology* 499: 1-80.

France, S.C. 1994. Genetic population structure and gene flow among deep-sea amphipods, *Abyssorchomene* spp. from six California Continental Borderland basins. *Marine Biology* 118:67-77.

Shulenberger, E., and J.L. Barnard. 1976. Amphipods from an abyssal trap set in the North Pacific Gyre. *Crustaceana* 31(3): 241-258.

NEP Species:

Abyssorchomene abyssorum (Stebbing 1888) – South Atlantic, New Zealand, Galapagos; 550-4330m
Abyssorchomene distinctus (Birstein and Vinogradov 1960) – Palau to East Pacific Rise at 13°N; 2000-4732m
Abyssorchomene gerulicorbis **(**Shulenberger and J. L. Barnard 1976) – off Northern Baja California; 5720m

NOTE: The following pages attempt to highlight relatively easy to view morphological differences between *Abyssorchomene* listed above and the closely related members of the genus *Orchomene* also present in the SCB. Local taxonomists using D. Pasko's 2018 key to the SCB Lysianassids should be careful to compare specimens that key to *Orchomene* with the included identification aids for *A. abyssorum*, *A. distinctus*, and *A. gerulicorbis*, especially when identifying specimens from deep water.

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Abyssorchomene abyssorum (Stebbing 1888) (from Barnard and Ingram, 1990);

Male = "s"; female = unattributed

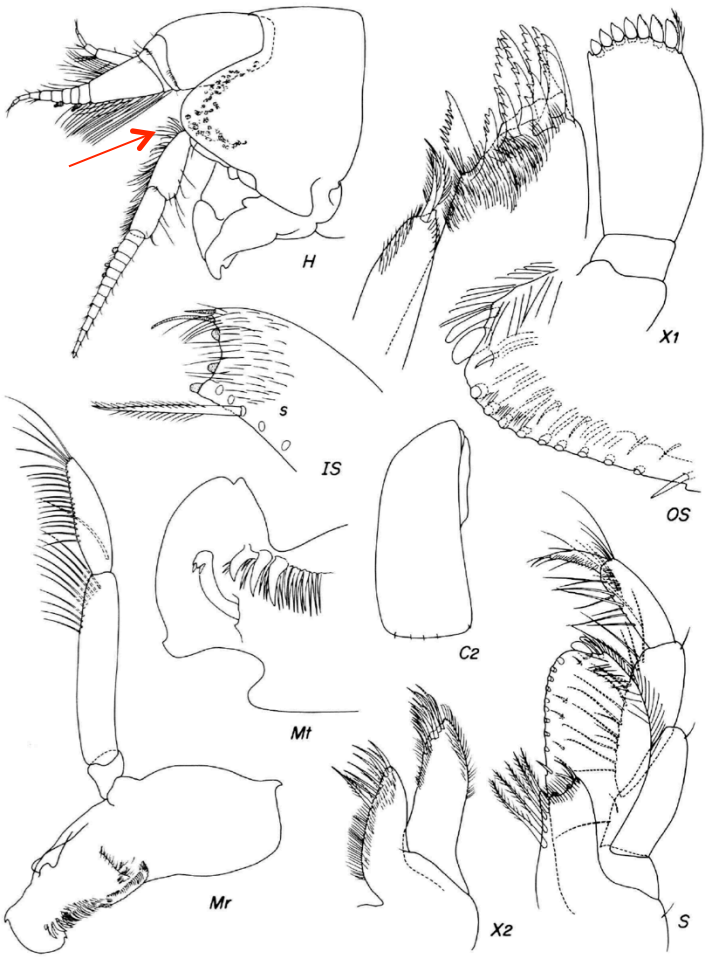


FIGURE 15.—*Orchomene abyssorum*, male "s" 6.41 mm.

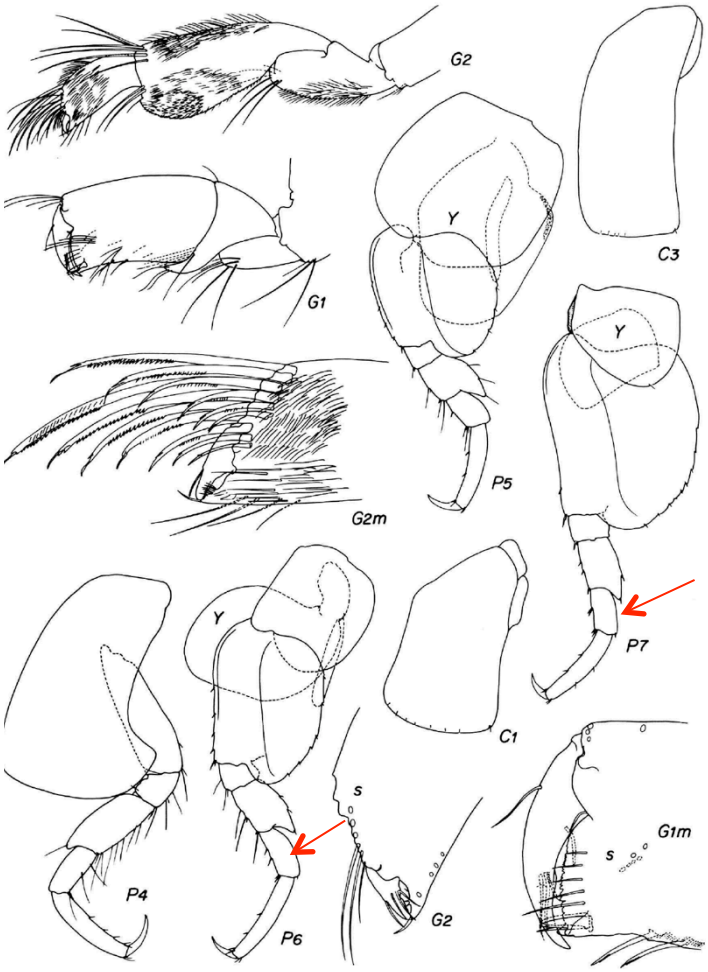


FIGURE 16.—*Orchomene abyssorum*, male "s" 6.41 mm.

