

**S**OUTHERN  
**C**ALIFORNIA  
**A**SSOCIATION OF  
**M**ARINE  
**I**NVERTEBRATE  
**T**AXONOMISTS



May–June, 2016

SCAMIT Newsletter

Vol. 35 No. 1



*Ledella fiascona* (Dall 1916)  
 B'13 station 9041, July 2013, 742m  
 Identification by P. V. S., June 2016  
 Photos by W. Enright, CSD

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

**Publication Date: January 2017**

*There was no meeting in May 2016*

## 20 JUNE 2016, FUTURE OF SCAMIT, SBMNH

**Attendees:** Kelvin Barwick (OCSD); Tony Phillips, Dean Pasko (Private Consultant); Ron Velarde (CSD); Paul Valentich-Scott (SBMNH); Larry Lovell (LACSD).

Following the unfortunate cancellation of a scheduled Morphometrics Workshop the first day of this two day SCAMIT meeting, President Larry Lovell took the opportunity to employ a small group of long-time

### UPCOMING MEETINGS

Visit the SCAMIT website at: [www.scamit.org](http://www.scamit.org) for the latest upcoming meetings announcements.

SCAMITeers to discuss SCAMIT's future. He opened the discussion by asking some general questions: What is the State of SCAMIT? What are our strengths and weaknesses? How can we improve SCAMIT and promote better attendance and participation? Does the Taxonomic Database Tool add value? Are we (SCAMIT) trying to do too much? His general thoughts on these topics were outlined in a short handout, along with a slightly updated discussion dealing with the demise of taxonomy and taxonomists, originally put forth by Dave Montagne in the mid-90s. The latter document discussed the dearth of trained taxonomists who could take the place of the many practicing SCB workers who would be soon retiring. Think Tom Parker, Dan Ituarte, Doug Diener, Dorothy Norris, Dave Montagne, Bob and Cheryl Brantley, Jim Roney, to name just a few.

Kelvin raised the issue of meeting topics, commenting that our original meetings were focused on animals, unknowns. These initial meetings slowly evolved into workshops requiring many hours of preparation. That change likely contributed to the difficulty of getting volunteers to lead meetings. In addition, these meeting were often directed towards those that were already knowledgeable in the subject but often went over the head of the new taxonomists. This lead to some agreement that SCAMIT might benefit from having more specimen-oriented meetings rather than workshop-focused ones. Unfortunately, the logistics of specimen-oriented meetings can create problems of having an adequate number of microscopes and experts to discuss specimens. We would also have to take care to keep the meetings from devolving.

We had additional discussions about how to involve those who are new to taxonomy (or specimen identification). What is a good format that fosters involvement? SCAMIT used to employ the "mystery" dishes, basically sending staff back to laboratories with unlabeled specimens to identify, and return with them for discussion one month later. Such efforts allow individuals to learn by trial-and-error, by figuring out identifications on their own without having the results handed to them. Some of us have new taxonomists asking for the answer without showing much interest or regard for the process.

Kelvin suggested that a mentor program might help new members stay involved and active. They would at least have one person that they felt they could talk to without the fear of embarrassment.

Paul suggested that the "old guard" was at the table, but what we need was a meeting with the "new guard". This lead to the idea of a SCAMIT conference, which Kelvin said they did once when he was President. Such a conference, a larger general membership meeting, might provide an opportunity to get input from new and/or less active members. We discussed venues, such as the Cabrillo Museum and SCCWRP facility, and timing, possibly in September.



We also mused over a number of potential topics for a general membership conference, including SCAMIT's future, the status of the Treasury, the status of the Toolbox, management of the grant program, improving participation/attendance, meeting frequency and formats, officership, developing partnerships with other organizations (e.g., Southern California Coastal Water Research Project (SCCWRP), San Francisco Estuary Institute (SFEI), etc.)

Paul continued the discussion by suggesting that SCAMIT actively recruit people to become more involved with meetings and officership. We're all familiar with other professional organizations that do so, and Paul mentioned the Western Society of Malacologists (WSM) as one organization that uses the president-elect system to line-up leadership roles into the future to avoid the multi-year service that often happens in SCAMIT. Individuals that work for agencies are the best potential targets because they are often encouraged to participate in professional organizations, such as SCAMIT, and receive support for doing so. We tossed around the idea of creating a recruitment committee, similar to what is done with the WSM.

Some of these changes might require us to revisit the SCAMIT Constitution to allow for another office (President-elect) or allow the Vice-President to succeed the president. We could add such amendments with the next election in February 2017, based upon the results of the September meeting.

The idea of less frequent meetings, bi-monthly rather than monthly, was also discussed. We typically hold 10 meetings/year and perhaps having a meeting every other month would facilitate more cooperation/participation. We might have better luck with planning should we drop back on the frequency of our meetings.

The issue of SCAMIT's open access model, i.e., the fact that SCAMIT-generated materials are shared without restrictions was also discussed. In recent years, there has been a subtle change in workshop leadership from individuals predominantly supported by public agencies to those acting as private contractors. In particular, how does it work when material or taxonomic information is generated on contract? Is there an obligation to post these materials or are these materials the property of the author or the client?

Should SCAMIT make an effort to branch outward and develop partnerships with other agencies (e.g., holding a joint meeting with SFEI-associated taxonomists or City of San Francisco staff)? There is overlap in species reported among these different agencies and it might benefit all, including the State and Regional Water Quality Boards, who interpret and regulate environmental assessments. Ron then suggested that the Regional Board might have some reason for supporting SCAMIT due to SCAMIT's involvement in p-code and Species List maintenance.

After lunch, we dove into a discussion on the utility of the SCAMIT Taxonomic Database Tool. There are some difficulties with functionality. Larry asked whether or not SCAMIT should put more money or effort into the Database Tool. But this devolved into a discussion of the SCAMIT Species List itself, the backbone of the Database Tool, and List maintenance, how it cascades to Agencies, the State, and SCCWRP. We discussed the issue that SCAMIT, as a volunteer organization, cannot take on the idea of the List and the associated P-codes and Sediment Quality Objectives (SQO) values without compensation or support for the effort. It is one thing to maintain species lists and follow taxonomy, but another thing altogether to trace P-codes and SQO values back to species and make sure those lists are up-to-date. The fact that the State's current SQO is still based on SCAMIT Ed 5 is a case in point. Such a state of affairs ignores the changes in taxonomy and taxonomic resolution that have taken place in the past 10 years. These



responsibilities belong to the State, SCCWRP, and other organizations. We need to draw a bright line between what SCAMIT can deliver and what they have responsibility for. For example, the Southern Association of Freshwater Invertebrate Taxonomists (SAFIT) has an agreement with the State who provides SAFIT money for their efforts to maintain the freshwater list.

Three issues came out of the discussion: (1) how to database the Species List so that it can be maintained and distributed more easily; (2) how should SCAMIT be involved (or not) in the maintenance of the SQO tool, p-codes, etc., and (3) how does SCAMIT get reimbursed for its efforts. As a volunteer organization, SCAMIT should not be responsible for regulatory compliance. This led to a discussion of the nearly defunct BATMan group, but without resolution on what to do about it.

Paul brought up the idea of Symbiota (<http://symbiota.org>), which has a tool for maintaining lists of species and such. The site includes a number of on-line workshops and tools available for list management. He suggested that we review these workshops (<http://symbiota.org/docs/>) to get an idea of how Symbiota could be used to help in the maintenance of the SCAMIT Species List. Paul noted that his colleague at the museum had employed Symbiota to “suck up” a huge list of species and is currently using the tool for managing a very large species database. One current implementation of Symbiota is found at <http://www.invertebase.org/portal/index.php>, which includes data from a large consortium of institutions.

When the discussion came back around to the Taxonomic Database Tool, there was some agreement that the project might be biting off too much. It's large, labor intensive, and requires regular maintenance. The future of the Database Tool is worthy of further discussion.

Towards the end of the day, we recognized that we had covered a large number of topics without coming to any specific conclusions. So to try to move the ball forward, we put together yet another set of assignments; hopefully a list that will see some follow through.

#### **TO DO Assignments:**

SCAMIT Species List Maintenance of names and name management: Kelvin, Paul, Wendy

- Convert to database
- Paul contact [symbiota.org](http://symbiota.org) to discuss their ability to house the SCAMIT species list
- Translate current Ed11 list from Excel to Database

Toolbox updating: Tony, Dean, Greg Lyon

- Generate a “To Do” list from prior meetings
- Keep project moving forward, follow-up with those who volunteered to provide content, schedule future meetings

SCAMIT Ties to SQO, P-codes, and Regulators: Larry, Chris Beegan, EPA

- Follow-up with State Regulators about developing a SAFIT Model for SCAMIT

Generate a Survey Monkey prior to the September meeting

- [Erin Oderlin took on this task and distributed the survey via the general discussion list server.]



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**21 JUNE 2016, BOEM (LISA GILBANE) AND NEP NUDIPLEURA UPDATE (JEFF GODDARD), SBMNH**

**Attendees:** Paul Valentich-Scott, Priscilla Akin (SBMNH); Larry Lovell, Don Cadien, Chase McDonald, Terra Petry (LACSD); Kelvin Barwick (OCSD); Ron Velarde, Megan Lilly (CSD); Cheryl Brantley (Retired); Tony Phillips, Dean Pasko (DCE); Lisa Gilbane (BOEM); Jeff Goddard (MSI, UCSB).

**Business meeting:** Larry opened the meeting by announcing to all in attendance about the cancellation of the morphometric workshop yesterday (Monday), and noted that the topic is one relevant to our organization. Kelvin and Paul chimed in that they had heard many morphometric talks at the recent Western Society of Malacologists meeting.

Larry then presented the results of the Monday discussion, “SCAMIT, The Next Generation” for the benefit of those in attendance.

The presentation generated more discussion of potential collaborations, particularly with the Washington Department of Ecology and the San Francisco Tiburon Laboratory, who frequently put together voucher sheets. Exchanging voucher sheets and occurrence information on a regular basis would likely provide fruitful discussion, potentially consolidate efforts, and bring about agreement or resolve differences in species identifications.

We also revisited the idea of a General Membership meeting in September to discuss the future of SCAMIT. Recognizing that SCAMIT is a volunteer organization, Lisa suggested that we needed to emphasize how SCAMIT benefits members and their jobs, and drive home the idea that SCAMIT has an impact on their job activities. Bringing the value of SCAMIT to the individual should be an important goal of the general meeting effort. As a point of contrast, we discussed the stories that Paul related the previous day about his experience in Europe where the lack of cooperation among competing taxonomic consultants limits data consistency across European waters. Unfortunately, the European taxonomists view their taxonomic resources and results as proprietary information and there isn't a mechanism or desire to share them.

Larry then introduced Lisa Gilbane, who began her presentation with a discussion of the Bureau of Ocean Energy Management (BOEM), which evolved out of a complicated history involving USGS, Bureau of Land Management, the Mineral Management Service, and the Gulf of Mexico Oil Spill.

BOEM (under one of its previous entities) was responsible for the 1975-78 Baseline surveys, as well as the Santa Maria Basin & Western Santa Barbara Channel survey and resulting MMS Atlas publications. They are currently pressing for another effort to perform a second deep water survey. The Smithsonian has a contract to house all the BOEM collections (historical and future). BOEM also works on the Multi-agency Rocky Intertidal Network (MARINE: [pacificrockyintertidal.org](http://pacificrockyintertidal.org)). As a result of these varied surveys, incorporating many different taxonomists and entities, BOEM and MARINE face some of the same issues as SCAMIT relative to maintaining species lists and vouchers, and providing consistent taxonomic identifications. Lisa summarized some of MARINE's long term monitoring efforts, community monitoring, and rapid assessment projects. The data has been useful in studying the spread of disease across the marine environment, as well as the impact of urban runoff and oil spills. Lisa described the efforts associated with several oil spills (Platform Irene/Torch, Cosco Busan, Refugio) where the BOEM-sponsored collaborative work provided valuable data to understanding spill impacts.



These collaborative efforts have also benefited the establishment of Marine Protected Areas around the NEP. For example, about half of the MPA's designated along the central coast came out of MARINE's long-term monitoring sites.

Lisa is also working on developing a clean voucher collection. The collection and housing of the vouchers has been funded, including the collection of DNA tissue samples, but not the analysis of the DNA. In addition to documenting species occurrences and morphology, Lisa hopes to use survey vouchers to document shifts in species ranges. BOEM has a few more surveys planned going forward: Four sites in Fall 2016 in the SCB, three in Spring 2017 in Central California, and the remaining sites in Fall 2017 and Spring 2018.

Paul asked Lisa about their voucher database, which has an SQL base, but a Microsoft Access front end. All vouchers are housed in one data server (SQL), others submit data via Access, which are then uploaded and managed. BOEM is moving to the use of iPads for some data records in the field, and the use of Web-based forms for entering data.

Don asked if the BOEM effort will eventually be folded into the Surface Water Ambient Monitoring Program (SWAMP). Lisa was interested in this, but hadn't pursued it yet. Don's concern was that we could end up with two different reporting standards, BOEM's and SWAMP's.

The Marine Science Institute (MSI) and BOEM are cooperating on the California Oil Platform monitoring program. The program includes water quality monitoring and photographic invertebrate assemblage monitoring. Lisa showed some preliminary analysis of the oil platform assemblage data indicating changes with water temperature, depth, and region. The goals are to document existing patterns and trends, and prepare for the eventual monitoring of the decommissioned platforms.

*Watersipora* [Bryozoa; Gymnolaemata] are covering a majority of the space on oil platforms, and are invading the natural reefs in the Santa Barbara Channel. The question was whether the platforms were the vehicle for the spread of *Watersipora*, or is there another mechanism, such as the platform servicing vessels. *Watersipora* has spread from the bays and harbors to the offshore region and the Santa Barbara Channel in the past 20 years or so. There is also work being done on understanding the natural history, biology, and dispersal mechanisms of *Watersipora*.

With the conclusion of Lisa's very interesting presentation, we discussed making SCAMIT members available to help with identification of BOEM scraping samples. Lisa commented that no scrapings have been collected to date, but that they may do so this coming survey. But several persons with prior experience in the California Fish & Game Introduced Species Survey raised the caution flag as they had experienced many problems with the identification of the scrapings.

For additional information on BOEM, MARINE, and their efforts, please feel free to contact Lisa at [lisa.gilbane@boem.gov](mailto:lisa.gilbane@boem.gov). Information on the *Watersipora*/Platform studies can be obtained through Susan Zaleski (BOEM) [susan.zaleski@boem.gov](mailto:susan.zaleski@boem.gov) and Mark Page (MSI, UCSB) [mark.page@lifesci.ucsd.edu](mailto:mark.page@lifesci.ucsd.edu).

After a brief break Dr. Jeff Goddard (MSI, UCSB) presented: *Nomenclatural changes in Nudipleura from southern California*. Jeff's presentation treated us to a wonderful collection of nudibranch images as he commented that recent molecular genetic work from the labs of Dr. Ángel Valdés and others has revealed new cryptic species complexes of nudibranchs. Jeff



lamented – partially tongue in cheek - that just when nudibranch taxonomy in the region appeared settled, we now have a slew of new species, some of which overlap considerably in range and are currently difficult to distinguish in the field. Dr. Goddard kindly gave approval for SCAMIT to post his presentation to the website, where readers are directed for images and references to accompany the following summary. His presentation can also be found as an attachment at the end of this Newsletter.

*Berthella californica* (Dall, 1900). Work in progress by Ángel's student Hessam Ghanimi has confirmed that *B. californica* is now two species which differ in spotting pattern and overall coloration. *B. californica* will likely be retained for the northern species which has opaque white spots of varying size scattered irregularly on the translucent white dorsum and lacks the white stripe found on the rhinophores of the southern species. The egg masses are also different between the two species.

*Limacia cockerelli* (MacFarland 1905). Northern and southern forms known for decades have been confirmed to be separate species. The southern species possesses a medial row of red-orange dorsal papillae, whereas the dorsal papillae on the northern species are smaller and scattered across the dorsum. *Limacia cockerelli* will be retained for the northern form, which was originally described from the Monterey Peninsula. The southern form is being named after Gary McDonald, and a similar-looking form found recently in Chile is being described as a new species.

*Diaulula sandiegensis* (Cooper, 1863). Spotted and ringed species have been delineated (Lindsay et al., in press). The northern, spotted species has spots that extend to the mantle edge and increase in number with age; while in the southern form spot numbers are static and confined to the inner part of the dorsum. *Diaulula odonohuei* Steinberg (1963) will be applied to the northern species, and *D. sandiegensis* retained for the southern species. The geographic ranges of the two overlap from northern California to British Columbia.

*Felimare californiensis* (Bergh, 1879). Hoover (2015) determined that *F. ghiselini*, described by Bertsch (1978) from the Gulf of California, is the same as *F. californiensis* and therefore a junior synonym of that species.

*Dendrodoris behrensi* Millen & Bertsch, 2005. Jeff noticed similarities between the original descriptions, published a century apart, of *D. nigromaculata* (Cockerell, in Cockerell & Eliot, 1905) and *D. behrensi*. Goddard & Valdés (2015) located the type specimen of *D. nigromaculata* and showed that the two species are indeed synonymous. They further showed that the name *D. nigromaculata* had been misapplied in recent decades to *Doriopsilla rowena*, described by Marcus & Marcus (1967) from the northern Gulf of California. Available information on developmental mode suggests *D. rowena* may actually constitute two species: one with planktotrophic development found from the northern Gulf of California to central America, and one with direct development from La Jolla and the northern Pacific coast of Baja California.

*Doriopsilla albopunctata* (Cooper 1863). Jeff recounted that Hoover et al. (2015) showed that this single species now constitutes three species: *D. fulva*, with sparse spotting and known throughout California (and with the current El Niño, into southern Oregon); *D. albopunctata*, known from Baja California to northern California; and *D. davebehrensi*, known from the Gulf of California and Newport Bay. Jeff noted that *D. davebehrensi* and some *D. albopunctata* are difficult to distinguish externally where they overlap in range, and that more sequencing is needed to determine the identity of forms intermediate in spotting between *D. fulva* and *D. albopunctata*.



*Doriopsilla gemela* Gosliner, Schaefer, & Millen, 1999. Jeff mentioned that specimens of this species from the northern Gulf of California have direct development, contrasting with the planktotrophic development of *D. gemela* from California, and were described by Hoover et al. (2015) as a new species, *D. bertschi*.

