

SOUTHERN CALIFORNIA ASSOCIATION OF MARINE INVERTEBRATE TAXONOMISTS



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

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11 SEPTEMBER 2017, TEREPELLIDAE, NHMLAC, L. HARRIS LEAD, VINÍCIUS DA ROCHA MIRANDA, GUEST LECTURER

Attendance: Ron Velarde, Veronica Rodriguez-Villanueva, Ricardo Martinez, CSD; Arturo Alvarez-Aguilar, UABC; Greg Lyon, Erin Oderlin, Jennifer Smolenski, CLAEMD; Brent Haggin, Norbert Lee, Bill Furlong, LACSD; Rob Gamber, Kelvin Barwick, OCSO; Tony Phillips, DCE.

UPCOMING MEETINGS

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

The business meeting started with upcoming meeting announcements.

The next meeting will be Monday, October 16th at the NHMLAC and

will be on specimen photography with macro photography being demonstrated by Leslie Harris, and large scale photography being covered by Dean Pentcheff. In addition, on the software side, Kelvin Barwick will be giving a short presentation on Photoshop and Leslie will demonstrate how to use Lightroom. Participating members should bring stain, specimens they would like to photograph, the photo backgrounds that they currently use, and also take inventory of the type of photo equipment they use.

Next Kelvin proposed a Toolbox review meeting for Tuesday, November 14th at OCSO. He suggested we work on changing the Toolbox organization as the hierarchy is out of date and needs to be addressed. One suggestion would be to eliminate Class and Order from hierarchies and just have the Toolbox go straight from Phylum to Families. Kelvin asked - What polychaete families do we want to cover during the Toolbox review? Should we just go in alphabetical order? The goal of the meeting is to create a list of new things to add and a list of things to change.

It was recognized that it would, most likely, take more than one meeting to complete the task. Members should submit literature and voucher sheets they want added to the Toolbox.

The next question to be posed - Any ideas for next year's meetings? Leslie replied that there will be a need for Bight'18 prep meetings. These will include reviewing literature (including grey literature), going over specific groups, and verifying specific specimens/vouchers. If you have any other suggestions please submit them to Leslie or Kelvin.

Kelvin then presented a review of the QA section of the SCCWRP Bight'13 Benthic Report (Tables 7, 8, & 9) regarding abundance counts and proper identifications. He stated that overall we did very well but feels there is still room for improvement. One problem area revealed was Chaetodermatids.

Scaphopod specimens for Katy Estes-Smargiassi are still being sought. Katy is an Assistant Collections Manager in Invertebrate Paleontology at the NHMLAC. She is working on the paleoecology of Pleistocene scaphopod communities of the Eastern Pacific. As part of this she is looking at modern fauna reported from the SCB, i.e., the SCAMIT Species List. She is also "interested more broadly in the taxonomy of scaphopods - how to identify species, whether species are valid, whether species should be synonymized, etc". So if you have any specimens of scaphopods you'd like to donate, bring them to the October SCAMIT meeting or send them up with an attending colleague.

And lastly, Tony announced that he has created a number of provisionals for Odostomids and Pyramidellids. More to follow in the future.



With that it was time for the taxonomic portion of the meeting to begin. Our Guest Lecturer for the day was Vinicius da Rocha Miranda. His presentation was titled:

Phylogenetic Relationship between the scale-worm families Sigalionidae & Pholoidae (Annelida: Aphroditiformia)

Below are bullet points from his talk:

- Aphroditiformia has 165 genera from 6, 7, or 8 families
- Use chaetae as main synapomorphy
- Pholoids (some species) do have branchiae and ctenidia
- Some species of Sigalionids do have external palps and changes in internal vs. external may be due to fixation practices
- Stylodes may be the same as papillae
- Pisionidae nested genetically under Sigalionids

Morphological characters useful for identification:

- Prostomium
- Buccal & proboscidal ornamentation
- Lateral extensions
- Nuchal organs & nuchal folds
- Tentacular segments
- Inner tentacular lamellae (see as a refraction of golden light from the cilia). Easy to see using Shirla stain because it defines edges where structures used to be
- Tubercles and cirri on 3rd segment (tubercles are harder than papillae)
- Segmental papillae: dermic projections and nephridial projections
- Cirri and associated modifications
- Elytra ornamentation
- Parapodial lobes: distribution
- Copulatory organs
- Ventral suckers (may only be present on males –in Brazilian specimens- for reproduction)
- Parapodial glands
- Notopodial chaetae
- Ctenidia
- Chaetal arrangement
- Neuropodial chaetae
- Longitudinal patch of pores



Vinicius briefly touched on larval development. The parapodial lobes gradually reduce/disappear on setigers 1-7 through development (juvenile to adult).