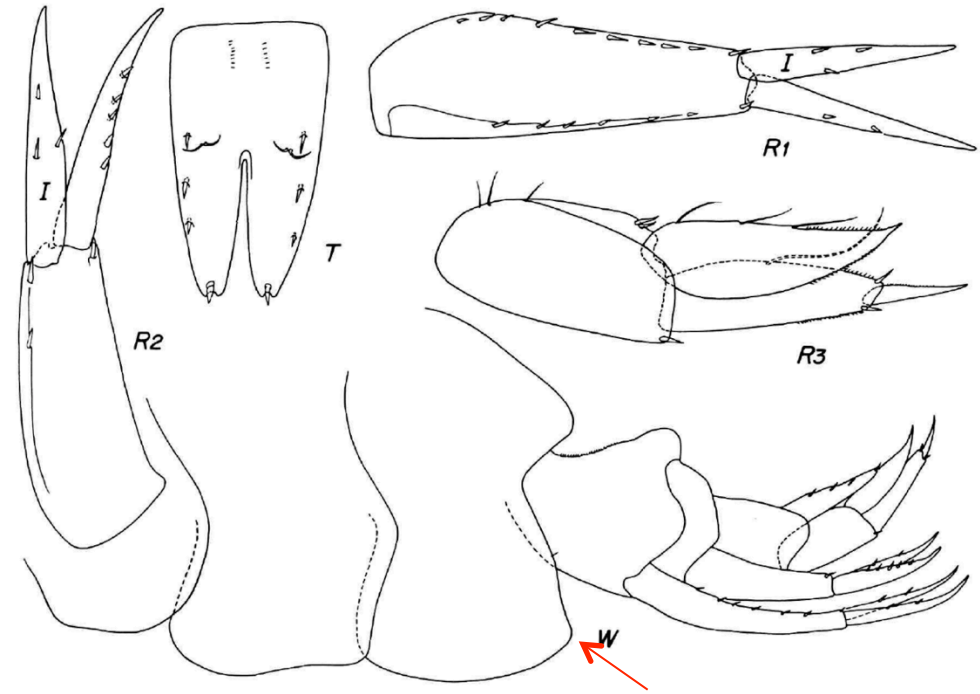
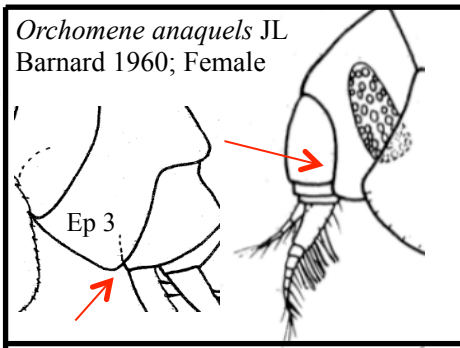
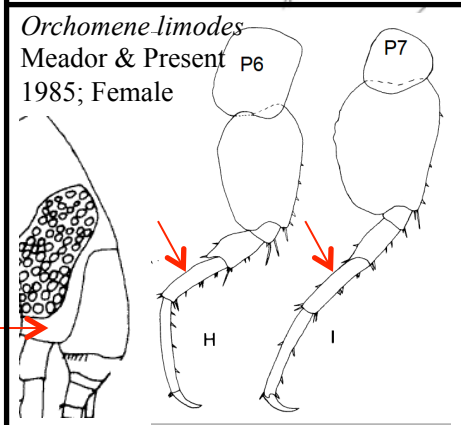


FIGURE 17.—*Orchomene abyssorum*, male "s" 6.41 mm.





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Abyssorchomene distinctus (Birstein and Vinogradov 1960) (from Barnard and Ingram, 1990); Male = "r"; female = unattributed and "o"

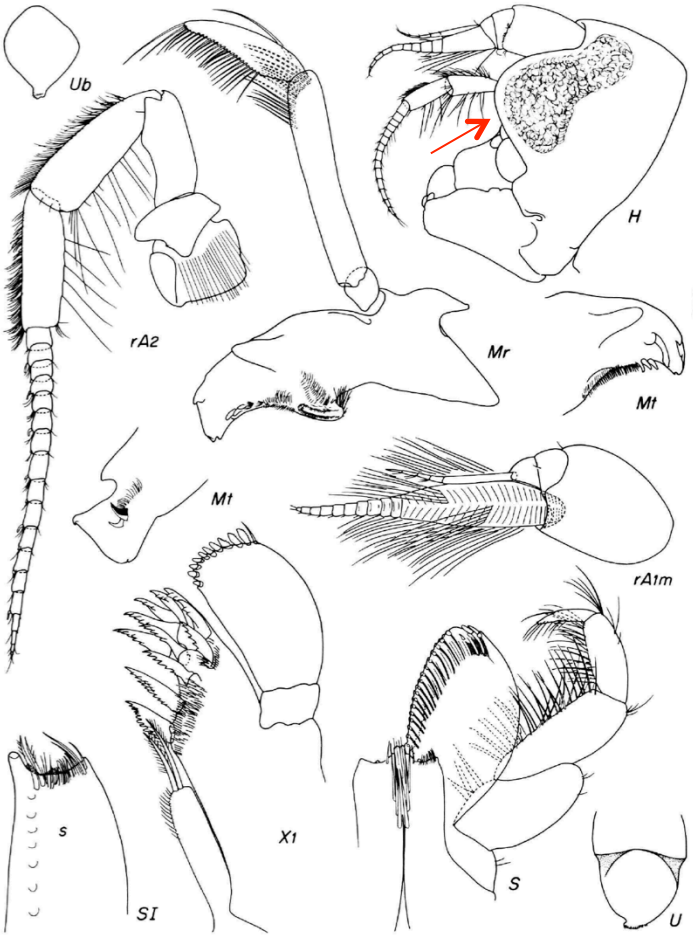

FIGURE 12.—*Orchomene distinctus:* unattributed figures = female "o" 13.92 mm; r = male "r" 12.32 mm.

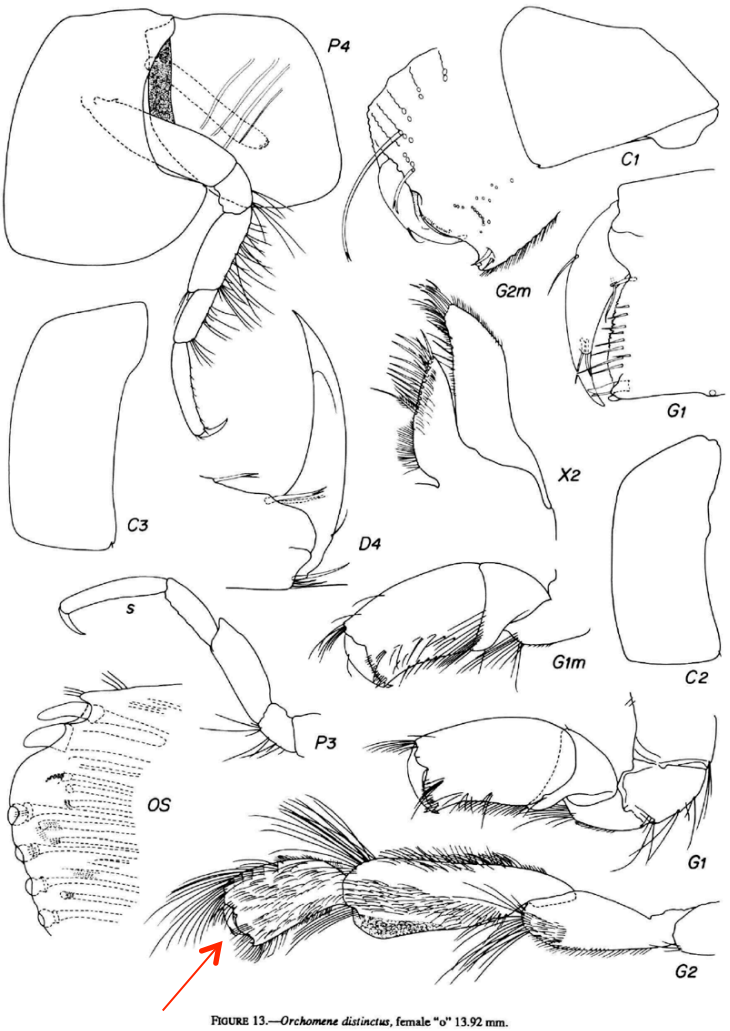

FIGURE 13.—*Orchomene distinctus*, female "o" 13.92 mm.

