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TAXONOMISTS**



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Heterophoxus cf. ellisi
San Diego Bay Dredge Station B5C, 2006
Photo by D. Pasko

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The SCAMIT newsletter is not deemed to be a valid publication for formal taxonomic purposes

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13 MAY 2019, *HETEROPHOXUS* AND “FRIENDS” (D. Pasko), AND ARTHROPOD TOOLBOX REVIEW (B. FERRARO), OCSD

Attendance: Craig Campbell, Joanne Linnenbrink, CLAEMD; Katie Beauchamp, CSD; Dean Pasko, Tony Phillips, DCE; Don Cadien, Chase McDonald, Jovairia Loan, LACSD; Angelica Zavala Lopez, MTS; Kathy Omura, NHMLAC; Kelvin Barwick, Ben Ferraro, Danny Tang, OCSD

UPCOMING MEETINGS

Visit the SCAMIT website at: www.scamit.org for the latest upcoming meetings announcements.

Kelvin began the meeting with the announcement of the SCAMIT officer election results; there were no changes or surprises and the current suite of

officers was reelected. He then covered upcoming meetings; June 10th will be Aplacophora at OCSD; no meeting in July; the August 12th meeting will focus on Annelids, but unsure of what form that meeting will take as the IPC13 conference is being held the same month in Long Beach; September 9th will be on Miscellaneous Phyla FIDs at OCSD; October 14th will cover Mollusks at LACSD; November 11th will cover Echinoderms at OCSD; the annual All Hands meeting will be December 9th at SCCWRP.

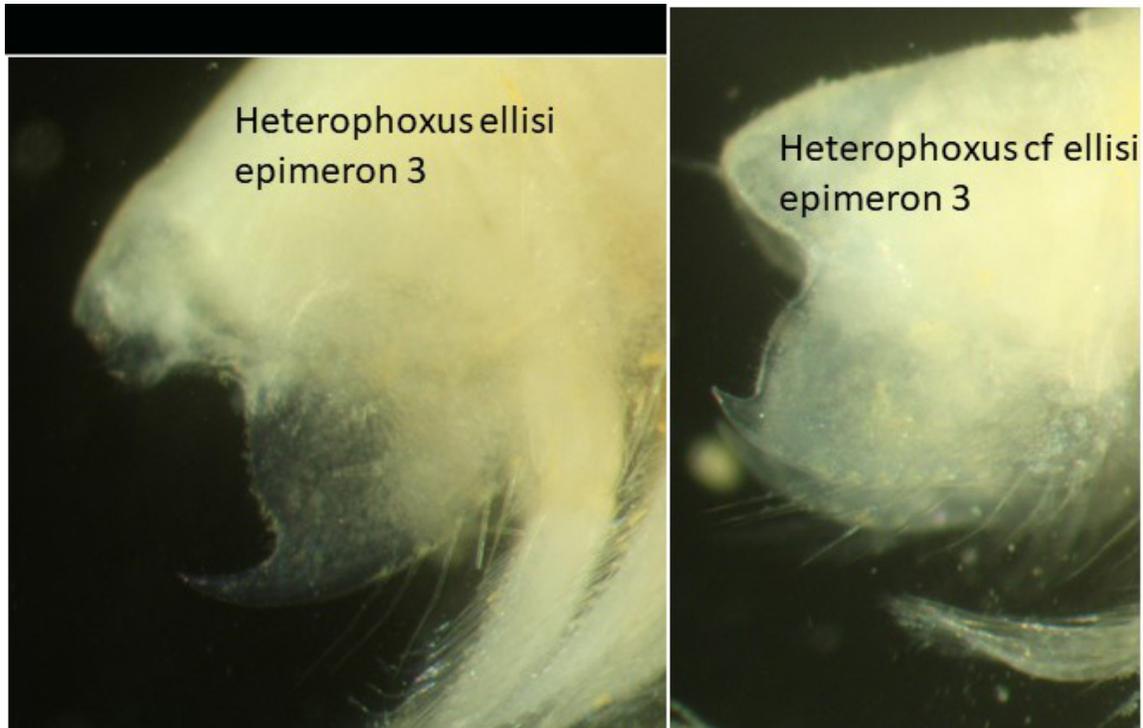
Kelvin also mentioned that two meetings per month may become necessary due to ongoing Bight’18 taxonomy. However, he asked people to “speak up” if interested (through the SCAMIT List Server at least). It was understood that not everyone was processing their Bight’18 infauna samples on the same schedule, so people may not yet know whether multiple meetings per month would be useful.