He then discussed *Pisione* vs. *Praegeria* and characters used to separate them:

- Pigmentation
- Prostomium not fused
- Triangular tip of buccal acicula
- Cirriform or lacking ventral tentacular cirri
- Lack of nephridial papillae

Vinicius stated that Pisionids are from Peru and Chile. He hasn't seen any from California. So far all of the California specimens identified as Pisionids are actually Praegerids.

With Vinicius's presentation complete it was time to move on to Leslie's talk for the day: *Terebellidae Grube, 1851; 1. Intro, Polycirrinae, Thelepodinae* – By Leslie Harris, Kelvin Barwick, Dot Norris, Erica Keppel. Below are some primary points of interest from that presentation.

- Terebellids use chemosensory receptors to differentiate between food particles and non-food particles. Non-food particles are used for tube building
- Lateral lappets are an important feature: How big are they in relation to each other and in what position are they found (lateral, ventral, dorsal, or encircling)? Some species, when fixed, develop pseudo-lappets due to constriction, therefore one must be careful to differentiate between true (membranous) lappets and (muscular) folds
- In abdominal sections (posterior end), neuropodia are situated on top of the body wall instead of protruding from it
- For neurochaetae, the number of teeth in each row is an important character at the genus and species level
- Uncini may be packed together so tightly that they appear as a double row, but in fact are just a single row. Uncini basal shafts are used to help the worm move up and down their tubes
- An important characteristic is if glandular pads extend to the edge of the neuropodial cirri or if there is a gap
- Important note: Branchiae are not always present and regenerated branchiae are always smaller when they grow back, therefore relative size could be misleading
- Leslie cautioned us that to “identify small individuals, check the number of thoracic chaetigers and types of chaetae; that may get you to genus”
- Glandular areas develop with age; therefore juveniles will have different stain patterns than adults. Staining is reliable for “good” sized adults. In terms of staining: Either the ventral pads will be glandular or the lateral pads will be glandular, not both
- Polycirrinae has 2 or 3 types of tentacles (whereas most other subfamilies of terebellids have a single type of tentacle)



- *Polycirrus* can sacrifice their head and regenerate a new one. According to Leslie, “This renders any key couplet based on absolute number of thoracic chaetigers useless”
- Check L. Lovell’s *Polycirrus* table (2006) in order to not confuse *Polycirrus* sp OC1 with *Polycirrus* sp B
- Leslie examined character differences between *Thelepus setosus* (European description) and what she calls *Thelepus* sp E (from Vancouver, B.C.). See: *Thelepus setosus*-sp-E_LH_9Sept2017 table. This still needs to be cross checked with southern California species

And with that, a long Terebellid-filled day was complete.

16 OCTOBER 2017, DIGITAL PHOTOGRAPHY, NHMLAC; L. HARRIS & D. PENTCHEFF

Attendance: Unfortunately attendance was over-looked and not taken.

The business meeting began with the normal announcement of upcoming meetings. The next meeting will be an Annelid Toolbox Review and everyone is asked to bring their notebooks and/or electronic files. The goal is to file share and add, change, and edit the Toolbox. The meeting will be held on November 14th at OCSD.

Leslie then announced that SCAMIT may be moving towards two meetings a month to prepare for Bight ’18, in order to standardize identifications between labs and taxonomists. The two meetings in a single month will most likely focus on different taxonomic groups, therefore most members wouldn’t need to attend a meeting more than once a month.

The Annual General Membership meeting will be held at SCCWRP on Monday, December 13th. SCAMIT will be providing lunch. We will be discussing the future of SCAMIT, preparing for Bight ’18, and updating the Constitution.

We were told that the Smithsonian barcoding project may be interested in presenting their work at a future SCAMIT meeting.