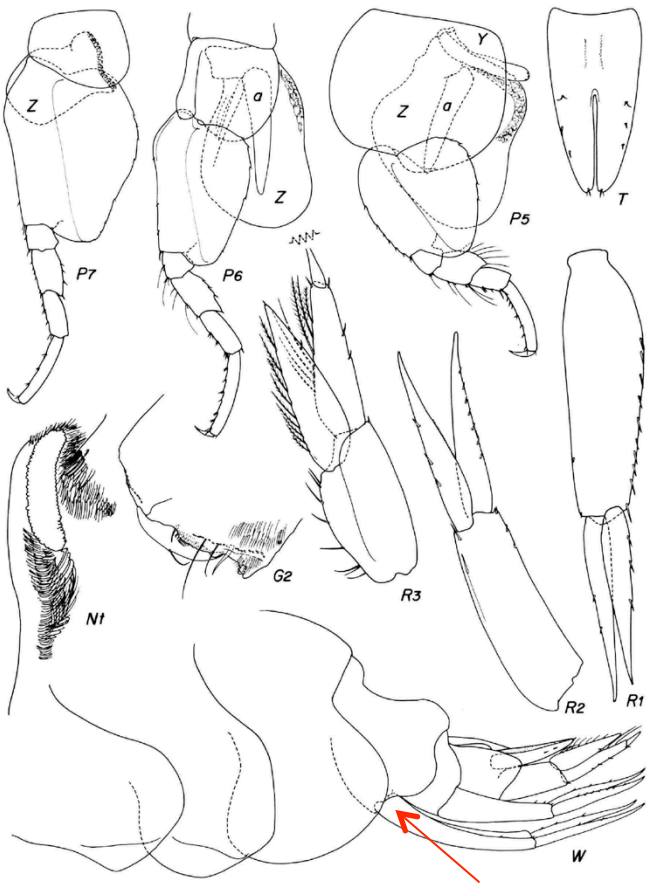

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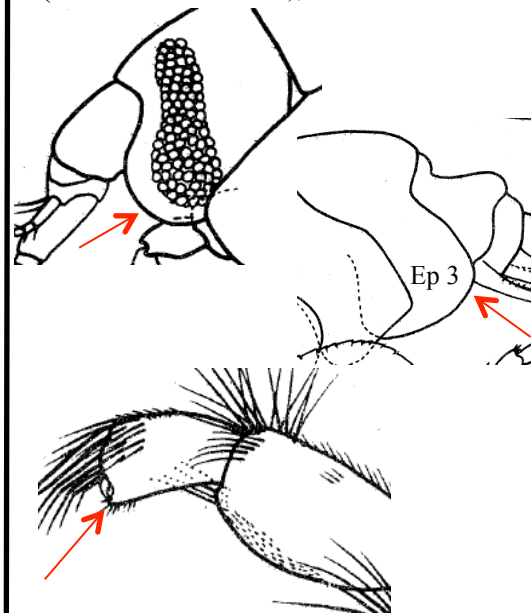
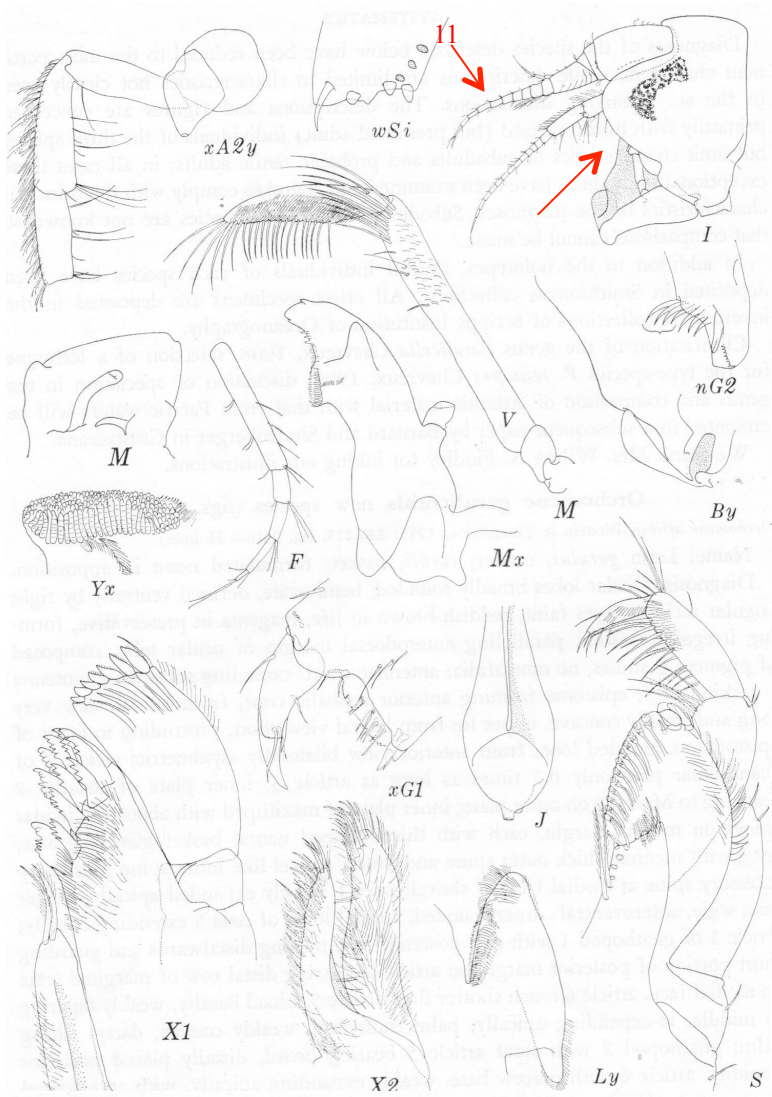
FIGURE 14.—*Orchomene distinctus*, female "o" 13.92 mm.