With no other business items to discuss, Kelvin and Danny excused themselves, and Dean Pasko opened the discussion on Phoxocephalids/*Heterophoxus*.

Dean’s primary focus for the meeting was *Heterophoxus ellisi*, *H. cf ellisi*, and *H. oculatus*. They are similar species, and easily confused, so the goal was to shed more light on their differences/similarities to assist in identification efforts. *H. affinis*, the other reported SCB *Heterophoxus*, is distinguished from the above by the absence of setae along the posterior margin of pereopod (P)7, Article (Art) 6 and reduction (or absence) of eyes. Additionally, *H. affinis* is typically found in deeper waters than the species being discussed here.

- *H. ellisi*, *H. cf ellisi*, and *H. oculatus* are the most commonly encountered *Heterophoxus* in the Southern California Bight (SCB).
- *H. cf ellisi* is a shallow-water, embayment species, while *H. oculatus* and *H. ellisi* are both typically offshore species.
- The epimeron (Ep) 3 for both *H. oculatus* and *H. ellisi*, has a large processes/tooth on the postero-distal end. On a relative scale, the Ep 3 tooth of each of these species is $\geq 1/3$ the length of the straight portion of the Ep 3 posterior margin.
- Whereas *H. cf ellisi* has a small Ep 3 tooth. The tooth is $< 1/4$ the length of the straight portion of the posterior margin.
- *H. ellisi*, P6, Art 6, have singly inserted setae along the entire posterior margin.





- *H. ellisi*, P6, Art 5, will also have multiple sets of spine-seta pairings (i.e., a spine paired with a plumose seta) along the posterior margin.
- *H. oculatus*, P6, Art 6, has a combination of singly and doubly inserted setae along the posterior margin, most often with two or three pairs of doubly inserted setal pairs.
- *H. oculatus*, P6, Art 5, posterior margin has 1-3 unpaired spines (same as seen on *H. cf ellisi*).
- *H. cf ellisi*, P6, Art 6, will consist primarily of singly inserted setae in the posterior margin, with the occasional set of paired setae present distally. Dean also pointed out that when looking at that distal end of article 6 (where article 6 attaches to article 7, the dactyl), there will always be a setal bundle consisting of 3+ setae at the end of the segment.
- *H. cf ellisi*, P6, Art 5, posterior margin has 1-3 unpaired spines (same as seen on *H. oculatus*).

Dean discussed the potential for confusing *H. cf ellisi* and *H. oculatus* since *H. cf ellisi* can occasionally have a pair of doubly-inserted setae on P6 Art 6, the character used to distinguish *H. oculatus* from other *Heterophoxus* taxa. However, the two species can be distinguished by the size of the Ep 3 tooth: large in *H. oculatus* and small in *H. cf ellisi*.

Dean also pointed out that SCAMIT's standard recommendation for specimens of *Heterophoxus* where one or both P6 is missing has been to report them at the genus level because of the variability of the setal bundle arrangement on P6. But, he noted that the shallow water *H. cf ellisi* is different enough due to the small size of the tooth on Ep 3, from *H. ellisi* and *H. oculatus*, that a specific assignment can be made. Dean offered to create an ID sheet to help differentiate these species.

Don suggested looking at Dean's presentation from last year's meeting on Phoxocephalids as a good reference (with photos!) for some of the characteristics described herein. The slides presented today update the previous presentation with the comparison of *H. oculatus*.