*Flabellina goddardi* Gosliner 2010. Until recently this species was known only from the type locality in Carpinteria. Jeff described how additional specimens have been found subtidally off Malibu and Anacapa Island. These subtidal specimens, as well as additional specimens from Carpinteria, differ from the type specimen by having complete to broken white lines on the body. The Anacapa specimens, with complete white lines, were found in close proximity to and resembled, *F. trilineata*, suggesting a possible mimicry complex. Brenna Green, a student of Terry Gosliner at the California Academy of Sciences, is working on the phylogeny of *Flabellina* and may provide insight about the placement of *F. goddardi*, which has a uniserate radula, in the genus *Flabellina*, other members of which have triserate radulae.

*Aeolidia papillosa* (Linnaeus, 1761). A widely distributed species with populations in the northeastern Pacific, western and eastern Atlantic, and southern Pacific, has been split into four species by Kienberger et al. (2016): *A. campbellii*, *A. filomenae*, *A. loui*, and *A. papillosa*. *Aeolidia loui* occurs from central Baja California to at least southern Oregon and can be distinguished from the more northerly *A. papillosa* by its warty rhinophores, a trait that unfortunately disappears after preservation.

*Hermisenda crassicornis* (Eschscholtz, 1831) was found by Lindsay and Valdés (2016) to be a complex of three species: *H. emurai* in the northwest Pacific and *H. crassicornis* and *H. opalescens* in the northeast Pacific. The more northerly *H. crassicornis* has a blue-white stripe on each ceras. Jeff has found specimens in Santa Barbara that look very much like *H. emurai*, raising the possibility that *H. emurai* has been introduced to the Southern California Bight (SCB). Jeff also mentioned that specimens intermediate in appearance between *H. crassicornis* and *H. opalescens* need to be sequenced to determine (1) their identity and (2) whether or not hybridization is occurring between the species.

Jeff mentioned that *Doto* form A of Goddard (1996), prevalent in the SCB, was determined by Shipman and Gosliner (2015) to be genetically distinct from the northern species *D. amyra*, but has yet to be described.

*Flabellina cooperi* (Cockerell, 1901). Jeff mentioned that Brenna Green's work has shown that specimens with smooth to slightly rugose rhinophores found intertidally in southern California and superficially resembling *F. trilineata*, are actually color variants of *F. cooperi*, which is better known subtidally. The intertidal specimens typically have white spots on the cerata and irregular bands of white on the sides and top of the body.

That concluded Dr. Goddard's wonderful presentation which can be found in its entirety on the SCAMIT website in the Taxonomic Tools Box. The references for this presentation are listed at the end of the newsletter.

Next to have the floor was Paul Valentich Scott. He treated us to his presentation, given at this year's WSM, on bivalves from the Peru-Chile Province. Paul described the history of bivalve workers over the past 150 years. He and his collaborators mined historical works to review the described species from the region. They then compared those results to other well-studied areas, and found that there were nearly twice as many families and genera elsewhere than were present



in the Chile-Peruvian region. They found that 344 species disappear as you cross 6-degrees south. So a problem was before him: Why the drop in species? Was it sampling bias or simply unrecognized taxonomy?

Paul recounted their investigation of one unknown specimen sent to him by his Peruvian colleagues, initially referred to as a “*Crenella*”. In short, through the process of investigating this one specimen he found 39 new species out of the material at hand. Upon completing a more significant review of the specimens and surveys from the region, he determined that the decline in species richness was due to the region being under-sampled, and additionally, the material that does exist is under-studied. Paul hopes to complete a new book, *Bivalve Seashells of Western South America* by 2018. It will compliment his two previous west coast monographs, *Bivalve Seashells of North America* (2000) and *Bivalve Seashells of Tropical West America* (2012).

After Paul’s presentation we broke for lunch and in the afternoon Paul graciously offered to examine specimens brought by various attendees to assist with their identification. Below is a summary of the CSD specimens examined.

First up was *Solen* spp – a Bight ‘98 voucher specimen of *S. rostriformis* from San Diego Bay was verified. In contrast, all of the offshore specimens were *S. sicarius* including a specimen from CSD station I-12, 2016, 29m.

A *Periploma* sp fid from CSD station I-33, Jan 2016, 31m, was examined and ID’ed by P. Scott as *Cyathodonta pedroana*. It was such a small juvenile that the undulations in the shell weren’t obvious.

A specimen of *Periploma rosewateri* (B’13 station 9099) was verified and left with Paul for accession in to SBMNH collections.

An animal that had been tentatively identified as Thyasiridae sp SD 1 was determined by Paul to be *Axinodon redondoensis*.

Next up was an fid Bivalvia from CSD station I-7, July 2012, 52m. Paul determined it to be *Bernardina bakeri* which will be a new addition to the SCAMIT Species List.

Nuculanidae fid from B’13, 9041, 742m was reviewed. It had a completely internal ligament so it belonged to a different subfamily. After much examination and discussion an identification of *Ledella fiascona* was determined. This is another new addition to the SCAMIT Species List. The specimen was left with Paul. He is going to photograph it and send images to molluscan taxonomists. He only knows the type specimen and is eager to have more material to document. See the NL cover for images of this animal by Wendy Enright, CSD.

On the subject of *Ledella*, a *Ledella* sp fid from B’08 7121, July 08, 860m, was decided to most likely be an undescribed species of *Ledella*.

Paul determined a juv Lasaeidae fid from CSD station I-34, Jan 2016, 21m, to be *Kurtiella pedroana*.

There was a “dead shell” specimen of Nuculoidea fid from CSD Regional station 8424, 23 July 2015, 131m. Paul left the ID at Nuculoidea and said he wants more specimens, but live specimens....



With that Megan had run out of bivalve specimens with which to bother Paul so she headed downstairs to corner Dr. “Hank” Chaney in his office and ask him to look at fid gastropod specimens she had brought.

He was able to verify a small specimen of *Crepidula excavata*.

A Gastropoda FID from B’13, 9023, 430m, July 2013, was determined to be a Fasciolariidae and most likely a juv *Fusinus barbarensis*.

And lastly, a group of small but beautiful *Eulithidium* sp fid, were identified as *E. pulloides*.

### ATTACHMENTS - MOLLUSCA

Appended to this issue of the Newsletter is a voucher sheet on *Nutricula lordi* produced by Angela Easton at the Washington State Department of Ecology.

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Please visit the SCAMIT Website at: [www.scamit.org](http://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 \$15 for an electronic copy of the newsletter, available via the web site at [www.scamit.org](http://www.scamit.org), and \$30 to receive a printed copy via USPS. Institutional membership, which includes a mailed printed copy, is \$60. All correspondences can be sent to the Secretary at the email address above or to:

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Long Beach, CA 90815

## *Nutricola lordi*

### Nomenclature

Phylum	Mollusca
Class	Bivalvia
Order	Veneroida
Family	Veneridae
Authority	Coan et al., 2000
Original Description	(Baird, 1863)
Common Synonyms (S) Previous Names (PN)	<i>Psephidia lordi</i>



### Distribution

Southeastern end of the Bering Sea (57.0°N) [CAS] and Cook Inlet, Alaska (59.2°N) [LACM], to Punta Pequeña, Baja California Sur (26.2°N) [LACM]. Depths for Ecology records: 1 – 268 m.

### Material examined

Qty	Project	Station ID	Location	Date	Depth (m)
1 spm	Historical	14 (Rep 2)	Hood Canal, Bangor	01 April 1989	133
1 spm	Historical	26 (Rep 1)	Central Basin	01 April 1992	268
1 spm	Temporal	29 (Rep 1)	Shilshole	18 April 2000	199
9 spm	Regional	323	Coon Bay	14 June 2004	103
97 spm	Regional	3855	Useless Bay	18 June 2014	80

### Description

Length to 10 mm; shape ovate to subtrigonal with broadly rounded anterior and posterior margin; moderately inflated; shell thick; beaks small but prominent; sculpture of microscopic commarginal striae; shell and periostracum yellowish-white, brilliantly polished; pallial sinus shallow, pointed; ligament slightly protruding; 3 cardinal teeth in each valve; no lateral teeth; inner ventral margin smooth

## Diagnostic Characteristics

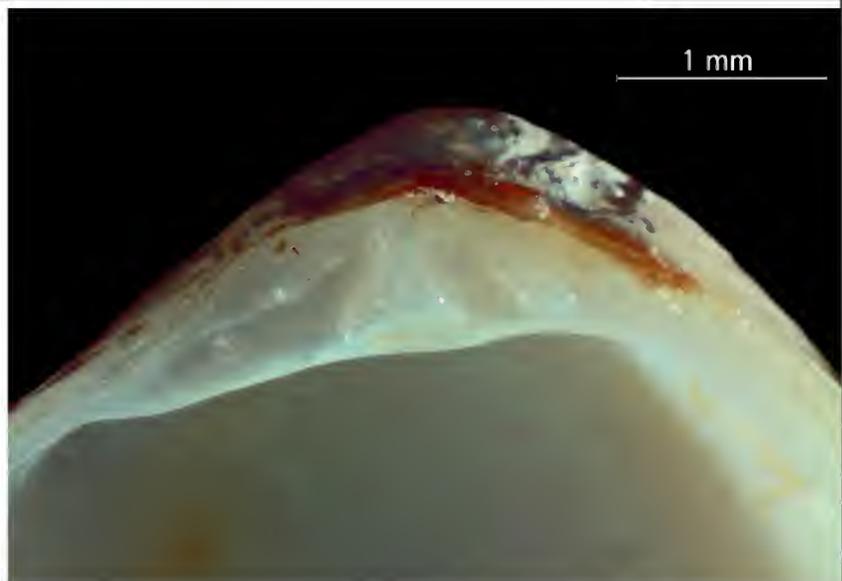
Diagnostic Characteristics

Photo Credit: Marine Sediment Monitoring Team

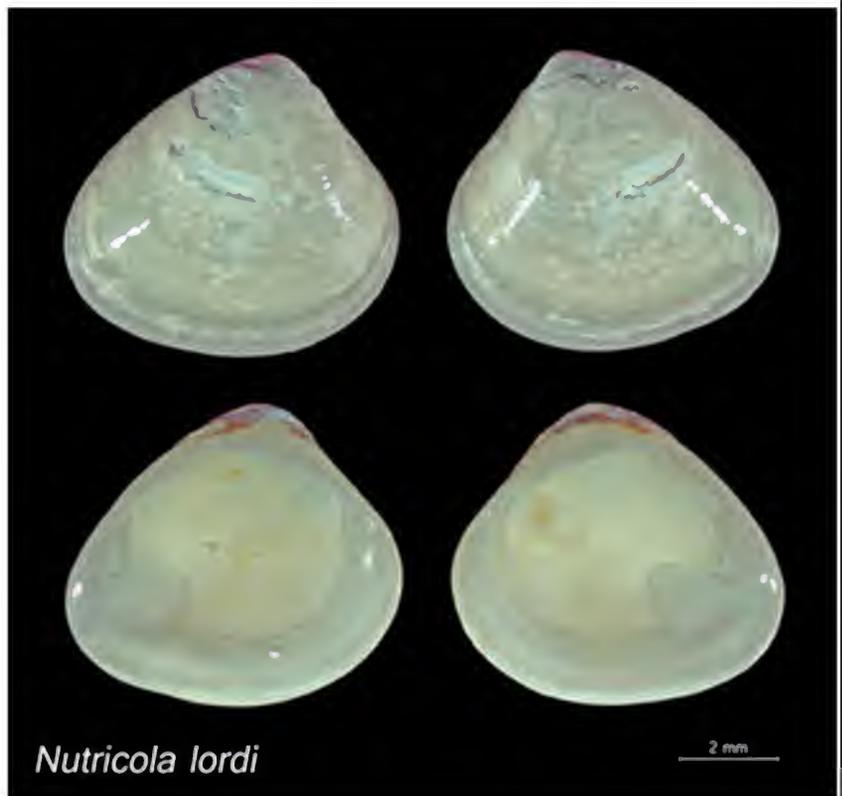
sculpture of fine commarginal striae



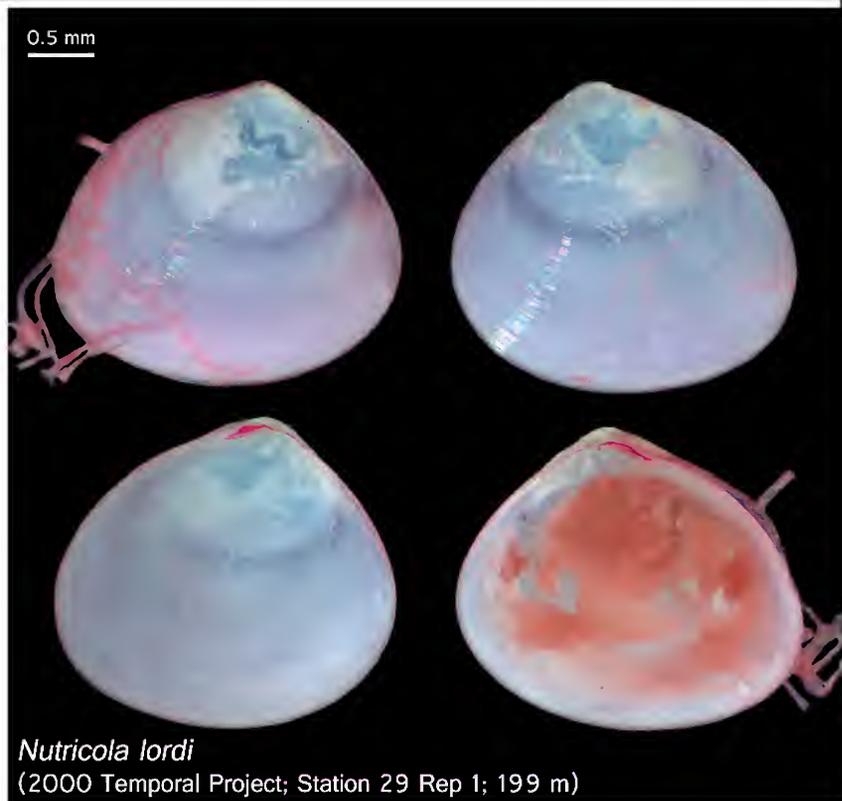
anterior lateral tooth in right valve is absent; ligament slightly protruding



pallial sinus shallow; shape subtrigonal; smooth inner ventral margin



examined specimen of deep water *N. lordi*



## Related Species and Characteristic Differences

Species Name	Diagnostic Characteristics
<i>Nutricola ovalis</i>	subovate shape; compressed; sculpture of feeble anterior and ventral commarginal striae; lunule absent; shell and periostracum brilliantly polished;
<i>Nutricola tantilla</i>	subovate-subtrigonal shape; sculpture of low, widely spaced, commarginal ribs or striae; anterior lateral tooth in right valve moderate, short; ligament sunken; lunule demarcated by a line only; surface straw colored; posterior slope stained brown to purple; inner ventral margin with obscure oblique grooves

## Comments

Coan et al. (2000) recorded at depths from the intertidal zone to 22 m, but records from Washington State Department of Ecology have recently been examined to determine that *Nutricola lordi* has exceeded those depths by an order of magnitude (over 240 m). The deepest recorded depth was at 268 m in 1992 at Historical Station 26 (Central Basin). The earliest Puget Sound record in 1989 shows *N. lordi* was found at 195 m at Long-term Station 38 (Point Pully).

## Literature

Baird, William. 1863. Description of some new species of shells, collected at Vancouver Island and in British Columbia by J. K. Lord, Esq., naturalist to the British North-American society of London. Proceedings from 1863(1): 71 (May) [repr., with other material: Lord(1866)]. p. 69.

Coan, E.V., Valentich-Scott, P., and F.R. Bernard. 2000. Bivalve Seashells of Western North America Marine Bivalve Mollusks from Arctic Alaska to Baja California. Santa Barbara Museum of Natural History Monographs Number 2. Studies in Biodiversity Number 2. ISBN 0-936494-30-1. Santa Barbara: Santa Barbara Museum of Natural History. pp: 366-367, 382-383.

## More Information

More information about Puget Sound benthic invertebrates is available at:  
<http://www.ecy.wa.gov/programs/eap/psamp/index.htm>

Prepared by Angela Eagleston (Ecology). This document is a pre-release of a Department of Ecology based publication.

If you need this document in a format for the visually impaired, call (360) 407-6764. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call (877) 833-6341.

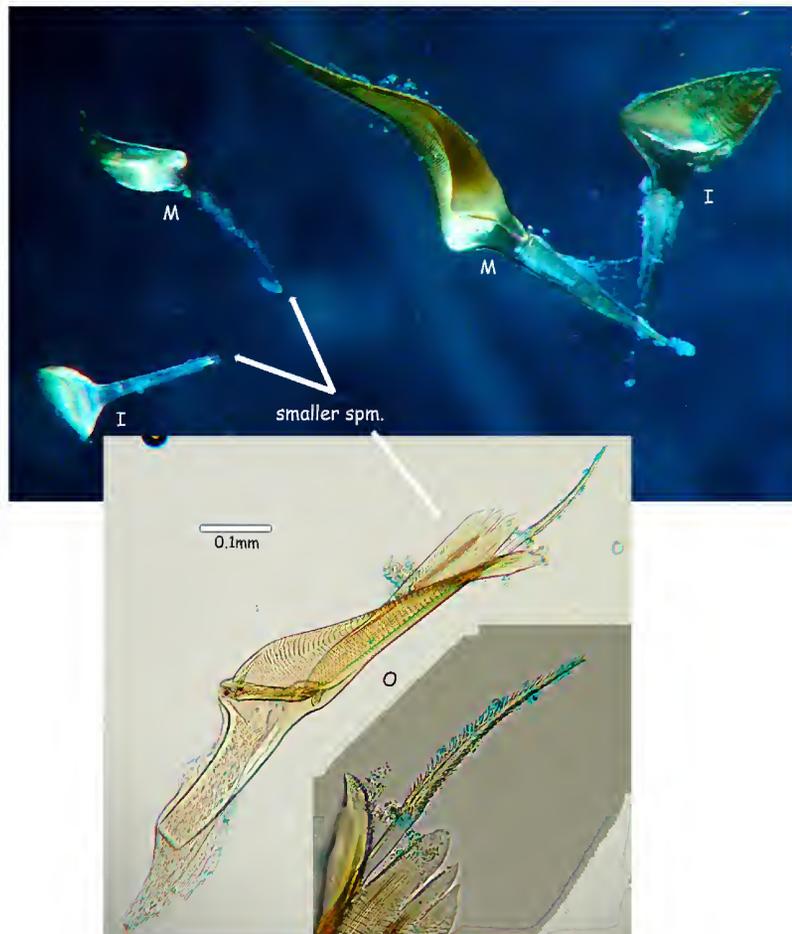
**S**OUTHERN  
**C**ALIFORNIA  
**A**SSOCIATION OF  
**M**ARINE  
**I**NVERTEBRATE  
**T**AXONOMISTS



July–August, 2016

SCAMIT Newsletter

Vol. 35 No. 2



*Neosabellaria cementarium* - opercular crown palae arranged in three concentric rows: outer (O), middle (M) and inner (I) palae.  
 CSD Sta. 2031(2), 29JUL2005, 52m.  
 - K. Barwick

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

**Publication Date: February 2017**

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**JULY 2016**

There was no July 2016 SCAMIT meeting.