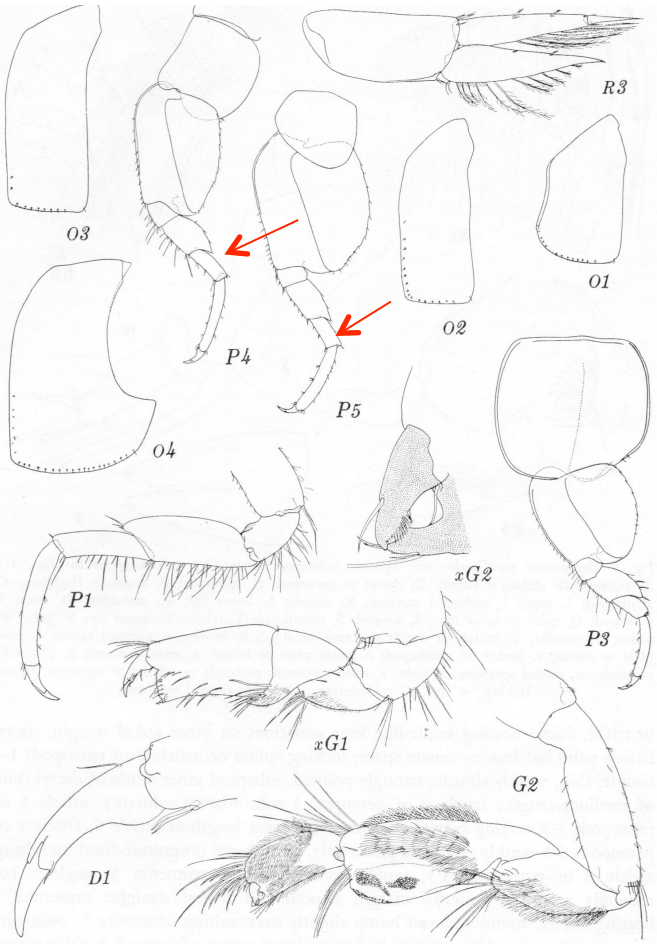
Orchomene obtusa (GO Sars 1891) (from JL Barnard 1964); Male

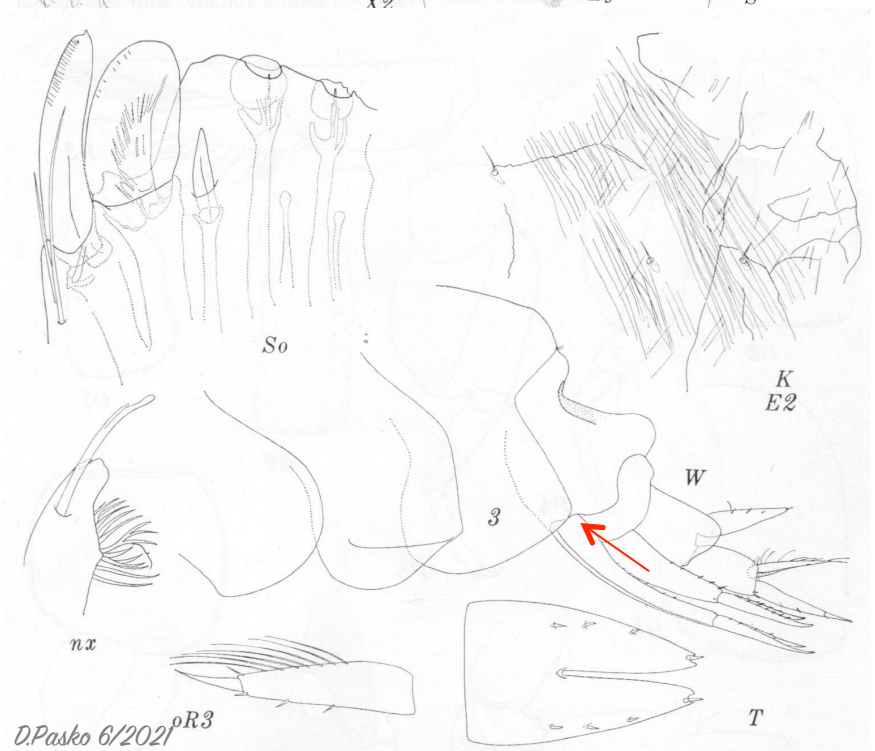


Abyssorchomene gerulicorbis (Shulenberger & JL Bardard 1976)

(from Shulenberger & JL Barnard 1976); Female







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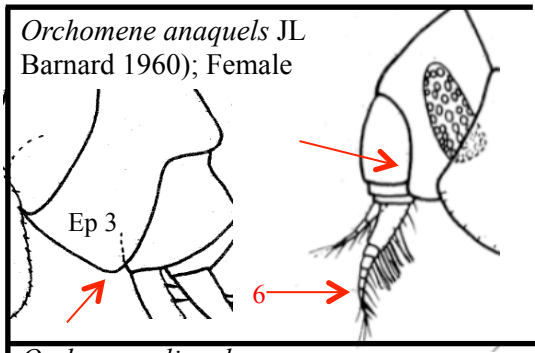
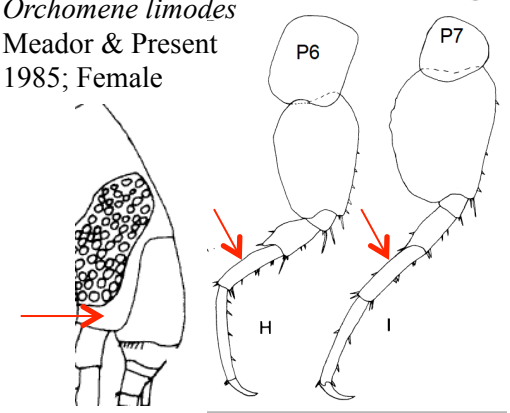
Orchomene anaquels JL Barnard 1960); Female



Orchomene limodes Meador & Present 1985; Female



Key to the southern California species of *Ericthonius* (Amphipoda: Ischyroceridae)

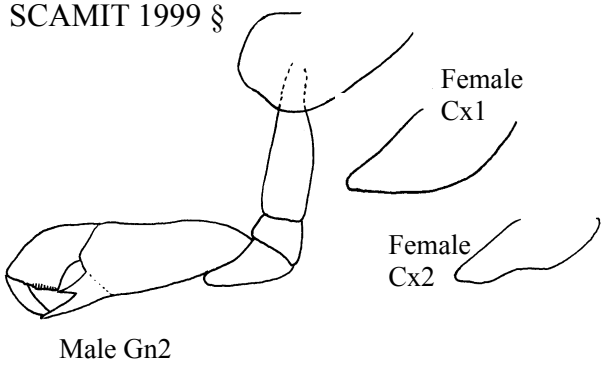
Dean Pasko 9 March 1999 (Revised 12June2021)

1 Eyes clear, unpigmented 2
– Eyes pigmented 3

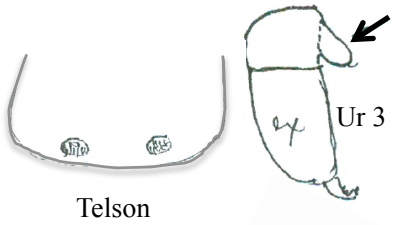
2 Uropod 3 with vestigial inner ramus; telson with short, small patches of recurved denticles positioned dorsally ..... *Ericthonius* sp A
– Uropod 3 uniramus; recurved denticles of telson along dorsolateral margin; coxa 1 produced, wider than deep (male and female); male coxa 2, ventral margin straight; female coxa 2 "stepped" (i.e., anteriorly produced and posteriorly excavate) ..... *Erichthonius* sp SD1