Dean asked if others sampled *H. cf ellisi*, and only Tony claimed to have seen it. The POTW monitoring programs do not normally sample in bays (except perhaps for special regional monitoring), so this “bay” species is not normally seen.

Don asked if Dean noticed any sexual dimorphism with these species, and Dean said he hadn’t, at least not with respect to the characters being considered.

Dean wanted to point out that at the beginning of his Phoxocephalid key, species are separated by the presence or absence of eyes, however he’s come across some *H. affinis* in San Diego, without eyes (no ommatidia present either); he’ll work on updating his key to reflect this. Don said that the presence or absence of eyes in this group, as we know from *H. oculatus*, are population-dependent, so they have the potential to develop if needed, but it depends on habitat.

Dean completed his presentation and then Chase mentioned he’d brought a Bight’18 FID Phoxocephalid (taken from 745m). Chase had used Dean’s key (from last year’s Phoxocephalid presentation), but was not convinced of the arrived at species. Dean mentioned that his intention with creating his key was to try to get away from using mouthparts for identification (whenever possible), and to try to simplify the key for everyone. He then suggested that we should refer to Don’s key (available on the SCAMIT website), as it’s more thorough in describing and utilizing some of the more systematic character-states. Don added that only when it was unavoidable, did he add those more-difficult characters in his key.

Dean also mentioned that he has been working on updating the simplified *Photis* key he provided at last year’s meeting (Artificial Key to adult male and female *Photis* of SCB, 23 May 2017). Although the original key works very well, he still references the written dichotomous key on occasion for characteristics that aren’t listed in the simplified key.

Photis sp SD12 is not in the original key but was validated by another specimen review and was recently encountered in a CSD sample. Due to this occurrence, Dean feels more comfortable adding it to the key.

There are two SCB *Photis* species that have strongly produced Ep 3: *Photis* sp A and *Photis* sp SD12, both of which are not commonly seen. Although *Photis macrotica* does have a slightly produced Ep 3 it is more obtuse or squared than produced in that it doesn’t extend posteriorly. *Photis chiconola*, a deep water species (1000+m) also has a blunt, obtuse Ep 3, but is very rarely encountered.

Don also mentioned that for *Photis* sp A, a striking characteristic is that the coxae are massive and extend ventrally so that the legs are completely covered. He asked if the same were true for *Photis* sp SD12? Dean stated that the coxae of the latter are long and thin, but coxae 4 does not expand into a triangular shape like that of *Photis* sp A. The coxae of *Photis* sp SD12 are not broad but they are elongated and only moderately setose along the ventral margin. They are not so long as to cover the entire pereopod. Don asked if they were strap-like, and Dean confirmed that coxae 1 – 4 are all strap-like. *Photis* sp SD12 is found in offshore waters (recently collected in San Diego at station B11, 88m), and are also colorful (mottled coloration). Don asked if they were similar in coloration to *Photis* sp OC1, and Katie asked if it was a sort of a ‘peppery’ coloration. Dean stated that they were not ‘peppery’, but rather broad splotches along the carapace and on the pereopods. Tony asked if the pigmentation carries onto the coxae, and Dean replied that it does. Dean said he’ll work on getting some photos taken of the CSD specimen.



Don asked if anyone had noticed any changes in the makeup of our *Photis* complement in recent years? Or if people have been seeing the northern forms decreasing, while the temperatures rise? Tony mentioned that he's noticed lower abundances of *Photis lacia* than in previous years. Dean agreed and has noticed the same decline.

Dean then suggested that *Nebalia pugettensis* Cmplx might just be a single species. After having looked at multiple specimens, he believes it may be more accurate to call it something other than 'complex'. Don suggested defining some of the characteristics and perhaps creating a provisional species.

Dean mentioned he's come across some Harpiniopsids that have a short pointed Ep 3 (as opposed to rounded with no hook at all, as the key describes); he's working on updating this portion of the key as well.

Dean has been working on updating and expanding the Mysid key (originally created by Ron Velarde and Don Cadien, 1992).

With that Dean concluded his portion of the meeting and opened the floor for Ben.