With that it was time for the photography portion of the meeting. The meeting began with helpful reference sources being listed:

- SCAMIT Newsletter May-Aug 2010; vol. 29, no 1&2 on Macro photography
- Sturm, C. F., Pearce, T. A., & Valdés, Á. (Eds.). (2006). *The mollusks: a guide to their study, collection, and preservation*. Universal-Publishers.

Peter started by speaking on how he photographs the larval stages of zooplankton. He uses a dissecting scope with a Nikon 5100 for live specimen video (use a 4k if you want slow motion). To view organisms individually he suggests putting them into a depression slide with a dark field as the background. Initially everything is videos and afterwards he pulls out still shots from the videos.

Tim was then asking about tide pool imagery. He specifically needs help with over-exposed pictures. Kelvin explained that using imaging software it is easier to fix an under-exposed picture than an over-exposed one.



Leslie then suggested diffusing the light instead of using the harsh glare of the sun. Create a photo tent or use a white umbrella (with one strobe outside and one strobe inside of the photo tent.) It was also suggested that if the camera is placed underwater and angled upwards towards the underside of the water's surface, with the flash on, it will create a mirrored image of the object being photographed on the underside of the water's surface.

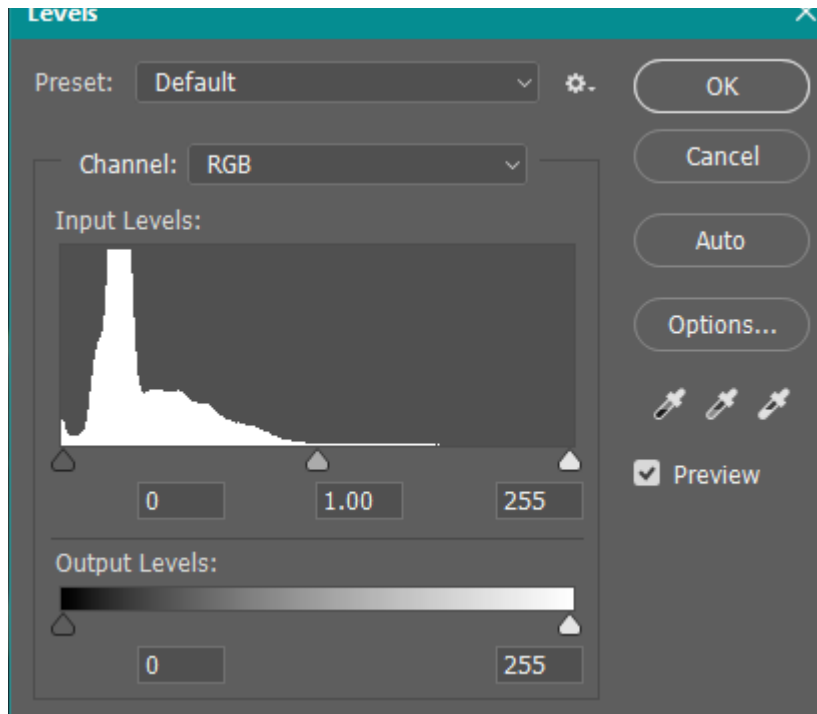
Kelvin had the floor next to discuss OCSD's photoscopes, old and new. Although the original set up has been recently replaced with a more sophisticated system. he felt that it, (patterned after what had been done at the San Diego Lab), was a good-affordable system. This was a Wild-Heerbrugg M-400 Photomakroskop® with a Nikon D80 DSLR mounted on top. The M-400 was designed specifically for micro-photography and therefore provides a straight light path from objective to CCD. It is adaptable to a number of camera mounts, making it upgradeable. With a built-in iris, it allows for increased depth of field at higher magnifications. However, it needs high light levels to illuminate the subject. The camera view-finder makes it difficult to achieve fine focus. Additional software and a dedicated computer are needed to allow for remote control. You can not use the camera's built-in lens controls on DSLR, e.g., f-stop, autofocus. Without a dedicated computer, there is an additional step needed to download images. It is limited to macro images only. For images from the compound microscope the same camera was used with a Martin® Microscope adapter.