3 Eyes reddish; male gnathopod 2 with simple apical tooth on carpus; female coxa 5 with obtuse posterior lobe, posterior margin sloping; shallow to deep coastal waters ..... *Ericthonius rubricornis*
– Eyes dark (brown or black); male gnathopod 2 with bifid apical tooth on carpus; female coxa 5 with rounded posterior lobe, posterior margin not sloping backwards; shallow sublittoral to bays and harbors..... *Ericthonius brasiliensis*

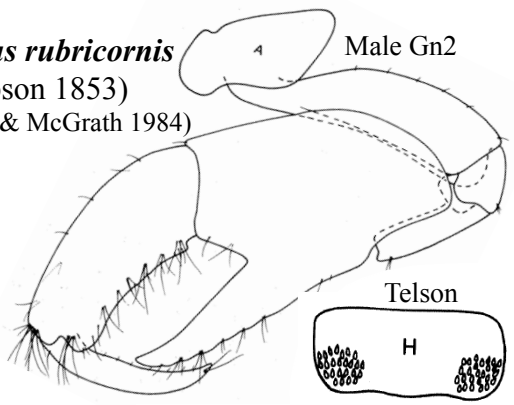
***Ericthonius* sp SD1**
SCAMIT 1999 §



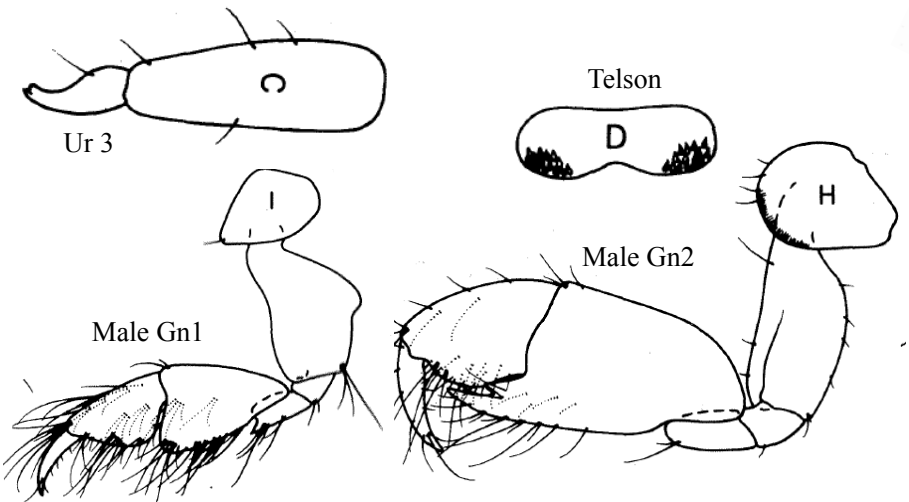
***Ericthonius* sp A** SCAMIT 2012 §

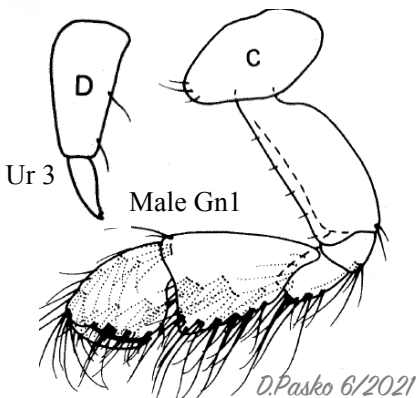


Ericthonius rubricornis
(Stimpson 1853)
(From Myers & McGrath 1984)



Ericthonius brasiliensis (Dana 1853)
(From Myers & McGrath 1984)





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SCAMIT CODE Date examined: 16 February 1997

SYNONOMY:
? *Ericthonius brasiliensis* juvenile

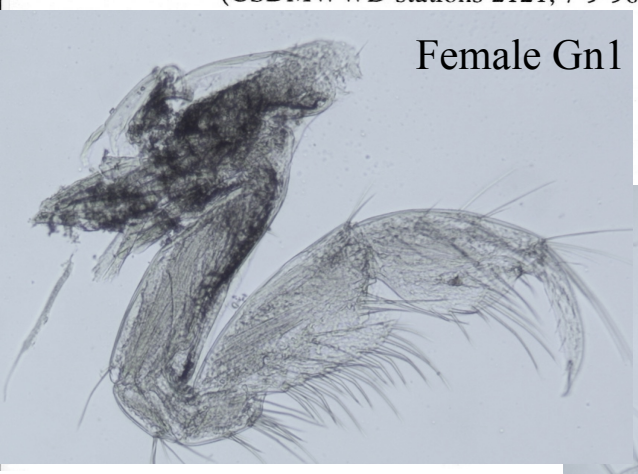
LITERATURE:
Bousfield, E.L. 1973. Shallow water Gammaridean Amphipods of New England. Cornell University Press, Ithaca, New York; 312 pp.
Barnard, J.L. 1975. Phylum Arthropoda: Crustacea, Amphipoda: Gammaridea. Pp. 313 366. IN: R.I. Smith and J.T. Carlton (eds), Light's Manual: Intertidal Invertebrates of the Central California Coast. Third edition, University of California Press, Berkeley, California.

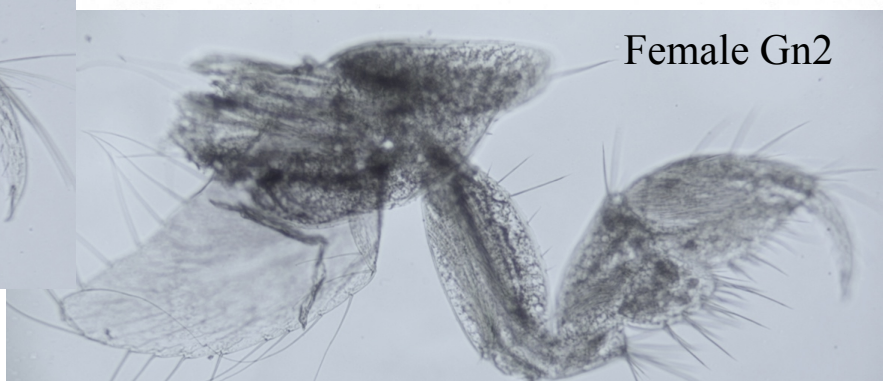
DIAGNOSTIC CHARACTERISTICS:
A small species, approximately 2-3 mm at maturity, with general characteristics very similar to *E. brasiliensis*. Eyes unpigmented
Male gnathopod 2 with double defining tooth; coxa much broader than deep, antero-ventral margin slightly concave, posterior margin oblique; article 2 (basis) elongate.
Male coxa 1 anteriorly produced, much broader that deep.
Male and female uropod 3 peduncle = urosomite 3.
Female coxa 1 anteriorly produced, obliquely rounded posteriorly.
Female coxa 2 anteriorly produced, ventrally stepped (or sinuous), with oblique posterior margin.
Uropod 3 broadened proximally, narrowed distally, approximately 2x width of distally bifid ramus.