The purpose of Ben's portion of the meeting was to continue going through the Taxonomic Toolbox for Arthropods, and determining whether changes needed to be made. Ben, as previously, was recording any changes that will later be provided to Dean Pentcheff for website updates.

Picking up where we left off at the last meeting, Ben began by asking if anyone had a chance to look for species photos to add to the website. The general consensus was 'not yet'. His goal is to start a catalog of photos by agency/organization, that are "shareable" for the SCAMIT website.

Ben also asked if DCE would be willing to release their training materials to the SCAMIT website. Tony said that although he has no personal issues with providing the materials, his concern is those materials actually belong to the agencies that contracted DCE, who in turn created the material for the purposes of training their employees. Dean said that his hesitation in the past was that some of these materials have been works-in-progress, but now with the process of training, some kinks/issues in the training material have been resolved. His other reason for hesitating is because some of the materials may have pictures, etc. that may not have been properly referenced, so posting it on the website might be an issue. Don mentioned that Dean Pentcheff will most likely have experience with the legalities of this type of thing and may be able to provide some insight here.

The Toolbox Review picked up where it was left after the last meeting, with the Superorder Peracarida.

- For order Mysida, Dean will update and provide his updated Mysid key (and it will replace the rest of the Mysid keys in the Toolbox).
- For Order Tanaidacea, Dean suggested that Don's write-up on Tanaids should be included (under 'Other Useful Tools' for Tanaidacea).

After reviewing the Isopods, we moved on to Order Cumacea. We were only able to go through the first two families in the Toolbox (Family Bodotriidae and Diastylidae), and due to time constraints, decided this would be a good place to end the meeting. The remaining families of Order Cumacea, and all of the Amphipoda will be reviewed at a later date.



10 JUNE 2019, APLACOPHORA, OCSD

Attendance: Kelvin Barwick, OCSD; Terra Petry, Chase McDonald, Jovairia Loan, Don Cadien, LACSD; Greg Lyon, CLAEMD; Mike McCarthy, consultant; Wendy Enright, Megan Lilly, CSD; Kevin Kocot, Univ of Alabama; Patricia Seabourne

The business meeting began with Megan stating that she will be doing her best to catch up on newsletters over the next year and hopes to be back up to “current” by Spring of 2020 (after the B’18 deadline).

Kelvin then gave a brief presentation on Jim McClean’s notebooks. During this presentation an “Action Item” list for Kelvin evolved:

- Find out the cost of scanning the remaining rolls of film that Jim used to create his manuscript and then write a proposal to the Executive Committee to use publication grant funds to have these images scanned
- Have a meeting/poll (?) to discuss how to make the information available
- Discuss online hosting possibilities with Dean Pentcheff
- Don suggested asking Pat LaFolette how he approached scanning the images

With the business meeting concluded we moved on to a presentation by Kevin Kocot. He shared images of unusual aplacophora sampled in the Antarctic, Iceland, and other locales. For the purposes of identification he used a combination of histology slides, SEM images, and DNA sequencing.

After Kevin’s presentation we moved on to looking at specimens “on hand”. The various agencies discussed birefringence techniques, and efforts were made to try to create consensus about use and interpretation.

Megan had brought a chaetoderm specimen from B’18 10276 (CSD 8705), 31 July 2018, 87m. It was debated between *Falcidens longus* and “juv” Chaetodermatida. Consensus was reached for *F. longus*. CSD specimens of *Chaetoderma pacificum*, and *C. nanulum* were also examined.

Greg Lyon had brought numerous specimens which he had taken time to ID prior to the meeting, and was seeking verification. We examined and verified the following:

- *Limifossor fratula* - B18-10359 - 680m
- *Falcidens hartmanae* - B18-11000 - 380m
- *Chaetoderma marinelli* - B18-10257 - 80m
- *Chaetoderma nanulum* - B18-11000 - 380m
- *Chaetoderma pacificum* - B18-10304 - 168m

After reviewing Chaetoderms we briefly touched on two trawl invertebrate issues, for which Megan had received review requests. Megan shared specimens of *Dendraster terminalis* and *D. excentricus* and showed/discussed the differences in test and spine morphology. She also quickly reviewed how to separate *Pagurus armatus* and *P. spilocarpus* and had created a “field ID sheet” which she has since distributed.