**29 AUGUST 2016, THE FAILURE OF DNA BARCODING, SCCWRP**

**Guest Speaker,** Kirk Fitzhugh,  
NHMLAC

**Attendees:** Carol Paquette (MBC);  
Kelvin Barwick, Laura Terriquez,  
Danny Tang, Mike McCarthy  
(OCS D); Greg Lyon (CLA-EMD);  
Katie Beauchamp, Gabe Rodriguez,  
Ron Velarde (CSD); Leslie Harris (NHMLAC); Larry Lovell (LACSD); Dean Pasko, Tony  
Phillips (Private Consultants); Doug Foster (TheLab)

**Remote Attendees:** Don Cadien, Bill Furlong (LACSD), David Villas (MBC); Wendy Enright,  
Ricardo Martinez-Lara, Megan Lilly, Veronica Rodriguez (CSD); Angela Eagleston (WADOE);  
Paul Valentich-Scott (SBMNH)

<p><b>UPCOMING MEETINGS</b></p> <p>Visit the SCAMIT website at: <a href="http://www.scamit.org">www.scamit.org</a> for the latest upcoming meetings announcements.</p>
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**Business:** A General Membership Meeting will be held September 13<sup>th</sup> at SCCWRP. SCAMIT Officers will provide their annual updates, as they do for typical Executive Committee Meetings, which will be followed by a special general meeting to discuss the future direction of SCAMIT. Larry asked for meeting topics for the October meeting and then announced the next International Polychaete Conference (IPC 13) will be at Cal State Long Beach (CSULB), Aug 4-9, 2019.

Kelvin mentioned that the Pyramidellidae listing in Ed 11 has changed considerably, therefore this is a topic that needs resolution. There are many provisional species some of which have been assigned to described species. Kelvin referred the discussion to Tony who has been working with Pat Lafollette to make these assignments. Tony mentioned that he could not meet in October, but volunteered for a November meeting on Pyramidellidae, with a date to be determined.

Larry mentioned that if specimens were going to be reviewed, SCCWRP would be a good meeting location as they have a microscope that can broadcast live views, allowing those who are attending remotely to participate. If that system were to be made available, and actually functional, it would go a long way to meeting one of the most highly requested meeting changes that came out of the recent SCAMIT Survey.

With a little additional urging, Kelvin was roped into hosting the October meeting. This will take place on Tuesday, October 11<sup>th</sup> at the Orange County Sanitation District (OCS D). The topic will be a review of material from members' gastropod notebooks, with perhaps some updating of the SCAMIT toolbox if time permits.

Regarding the meeting schedule, Leslie asked if we should have a December meeting. Larry mentioned that the Bight' 18 planning will be on the horizon and there may be a proposal to discuss taxa that are in need of resolution. Also, labs that are going through taxonomic training could use the December, or other upcoming SCAMIT meetings, to bring taxonomic issues to the table for discussion. A lot of information and insight can be exchanged without a formal presentation or workshop, but rather by sitting around the table and sharing about problematic taxa. In some cases a topic is all that is needed.



Larry announced that Kelvin Barwick is the most recent grant recipient from the SCAMIT publication fund. Kelvin received the grant for a paper he co-authored (Safonova 2016) describing a new species of *Policordia*. Larry used that announcement to transition to a review and reminder about the SCAMIT publication grant program.

Following the business portion of the meeting, Larry introduced Dr. Kirk Fitzhugh. Kirk got his PhD in polychaete systematics from the late Kristian Fauchald, and eventually came to the Natural History Museum of Los Angeles County in 1990 as Curator of the polychaete collection. Kirk's current research passion focuses on the philosophy of systematics.

Kirk then took the floor and introduced his presentation: *The epistemic failure of DNA barcoding*, which began with some background on barcoding and his perspective of the species concept.

He started out his overview by noting that the explosion of barcoding in systematics research is in part a result of a “bandwagon” trend. He pointed out that many researchers have jumped onto the barcoding bandwagon and applied the method without a clear understanding of the principles of scientific inquiry and their correct application. Kirk opined that by doing so, we're no longer teaching science as a method, rather we're teaching science like we teach medicine. In essence, for this problem one prescribes barcoding as the solution, rather than asking the appropriate questions, formulating hypotheses, and testing the hypotheses. Barcoding has become to systematists what the Sirens were to Odysseus, and that one needs to be a little wary of running astray with the blind application of the method.

In early days DNA barcoding was described as a method for “identifying” species. Even as recently as 2012, barcoding was defined in the glossary of a textbook “as a method for identifying species”. Kirk, on the other hand, describes barcoding as a “technology-driven” science.

The first question one must ask is: What are Taxa? (including species). This is the fundamental question that all systematists seem to avoid answering. Kirk offered the following definition: *Any of a set of classes of hypotheses used in biological systematics for the purpose of explaining particular characters of observed organisms*. In general this means that taxa are inferential reactions to our observations of organisms. Taxa are explanatory hypotheses, not things, entities or individuals, thus... species are also explanatory hypotheses, and cannot be identified or delimited! One observes individual organisms, not species.

Kirk argued that as taxonomists we take our background knowledge, make our observations of structures and such things that are in need of explanation, and generate a hypothesis: such as a species hypothesis. Such abductive reasoning – the inferences of explanatory hypotheses – is our most commonly used reasoning. We use it on a daily basis.

*What are species?:* Are they classes or individuals? They are neither. What we observe are in fact, semaphoronts: the state of the individual organism at the moment in time at which you are observing it. Semaphoront is a term introduced by Hennig (1966) in his book *Phylogenetic Systematics*, which introduced the idea of cladistics analysis.

Kirk offered up his preliminary definition of species that has taken many years, and a path of many more iterations: *An explanatory account [hypothesis] of the occurrences of the same character or characters among gonochoristic or cross-fertilizing hermaphroditic [sexually reproducing] individuals by way of character origin and subsequently fixation during tokogeny.*



With this concept of a species defined, he began his argument against the use of DNA barcoding of a nucleotide sequence for the purposes of identifying a species. One cannot identify species via DNA barcoding because species are not things or class constructs. Species, like all taxa, are explanatory hypotheses. A nucleotide sequence is a set of characters of a semaphoront, a point in time in the ontogeny of an individual. It is little more than the characters one can use to communicate their observations of individuals at a given point in time.

Kirk cited the Kongshavn et al (2016) IPC conference presentation by way of example. They performed a 3-year study comparing barcoding identifications to morphologic identifications and found little agreement. [Experiences after three years of automated DNA barcoding of Polychaeta. Abstract, 12<sup>th</sup> International Polychaete Conference, National Museum Wales]

Kirk's presentation was elegant and I cannot adequately represent it in total here. However, I would summarize his argument as follows: Kirk is stating that reducing a "species" or "taxa" to a genetic sequence is not an appropriate representation or explanation of a species-level hypothesis, because one is not considering that we don't know the causal relationships between the sequence and the expression of the sequence. So trying to relate individuals to the hypothesis of what constitutes a species without an understanding of what the sequence represents (physically) is misleading and inaccurate. The process does not follow the principles of scientific inquiry. Consequently, one cannot use a nucleotide sequence to 'identify' species, and one should not use nucleotide sequences as characters to construct cladograms without a clear understanding of what is required to explain individual nucleotides, how those nucleotides are causally related to phenotypes in the organism, and how characters change with ontogeny.

In conclusion, Kirk mentioned that he would gladly share electronic versions of the various research papers that he has written on this subject or some of the seminal articles that he used in the formulation of his ideas on barcoding and cladistic analysis. A Dropbox link to his philosophically-oriented papers is provided below. Among the papers are several recent polychaete works in which we have treated taxa as explanatory hypotheses.

<https://www.dropbox.com/sh/gx7jqgxw076xiv4/AAA29e-xqyGP5Ue4xwpXAB4ha?dl=0>.

Following the presentation there was a brief but lively debate about the use of genetic methods in other applications. Kirk explained that he was not arguing against the use of barcoding as a tool, but that the tool is being applied without regard to scientific methods to questions of phylogenetic analysis and inferences of species hypotheses.

After lunch, Larry jumped into the review of Ed 11 and began a discussion of the emend list to correct errors or omissions that have already been discovered by LACSD staff. Larry mentioned his discussion with Chris Beagan and the State regarding State funding for the SCAMIT database.

Page 38-39: *Lottia coniz* and synonyms need to be addressed

Page 99: *Nephtys* is misspelled and *Sphaerodoridium* has an extra "r" in it

Page 100: Kravits is misspelled with an s instead of a z.

Page 101: chamberlin is misspelled

Page 96: Ørsted with a ö in WoRMS vs ø in SCAMIT



Next up Leslie gave a presentation on the 12<sup>th</sup> International Polychaete Conference at the National Museum Wales, Cardiff, including pictures of the museum where the conference was held, the gift bag & its swag (including rain ponchos to withstand the inclement weather), the mid-week excursion, etc. The meeting had nearly 200 attendees. Local SCAMIT members Larry, Leslie, Kirk, and Karen Green were in attendance. Kirk did a week-long pre-conference workshop on *Philosophy of Biological Systematics* and provided a plenary talk similar to the one given at today's meeting. Larry, Kirk, and Leslie were sole authors or co-authors on 2 talks and 6 posters. On behalf of Don Reish, an organizing committee led by Bruno Pernet (CSULB), presented a bid to host the 13<sup>th</sup> International Polychaete Conference in Long Beach in 2019. Although it was the only bid it was enthusiastically accepted by the membership. Bruno and a number of SCAMIT members are on the committee. The Queen Mary, The Westin Long Beach, and the Marriot Courtyard, have submitted bids to host the conference. Leslie described the many issues to be considered, such as the mid-week excursion, workshops, registration fees, etc.

Leslie then passed around a flashdrive with pdfs of the meeting proceedings and abstracts, as well as pictures of a number of posters. One great new feature instituted by the Cardiff organizers is a page with downloadable pdfs of the posters that were on display. The Cardiff posters can be found here: <https://museum.wales/Posters/>

Below is a listing of posters/presentations involving SCAMIT members:

- Lovell, L.L., Fitzhugh, K., Harris, L.H. Taking a closer look: a SEM review of *Levinsenia* (Paraonidae)
- Fitzhugh, K. A solution to going down the rabbit hole of systematics [plenary talk]
- Harris, L.H. 4 new and 1 revalidated species from California (Polychaeta)
- Tovar-Hernandez, M.A., Harris, L.H. Sabellids from the Chukchi Sea, Alaska (Sabellidae)
- Sivadas, S.K., Harris, L.H., Carvalho, R., Ingole, B. Standardizing Polychaete taxonomy for the improvement of marine ecology and conservation studies on the Indian subcontinent
- Sivadas, S.K., Harris, L.H., Carvalho, R., Ingole, B. The status of marine polychaete research in India
- Keppel, E., Chang, A., Marraffini, M., Harris, L.H., Ruiz, G. NIS Surveys: Polychaete diversity in San Francisco Bay, California (USA) (talk)
- Nogueira, J., Fitzhugh, K., Hutchings, P., Carrerette, O. A new hypothesis of phylogenetic relationships within the polychaete family Telothelepodidae (Annelida, Terebelliformia)

Leslie (and Kirk) noted that the conference was loaded with talks and posters on molecular techniques in phylogeny. Leslie added that it was very apparent that morphological techniques of relating taxa were fading rapidly, as are the individuals who practice them.

Leslie also mentioned several presentations of note, specifically a proposed redefinition of *Pista*, a discussion of widely distributed species, reviews of Cossuridae and Magelonidae, and next generation histology and meta-DNA.



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- Hennig, W. 1966. *Phylogenetic Systematics*. Translated by D.D. Davis and R. Zangerl. Univ. of Illinois Press, Urbana and Chicago. 263 pp.
- Kongshavn et al. 2016. Experiences after three years of automated DNA barcoding of Polychaeta. Abstract, 12<sup>th</sup> International Polychaete Conference, National Museum Wales.
- Safonova, L., and K. Barwick. 2016. A new species of the genus *Policordia* (Bivalvia, Verticordioidea, Lyonsiellidae) from off the coast of southern California.



Please visit the SCAMIT Website at: [www.scamit.org](http://www.scamit.org)

### SCAMIT OFFICERS

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The SCAMIT newsletter is published every two months and is distributed freely to members in good standing. Membership is \$15 for an electronic copy of the newsletter, available via the web site at [www.scamit.org](http://www.scamit.org), and \$30 to receive a printed copy via USPS. Institutional membership, which includes a mailed printed copy, is \$60. All correspondences can be sent to the Secretary at the email address above or to:

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**S**OUTHERN  
**C**ALIFORNIA  
**A**SSOCIATION OF  
**M**ARINE  
**I**NVERTEBRATE  
**T**AXONOMISTS



Sept–October, 2016

SCAMIT Newsletter

Vol. 35 No. 3



*Octopus veligero*: Submature female (45 mm ML)  
 Captured in 100m off San Diego, CA; January 1997  
 Photo by D. Norris.

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

**Publication Date: April 2017**

### 13 SEPTEMBER 2016, SCAMIT GENERAL MEETING, SCCWRP

**Attendees:** Ricardo Martinez-Lara, Veronica Rodriquez, Ron Velarde, Wendy Enright, Megan Lilly, Katie Beauchamp, (CSD); Ken Sakamoto, Benjamin Ferraro, Danny Tang, Kelvin Barwick, Mike McCarthy (OCSD); Greg Lyon (CLA-EMD); Dean Pentcheff, Leslie Harris (NHMLAC); Don Cadien, Bill Furlong, Brent Haggin, Jovairia (Jojo) Loan, Larry Lovell (LACSD); Dean Pasko, Tony Phillips (Private Consultants)

#### UPCOMING MEETINGS

Visit the SCAMIT website at: [www.scamit.org](http://www.scamit.org) for the latest upcoming meetings announcements.

**Remote attendees:** Dany Burgess, Angela Eagleston (WADOE); Dave Vilas (MBC); Mary Wicksten (Texas A&M); Kathy Langan (CSD); Cheryl Brantley, Dot Norris (Retirees); Michelle Knowlen (Ramboll)

We began the meeting with updates from the Executive Committee. Larry provided the yearly President's update with a list of highlights from the year. The entire slate of SCAMIT officers had been re-elected in 2016 to serve out the 2016-17 year, with the addition of Erin Oderlin (CLA-EMD) taking over the Treasurer position for Laura Terriquez who had taken on other responsibilities at the Orange County Sanitation District and would no longer be performing taxonomy. The Treasurer's report is appended to the end of this NL. Also, SCAMIT worked with SCCWRP to hold the Bight' 13 Synoptic Data Review and QC meetings. The Species Review Committee succeeded in producing Ed 11 of the SCAMIT Species List, and did so on time! Although the List had already been superseded by the announcement that Jim Blake had recently reviewed the Cirratulids, which included several changes to the *Monticellina* group. SCAMIT members also participated in two meetings at the NHMLAC to identify unknown and poorly labeled specimens that the museum had inherited from the Alan Hancock Foundation. In addition, SCAMIT was represented at a couple of conferences (SCAS – with table attended by Erin Oderlin) as well as the International Polychaete Conference (attended by Leslie Harris, Larry Lovell, and Kirk Fitzhugh), and several members were actively involved in training local staff in taxonomy.

All of these accomplishments are in line with SCAMIT's mission to pursue standardization projects, such as Bight projects, taxonomy training, and getting newly trained individuals in conformance with existing work.

Leslie Harris then stepped forward to provide the Vice President's report. Leslie's main job as VP is to schedule workshops and/or coerce people into providing workshops and meetings. Leslie commented that many of the 2015-16 meetings were taken up by Bight' 13-related efforts, including the resolution of FID specimens, and QC and Synoptic Data Review meetings. Also, for the first time in a long time, we had one month without a meeting (November), which may have been a result of fatigue brought on by the series of 2-meetings/month that occur with every regional Bight survey.



Leslie asked for volunteers to lead workshops and topics. She suggested that it does not necessarily have to be just taxonomy; the meetings can focus on ecology, standardization, best practices, among other things.

The two currently scheduled meetings involve Mollusca. The first, scheduled for 11 October, will be a notebook review and toolbox clean-up and will be led by Kelvin Barwick (OCSO). The second meeting will be on 9 November, also at OCSO, and will cover the Pyramidellidae, subfamily Turbonillinae. This meeting will be led by Tony Phillips.

Dean then provided the Secretary's report. The SCAMIT Newsletters are in good shape, except that Dean Pentcheff had noticed that we were missing a few. [Secretary's Note: Fortunately, the missing NLs have since been found and posted to the website. All is good with status of SCAMIT] Dean also presented a list of the various Action Items that had been generated from several of the recent meetings where the Taxonomic Toolbox contents had been reviewed, as well as some of the other pending efforts from other meetings. Various people asked if the Action Items list could be posted to the General List Server. Tony then remembered one Action Item from the Ascidian meeting and volunteered to check with Gretchen Lambert to see if she will share her Ascidian pictures that had been taken during the SPAWAR project.