RELATED SPECIES:
This species is very similar to *Ericthonius brasiliensis* in form of the gnathopods, mouth part morphology, shape of coxa 5, length of uropod 3 peduncle (= urosomite 3), uropod armature, etc. The species differs in its consistently small size at maturity (approximately one-half the size of *E. brasiliensis*), the distinctive shape of coxae 1 and 2, and the more elongate article 2 of gnathopod 2 (male).

OTHER COMMENTS:
It is possible that these specimens may have been mistaken for juvenile forms *of E. brasiliensis*. The consistently small size (2-3 mm) of ovigerous females and males with well developed penes, together with the few but consistent differences listed above lead me to believe that it represents a separate species.

DISTRIBUTION:
La Jolla, CA (CSDMWWD station 2137, 7-15-96, 157 ft) and San Diego/Imperial Beach, CA (CSDMWWD stations 2121, 7-9-96, 275 ft; I-34, 7-16-97, 63 ft).





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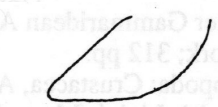
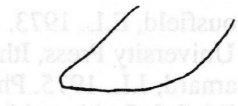
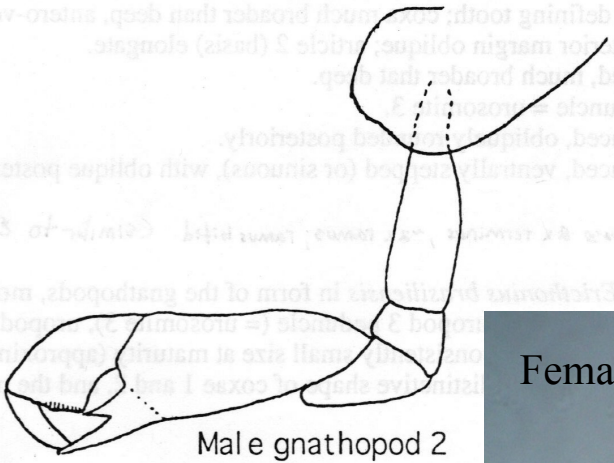


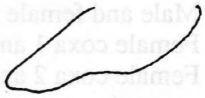
Male coxa 1



Female coxa 1



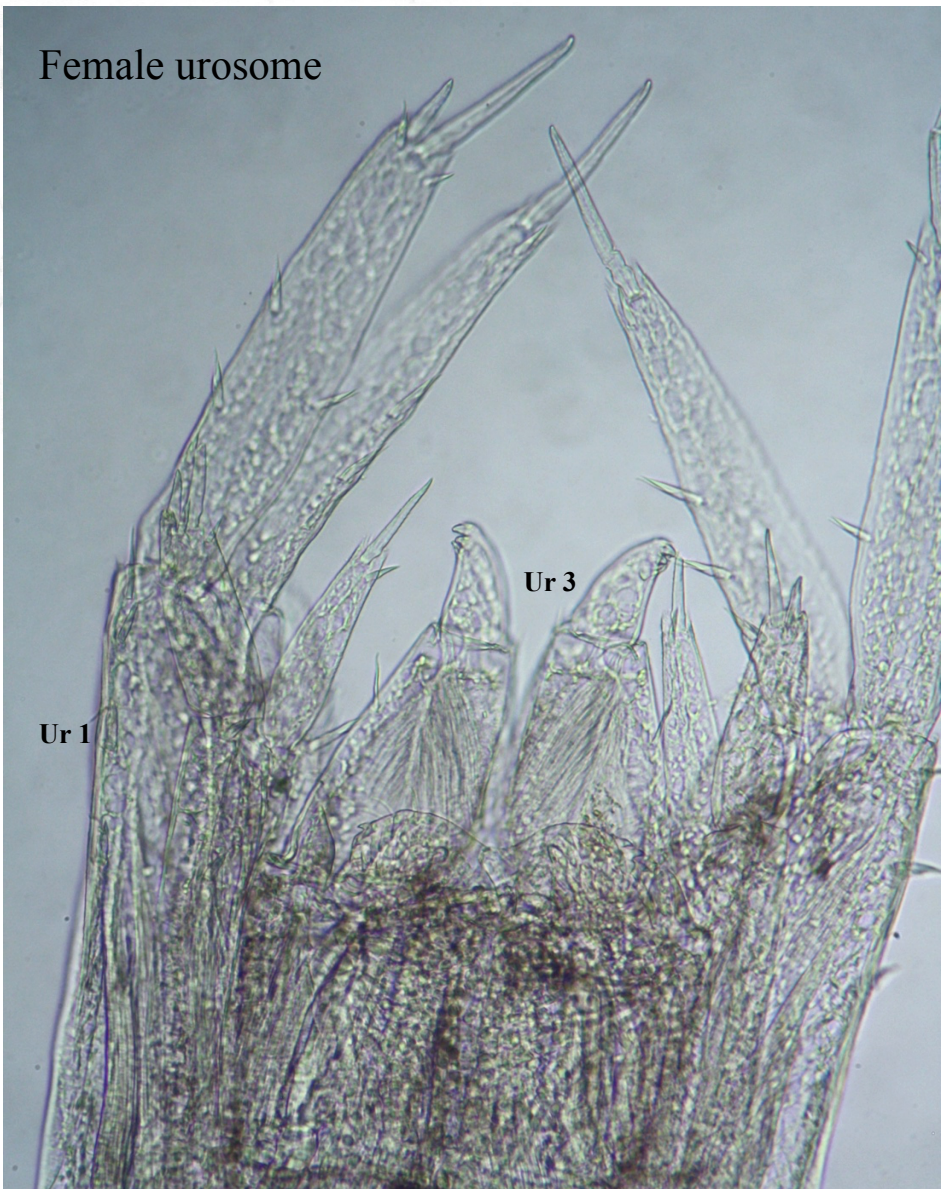
Male gnathopod 2



Female coxa 2

Ur 3

Female urosome



Relevant Isopod Resources & Keys

Brusca, RC, V Coelho and S. Taiti. 2007. Isopoda. In: The Light and Smith Manual: Intertidal Invertebrates from Central California to Oregon, 4th edition (Carlton JT, ed.). University of California Press, Berkeley, CA p. 503-542.

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Stebbins, TD. 1999. Key and Notes to the Marine Isopods (Crustacea: Isopoda) Known from Coastal Shelf Bottoms in the Southern California Bight. August, 1999.

Stebbins, TD. 2012. Key and Notes to California Valviferan Isopods (Crustacea: Isopoda: Valvifera). SCAMIT Presentation 13-February-2012

Stebbins, TD. 2012. California Epicaridean Isopods: Superfamily Bopyoidea and Cryptoniscoidea (Crustacea, Isopoda, Cymothoida).

Stebbins, TD. 2012. Bopyrid Isopods (A Table of Hosts and Characters of SCB Bopyrid Isopods).