NO MEETING JULY 2019



AUGUST 2019, 13TH INTERNATIONAL POLYCHAETE CONFERENCE

The 13th International Polychaete Conference (IPC13) was held aboard the Queen Mary in Long Beach, California from August 4 thru 9. SCAMIT members Leslie Harris (Vice President), Larry Lovell, and Bruno Pernet were part of the IPC Committee that hosted the conference. Over a hundred researchers, students, and working taxonomists from all over the world were in attendance. Eighteen SCAMIT members were present including POTWs (CSD, OCSD, LACSD, CLAEMD, and CSF), consulting organizations (DCE, MCT, and ARC), and members from various museums and universities. In the opening remarks, OCSD was acknowledged for their co-sponsorship of the conference and SCAMIT was thanked for their contribution to the IPC13 student support fund. The first day, volunteers staffed a booth to distribute SCAMIT informational materials, allow guests to peruse the website, and enjoy (and perhaps purchase...) SCAMIT swag.

Over 125 papers and posters were presented with wide ranging symposia topics including, Systematics, Evolution, Diversity, Biogeography, Physiology, Ecology, and Morphology. There were a number of presentations that showcased the use of various molecular techniques searching for possible hidden diversity at the species, generic, and family levels. Similar techniques were presented in a biogeographic context to look at cryptic diversity and genetic connectivity between adjoining deep-water basins.



SCAMIT Members attend the 13th International Polychaete Conference
4-9 August 2019, Long Beach, CA

Many papers looked at Polychaetes as bioengineers, exploring various tube-building techniques and burrowing strategies. Other interesting papers included: a look at the swimming behavior of the holoplagic *Tomopteris*; potential for saltational evolution in the anatomy of a Syllid; the evolution of Charlie Chaplin worms (*Histiobdellidae*); and the mapping of neuropeptides in the muscle cells associated with the penis of *Dinophilidae* (1 mm polychaetes!). A look at the functional morphology of *Sternaspidae* (a locally common and enigmatic taxon) was a standout, but in the end, the underwater videography of annelids by Nannete Van Antwerp stole the show!



Presentations on new taxonomic hierarchies constructed through the use of phylogenetics included:

- Paulo Alves (Universidad Federal Fluminense):

Nereidinae and Gymnonerinae are no longer considered monophyletic

Melinninae does not branch into the same clade as Ampharetinae, but rather is revealed to be a sister group of Terebellidae

The elevation of Polycirrinae, Thelepodinae, and Terebellinae to each of their respective family levels (Nogueira et al. 2013) may not be genetically valid. Phylogenetics puts Thelepodinae as a sister group to Terebellidae, and Polycirrinae actually nests within Terebellinae.

- Jenna Moore (Florida Museum of Natural History):

Mesochaopteris and *Chaopteris* are monophyletic and sister clades

Phyllochaetopterus is nested within *Spiochaetopterus*

- Polina Borisova (Shirshov Institute of Oceanology):

Lumbrineris appears to be paraphyletic

Ninoe and *Gallardonneris* are monophyletic

Several characters associated with jaw morphology of Lumbrinerids viewed as synapomorphies appear to actually be homoplastic

However, per SCAMIT customs, our local taxa will have to go through a rigorous vetting process before any of these hierarchical changes are potentially reflected in our own Species List.

Two local POTW taxonomists presented posters. Brent Haggin of LACSD presented on his work with cryptic species of Orbiniids. Veronica Rodríguez-Villanueva of CSD was a co-author on three posters—1) on community and structure of soft bottom assemblages of the northwestern coast of Baja California, Mexico, 2) on spatial distribution of Cirratulid species along the west coast from Tijuana-Ensenada in relation to environmental conditions, and 3) on the levels of infestation of an undescribed *Polydora* species on the local farm stock of clams in Baja California, Mexico. Other SCAMIT members that presented included a poster by James Blake on a new species of *Atherospio* from the eastern Mediterranean Sea, and an oral presentation by Bruno Pernet on the distribution limitations of *Ficopomatus enigmaticus* in California.