Larry gave the Treasurer's Report for Erin. SCAMIT received \$1,960 of income from dues and CDs (certificates of deposit, not Bruno Mars), but had expenses of about \$2,756. The expenses were mostly due to printing the backlog of NLs, with a few other items accounting for a small amount of expenditures. Larry reminded us that we have 25% of the available funds for publication grants, which is approximately \$6,600. Kelvin is the most recent recipient of such a grant. The SCAMIT grant supports publication costs for SEMs, re-prints, barcoding, page charges, etc.

Next our fearless Webmaster Dean Pentcheff had the floor. Dean would love to take time to tweak the website design a little. It would be nice to update photos. Our website host (Dreamhost) provides their service for free, including storage, back-up, and maintenance. As we think about legacy materials (e.g., the Jazz Drives of CSD), we can migrate all that material to the magnetic storage on the Web. Dean is happy to help individuals migrate that material, and suggested that we could archive many of these images and information to the SCAMIT server, rather than our own specific drives, CDs, etc. Where Jazz drives, CDs, etc. tend to become outdated or expire, magnetic archives simply transfer with the updated technologies.

Larry raised the idea of doing something similar with animal images. Larry thought we could start with the Mollusk meeting, and, with some reservation, Kelvin agreed to bring it up at the November meeting.

Ron suggested a repository for digital literature, but Kelvin raised the question of the licensing issues. Dean Pentcheff has been active in this area and urged us to have a



substantive discussion on this topic, and encouraged SCAMIT to consider a separate meeting to discuss it. Dreamhost does have the capacity to host such an electronic listing. We decided to have a meeting on 12 December to discuss the topic of digital literature and the SCAMIT website.

Kelvin Barwick, the new Species List Review Committee Chair, gave a short presentation on the history of the SCAMIT Species List. Montagne & Velarde (1994) was the first Edition of The List, focusing on species reported by the four major POTWs operating in the SCB, and built upon the original SCB listing created by Straughan and Klink (1980). Edition 2 (Montagne & Velarde, 1996) came with the addition of trawl organisms. Don Cadien jumped in and took over Ron's role in 1998, with the publication of Edition 3 (Montagne & Cadien 1998). Ed 3 was the first to include synonyms. Montagne & Cadien (2001) put out Edition 4, and added a count of the included species (2076 nominal taxa). Cadien and Lovell took over the project and published Edition 5 in 2008. Cadien and Lovell (2008) added hard substrate taxa, and included all SCAMIT member-verified taxa, bringing the total to 2551 species-level taxa. 2010 brought about the formation of the Species Review Committee with Don serving as Chair, and consisting of 13 charter members. The committee had the lofty goal of yearly updates, beginning with Ed 6. Cadien and Lovell (2011) published Ed 6 and included red text to indicate changes. Editions 7 – 11 were published in successive years by Cadien & Lovell through 2016, with Ed 11 including 3227 species-level taxa from all large and small monitoring programs operating in the SCB, as well as the five regional Bight surveys, and five other species studies in the SCB.

Then Kelvin listed some of the new challenges that were facing the Committee:

- Keeping the List current.
- Don's departure leaves large shoes to fill
- Converting the List to an editable database
- Expanding coverage from SCB to all of CA or the entire West coast
- Recruiting Committee members

Kelvin then welcomed the newest sucker (recruit) to the Committee, Greg Lyon, (CLA-EMD), and later explained that Brent Haggin had also volunteered to participate on the Committee. [Editor's note: Go Brent and Greg!]

Kelvin noted Don's tremendous contributions to the existence of the List in its present form and that Don has been the lead on its propagation for many of the past iterations. In response, Don noted that it was time for the process to be de-centralized, and that was part of his goal in stepping down. Several people recognized Don's tremendous dedication to leading the Committee, and the self-less leadership he has provided over the past decade plus. The organization is truly indebted to his service.



Larry added that SCCWRP helped generate the first List in an effort to bring the Agencies in line with each other, generating a standardized listing of the reported species. He also added that the timing of the List publication was in part based on the Regional Bight Program completion and updates. The Species List Review meetings had been held here at SCCWRP from the beginning, and continuing to use this venue going forward would allow more participation from remote attendees.

Larry announced that the Cadien Library is finally coming up for sale. It includes 11,530 pieces of taxonomic, ecological, and general literature that has all been databased in Endnote and key word referenced. Most are originals, and there are some copies, and some duplicates. This database has tremendous value. Don added that he hoped someone would find this of interest because the purpose was to benefit SCAMIT. Don prefers to use hardcopy but due to space constraints now has to rely on digital pictures. A lot of the material had come from duplicates within Jan Stock's literature collection. The databasing took a minimum of 4 months of effort, so that alone is worth quite a lot of employee time (i.e., \$\$) to some individual, laboratory, or agency. SCAMIT would prefer to sell the library in mass via a silent auction through our on-line list-server. The starting minimum bid will be \$5,000, and the lucky bidder must arrange to move the material from the LACSD Marine Biology Laboratory to their own place of residence/business. Larry added that this effort supports the mission of SCAMIT to promote the standardization of the taxonomy among its members. [Editor's note: Sadly, as of this printing, the library remains unsold. If you know of any agency in need of a valuable collection, please contact the Secretary.]

Larry also noted that Mary Bergen had generously donated her echinoderm literature. It was available on the back table, but Megan announced that "she" was planning to take it all! In the end, everyone got a shot at it. Brent Haggin has gone through the LACSD literature and pulled out duplicates, which he also made available at the back of the room.

Larry then followed with a presentation on SCAMIT, *The Next Generation*. SCAMIT has been around for 34+ years, and with some in the room representing founding members. But, the future of SCAMIT is dependent on preparing for a change in the old guard. Many of the founding members in charge today won't be around forever.... So it is time to find replacement leaders to perpetuate SCAMIT's progress forward.

It was the 1972 Clean Water Act that gave rise to the need for working taxonomists, such as those that SCAMIT has come to support. Standardization was necessary in the SCB to deal with the messy nature of species, as well as the different methodologies for performing identifications used by different laboratories. Developing a system to share resources was necessary for the working taxonomists' progression. The importance of taxonomic standardization and inter-calibration was needed also for long-term data comparability and compatibility, and inter-regional regulation.

The Southern California Coastal Water Research Project (SCCWRP) Taxonomic Standardization Program (1973-1982) preceded SCAMIT. SCCWRP produced a few



publications, including some regional keys, and held inter-calibration meetings. The driving force in this effort was Jack Word, who was succeeded by Leslie Harris. In 1982, after SCCWRP's support waned somewhat, John Shisko saw a need to continue the tradition SCCWRP had initiated, and organized SCAMIT as a 501(c)(3) non-profit Organization. Larry then went on to describe the evolution of SCAMIT meetings to workshops, technology usage, voucher sheets, species listing, website and database, and toolbox.

Why is SCAMIT a success? There are a relatively large number of taxonomist jobs in the SCB. In addition, there is ample taxonomic work, including large regional monitoring, and a general spirit of cooperation among the taxonomists supported by the POTW's agencies. Other groups have tried something similar (NEAMIT and NAMIT), but they had difficulty sustaining themselves largely because of geographic barriers.

Larry then discussed the results of the Survey Monkey. About one-third responded (54 of roughly 144 members). The presentation will be available at the SCAMIT website. The survey covered a number of results, such as meeting preferences; member use of the SCAMIT webpage, Species List, Taxonomic Toolbox, and Newsletters; SCAMIT priorities; topics that should be covered, among others. Overall the results demonstrated that more than 90% of the respondents visited the website at least once monthly, and/or used the Toolbox or visited the Newsletters multiple times per month. Very few (<5%) of the respondents had never visited the site or used its content. Workshops with specimen reviews or that included hands-on work were some of the most popularly requested meeting formats.

We briefly discussed one of the other popular requests, remote access for our monthly meetings. Adding remote access would come at a cost. Systems such as GoToMeeting cost about \$500/yr, while BlueJeans has a cost structure based on number of participants, but would likely be similar. This, in combination with Newsletter production costs might require a small dues increase. SCAMIT dues are \$15/yr, and have not increased for quite some time.

Dean Pentcheff discussed the NHMLAC effort to bring together various organizations to substantiate the species concept that Kirk had recently debunked, particularly with the use of DNA barcoding (See SCAMIT NL Vol 35, No. 2). He is bringing this to SCAMIT since SCAMIT has the greatest taxonomic expertise that could be tapped to marry the taxonomy and barcoding. SCAMIT might also be one of the biggest beneficiaries of such an effort as it could be used to help resolve various taxonomic issues that SCAMIT wrestles with regularly (e.g., all of our provisional species). The DNA barcoding is only useful if you have correspondence between a barcode library and a specimen library. NHMLAC has some seed funding, but would like to partner with SCAMIT to move the project forwards.

Mary chimed in that here that Texas A&M has thousands of specimens preserved in formalin. She raised objections that the cost of barcoding is not cheap and cannot be



applied to formalin-fixed specimens. Dean agreed and mentioned that NHMLAC is trying to set itself up as the agency to facilitate that effort so that individuals could send specimens to the museum for analysis. He also indicated that the costs are coming down precipitously, and that the NHMLAC is working to develop a library of primers to facilitate the barcoding efforts and increase efficiencies.

Kelvin raised the issue that such efforts have been brought to SCAMIT before (e.g., Guelph), but have never contained enough money for the taxonomic effort. Until taxonomy is built into the budget with the coding money, we will continue to have problems. Dean countered that they are aware of the issue and are trying to address it. The museum is trying to set an objective that benefits the collaborative agency before it benefits itself. In addition, the museum would like to cooperate with SCAMIT members to resolve species problems.

After this rather interesting diversion, Larry got back to the presentation (What would you like SCAMIT to address in the Future). Regional Chapters was one idea that was listed in the survey. Dot mentioned that we should talk with Heather Peterson at San Francisco Water Authority for a discussion of Regional SCAMIT Chapters.

After a delicious SCAMIT-sponsored lunch, we came back to the discussion of the meeting format. Larry brought up the slide from the Survey on meeting preferences. Veronica suggested that the Workshop begin with a short general presentation of higher-level systematics of the taxa to be covered, followed by the problem taxa discussion and specimen review. Kelvin interjected that such workshops are the ideal situation for SCAMIT, but they take a lot of preparation time. Several alternative ideas were suggested: e.g., running the workshops in a collaborative nature, either between labs or within labs, or using Facetime and Skype as mechanisms to share information and allow remote access, or moving back to the video system format that has been successfully used in the past. We recognized that most agencies now have individual systems that allow video and image projection. Leslie mentioned that these video projects worked well, except when there are delays to take photos, and Kelvin noted that there is a fair amount of effort that goes into the set-up/break-down of the systems. Either way, the downtime created by pauses in the video generate opportunities for the meeting to succumb to entropy.

Ricardo recounted his experience with SCAMIT that began with education-oriented workshops that seemed to evolve into the more detailed and species-specific meetings of late as many of us have matured in our taxonomic skills. With the change in the introduction of more young taxonomists, we seem to have a greater need for the educational workshop method. He also noted that there are blue-tooth cameras that can broadcast images directly to laptops within wifi range. Perhaps SCAMIT can purchase such a camera that can be shared and travel to the meetings.

Dean Pentcheff interjected that there is no better way to learn than to teach. He suggested that the new members (new taxonomists) accept leadership roles for a workshop and that



some of the older SCAMIT members be available as mentors to the newer members. There might be a way to make this mentorship loosely organized so that the more experienced SCAMIT taxonomist be available to help answer questions and provide direction, not create the product or presentation. Megan added that the mentor need not provide everything to the mentee; but be available to utilize their own contacts to provide additional information. We suggested that perhaps SCAMIT could provide a listing of people willing to mentor others on the SCAMIT website (e.g., Mary for decapods, Leslie for polychaetes, etc.).

Mike McCarthy mentioned that he had benefited the most from meetings that start at a higher phylogenetic level (e.g., characteristics of the family), relative to species-specific workshops. Ben chimed in that the systematics of why animals belong together seems to help newer taxonomists. The general recommendation from a lively exchange was to provide context (systematic organization) at the beginning of the workshop, e.g., why are they the organized together in a family, what are the defining characteristics of the group (generally!), why are there problems.

Of course there was recognition that everyone should take some responsibility to familiarize themselves with the topic, especially since the meeting topic and speaker are often known beforehand. So no one need come to the meeting unfamiliar with the topic at hand which could help avoid confusion at the beginning.

Larry suggested we go around the room and recommend problem taxa in need of a workshop or review. Larry started off with Magelonidae and from there what was suggested is as follows: Ricardo – Paraonids; Dean Pasko – Heteronemertea; Veronica – Magelonids; Ron – Cirratulids; Wendy – Scaphopods; Megan – *Apostichopus*, holothuroids; Ben – didn't have anything yet as he was just beginning his training; Danny – *Photis*; Kelvin – Sabellids; Greg – Tellinids (Bivalves); JoJO – Anthozoans; Katie – *Photis* and *Rhepoxynius*; Don – Eusirid amphipods (Don also stated that there is no better way to learn than to jump into a taxon that you don't understand. That is how we all have learned); Leslie – cirratulids (we don't know enough about the development of character states with ontology); Mike McCarthy – polynoids and syllidae; Brett – Terribellidae; Bill – Syllids, Sabellidae, Magelonidae. Tony - ?; Dany (remote) – Pleusids, Sabellids; Dot (remote) – Capitellids.

Then Larry went back to learning modality: specimen review, such as blind reviews, as a first step towards inter-calibration. These are great but take some prep time (pulling specimens, etc.). However, they provide great value in helping identify where people differ in application of the same literature, etc. Individuals would bring identified specimens for exchange at the meeting being held prior to the meeting at which the mystery specimens would be discussed.

All of this gave Leslie an opening to pin down individuals to lead workshops in the coming year.



- Sabellids - Ricardo (January, 2017)
- Heteronemertea – Dean (February 2017)
- Magelonids - Larry/KB (March, 2017)
- *Photis* spp – Dean (April, 2017)
- *Apostichopus* (Holothuroidea) – Megan (May, 2017)
- *Monticellina* – Veronica (June 2017)
- Eusiroids – Don (August 2017)
- Terribellidae – Leslie (September, 2017)

Each of the meetings/workshops should incorporate some type of toolbox review. **[Editor’s note:** original schedule presented here has changed, see the website for the updated meeting schedule.].

As we started to wrap up the day, the idea of funding for items such as - GoToMeeting; InDesign; WiFi access systems (SCAMIT purchase hotspot); a digital camera, was raised again. Dean Pasko asked if those in attendance would support a raise to the annual SCAMIT membership. Would members be willing to pay an additional \$5/year to accommodate these additional expenses? A \$5/year increase was unanimously approved by those in attendance, and a \$10 increase was less unanimous, but readily accepted.

Larry then moved into the demonstration of the live web-based microscope feed. Overall both individuals who responded to Larry’s request for feedback of the remote system were **very** positive. They thought that the visual and audio worked well and that the video feed from the microscope was excellent, except when the specimen was being manipulated. The still image was clear, but the lag during specimen handling created a blurry image. In short, both said they would participate again if it were offered.

And lastly, there was some comment that those in attendance at the meeting might be more careful with their side comments, etc., as they were distracting and sometimes prevented the remote attendees from clearly hearing the discussion.



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**11 OCTOBER 2016, MOLLUSK TOOLBOX REVIEW, OCSD**

**Attendance:** Kelvin Barwick (meeting lead), Danny Tang, Ernie Ruckman, Ben Ferraro, Mike McCarthy, OCSD; Ron Velarde, Wendy Enright, Megan Lilly, CSD; Greg Lyon, CLAEMD; Larry Lovell, Don Cadien, Chase McDonald, Terra Petry, LACSD; Carol Paquette, MBC.

**Remote attendees:** Heather Peterson, CCSFPUC; Angela Eagleston, WA Dept of Ecology.

Kelvin called the meeting to order and started by requesting a round of introductions for the benefit of the remote attendees. Once introductions were complete he turned the floor over to Larry Lovell for a quick summary of SCAMIT business. Larry started by thanking Kelvin and OCSD for hosting the meeting. The next meeting will be October 18<sup>th</sup> at SCCWRP and will be a meeting of the Species List Review Committee. Larry then went on to review upcoming meetings for the next few months; see the SCAMIT website for a complete listing of upcoming meetings.

Larry then segued in to discussing the Future of SCAMIT/General Membership meeting that had recently occurred in September. He felt the meeting went very well and overall received positive feedback from the members who attended whether in person or remotely. One of the best things to come out of the meeting was that Leslie Harris was able to get meetings scheduled through 2017. This happened because Larry had gone around the room, one person at a time, and asked them what they thought was a Phyla/subject that warranted a meeting. Afterwards certain individuals were asked if they'd be willing to host a meeting on one of the subjects mentioned and to everyone's delight and surprise, most of them said yes. Due to the success of the meeting, Larry is proposing that SCAMIT hold a general membership/future planning meeting annually, most likely in September.

With the business meeting complete, Kelvin took the floor again to start our work on the Mollusk portion of the Taxonomic Toolbox. During the first half of the meeting he hoped to address material that had been posted in the toolbox but had not been properly vetted by SCAMIT subject experts. These were noted online with the link in green font and an asterix. The second half of the meeting, if time allowed, would be to start a comparison of mollusk literature/notebooks amongst attendees.

To address the first task, he had created a spread sheet of all the files included in the Mollusca portion of the Toolbox. There was some discussion as to how/where to start and we decided to begin with the smaller groups. That led us to Cephalopoda. It quickly became apparent that SCAMIT needs protocols for how to deal with modifying historical documents and how to track those modifications. Due to the fact the material is in PDF format, the Toolbox contains many outdated names and other information. However, by simply removing them we lose the historical aspect of what had been done and when. During a pause while searching for a species, Megan filed a complaint regarding the organizational structure of the mollusk section of the Toolbox. It is organized



phylogenetically, so she has no room to fault it scientifically. However without the ability to have total recall of a given taxon's phylogeny she finds the process of drilling down unnecessarily cumbersome. She suggested that a search tool be added to the Toolbox page. Other attendees concurred.

Many species were addressed as we worked our way through Kelvin's spreadsheet. Wendy Enright started a listing of species for which CSD would look to see if they had the original images in their archive (since Kelvin was an employee of CSD at the time that many of the vouchers were created). The species addressed are too many to list here, but Megan kept a list of some of the action items created.