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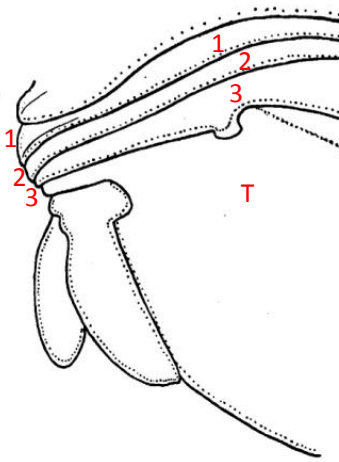
Wetzer, R and NL Bruce 2007. A new species of Paradella Harrison & Holdich, 1982 (Crustacea: Isopoda: Sphaeromatidae) from Baja California, Mexico, with a key to East Pacific species. Zootaxa 1512: 39-49.

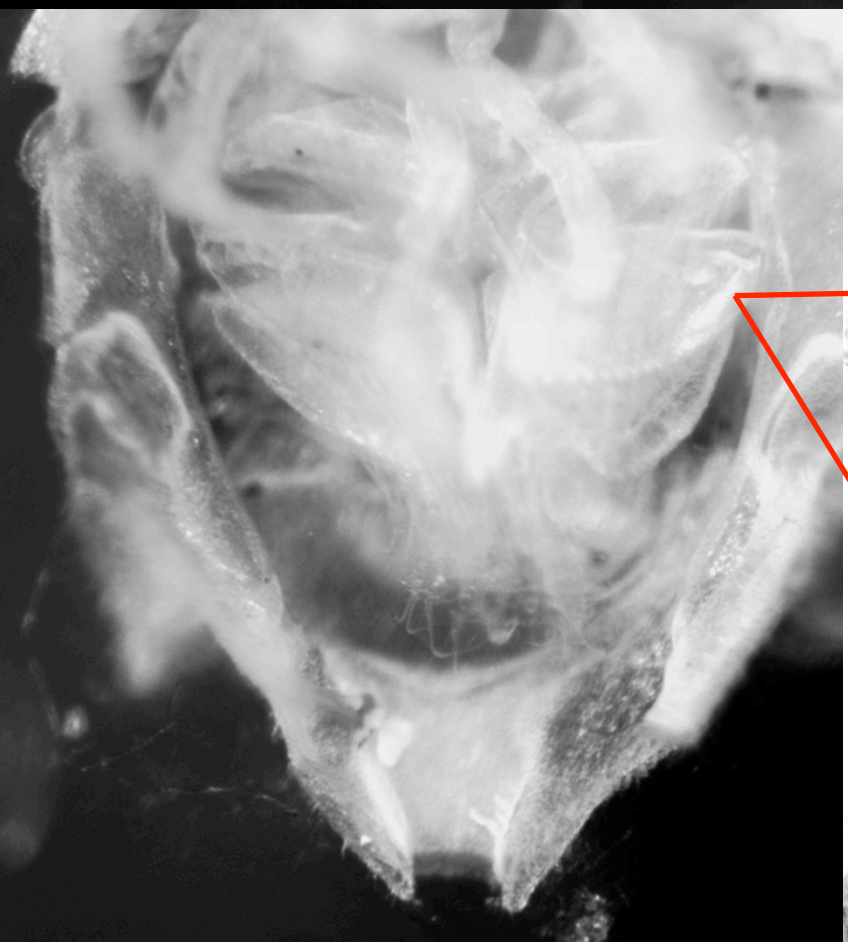
Wetzer, R and G Mowery 2017. Redescription of Dynoides elegans (Boone, 1923) (Crustacea, Isopoda, Sphaeromatidae) from the north-eastern Pacific. ZooKeys 646: 1-16.

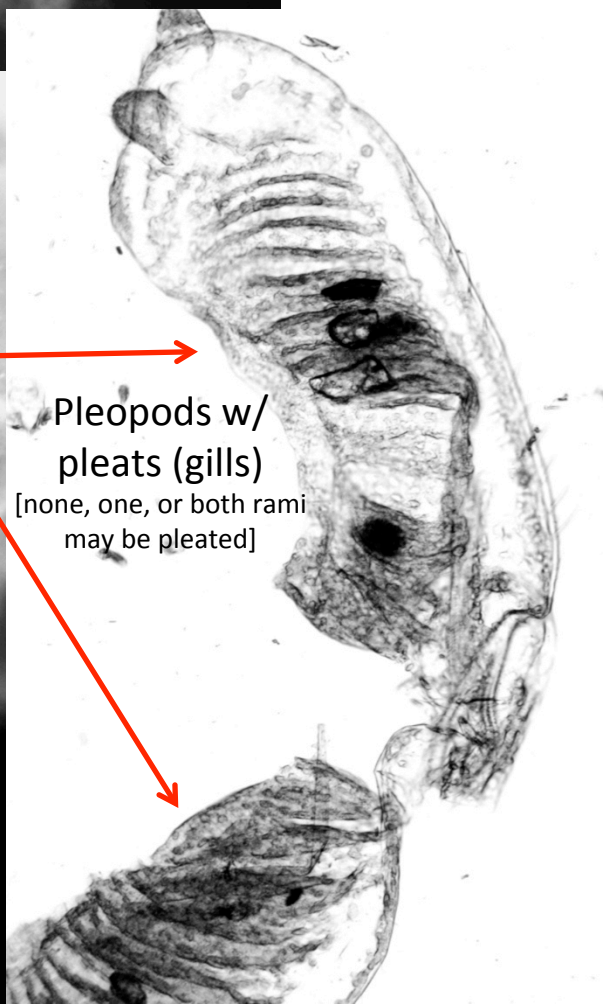
Wetzer, R, A Wall, NL Bruce. 2021. Redescription of Gnorimosphaeroma oregonense (Dana, 1853) (Crustacea, Isopoda, Sphaeromatidae), designation of neotype, and 16S-rDNA molecular phylogeny of the north-eastern Pacific species. ZooKeys 1037:23-56 Wetzer, R., Brusca, R.C., and Wilson, G.D.F. 1997. Introduction to the marine Isopoda. Pp. 1-8 in: Blake, J.A. and P.H. Scott (eds.), Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and Western Santa Barbara Channel, Vol. 11: The Crustacea Part 2: The Isopoda, Cumacea and Tanaidacea. 278 pp.

Isopoda: Sphaeromatidae

2-3 free pleonites







Pleopods w/ pleats (gills)
[none, one, or both rami may be pleated]

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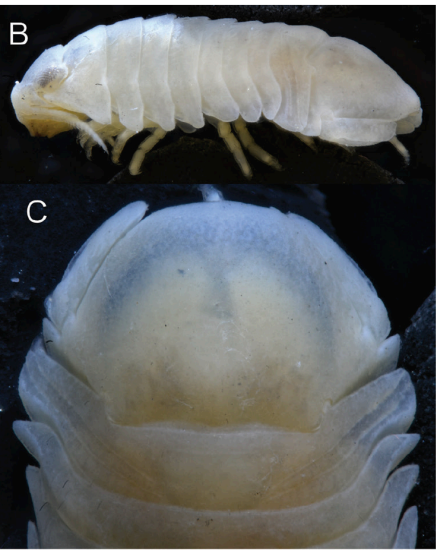
Key to NEP *Gnorimosphaeroma*