Within the last year this system was replaced with a photo-microscopic system from Leica. It includes the Leica MC165c dissecting scope with computer controlled lights and focus and optional lighted base. Also included is a Leica DM2500 compound scope with both brightfield and DIC illumination but no computer controls. They both share one MC170 five-megapixel digital microscope camera. The camera and dissecting scope are controlled with proprietary software. Along with the control software, there are modules for annotation (auto-calibrated scale bars), morphometrics (size, counts, areas, etc.) and Z-stacking photomontage.

Kelvin then gave a "quick guide to Photoshop" presentation. He contended that many in attendance were like him - intimidated by all the capabilities of Adobe Photoshop, and felt that most explanations offered in the past have been overly-technical and not practical for our day to day needs, which are to capture serviceable images for communicating electronically with colleagues. With that assumption Kelvin shared the workflow that he routinely uses. Briefly, the steps are listed here:

1. Make a copy of the original image; work with the copy
2. Crop and rotate image
3. Adjust Levels (Ctrl – L) for light and brightness controls (works best with slightly under-exposed images)
4. Use Unsharpen Mask to sharpen the image (Threshold set from 4 to 6; this is far superior to simple Sharpen tools)





At this point Leslie chimed in and added that it is best to work with RAW images (though not all software programs can use RAW images). If you have to work with TIFFs and/or JPEGs, use TIFFs over JPEGs. JPEGs constantly lose data when you start to edit them. A tip for adjusting Levels (step 3 above) - bring right hand “adjuster” to the first point of data, and then adjust using the middle “adjuster”. It gets you a more realistic color of the organisms (see screen shot).

Brent Haggin then briefly touched on the LACSD system which uses a Nikon SMZ 1000.

The floor was turned back over to Leslie so she could discuss photography of live organisms. She does not use a trinocular, she uses a Martin adapter which fits through the ocular. It comes with a diopter; therefore she fine focuses through the camera instead of the microscope. She uses the adapter in the left ocular. It is a universal standard that the left ocular stays stationary, while the right ocular slides. She suggests using a GFC syringe filter tip to clean photographing solution. Surface particulates will distort images. Particles/sediment grains under the organism refract/reflect/absorb light from the organism and distort the color. Black glass is the best photo dish, or you can stack dishes in a “double boiler” set up, with black velvet in the bottom dish filled with water up to the underside of the top dish. Use sub-stage lighting for transparent organisms or structures like chaetae and appendages as this still allows the natural color of the organism to come through. Use the least amount of water possible to cover the animal since the surface tension of water will keep the appendages from floating up. Use a coverslip/microscope slide to mount organisms to the bottom of the dish and just barely cover the top of the coverslip with water. The smaller the dish, the smaller the volume of water, and subsequently, greater surface tension. She uses a fixed fiber optic light source with 2 strobes and she mostly uses side light and sub-stage lighting. For flatworms, however, use only sub-stage lighting. She recommends, if using only fiber optic lights, take photographs with longer exposures. But the opposite is true (shorter exposure) if using strobe lights. Strobe lighting allows you to capture more color in your organisms. Sub-stage lighting pulls out structures in your images, whereas light from above gives you better color. When taking pictures on a compound microscope, try using a fiber optic light source with one arm shining straight down and the other one shooting horizontal (across); it creates more definition and 3D images.



Dean Pentcheff was next and discussed photostacking:

- He uses a photo diverter with a stadium lighting system
- Slide the objective to align one ocular over the viewing area
- 10 photos per cm³ organism
- External light at < 45° will not hit the bottom and reflect the light back into the lens
- Tend to shoot at F11 stop
- Affinity Designer and Affinity Photo are professional photography software packages (about \$50 each)

Leslie mentioned that Lightroom allows you to edit a stack of photos all at once. Which drove Kelvin to ask - How do you organize photo metadata? Leslie replied that she uses keywords attached to each photograph and then inputs them into a database...though many people don't have access to photo databases.

And the last note of the day was that XPF and IPTC files for images capture different metadata are the least problematic in that they are nearly universal and least likely to be lost or modified by software that you may be using or as technology changes.

BIBLIOGRAPHY

Gillet, David J., Lovell, Lawrence L., Schiff, Kenneth, C. 2017. Southern California Bight 2013 Regional Monitoring Program: Volume VI. Benthic Infauna. SCCWRP Technical Report 971. pp 300. http://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/971_B13BenthicInfauna.pdf



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