- It was requested that Megan upload a copy of her field guide to *Octopus* spp found in SCB trawl surveys. She will also send out a copy to representatives at all the POTW agencies.
- Wendy Enright will upload her ID sheet comparing juvenile moon snails
- Kelvin needs to upload his "Field Guide to Trawl Caught Gastropods"
- The voucher sheet created by Megan on *Propebela* sp during the B'13 project needs to be modified and returned to Turridae sp SD 1 since Don Cadien and Tony Phillips do not believe it to be a *Propebela*. [pending]
- Don or Kelvin need to upload the discussion and voucher sheet on *Philinoglossa* sp A
- Megan needs to add her images of *Calliostoma platinum* to the Field Guide for *Calliostoma* spp
- Kelvin will upload Don Cadien's Cephalaspidea Key, 1996
- Kelvin is going to pull and create separate voucher sheet files for the Aplacophora species addressed in Barwick and Cadien 2005 – SCAMIT Supplement Vol 23
- Kelvin agreed to follow up with the web master to update the Toolbox. [completed]

Once we had completed the review of the spreadsheet it was time to move on to data exchange. Since much of the day was gone by this point, the data exchange consisted of Kelvin reviewing some of his many wonderful images of mollusks and offering to download his image collection on to people's thumb drives. Everyone eagerly lined up to take advantage of his generous offer. For those who attended remotely Kelvin will work on a way to get them the images. There was a brief discussion about Dropbox, FTP



sites, etc. and how some of the agencies do not allow, by work place policy, access to some or all of these file sharing websites, but the images, regardless, are still available in Dropbox. The upcoming December meeting with SCAMIT webmaster Dean Pentcheff will hopefully allow us to brainstorm some solutions to some of SCAMIT's storage and file sharing dilemmas. And with that we adjourned after a productive malacology filled day.

### **18 OCTOBER 2016, SCAMIT SPECIES LIST REVIEW, SCCWRP**

**Attendees:** Kelvin Barwick, Don Cadien, Larry Lovell, Brent Haggin, Ron Velarde, Wendy Enright, Megan Lilly, Leslie Harris, Tony Phillips, Dean Pasko

It was the first meeting during which the transition of the responsibility of chairing the Species List Review Committee (SLRC) officially transferred from Don Cadien to Kelvin Barwick. Kelvin opened the meeting with a review of the ambitious agenda and a general discussion of the goals.

Brent got the discussion going with a question about why the Species List leaves out pelagic organisms, a major component of the coastal ecosystem. Don, Kelvin, and others responded that since pelagic organisms have generally not been part of the NPDES monitoring programs and collectively SCAMIT members have little information and limited experience with zooplankton, SCAMIT has never felt the need to consider them. The restrictions of the SCAMIT Species List are covered in the front matter, which describes the limitation to benthic organisms. But a part of Brent's point was the absence of academic involvement in SCAMIT. Don noted that if and when zooplankton become part of any of the Southern California NPDES permits, SCAMIT will have to address the issue. We should also note that SCAITE is available for the identification of fish ([www.scaite.org](http://www.scaite.org)), the larvae of which form a large component of the planktonic community.

We then moved into a brief overview of the species list tracking system. The standard approach has been based on a flat file database (Excel) with an emend list to serve as a record of changes, including justification for a proposed change as well as the reason that a suggested change is denied or placed on hold. Don has graciously decided to continue as the keeper of the emend list with the understanding that in the coming years we will be transitioning to a database approach. We then reviewed the various worksheets within the Ed 11 mock-up, including the Proposals, On Hold, as well as the Non-Controversial sheets. These listings are used to keep track of the proposed changes, etc., so that we have historical records for reference.

Kelvin then brought up his phyletic listing for distribution of workload. The following assignments were made for preparation of Ed 12 of the species list. Question marks indicate members volunteered but not confirmed.



- Front Matter: Explanation of why SCAMIT follows a particular phyletic tree or system. L. Lovell, K. Barwick and D. Cadien
- Building List (Management of proposed changes, on hold items, etc.): D. Cadien, L. Lovell, K. Barwick and B. Haggin
- Chief Editors: K. Barwick, L. Lovell and D. Cadien
- WoRMS Cross-Check: N. Haring and W. Enright
- Annelids: L. Harris, L. Lovell, R. Velarde, T. Phillips, and B. Haggin
- Arthropoda: D. Cadien, T. Phillips, D. Pasko, R. Velarde, and D. Tang, (Expert: M. Wicksten?)
- Brachiopoda: M. Lilly, W. Enright, and D. Pasko
- Calcarea/Silicea: D. Cadien, B. Haggin, M. Lilly, and N. Haring
- Chordata: M. Lilly, D. Pasko (Expert: Gretchen Lambert ?)
- Cnidaria: T. Phillips, D. Cadien, and D. Pasko
- Echinodermata: M. Lilly, E. Oderlin, T. Phillips, and D. Cadien (Expert: R. Mooi? and G. Hendler?)
- Echiura: B. Haggin and W. Enright
- Bryozoa: D. Cadien and C. Paquette
- Entoprocta: K. Barwick
- Kinorhynca: K. Barwick and N. Haring
- Mollusca: K. Barwick, W. Enright, G. Lyon, R. Velarde, M. Lilly, and T. Phillips (Expert: P. V. Scott?)
- Nematoda: W. Enright and L. Lovell [Editor's note: With tongue placed firmly in cheek]
- Nemertea: B. Haggin, M. Lilly, T. Phillips, and D. Pasko
- Phoronida: W. Enright and M. Lilly
- Platyhelminthes: T. Phillips and L. Harris
- Sipuncula: W. Enright, M. Lilly, and D. Pasko



Each category of responsibility included at least one person listed as a primary (the first person in each list above) who will be responsible for submitting a final change as well as submitting major changes to the full committee (such as whether or not the Sipuncula should be included in Annelids).

Each member of a working group will have responsibility for helping search out new literature and recommend changes to the listed literature governing the organization of a particular phylum. They will send new literature, etc. to others in their working group, as well as suggest changes to the list for the Phylum.

We discussed how a large number of in-house provisional species end up on the On Hold listing, since many of these provisionals have not been widely distributed. It turns out that Don and Larry add species reported in Bight projects and Ron reports City of San Diego provisionals if they were reported as part of their NPDES program, even if they are only reported internally (i.e., in-house). The current On Hold list has 188 taxa listed.

Wendy proposed that we create an “Orphaned” tab for the purposes of cleaning up the On Hold listing. This tab/listing would include those provisional names that have no hope of being processed further (either due to loss of specimens or loss of taxonomists). In the course of the discussion we realized that one of the first items for SLRC might be a review of the On Hold list for those taxa that should be removed and designated as “Obsolete” so that we do not lose their value as part of the historical metadata.

Brent also raised the question about whether or not resolution of provisional species should be addressed via the SLRC. The basic response was yes, the SLRC should address provisional taxa and make an effort to press the originating authors to publish a final voucher sheet.

We then discussed research strategies that Don and others use to keep current on taxonomic literature. Kelvin has access to Current Contents through OCS D’s subscription and has a search string that targets taxonomic literature. He then sends out literature requests with about a 75% return rate.

Don has a series of websites that he goes to regularly for pulling literature (listing provided below). He uses WoRMS for getting new literature and finding newly reported species and/or species synonymies. For example, for Ed 11 he did a line-by-line comparison of differences between WoRMS and SCAMIT, and then took account of their referenced literature. This led to a discussion that WoRMS has a mechanism for automated comparisons, and Wendy suggested that Nick Haring may have a script for comparing WoRMS to the SCAMIT listing and the City of San Diego species listing.

Don also uses Google Scholar. He mentioned that you can use parentheses to limit the search string, and limit those records to literature titles, not titles listed in the bibliographies of published literature. It can be set up for quasi-automation. Google doesn’t handle long search strings well, however.



Additionally, Don uses Ingenta Connect ([www.ingentaconnect.com](http://www.ingentaconnect.com)) which has repositories of a number of journal back issues. Brent interjected that WoRMS authors/contributors have also been responsive to queries regarding changes and updates.

Larry stated that he uses Research Gate. One must first set-up a user-profile, but it is a very useful tool. Many authors post their papers on Research Gate for free to share material with other researchers. Tony added that you can “follow” a specific author in Research Gate. Tony has had great success on this site and looks at his research interests quarterly.

Tony mentioned Biodiversity Heritage Library (BHL) for the older literature, and Kelvin interjected that you can request material not on BHL to be added. BHL will find the requested material, scan it and post it to their website.

Brent found that Academia ([www.academia.edu](http://www.academia.edu)) is similar to Research Gate.

Don mentioned the Smithsonian also has a vast resource of literature. They provide exportable pdf files of such valuable literature as The Galathea Reports, Danish Ingolf, and Challenger Reports.

Leslie added that when using Google Scholar, there is a small tab on the left side of the page where you can add “alerts” for the species that you’ve been recently searching. Leslie also has access to the USC library that allows her to search specific journals in pdf form.

As lunch neared, we quickly addressed the completion schedule. Larry suggested that we meet every 3 months, and everyone agreed. So the next meeting would be scheduled near the end of the each month in January, April, and June 2017 at SCCWRP.

After lunch we addressed the second half of Kelvin’s agenda: The Future Priorities of the SLRC. It was agreed that a database tool is needed to make future updates easier and more efficient. In order to define what will be required of a future database tool we began by identifying the end users and their requirements. We identified three groups: The committee itself, the general membership, and the participating agencies. Wendy recorded our decision on the whiteboard and has transcribed them below.

**SLRC needs:**

- I. Currently accepted species list (This is the big one)
  - A. This includes all valid species names, authorities, taxonomic hierarchy, synonyms, and accurate Front Matter
- II. Proposed changes to both the Species List and the front matter (Emend List) including:
  - A. Type of change (Insert, Delete, Split, Merge, Reorder, Orthography or similar minor modification)



- B. Flags for disposition (Hold, Proposed, Non-controversial)
- C. Historic changes and associated metadata
  - 1. What changed
  - 2. Why
  - 3. When
- III. “Orphaned” taxa
  - A. Old provisional species with no hope of development (missing specimens, etc.)
- IV. Version control
  - A. Maintain July 1 publication

**For SCAMIT and its members:**

- I. PDF of SLRC item I. (above)
- II. Updated Toolbox names and hierarchy
- III. Species page update
  - A. Linkage to Toolbox
  - B. Distribution/occurrence data (map)
  - C. Photos
- IV. Literature linkage
  - A. Part of the toolbox/species list
  - B. Questions regarding copyright, etc. (to be addressed at December, 2016 meeting with Dean Pentcheff)

**For Agencies and Consulting Laboratories:**

- I. CSV (or other format) flat files of SLRC item I. (above) excluding Front Matter
- II. p-code updates feeding into BRI, ITI, SQO, and other indices
- III. Web app for BRI calculation
- IV. The ability to revert to other versions of the Species List (older or newer) for their own work though one version may have been set as the standard for multi-year projects such as Regional Bight Surveys

The next topic was how we will be able to accomplish these goals. It was noted that this has eluded us in the past. The most fully realized tool was developed by Shelly Moore at SCCWRP but was dropped due to funding issues. However, Wendy noted that that work could be incorporated in future plans so as to jumpstart the process.



We agreed that we need to develop a detailed scope of work (SOW) in order to not only secure funding, but to get the product that we want within the constraints of time and money. Brent Haggin suggested that the SOW could be used to submit a request for proposal (RFP) that in turn could be used to develop the specifications for the final product that we would then put out to bid. Kelvin suggested that the entire SLRC need not be involved in this process; a smaller subcommittee could be formed. While there was general agreement the formation of said committee was tabled for our next meeting.

Kelvin announced that OCSD has pledged \$4000 to the effort. President L. Lovell said that SCAMIT would commit \$5000 to the project and still retains \$3500 from OCSD's earlier contributions. Other potential donors include: large and small POTWs, private environmental consulting firms, state and federal regulators, etc. Larry pointed out that past attempts had been unsuccessful but the effort might gain more traction if elements, such as BRI p-cope updates, are included in the final proposal. In that vein, Kelvin asked attendees to talk to their database managers to gauge their level of interest and their needs.

Before adjourning, Kelvin reviewed action items.

- SLRC members with particular expertise will share links and other information about literature research methods via the list server
- The Chair will schedule and organize the next meeting in late January, 2017
- The Chair, with the help of Secretary and others, will publish the minutes for review
- Wendy will transcribe the information gathered on the whiteboard during the meeting; (done and included here)
- The Chair will post the list of assignments; (done)
- Don, with Larry, Kelvin, and Brent's help will prepare and distribute the mock-up and emend list
- The Chair will confirm that those who have been volunteered are indeed volunteering
- SLRC members will talk to their data managers to gauge their level of interest and need for a database tool or related products



Towards the end of the meeting, Don provided a set of links that he often refers to when checking for recent literature and species of interest.

<http://digitallibrary.amnh.org/>

<http://www.invemar.org.co/boletin/>

<http://archimer.ifremer.fr/>

<http://www.biodiversitylibrary.org/>

<http://www.journals.uchicago.edu/loi/bbl>

[http://ci.nii.ac.jp/organ/journal/INT1000001582\\_en.html](http://ci.nii.ac.jp/organ/journal/INT1000001582_en.html)

<http://www.ctoz.nl/>

<https://decapoda.nhm.org/cgi-bin/mason.cgi/references/newpdfs.html>

[http://www.zmuc.dk/InverWeb/Galathea/Galathea\\_p5.html](http://www.zmuc.dk/InverWeb/Galathea/Galathea_p5.html)

<http://www.ingentaconnect.com/content/umrsmas/bullmar>

<http://www.int-res.com/journals/meps/meps-home/>

[https://www.mba.ac.uk/nmb1/old\\_jmba/vol20/vol20no1.htm](https://www.mba.ac.uk/nmb1/old_jmba/vol20/vol20no1.htm)

<http://repository.kulib.kyoto-u.ac.jp/dspace/?locale=en>

<http://publications.cm-funchal.pt/>

[http://www.mcz.harvard.edu/Publications/search\\_pubs.html?higher\\_taxon=Mollusca](http://www.mcz.harvard.edu/Publications/search_pubs.html?higher_taxon=Mollusca)

<http://www.repository.naturalis.nl/cgi/b/bib/bib-idx?c=naturalis;tpl=browse.tpl>

<http://scholarspace.manoa.hawaii.edu/handle/10125/364>

<http://pensoft.net/>

<http://science.peru.edu/COPA/>

<http://www.sil.si.edu/eresources/silpurl.cfm?purl=0096-3801>

<http://www.ajarchive.org/>

<http://www.scielo.br/?lng=pt>

<https://repository.si.edu/handle/10088/796>

<http://www.crustacea.org.br/?id=3&subid=1>

<http://paleopolis.rediris.es/benthos/REF/som/Tethys-som.html>



<http://isopods.nhm.org/databases/references/>

<http://www.pfeil-verlag.de/04biol/d8391.html>

<http://link.springer.com/journal/227>

<http://www.lovelab.id.ucsb.edu/>

<http://qr7ug7ul2q.search.serialssolutions.com/>

[http://www.sil.si.edu/DigitalCollections/usexex/navigation/ScientificText/USExEx19\\_20select.cfm](http://www.sil.si.edu/DigitalCollections/usexex/navigation/ScientificText/USExEx19_20select.cfm)

[https://archive.org/details/university\\_of\\_toronto](https://archive.org/details/university_of_toronto)

<http://www.biodiversitylibrary.org/>



**SCAMIT Treasury Summary  
2015 – 2016**

Below is the treasurer’s report for 2015-2016. Once again we are **not** raising dues thanks to so much continued support from all of you! We have over 140 members across the US and worldwide. SCAMIT did not award any publication grants this past year but we have funds to do so. Please help get the word out that these funds are available. As stipulated in our grant policy, we have **\$6,609.50** or 25% of our operating budget of \$26,438.01, which does not include database funds, available for publication grants this year. The taxonomic database support tools on our website were maintained by our webmaster. The database expense totaled \$675.00. We have been doing a great job catching up on newsletter publications; therefore, that expense is higher than in past years, totaling \$1,255.73.

**Account Balances (as of 4/30/16)**

**Holdings**

Checking	\$ 16,412.33
(deposited Cash account (\$207.93) into Checking)	
Certificate of Deposit	\$ 10,025.68
Database Fund	<u>\$ 3,267.05</u>
<b>Total</b>	<b>\$ 29,705.06</b>

**Income**

2015 Membership dues	\$ 1,960.00
Interest from CD	<u>\$ 6.78</u>
<b>Total</b>	<b>\$ 1,966.78</b>



**Expenses (General Account)**

Meeting refreshment	\$ 282.85
Annual Luncheon	\$ 160.00
2015 PO Box	\$ 128.00
Website Content & Design	\$ 675.00
Newsletters (printing/postage)	\$ 1,255.73
2015 WSM Registration Fee (L. Lovell)	<u>\$ 255.00</u>
<b>Total</b>	<b>\$ 2,756.58</b>



Please visit the SCAMIT Website at: [www.scamit.org](http://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 \$15 for an electronic copy of the newsletter, available via the web site at [www.scamit.org](http://www.scamit.org), and \$30 to receive a printed copy via USPS. Institutional membership, which includes a mailed printed copy, is \$60. All correspondences can be sent to the Secretary at the email address above or to:

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**S**OUTHERN  
**C**ALIFORNIA  
**A**SSOCIATION OF  
**M**ARINE  
**I**NVERTEBRATE  
**T**AXONOMISTS



November–December, 2016

SCAMIT Newsletter

Vol. 35 No. 4



*Turbonilla* sp 6  
 Phillips 2016



*Turbonilla chocolata*  
 (Carpenter 1864)  
 Photo by T. Phillips



*Turbonilla tridentata*  
 (Carpenter 1864)  
 Photo by T. Phillips

**This Issue**

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

**Publication Date: June 2017**

**9 NOVEMBER 2016, PYRAMIDELLIDAE: *TURBONILLA*, OCSO; T. PHILLIPS, LEAD**

**Attendees:** Larry Lovell, Don Cadien (LACSD); Kelvin Barwick, Mike McCarthy, Ben Ferraro (OCSO); Wendy Enright, Megan Lilly, Ron Velarde (CSD); Tony Phillips, Dean Pasko (Private Consultants)

**Remote Attendees:** Angela Eagleston (WADOE); Heather Peterson (SFPUC)

**Business:** [no minutes due to computer problems]

<p>UPCOMING MEETINGS</p> <p>Visit the SCAMIT website at: <a href="http://www.scamit.org">www.scamit.org</a> for the latest upcoming meetings announcements.</p>
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The next meeting will be at SCCWRP to discuss SCAMIT's digital footprint and how to move forward with remote access to meetings, sharing digital materials (photos, libraries), and updating the SCAMIT tools.