Wetzer et al 2021

(B & C) *G. insulare*



1 Body length 2 × width. Body widest at pereonite 7 and anterior portion of pleon (Fig. 14A). Known only from a freshwater pond on San Nicolas Island..... ***Gnorimosphaeroma insulare***

– Body more than 2 × width. Body widest at pereonite 6 or pereonites 2–7 similar in width **2**

2 In lateral view, pereonite coxal plates 2, 3, and 4 anterior margins raised, posterior margin not raised, giving coxae a somewhat "s-shaped" appearance (Fig. 15A, C). Species is fully marine ..... ***Gnorimosphaeroma oregonense***

– In lateral view, pereonite coxal plates 2, 3, and 4 anterior margins not raised. Species may occur in marine, brackish, or freshwater **3**

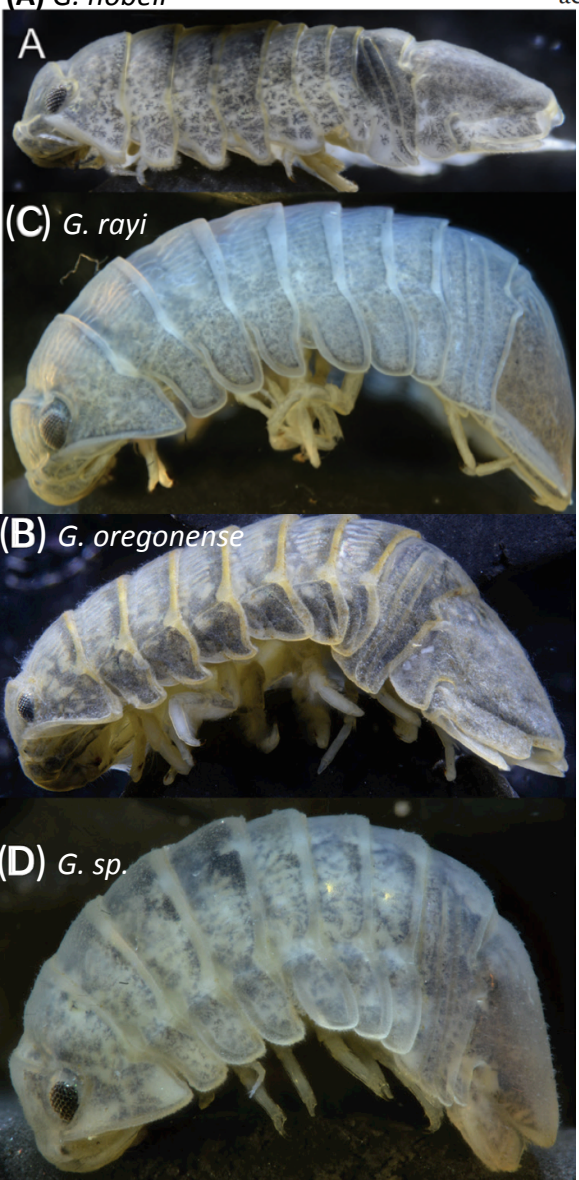
3 Pereonites 1–4 coxal plates margins with setose fringe (Fig. 15B). Posterior pleotelson margin with slight indentation (Fig. 12A). Species occurs in brackish or freshwater..... ***Gnorimosphaeroma noblei***

– Pereonites 1–4 without setose fringe on coxal plate margins. Posterior pleotelson margin without indentation (Fig. 12D, F). Species are fully marine..... **4**

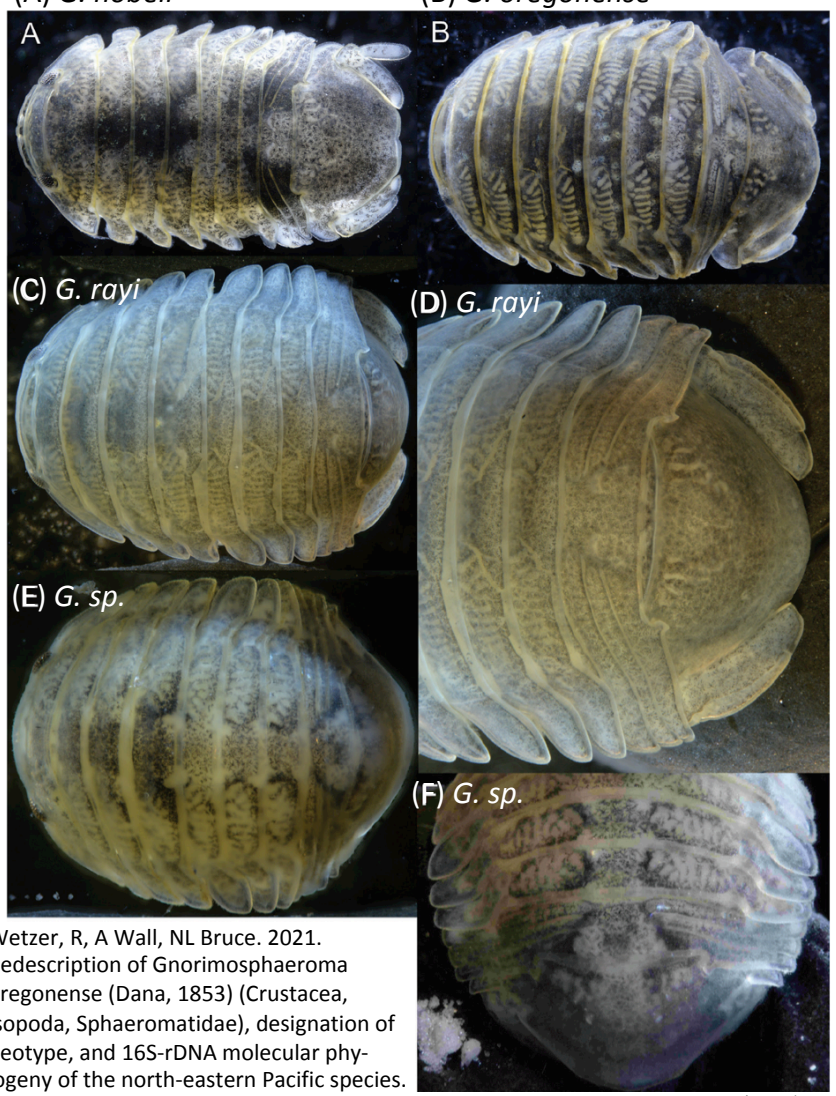
4 Pleonites lateral margins acute. Pleon lateral anterior margin smooth, without ornamentation (Fig. 12D) ..... ***Gnorimosphaeroma rayi***

– Pleonites lateral margins rounded. Pleonal lateral anterior margin with short acute lobe (Fig. 12F)..... ***Gnorimosphaeroma* sp.**

(A) *G. nobeli*



(A) *G. nobeli* (B) *G. oregonense*



Wetzer, R, A Wall, NL Bruce. 2021. Redescription of Gnorimosphaeroma oregonense (Dana, 1853) (Crustacea, Isopoda, Sphaeromatidae), designation of neotype, and 16S-rDNA molecular phylogeny of the north-eastern Pacific species. ZooKeys 1037:23-56

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