Pat Hutchings of the Australian Museum presented an essay on the lamentable, yet still common, practice of applying European names to animals found half way across the globe. The example that was given was of Day's 1967 monograph on South African Polychaetes, in which he used many existing European names for local taxa; a common practice at the time. Locally, Olga Hartman did much of the same in her own work with Eastern Pacific taxa. This has led to the explosion of species having global distributions when they clearly should not. With no other choice, these name usages are perpetuated by non-taxonomists in most contemporary ecological reports, as well as by many non-ecologists in developmental, genetic, and systematic papers focusing on medical research.



Carol Simon (Stellenbosch University), a South African researcher, outlined a program and methodology which establishes a framework to begin tackling this situation for their local fauna. Perhaps she will present more on this at the next meeting (IPC14) which she will host in Cape Town, South Africa in 2022.

Touching memorials were given for notable Polychaete researchers who had passed away since the last meeting in 2017. Particular attention was given to Dr. Reish, who chaired the meeting the last time it was held in Long Beach. Dr Reish left an immense legacy among SCAMIT members and on Southern California taxonomy. Additionally, a history of the Alan Hancock Foundation was presented, as well as a midweek excursion to visit the Foundation's building on the campus of USC. Overall the conference was extremely informative, very inspiring, and the future of polychaete taxonomy looks to be ever growing and flourishing. SCAMIT was well represented and all who attended were grateful to have participated.

- Jennifer Smolenski & Kelvin Barwick

2018–2019 SCAMIT TREASURY SUMMARY

As dictated in our by-laws, the 2018–2019 Treasury Summary is attached. Please note that it discusses the status of our publication grant fund.

LITERATURE CITED

Nogueira JMM, Fitzhugh K, Hutchings P. 2013. The continuing challenge of phylogenetic relationships in Terebelliformia (Annelida : Polychaeta). *Invertebrate Systematics* 27:186–238. doi:10.1071/IS12062



Please visit the SCAMIT Website at: www.scamit.org

SCAMIT OFFICERS

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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The SCAMIT newsletter is published every two months and is distributed freely to members in good standing. Membership is \$20 for an electronic copy of the newsletter, available via the web site at www.scamit.org, and \$35 to receive a printed copy via USPS. Institutional membership, which includes a mailed printed copy, is \$65. All correspondences can be sent to the Secretary at the email address above or to:

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SCAMIT Treasury Summary 2018-2019

Below is the treasurer's report for 2018-2019. Last year we raised dues for the first time since the start of SCAMIT in 1982 from \$15 to \$20 for electronic memberships, \$30 to \$35 for hardcopy memberships, and \$60 to \$65 for institutional memberships. We have over 150 members across the US and worldwide. SCAMIT did not award a publication grant this past year. Please help get the word out that these funds are available. As stipulated in our grant policy, we have **\$7,324.19** or 25% of our operating budget of \$29,296.75 available for publication grants this year. The taxonomic database support tools on our website were maintained by our webmaster. The database expense totaled \$517.50.

Account Balances (as of 5/31/19)

Checking	\$ 19,257.32
Certificate of Deposit	\$ 10,039.43
Total	\$ 29,296.75

Income

2018-2019 Membership dues	\$ 2,389.70
Interest from CD	<u>\$ 5.04</u>
Total	\$ 2,394.74

Expenses

Meeting refreshments	\$ 261.96
Executive Committee Luncheon	\$ 145.75
All-Member Christmas Luncheon	\$ 196.79
Website Content & Design	\$ 517.50
Newsletters (printing/postage)	\$ 212.71
2018 (\$136) & 2019 (\$140) PO Box Renewal	\$ 276.00
Don Reish Memorial IPC13 Student Donation	<u>\$ 2,000.00</u>
Total	\$ 3,610.71