Tony started off the meeting on Turbonillids by acknowledging that he was not “the” expert in Pyramidellids. His presentation was the result of 30+ years of observations of *Turbonilla* recorded from Hyperion's (CLA-EMD) monitoring programs and various consulting projects. At an October 2010 SCAMIT meeting, Pat LaFollette encouraged Tony and others to take detailed photographs and share them with each other. He also suggested that we use Abbott 1974 as our primary source. Tony provided a slide of the subgenera from Oldroyd (1927) and Abbott (1974) that summarized the current status of the genera (valid, transferred to other genera or subfamilies, etc.). He presented a second listing of the twenty-three genera currently listed in WoRMS for the Subfamily Turbonillinae. He commented that the genus *Turbonilla* has >1,000 species, while others have only one! The subfamily Turbonillinae has approximately 1,400 species.

The problem we face is that many species were described from dead specimens, which will forever make the issue of species resolution difficult. Consequently, Peñas & Rolán (2010), Cadien (2010: SCAMIT List), and Lygre et al (2011) have decided to leave all species listed within *Turbonilla*, since the generic divisions are confused and not fully resolved.

Peñas and Rolán (2010) provided a list of seven character states to help distinguish species and form. They are primarily limited to shell morphology.

1. Species without spiral sculpture and with axial ribs extending down to the base.
2. Species without spiral sculpture and with axial ribs interrupted suddenly at the periphery of the last whorl.
3. Species without spiral sculpture and with axial ribs on the last whorl which become attenuated towards the base until they disappear.
4. Species with spiral sculpture restricted to the intervals between the axial ribs and not present on the complete whorl.
5. Species with spiral sculpture restricted to the intervals between the axial ribs, present on the complete whorl, and with axial ribs extending down to the base.
6. Species with spiral sculpture restricted to the intervals between the axial ribs, present on the complete whorl, and with axial ribs that are suddenly interrupted on the periphery of the last whorl.
7. Species with spiral sculpture visible both in the intervals and on the ribs.



Tony then provided his list of 12 character states used to separate taxa for the current review. His presentation includes figures and photos that demonstrate each of the character states listed below. It is posted to the SCAMIT website and can be found here:

<https://www.scamit.org/tools/toolbox-new/MOLLUSCA/Subphylum%20Conchifera/Class%20Gastropoda/Subclass%20Orthogastropoda/Superorder%20Heterobranchia/Order%20%22Lower%20Heterobranchia%22/Superfamily%20Pyramidelloidea/Family%20Pyramidellidae/Subfamily%20Turbonillinae/Turbonilla%20SCB%202016.pdf>

1. Protoconch (if present) – Tony provided illustrations from Peñas & Rolán (2010) showing the angle of the protoconch and the orientation of the termination point. Tony has found that all the specimens he has examined are represented by Figure A in the publication.
2. Whorls rounded vs. shouldered (examine the distal end of the whorl).
3. Axial ribs without spiral sculpture.
4. Axial ribs with spiral sculpture in intervals.
5. Axial ribs stop at periphery of last whorl.
6. Axial ribs extend beyond periphery of last whorl towards base (at aperture).
7. Spiral sculpture restricted to intervals between the axial ribs.
8. Spiral sculpture visible both in the intervals and on the ribs.
9. Spiral striations on whorls vs. spiral sculpture absent. Note that there are small bands spiraling through the whorls.
10. With strong axial ribs and spiral sculpture, the junction of which is usually nodulose (i.e., nodules present at the intersection of the axial rib and spiral (transverse) sculpture or ridge).
11. Spiral striations present vs. absent on base of last whorl. Note that the base is the area where the first whorl originates, near the aperture.
12. Inner lip with plications (teeth) vs. inner lip smooth.

Tony then presented species collected from the Southern California Bight (SCB). All speciated *Turbonilla* were identified by Pat La Follette after reviewing an earlier version of this presentation. All of the included provisional taxa are based on the above 12 character states as of 2016 (i.e., authority as Phillips 2016). He included a listing of the SCB species grouped according to Abbott (1974) usage of *Bartschella*, *Chemnitzia*, *Momula*, *Pyrgiscus*, and *Pyrgolampros*.

Following is a listing of the species included in Tony's presentation, augmented with a few notes on whatever commentary could be captured. Each species was represented by one or more slides with pictures, a list of the 12 character states used to distinguish them, range of collections within the SCB, and depths collected.



*Bartschella* Iredale 1917, according to Abbott (1974) are “*Turbonillas* with well-rounded whorls, marked with strong axial ribs and strong spiral cords, the junction of which are usually subnodulose.”

- *Turbonilla laminata* (Carpenter 1864) = *Turbonilla* sp Hyp4 1998; ?*Turbonilla andrewsi* MBC 2002; *Turbonilla* sp F (Palmo) MBC 1971. The latter picture (sp F) caused Don to ask if the orientation of the axial ribbing made a difference (e.g., vertical, obliquely angled, etc.). When comparing the three provisional species, Tony found that the number of axial ribs was the same, the number of whorls were the same, and the number of the spiral ribs on the base were the same (6–7).
- *Turbonilla tenuicula* (Gould 1853) = *Turbonilla* sp DC2 Phillips 2015; *T. tenuicula* MBC 1971.
- *Turbonilla* sp 13 = *Turbonilla* sp K MBC 1973. Don noted that the whorls expand differentially from distal to proximal: the first couple expand in steps, but the few proximal whorls are little expanded.

*Chemnitzia* d’Orbigny 1840, according to Abbott (1974) are “*Turbonillas* without spiral sculpturing, having prominent axial ribs which fuse or terminate at the periphery. Intercostal areas sunken. Base smooth.”

- *Turbonilla santarosana* (D & B 1909) = *Turbonilla* sp SD1 Barwick 1995; *Turbonilla* sp Hyp2 Phillips 1996. This is one of the top two most common species in SCB monitoring.
- *Turbonilla* sp 1 Phillips 2016 = *Turbonilla* sp Hyp3 Phillips 1996. It has more strongly produced axial ribs, without basal striations. The axial ribs have a deep channel between them which cause them to stand out. Megan stated she might have lumped this species with *T. santarosana* due to similarities between the two. Don noted that the *Turbonilla* sp 1 aperture is subquadrate relative to the more rounded aperture in *T. santarosana*.
- *Turbonilla* sp 2 Phillips 2016 = *Turbonilla* sp Hyp8 Phillips 2011. *Turbonilla* sp 2 has a small rounded aperture, and more compacted axial ribs on a more elongate, narrow shell.

*Momula* A. Adams 1864. According to Dall and Bartsch (1909) “*Turbonillas* having axial ribs and deeply incised spiral lines; also irregularly disposed varices on the outer surface, which usually mark internal lirations on the outer lip, or internal lirations of the outer lip only. Sculpture never nodulose.”

- *Turbonilla tridentata* (Carpenter 1864) = *Turbonilla* sp DCE1 Phillips 2015.
- *Turbonilla* sp 12 Phillips 2016 = *Mormula* sp 2 Phillips 2015.

*Pyrgiscus* Philippi 1841. According to Abbott (1974) “*Turbonillas* having strong spiral incised grooves as well as axial ribs. Summits of the whorls not strongly shouldered.”

- *Turbonilla signae* (D & B 1909) = *Turbonilla* (*Pyrgiscus*) sp Hyp2 Phillips 1996; *Turbonilla* sp M MBC 1979. Tony noted that there is orange pigmentation within the slits. A notable character is the 19–20 deep slits per intercostal area, many more than other species.
- *Turbonilla weldi* (D & B 1909) = *Turbonilla* sp GOL1 Phillips 2014. This species has a high number of axial ribs (24).



- *Turbonilla* sp A SCAMIT 1988. Spiral striations along whorl, but not on the base. A very common species in SCB, and the first SCAMIT provisional.
- *Turbonilla* sp 3 Phillips 2016 = *Turbonilla* (*Pyrgiscus*) sp Hyp4 Phillips 2006. This species has retracted axial ribs (angled back) vs. protracted (angled forward), relative to angle of aperture.
- *Turbonilla* sp 4 Phillips 2016 = *Turbonilla* (*Pyrgiscus*) sp Hyp3 Phillips 2005.
- *Turbonilla* sp 5 Phillips 2016 = *Turbonilla* sp OC1 Phillips 2012. Elongate narrow species with spiral slits (19–20) between axial ribs.
- *Turbonilla* sp 6 Phillips 2016 = *Turbonilla* sp Hyp7 Phillips 2004. Retracted axial ribs with rounded whorls, and “painted” slits that vary in width without consistency. Dominant species in Avila Beach area.
- *Turbonilla* sp 7 Phillips 2016 = *Turbonilla* (*Pyrgolampros*) sp Hyp1 Phillips 2004.
- *Turbonilla* sp 11 Phillips 2016 = *Turbonilla* sp I MBC 1971. (From only one individual) Has slightly shouldered whorls, with 28-30 strong axial ribs with 12-13 sunken spiral slits per intercostal area.

*Pyrgolampros* Sacco 1892. According to Abbott (1974), “Brown to yellow *Turbonillas* with low, broad axial ribs that gradually disappear over the periphery and base of the last whorl. Spiral striations present. Surface covered with a thin periostracum. Intercostal spaces not grooved out or sunken.”

- *Turbonilla* sp 8 Phillips 2016 = *Turbonilla* sp SMB5 Phillips 2010. Strong axial ribs but without spiral ribs between them; instead, spiral striations are present as thin bands of color difference, not physical rib or structure.
- *Turbonilla* sp 9 Phillips 2016 = *Turbonilla* sp Mont2 Phillips 2014, with very unique aperture that is angled and rounded simultaneously. From Montecito, near Santa Barbara.
- *Turbonilla* sp 10 Phillips 2016 = *Turbonilla* sp Mont1 Phillips 2014. No spiral striations on base, though they are present on the whorls.
- *Turbonilla chocolata* (Carpenter 1864) = *Turbonilla* sp LAH1 Phillips 2010; *Turbonilla* sp SMB1 2001 (in part); and *Turbonilla* sp O MBC 1982. Tony’s pictures represent what he might call “form A” of *T. chocolata*. The specimens of *Turbonilla* sp SMB1 and *Turbonilla* sp L MBC represent Tony’s “form B” which has spiral striations on the base, where form A does not. *Turbonilla* sp SMB4 represents Tony’s “form C” with weak axial ribbing. Wendy noted that *Turbonilla* sp SD2 was also dropped into *T. chocolata*. This raised questions about where the synonymy of *Turbonilla* sp SD2 came from, but this had been documented at the 2010 SCAMIT meeting.

Tony explained that he begins counting the ribs from the top of the aperture, moving clockwise to the point at which the plane of the aperture comes in view again. When the aperture is broken, count the ribs between the two outer ribs when the specimen is lying flat and double that number to obtain a fairly accurate estimate. Tony clarified that the rib count always comes from the last whorl, nearest the aperture.

Kelvin suggested that a table of the characters might prove easier for everyone to follow when trying to perform their identifications. Megan offered to try to tabulate the characters Tony



provided to make it an easier ID process. [Ed's note: Tony has since started work on this table, letting Megan "off the hook"].

Don noted that the list of 12 characters is immensely valuable, and a standard that everyone can use to compare their specimens. Tony then explained his procedure for making his identifications. He first takes stake of the aperture and then turns the specimen over to look at the backside. He then takes a close look at ribs or striations, and then moves on to focus on the shoulder - is it rounded, or grooved, etc.

The group noted one of the significant issues still to be tackled is the variation that exists and how to note these variations.

Not all the species that Tony presented were generated from live material, some represented dead specimens. Tony stated that those species represented by only dead specimens had been found in two or more samples. He also noted that he has several additional species that he did not present because they are represented by only one specimen and he feels until more specimens can be found (hopefully alive), he will not include them on his list. He added that nearly half of the species in Peñas & Rolán (2010) were described from dead specimens.

Tony's breath of experience allowed him to suggest that *Turbonilla santarosana*, *Turbonilla* sp A, and *T. chocolata* are the three most common species up and down the SCB coast.

Larry noted that there are 15 taxa in the SCAMIT Species List, some of which were not covered by Tony, such as *Turbonilla diegensis*, *T. raymondi*, and *T. regina*. It is thought some may have come from past Bight surveys, or represent legacy reports, specifically from early surveys conducted by MBC, and should be reviewed.

Tony finished his presentation stating that he hoped when the McLean volume comes out, in the Pyramidellid section (in particular the Turbonillinae), all of the provisional species in this presentation will be speciated by Pat La Follette.

After lunch Kelvin lead us on a brief side-excursion into bivalves, Nuculanids, prior to continuing on the *Turbonilla* theme. He and Tony reviewed specimens from the Catalina Sea Ranch, an area off LA Harbor that is designated for aquaculture, and which also borders the OCSD monitoring program. The specimens looked like *Nuculana taphria* except for the presence of forward and aft bumps on either side of the umbo. In addition, Tony noted that the posterior section of the shell has ribbing, which is typically absent in *N. taphria*. Kelvin showed specimens from Orange County, which did not show the nodes/bumps. City of San Diego mentioned that some of its specimens also showed the nodes. Kelvin then presented a group of eight specimens in a growth series from the City of LA, some of which possessed the nodes and others not. Some present felt the above-mentioned features could be considered acceptable variations within a species.

And then it was back to *Turbonilla*. The group migrated into the lab and reviewed specimens from the City of San Diego and OCSD. Kelvin took digital images of all the specimens that Tony will incorporate into his presentation once confirmation of each species, and the corresponding digital pictures taken for each, is made. The first was *Turbonilla* sp SD2 from the CSD voucher collection, 51m station. Kelvin, Megan, Ron, and Tony confirmed that the CSD voucher does seem to match *T. chocolata* (form A) with spiral striations from the axial ribbing through the inner space.



We then looked at several specimens of ?*Turbonilla* sp A from OCSD's monitoring program brought by Mike McCarthy. The spiral striations did not extend to the top of the axial rib/were not continuous so therefore they could not be *Turbonilla* sp A. There were 6 spiral ribs in two of the specimens.

Kelvin showed specimens of *Turbonilla* sp SD5, which look like *Turbonilla* sp A, just a little smaller and fatter, with approximately 20 axial ribs and spiral sculpturing. There are about 9 spiral slits that extend onto the axial ribs as well as the inner space between ribs. Tony did not recognize it from any of the work he prepared. He believes it to be new and a part of the *Pyrgiscus* group. Another, smaller specimen was examined and appeared to be the same. Review upon drying confirmed the specimen as *Turbonilla* sp SD5.

*Turbonilla* sp SD6 is an elongated, narrow species with a correspondingly elongate, narrow aperture. It is very similar to Tony's *Turbonilla* sp 5, but differs in the structure of the spiral slits, and the fact that the axial ribs stop abruptly at the base with a distinct border, creating a smooth base. The spiral slits also go up the sides of the axial ribs, but do not extend on to the top of the ribs. Some concern began however, when a pair of specimens from deeper water (100m) looked more similar to *Turbonilla* sp 5 because the axial ribs extended weakly onto the base, as they do in *Turbonilla* sp 5. The first specimen examined was collected in shallow water (27m) and had a smooth base as described. The two lots appeared to have differences that were distinct. To confirm our prior observations we viewed another deepwater specimen of *Turbonilla* sp SD6. This particular specimen had the axial ribs continue to the base weakly as in the original deepwater specimens. Bottom line, there could be some issue with *Turbonilla* sp SD6.

We then brought out a specimen that Kelvin had identified as *Turbonilla* sp SD7. This species is chestnut brown with white stripes, has 24-26 axial ribs (with one specimen having up to 34), has thickened spiral ribs (7 per whorl) with broad, deep pits between them, plus a subsutural cord running between body whorls, less pronounced shoulders, and is more confluent from whorl to whorl; It also has about 6–7 spiral ribs on the base. A third lot of *Turbonilla* sp SD7 was also examined. These specimens were a bit more degraded, such that the axial ribs had been worn down. This is definitely not *T. signae* because of the absence of produced axial ribs. Both *Turbonilla* sp SD5 and SD7 are from the South Bay Ocean Outfall monitoring program in shallow sandy sediments.

*Turbonilla* sp SD8 was next, also with deep axial ribs (12) and inflated shoulders without nodules from 116m station. The specimen was small with 5 complete whorls, and was white, without color. So far, we've decided that SD7, 8, and 9 are all new, and were not represented in Tony's presentation.

We then examined a dried specimen of *Turbonilla* sp SD8 (with a second label of *Turbonilla* sp C). Tony postulated that it could be *T. laminata*. The specimen had 22–24 axial ribs, and brown banding (not white like the previous specimen). There were spiral punctations on the base.

A voucher of *Turbonilla* sp SD9 was brought by Kelvin. It is a small, fat, round turbonillid, with approximately 14 deep, protracted, axial ribs on inflated (convex) whorls. The specimens were generally white, not dark, from about 162m. This is a one-time record with no other specimens having been recorded.

With that we called it a day and went our various ways to consider *Turbonilla*.



**12 DECEMBER 2016, SCAMIT'S DIGITAL FOOTPRINT, SCCWRP; D. PENTCHEFF, LEAD**

**Attendees:** Kelvin Barwick, Ben Ferraro, Rob Gamber, Mike McCarthy (OCSD); Larry Lovell, Brent Haggin, Bill Powers (LACSD); Ron Velarde, Wendy Enright, Megan Lilly (CSD); Greg Lyon (CLA-EMD); Dean Pentcheff (NHMLAC); Tony Phillips, Dean Pasko (Private Consultants)

Larry opened with a short request for officer nominations, specifically the President, and Dean Pasko announced that he may not be running for Secretary next year. Dean's decision is dependent on how 2017 shapes up with other commitments. Larry then announced upcoming SCAMIT meetings and Wendy announced the upcoming WSM meetings in 2017 and 2018, the latter of which may be held in Hawaii! The 2019 International Polychaete meeting will be held at the Queen Mary in Long Beach and the organizing committee consists of several SCAMIT officers and members including, Larry Lovell, Leslie Harris, Don Reish, and Kirk Fitzhugh, among others. Brent added that next WSN will be meeting in Pasadena in November 2017.

Kelvin announced a new book - *Marine Invertebrates of Northwest Mexico - Invertebrados Marinos del Noroeste del Mexico* by Bertsch and Rosas (2016).

Larry then turned over the meeting to our Webmaster and digital consultant, Dean Pentcheff, to discuss options for SCAMIT's digital footprint: access to digital taxonomic literature, the SCAMIT website look and content, a digital Species List management system, access to WiFi during SCAMIT meetings, and options for digital microscopy display during SCAMIT workshops.

Topping the list for items to be discussed was how SCAMIT should deal with digital taxonomic literature. This item came to light during a recent SCAMIT Species List Review Committee (SLRC) meeting and, in part, as a result of several SCAMIT members providing taxonomy training and sharing PDF files of their taxonomic literature collections. Members often share PDFs, and other documents by thumb drives, etc., and we realized that perhaps there was a better way. Dean suggested several options for sharing these materials:

- Custom-built like the NHM's Systematic Publications website. Not recommended because of intense labor involved and ongoing maintenance in perpetuity.
- Mendeley, a public reference/PDF manager, is designed as a sharing site. However, Dean did not recommend Mendeley because it is owned by a profit-oriented company not too interested in intellectual sharing.
- Zotero is a public reference/PDF manager. Some of the benefits include:
  - a. Information can be shared and made completely public or shared to restrictive groups.
  - b. You create your own grouping of publications.
  - c. It is compatible with EndNote (import and export of references) and plays well with other systems such as Word.
  - d. It has a Dropbox-like back end from which it operates. Like Dropbox it does store the information to your computer hard drive.
  - e. It has a web-interface as well as a stand-alone application.



- f. Has the ability to pull in citation information and PDFs to the “library”.
  - g. Also can operate as a library manager, so that you can make notes on each entry, share a library subset (without creating duplicates of the individual references), etc.
  - h. You don’t need a “manager” per se, but there are different levels of privileges that may be assigned to individuals within a group if necessary.
- EndNote is a private system that has the ability to share libraries on the back-end, in a Dropbox-like system.

The Museum’s in-house system was built before Zotero existed, but has since evolved to have more elaborate and specialized requirements.

Zotero can take existing PDFs, if optical character recognition (OCR) capable, and can read the file to create the metadata (i.e., you can drop in a PDF and tell Zotero to grab and enter the bibliographic information from the web).

Dean thought that the system seems to be stable and steady and funded for continued functioning. He has been using it for about 5 years as the NHMLAC’s Marine Biodiversity Center reference sharing system, and it is still running without issue. Costs are free for the first 5GB, but you do have to pay a nominal fee for additional storage.

Kelvin raised the question of copyright issues. Because we often share information informally in ways that don’t violate copyright, would a more broadly distributed sharing generate concern with the issue of copyright?

The Museum looked at the “Fair Use” clauses of U.S. copyright law with respect to establishing their publicly-available database of taxonomic PDFs. The law includes 4 criteria:

- The amount and/or portion of the material: basically, are you using the full journal or just a portion of the journal, i.e., an article.
- Usage: commercial vs. academic.
- Type of work: copyright is more stringently applied for creative work, while compilations of data or factual reports of observation are considered less deserving of protection.
- Economic damage to originator: is there economic damage to the originator that would result from the copying.

The Museum’s legal counsel looked at these issues and, with an admittedly liberal interpretation, decided that the museum was not violating copyright law by sharing the decapod taxonomic literature they had compiled for their specific project. Consequently, since SCAMIT would be doing something similar it also would likely not be violating the broad interpretation of copyright law — this sharing would be allowable under Fair Use.

With respect to operation, Zotero works fine as a stand-alone program, as well as via web-based access. It seems to have been initially designed to operate as a Firefox plug-in, and works very well with Firefox (but also works with Chrome and Safari).



With respect to input, acquisition, and processing of PDFs, those files that are “born-digital” (PDF) are easy because they are already machine-readable (no OCR is needed). However, older publications that have a paper origin require additional work; scanning, OCR, etc.

The Museum has found the following system works well for processing their hardcopy documents: They scan text and line drawings at 400 dpi, and greyscale and color illustrations at 600 dpi. For their purposes, they found Abbyy FineReader 12 Professional to be the best OCR reader available. They perform OCR on the complete 400 dpi in black and white (B&W), which is great for text and line drawings. Any color plates are then scanned separately and the individual pages from the original B&W scan replaced. Dean noted that the Museum is willing to help and train if anyone needs a little assistance to get started. The guidelines are also documented online at:

<http://research.nhm.org/mbc/protocols/scanning/>

A side discussion of the use of Adobe Acrobat vs. other OCR readers lead to an understanding that Adobe is not that great of an OCR system relative to, for example, Abbyy FineReader. The latter has the ability to read a greater variety of font and character types as well as languages. In contrast, Adobe Acrobat reads the more recent and common digital fonts well, but does not perform as well on the older fonts commonly encountered in historic taxonomic literature.

Kelvin asked what is it that SCAMIT is trying to do with this effort? Was it to set groups of references prior to a meeting? Was it to link species to a reference, or set of references? Could it be used to make the SCAMIT Species List more dynamic and valuable? So, could the Zotero database be set-up to make a link directly to a specific publication? I [the Secretary] think the most basic usage was to simply share literature without having to use thumb drives. Zotero does have the ability to provide links to a specific paper, but that issue is subject to problems if one person edits the link and/or the link disappears as a result.

As an Action Item, we suggest that each of the agencies go back to their IT department to ask:

- Can we download Zotero to our computers?
- Are there storage issues?
- Can we run Firefox and get a plug-in for Firefox to allow usage of Zotero?

There was some discussion about how to begin. Dean recommended that if we are trying to create a communal bibliographic library, to start with the largest, most complete bibliographies possible. Because of the problem of reconciling near-duplicate entries, merging in other large bibliographic collections is very time-consuming.

With some reluctance by the Chair, the effort to deal with this question was placed with the SLRC. Some of the resultant action items to be completed prior to the next SLRC meeting in January 2017 include (1) Dean Pasko will perform a test load of his literature file to see how the metadata is generated on bulk uploads; and (2) each member of the SLRC committee will talk to their IT departments about the questions above. They will take this information into consideration for developing a plan moving forward.

SCAMIT Website Content was the next topic for discussion. Dean started with a list of all the things on the SCAMIT website, which included a lot! Dean then suggested that some items might be re-grouped for simplicity, while others might be deleted. Among the things to delete - the



toolbox reminders, the links page, the Morphbank Workbooks, SCAMIT/SAFIT workshop (note that these will be sidelined to an archive section — they'll still be available if someone needs them one day).

The new suggested structure includes a Top Page (Upcoming Meetings, Meeting Calendar, Upcoming Other Meetings); Member History (First International Polychaete Day, SCAMIT History PowerPoint, Membership & History), Jobs, Grants, Newsletters, Tools (current edition of the Species List, Taxonomic Database Link, Voucher Guidelines, Taxonomic Toolbox).

Dean also talked about a general update and potentially different look to the webpage. Currently the site has a linear construction, but another option is the grid-based page design (e.g., MBARI page). The linear is a little easier for Dean to manage and change, and is more easily adapted to responsive design for use on a tablet or phone. Dean offered to mock-up a grid-based main page, followed by a linear page, for consideration by the Executive Committee.

Kelvin then suggested that SCAMIT consider moving to an on-line membership form, as well as on-line payment via something like PayPal. Those present generally agreed that this would be a good idea and Dean said that it was possible to work these items into the site going forward.

We then dove headlong into Species List management. The Taxonomic Database Tool was the starting point. It has several limitations such as being based on Edition 7, and it does not yet perfectly link out to the individual species information. It does however link to maps using what data has been entered to date.

Dean outlined what he understood to be the desires of members for List management: make the current List available online, have the ability to emend and manage the List, manage synonymies, and track its history.

Dean suggested that we disassociate the List management from the taxonomic database tool. We can always go back to link it to the database tool (or visa versa), but trying to manage the two items concurrently creates problems and has hampered progress.

After lunch we discussed the idea of how SCAMIT could provide a WiFi network to attendees separate from that of the hosting facility, since SCWRP is one of the few facilities that provides a public WiFi. Dean suggested a company called Mobilebeacon, which can provide a fee-based 4g network. Through “TechSoup”, the cost is \$18 for the unit (referred to as a “puck”) and a \$120/year subscription cost. It is based on Sprint’s cell-phone coverage. Some considerations include that coverage could be limited by Sprint’s coverage, the cell-tower availability (for example, if you’re in a basement facility such as in the museum), and a limit of 10 computers/puck. Those in attendance considered this to be a very good option for the Executive Committee to consider.

The last item for discussion was the ability to allow digital images from a microscope to be shared during SCAMIT meetings. Dean summarized that live video was not the desired outcome – too much waiting around for the operator to actually produce the desired image – but that displaying and distributing the resultant still image was the main objective. So the real purpose is to share a still image on a screen that can be viewed online. One possible solution is the software Helicon Remote by HeliconSoft in conjunction with a digital SLR camera, Dropbox, and a projector. Helicon Remote allows you to run the camera by interfacing between your camera and computer. At a relatively low cost (\$75 for the software), SCAMIT would have the ability to capture images directly from the camera to a computer and automatically post them to a Dropbox



folder where they could be immediately retrieved and viewed by those attending the meeting remotely. (Of course, that depends on Dropbox being available/permitted on the remote attendees' computers.)

Ben asked if SCAMIT had approved the membership fee increase that was discussed at the September meeting. Larry responded that we had not done so, but that the next President might take on that task. That discussion led to a search for our Bylaws on the website, only to find that they are not available on the website! After a little effort, we found several sets of ByLaws included in various NLs (e.g., the 1983, Vol. 1, No. 12). The most recent ByLaws are presented in the Vol. 22, No. 11. The original dues were \$5 in 1983 and were eventually raised to \$15 per digital subscription and \$30 for the printed version. In order for dues to be raised, 2/3 of the members who respond to a request for raising said dues, must vote “yes”.

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**Please visit the SCAMIT Website at: [www.scamit.org](http://www.scamit.org)**

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The SCAMIT newsletter is published every two months and is distributed freely to members in good standing. Membership is \$15 for an electronic copy of the newsletter, available via the web site at [www.scamit.org](http://www.scamit.org), and \$30 to receive a printed copy via USPS. Institutional membership, which includes a mailed printed copy, is \$60. All correspondences can be sent to the Secretary at the email address above or to:

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**M**ARINE  
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**T**AXONOMISTS



January–February, 2017

SCAMIT Newsletter

Vol. 35 No. 5



*Phyllodoce medipapillata*  
 Photo by L. Harris

**This Issue**

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

**Publication Date: June 2017**

**9 JANUARY 2017, SABELLIDAE, CSD; RICARDO MARTINEZ LARA, LEAD**

**Attendance:** Erin Oderlin, Greg Lyon (CLA-EMD); Kathy Langan, Allison Brownlee, Ricardo Martinez Lara, Ron Velarde, Veronica Rodriguez, Gabe Rodriguez, Matt Nelson, Maiko Kasuya (CSD); Dean Pasko (DCE); Arturo Alvarez (UABC); Angelica Zavala (MTS); Bill Furlong, Brent Haggin (LACSD); Leslie Harris (NHMLAC); Ernest Ruckman, Kelvin Barwick, Mike McCarthy (OCSD).

**Remote Attendees:** Erica Keppel (MIRL); Doug Foster (TheLab); Angela Eagleston, Dany Burgess (WADOE); Chip Barret (EcoAnalysts); Dot Norris (Consultant).

**UPCOMING MEETINGS**

Visit the SCAMIT website at: [www.scamit.org](http://www.scamit.org) for the latest upcoming meetings announcements.

The business portion of the minutes were lost due to the Secretary experiencing computer issues. Following are the minutes covering the taxonomic portion of the meeting.

Ricardo started by reviewing the general characteristics and taxonomic character states used by CSD staff to identify members of the Sabellidae. The introductory Sabellid PowerPoint was developed primarily by Kelvin Barwick, and adapted and edited by Ricardo for this meeting.

He then showed a compilation of Fitzhugh (1989) figures showing the anterior morphology of Sabellids to aid with family terminology.

At the conclusion of his introduction Ricardo went over the reasoning for the meeting. At the September 2016 meeting, Sabellids were mentioned as a polychaete family that was problematic, and Ricardo volunteered to conduct an introductory workshop-type meeting, and provide a general review of the sabellid identification materials that haven't been reviewed in a broader meeting since Dot Norris created a key.

At City of San Diego Lab, Dot's picture key to the Sabellids is still used as the primary source for identification of the common species. Ricardo spoke about San Diego trying to revise the key on four or five separate occasions. The late Rick Rowe also made an attempt, but no rendition has been found to do a better job than Dot's picture key. The limitation of the key is that it's somewhat dependent on methyl green staining, with less attention to morphology. The original key has been since modified several times, and populated with photographs in addition to drawings.

He also reviewed the history of methyl green staining pattern in the identification of Sabellidae.

Ricardo then jumped into the use of Dot's key, beginning with Page 1 which distinguishes the subfamily Fabricicinae, 3 abdominal setigers and without a branchial skeleton, from the other taxa. The absence of a branchial skeleton is recognized by the absence of multiple cells in the radioles in X-section. This subfamily is now considered outside the Sabellidae sensu, Capa et al (2014).

*Pseudofabriciicola californica* is the one common Fabriciiniid in the City of San Diego sampling programs.

The key continues on page 1 with abdominal uncini forming nearly complete cinctures with *Myxicola* which is easily recognized by a reduced collar and pointed prostomium.



SCAMIT recognizes only *Myxicola* sp because of the synonymy of some local species; *M. infundibulum* and *M. aethetica*. Leslie explained what happened with this taxon, and reminded everyone of her *Myxicola* sp A.

Finally, page 1 of the key leads in two directions: Sabellids without companion setae (page 2 and 3), or Sabellids with companion setae present, page 4.

Ricardo moved to Pg 2 of the key and noted that there were few specimens of *Fabrisabella* sp A. In contrast, *Jasmineria* sp B is fairly common, and the only local species with a caudal cirrus, combined with a high collar extending above the base of the branchiae.

*Euchone* are distinguished by the number of depression setigers in the the abdomen. Ricardo suggested that *Euchone* should be primarily identified by counting abdominal depression setigers combined with the total abdominal setiger count. Methyl green staining in the *Euchone* is not as reliable as in other Sabellids.

He then went through the various pictures of specimens from Page 2. When we got to *Euchone incolor*, Leslie pointed out that what we call *E. incolor* is actually not correctly named. Our local species should become *Euchone* sp B. Next, a discussion of a potentially new species of *Euchone* that matched *E. incolor* on abdominal depression setiger count, but the staining was different. The specimen was small and had a “half-moon” slit of non-staining area on the collar as opposed to the 2 lateral non-staining areas of the “true” *E. incolor*. The variance in staining pattern for this *E. incolor* specimen highlights why San Diego relies on abdominal depression setiger counts rather than staining patterns.

Page 3 deals with the species that had been placed in the genus *Chone* in the past. With the publication of Tovar-Hernández (2008) local species have been placed in either *Dialychnone* or *Paradialychnone* which necessitated some modifications of the key. Methyl green staining patterns are relied on heavily and given the key’s artificial construction, little change was required to Pg 3.

Three species to be wary of include *Dialychnone albocincta*, *Paradialychnone paramollis*, and *P. eiffelturris*. The staining patterns of these three species are conservative and reliable, in Ricardo’s opinion, but they are similar and distinctions are subtle. He contrasted that with a slightly variable staining of *D. ecaudata*. Ricardo talked about the concept of staining patterns that are similar between species vs. variability within species.

Next in the discussion he pointed out an error in the written portion of the key - “collar raised ventrally; with dark staining band; thoracic uncini spatulate with or without mucron” is misleading. *Dialychnone albocincta* **do** have mucrons on the spatulate setae.

*Paradialychnone ecaudata* has two different staining patterns, one with a batman-like staining pattern on the collar. The second variant is a pattern with a more rounded stain similar to Tovar-Hernández’s (2008) illustration (Fig E), as well as the old *C. minuta* voucher sheet. Leslie later showed pictures of live specimens with the rounded glandular areas on the collar.

Ricardo discussed the idea that *Paradialychnone eiffelturris* is recognizable by the presence of the “tuning-fork” ridge ventrally on the collar. However, Leslie Harris reports that the ridge is sometimes flattened and not always present.

He noted that *Paradialychnone paramollis* and *Dialychnone albocincta* can also be distinguished (beside their staining pattern) by the 2nd setiger glandular ring structure, where *P. paramollis* has



a glandular ring that remains the same width and position (mid-setiger) around the circumference (ventral and dorsal), while *D. albocincta* has a glandular ring that is wider ventrally, positioned mid-setiger, but thinner dorsally with the ring positioned on the anterior margin of setiger 2.

Page 4 of the key deals with a few disparate species that have companion setae. The key is very regional in this case, i.e., reliable for the SCB species only, and may not be inclusive of all the species possible. There was a brief discussion concerning the “W” stain of *Bispira* that according to Leslie is true of the genus. Ricardo also illustrated the difference in eyes on the radioles of *Megalomma pigmentum* vs. the spiral eyes of *M. splendidum*.

*Parasabella fullo* was collected and photographed by Kelvin from Bight’ 13. The photos show the arista and companion setae detail, as well as the pigmented branchial radioles. The specimen was collected from 16m. Leslie mentioned that there is some question about the identity. Is it really *P. fullo*? Leslie has seen something that looks just like this specimen in the Sea of Japan, and therefore designated her specimens as “*P. ?fullo*”. *P. pallidus* has very enlarged setae.

Ricardo finished with a slide showing a table with Current Identifications of Sabellids vs. Previous Identifications.

He also had a final version of the revised key with minor edits and pictures that was distributed electronically via pdf.

After lunch, we rallied to review Leslie’s Sabellid photos. During Ricardo’s presentation Leslie recognized that she had several photos that were worth sharing.

Starting alphabetically with *Bispira*, we looked at *Bispira* sp LH04-3 with the split collar. *Bispira* has a recognizable “W” on the collar, and paired eyespots.

*Branchiomma* sp LH1, from Redondo Beach Harbor, a dock fouling species. It has a spotted body, with the spots generally remaining even after preservation. Other specimens were collected from Los Angeles Harbor off a Reish settling plate in 2014. Leslie pointed out the stylodes that come off the back of the radioles. There apparently is debate about the utility of the stylode characteristics for distinguishing taxa. This harbor species may be a European species or *B. veridi*. Although the specimens have some differences, Leslie is keeping them at *Branchiomma* sp LH1 because of the controversy about the taxonomic value of stylodes, and differences in size of animals sampled to date.

A species of *Laonome* sp SF1 that occurs in predominantly brackish water from San Francisco is probably *L. cappa*.

*Megalomma coloratum* from Malibu Pier shows a clear staining band below the 3rd setiger vs. below the second setiger in *Dialychone albocincta* (see above).

Leslie had a wonderful set of pictures of *Myxicola* sp A Harris that lives on hard substrates in masses of slime. This is as opposed to *M. infundibulum* found in soft bottoms.

After viewing Leslie’s photos a very productive meeting was concluded.



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**21 FEBRUARY 2017, SCAMIT SPECIES LIST REVIEW COMMITTEE, SCCWRP**

**Attendees:** Kelvin Barwick, meeting lead (OCSD); Greg Lyon, Erin Oderlin (CLA-EMD); Don Cadien (LACSD); Ron Velarde, Megan Lilly, Wendy Enright (CSD); Tony Phillips (private consultant)

We started with a review of the minutes from October. The minutes were approved and everyone accepted their fate with regards to their task assignments.

Kelvin started with an overview of the purpose of the committee and the dispersion of responsibilities. He then reviewed the “mock-up” provided by Don. Of special note were the items in the “on hold” tab where many provisional species have sat for years. Since so many of these items are old, they are marked for insertion into the list using Ed 6 numbers instead of the most recent list. Also, we were reminded to list all papers on the proposal tab, even if we reject them. It’s part of our paper trail and documentation for why the list was changed or **not** changed. We were reminded by Don to use the line number such that your insertion goes **above** that number.

Next was a review and discussion of the massive tree of life organization paper by Ruggiero et al (2015). Do we want to adopt their conclusions for the upper hierarchy of our taxa? Don gave a concise summary of the paper and then presented a basic argument to reject the paper for the purposes of our list and to continue with our current practices. A concern with a “consensus” paper such as this is the consideration of the compromises that are involved in reaching these agreements. It was decided after brief discussion that there was not sufficiently compelling evidence that this paper was superior to our current classification. In many ways this is similar to the rationale to follow/not follow the WoRMS classification.

Kelvin used his proposed emendation list and a paper regarding a subfamily change in the Mollusca, as an illustration of how the phyla subcommittees might work going forward.

We then set about reviewing the hold list; how to deal with those old entries? Ideally, each agency should take ownership of their items and either put them in a “graveyard” with an associated higher taxon, determine whether they have been synonymized, or otherwise move forward on providing sufficient documentation. This would require another column in the table but that is generally doable. We all need to work together to get the list under control. Greg suggested that each phylum lead take responsibility for following up with their groups in order to start addressing this issue. Keep in mind, there’s no expectation that all will be resolved prior to July 1 but if we can keep the list from growing, we will count that as a victory.

The deadline for emendation inclusion is no later than June 15<sup>th</sup>. The process is as follows: submission of emendations within a phylum are distributed amongst the phyla subcommittee (at a minimum) or to the entire Species List Review group. We decided on a minimum of two weeks prior to the publication date, but better to allow more time if possible. If these deadlines are missed then the emendations will roll over into the next edition or be placed on the hold list (potentially).

Sharing documents between committee members has become a bit of a difficult issue as various agencies have differing rules about what software can and can’t be used. Kelvin has been experimenting with Zotera and has found it useful for organizing literature but not as useful for sharing documents online (which is kind of the point of using the software). So more work on



how best to share literature still remains. Phyla leads will follow up on the literature listed in the front matter and make sure that the listing is sufficient for their respective groups. For now, if you want to acquire specific literature, ask Don.

Kelvin then called for phylum group updates, followed by resounding silence with a few exceptions. Arthropods were discussed by Don: there are a few isopod changes, a touch of copepod “stuff”, and some tidbits on amphipods, tanaids, etc. Assuredly, Don’s group will make enlightened and informed decisions about whether or not to accept these various suggested modifications. Potential changes to the mollusca and kinorhyncha have already been sent by Kelvin via email. And lastly, Tony briefly touched on cnidaria and platyhelminthes; in the cnidarian there is a possible change with the zooanthid subfamily, and Tony will seek clarification from Don regarding some flatworm literature.

After lunch, we tackled the continuing thorny issue of the database and bringing the process online. Kelvin had created an initial draft of an RFP (see attachment at the end of the newsletter). His outline is a first attempt to organize our needs so we can add detail and generate as much information as possible in order to minimize the change orders that might be required once we have established a contract for the work. Don suggested a slight elaboration of the mapping tool to include moderate statistical tools such as max/min depth.

Integration of the BRI tool with the database tool would be a powerful selling point to acquire funding from the POTW agencies and other stakeholders. Securing funding from the POTWs will be quite a challenge but could help make this project a reality sooner. Contacting the State for funds was also suggested and discussed but we agreed that would require expanding the List to include all of CA.

#### Action Items:

- Phylum leads will continue to share possible emendations with their groups/the whole committee as well as follow up with the hold list in their assigned specialties in preparation for Ed 12. Additionally review the front matter
- Kelvin will continue to work on the RFP outline along with Greg and Wendy (should this be a request for bids or a request for proposals?)
- Milestones for emendation submissions sent out by KB
- Contact Don if there are literature needs
- Next meeting will be April; Kelvin will send out a Doodle Poll



**27 FEBRUARY 2017, *PHYLLODOCE & EULALIA*, NHMLAC; LESLIE HARRIS, LEAD**

**Attendance:** No attendance list was submitted to the Secretary.

The meeting was called to order and welcoming statements and upcoming meeting announcements were made by Larry Lovell. He also discussed officer elections and announced current nominations. Members were reminded and encouraged to sign up for the SCAMIT email list, if they had not already done so.

Leslie Harris mentioned her recent trip to the Multi-Agency Rocky Intertidal Network (MARINE) annual meeting in Trinidad, CA, along with the rest of the museum's MBC-DISCO team. At the meeting she discussed the importance of SCAMIT and what we can do for the MARINE program. There were many excellent short presentations, including one on the various ways to use iNaturalist (iNaturalist.org), which could be utilized by SCAMIT.

With the business meeting over Leslie moved on to her presentation – “A review of *Phyllodoce* and *Eulalia* of the North East Pacific begins”. The presentation was primarily based on the information, voucher sheets, and images shared by SCAMIT members, plus Leslie's observations made over many years spent examining types, topo-types, and hundreds of non-type specimens.

Species pigment patterns were emphasized as were proportional length of the antennae, tentacular cirri, dorsal cirri and ventral cirri. Specimens were not examined prior to the workshop so everything was based on images and literature.

Many problems were found in comparative identification of NEP *Phyllodoce* and *Eulalia* species between labs, and between northern and southern members.

The initial list of NEP species was made from a literature review of primary sources for the NEP; Hartman (1936), Blake's MMS Atlas chapter (1994), and original descriptions.

Next was a general review of *Eulalia* and *Phyllodoce* characters and differences. Pigment patterns tend to be well conserved after preservation in these groups and are extremely useful for species identification. Changes from preservation and ontological changes may affect identification. There is some variation in soft characters like cephalic structures (antennae length, position, etc) and cirri shape, due to degree of contraction or relaxation prior to preservation.

***Eulalia bilineata***

In a review of several hundred specimens from British Columbia to northern Mexico and topotype specimens from the English Channel, Leslie found 8 species misidentified as *E. bilineata*. Most were undescribed; the three described species were *E. californiensis*, *E. gracilior*, and *Eumida longicornuta*. She has not found any true *E. bilineata* in the NEP.

***Eulalia californiensis***

This is the species most likely to have been identified as *E. bilineata* in eastern Pacific samples. Side note – there was a group discussion at this point on how preservation can affect ID, based on photographs of live and preserved specimens.

***Eulalia gracilior***

Re-described in 2012 by Pleijel, Aguado, & Rouse. The tentacular cirri are easily 2x longer than those of *E. californiensis*. A photo of *E. gracilior* is in the May/June 2006 SCAMIT newsletter Vol 25(1,) misidentified as *E. californiensis*.



***Eulalia quadrioculata* and *E. aviculiseta***

The two species were synonymized by Banse (1972), but there is some disagreement as to whether this is valid. Differences in coloration and eyespot patterns were noted by Hartman (1936); four color morphs found in specimens with lanceolate dorsal cirri are attributed to these two species.

Pleijel et al (2012) re-described *E. aviculiseta*, and state that more study needs to be conducted regarding synonymization. Color pattern in Pleijel (2012) does not match that of Hartman (1936) and in Leslie's opinion is likely to be an undescribed species. The type and co-type of *E. quadrioculata* are different species.

A discussion then ensued about what to do, given the documented differences. The options include:

- Lump everything together into *E. quadrioculata* complex
- Split into 1 described and 3 provisional species:
  - ❖ *E. quadrioculata* (maybe = *E. aviculiseta*, pointed ventral cirri), *E. sp* RR1 (rounded ventral cirri), *E. sp* 17, *E. sp* 18 (= *E. aviculiseta* of Pleijel et al)

It was decided to use the latter approach. Leslie will create SCAMIT voucher sheets for the provisionals.

***Eulalia levicornuta* complex (or big headache?)**

The type and co-type specimens are different species. Observed differences in tentacular cirri, ventral parapodial cirri, pygidial cirri, and pigment patterns. Many specimens fit into *E. levicornuta* as described but vary in details of the above mentioned characters and additionally, in the dorsal cirri. Other characters may be useful in separating these as valid species and merits further study. Fresh material in 95% ethanol that can be used for DNA analysis would be extremely useful in confirming if these differences are intraspecific or interspecific.

***Eulalia sp* 11 Harris**

Unique pigment pattern; found in shallow subtidal.

***Eulalia sp* 12 Harris**

Unique spotted pigment pattern, almost certainly not *E. levicornuta*.

***Eulalia sp* 4 RML**

Three rows of large round spots down the dorsum; short antennae and tentacular cirri.

***Eulalia sp* 16 Harris**

Two longitudinal rows of outward-facing “Cs” and a median longitudinal row of rounded spots. Mistaken for *E. californiensis* which has 2 longitudinal rows of inward-facing square brackets and occasionally median longitudinal lines which coalesce to form a third row. Median spots of *E. sp* 16 never coalesce.

***Eulalia sp* NAMIT1 Harris**

Distinct pigment pattern (“striking looking”), anterior dorsum mostly dark except for unpigmented mid-dorsal longitudinal stripe.

***Eulalia sp* NAMIT2 Harris**

Mid-segmental transverse pigment lines (frequently mis-ID'd?).



***Eulalia* sp N1 Ruff 1989**

May be same species as *E. sp* NAMIT4 Harris?

***Eulalia* sp NAMIT4 Harris**

Cirri shape; chaetal structures.

***Eulalia strigata* Ehlers 1900**

Mentioned just once by Hartman (1936), never observed again and Hartman's specimen was either lost or re-identified but not recorded.

***Eulalia viridis* (Linnaeus)**

Has lanceolate dorsal cirri. NEP specimens examined by Leslie were actually *E. quadrioculata* or one of the related provisional species with faded or no pigment patterns.

After lunch we started on the *Phyllodoce*. We covered general characteristics and reviewed an abbreviated key to CSD common species.

***Phyllodoce cuspidata***

Cuspidate ventral cirrus, 2x ventral spots per segment (usually conserved in preservation). A discussion took place regarding pigment patterns, variations, and a mystery voucher sheet. Possibly 2 species?

***Phyllodoce groelandica***

Probably found mostly in Europe. Distinct color patterns found in voucher specimens. May be up to 5 different species. *P. groelandica* is not likely to be found in CA, and may have been historically misidentified.

***Phyllodoce hartmanae***

Distinct pigment pattern, papillae, and ventral pigment spots make *P. hartmanae* fairly easy to ID. There was some brief comments regarding WA and SF vouchers.

***Anatides heterocirrus***

No type specimen located, only the written description remains, and only one specimen has been found.

***Phyllodoce longipes* NEP**

Digitate superior parapodial lobe unique on this coast; has distinct pigment pattern; could be 3 different species, all have the “pointy” ventral lobe; may be identified using the dorsal cirrus. Original description is inadequate for identification. Redescribed by Pleijel (1988) after examination of holotype and specimens primarily from northern Europe. Pigment pattern of European specimens differs from that of NEP specimens, suggesting that our local worms are not the same species. Confirming if NEP specimens are the same as *P. longipes* from Chile requires getting Chilean specimens for comparison.

***Phyllodoce papillosa***

Pigment pattern in McCammon & Montagne (1979) and Uschakov & Wu (1959) are different enough to belong to different species. McCammon & Montagne did not mention or illustrate an elongated superior parapodial lobe so the later synonymy of their NEP records with *P. longipes* may be questionable.



***Phyllodoce medipapillata***

Possibly often misidentified as *P. groelandica*. Identify using mid-dorsal papillae and striking pigment pattern in larger specimens. Small worms are light yellow or brownish-yellow and dorsal cirri are often pink. Largest specimens have brilliant iridescent blue-green color and yellow or olive dorsal cirri. Eggs are bright turquoise and sperm is white.

***Phyllodoce multipapillata***

Northern NEP species; off San Francisco is the southern-most record to date.

***Phyllodoce multiseriata***

Described from Acapulco; found in sabellid colonies. Reported in Hartman (1968). May be misidentified in NEP.

***Phyllodoce pettiboneae***

Long narrow digitate ventral cirri; rows of lateral chitinous cusps (K. Barwick photo).

***Phyllodoce williamsi***

Three lines of spots dorsally; ventral pigment squares.

***Phyllodoce* sp SD2**

Thick, distinct mid-dorsal longitudinal pigment line; big ventral cirrus on 2<sup>nd</sup> tentacular segment; nuchal papillae. Unsure of generic assignment, need to re-examine specimens.

***Phyllodoce* sp Phillips B10 SMB2004**

Provisional from LA (Santa Monica Bay).

***Phyllodoce mucosa***

*P. hartmanae*, *P. longipes*, (others) may have been misidentified as *P. mucosa*; does not occur in NEP.

***Phyllodoce madeirensis***

May be mis-identified as *P. medipapillata*; does not occur in NEP.

***Phyllodoce maculata***

*P. hartmanae*, *P. longipes*, and *P. williamsi* have been misidentified as this European species; does not occur in NEP.

***Phyllodoce citrina***

European species, reported from the Washington-British Columbia area, not likely to occur in the SCB. Leslie wants to see any specimens identified as this.

With that the presentation was complete and we moved on to concluding thoughts and an open discussion regarding presented material.

Tony Phillips asked what segments should parapodia be taken from for comparison of these species? Leslie answered that taxonomists should photograph/describe the parapods from the following segments - 10<sup>th</sup>, middle, and 20<sup>th</sup> from the end. If the specimen is a fragment, estimate the middle, and take the last parapod of the fragment.

Next was a conversation regarding the possibility of organizing “round robin exchanges” of specimens which was a feature of early SCAMIT meetings. Specimens provided by the different agencies have coded labels and are exchanged among the participating labs one month prior to the meeting discussing the phyla in question. This enables taxonomists to gauge the level of



consistency and proficiency of identifications. Several members expressed enthusiastic support of this activity, especially in light of the upcoming Bight'18 survey.

As for future meetings: Leslie requested that Terebellidae vouchers sheets and pictures be sent to her in preparation for the September meeting.

K. Barwick and R. Velarde expressed concerns that *Phyllodoce* vouchers may be mis-labeled, and a discussion followed about how to resolve these misidentifications. Leslie recommended that the 1<sup>st</sup> step is to create new voucher sheets synthesizing the information presented at the meeting, with specimen observation.

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Please visit the SCAMIT Website at: [www.scamit.org](http://www.scamit.org)

### SCAMIT OFFICERS

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The SCAMIT newsletter is published every two months and is distributed freely to members in good standing. Membership is \$15 for an electronic copy of the newsletter, available via the web site at [www.scamit.org](http://www.scamit.org), and \$30 to receive a printed copy via USPS. Institutional membership, which includes a mailed printed copy, is \$60. All correspondences can be sent to the Secretary at the email address above or to:

SCAMIT  
PO Box 50162  
Long Beach, CA 90815

## Detailed outline of database tool proposal (DRAFT presented to the Species List Review Committee on February 21, 2017)

- I. Brief history of SCAMIT and purpose
  - A. Established 1982
  - B. Standardize marine invertebrate taxonomy in the SCB
  - C. Monthly meetings and newsletter
  - D. Publish and maintain list of invertebrates "A TAXONOMIC LISTING OF BENTHIC MACRO- and MEGAINVERTEBRATES from Infaunal & Epifaunal Monitoring and Research Programs in the Southern California Bight"
    - a. Annual publication (July 1)
    - b. Standardize name usage including common synonyms
    - c. Includes current phylogenetic hierarchy (to Phylum level)
    - d. Reference list used in construction of list
    - e. Built and maintained as Excel file
  - E. Stake holders
    1. Committee
    2. General membership
    3. Regional POTWs
    4. SCCWRP
    5. Larger scientific community
- II. Database tool specification
  - A. General requirements
    1. List construction built on currently accepted species; listing should include each nominal taxa:
      - a. Binomial consisting of Genus and species
      - b. Authority and year
      - c. Synonyms (binomial and authority)
        - Objective
        - Chresonym (of usage)
      - d. Citation for inclusion (not authority)
      - e. Complete most current accepted phylogenetic hierarchy
    2. Metadata for nominal taxa:
      - a. Change history of binomial in context of the list
        - Add (New taxa record)
        - Delete (Record included in error)
        - Changes in orthography
        - Changes in authority- Replace
        - Reorder (change in phylogeny)
        - Merge (combine with senior synonym)
        - Split (remove from synonymy)
        - When (version)
        - Who
          - ◇ Proposed
          - ◇ Approved
      - b. Past phylogenetic hierarchies
      - c. Additional information (future goal)

- Pollution index codes (BRI, ITI, etc.)
  - Morphology
  - Occurrences (mapping)
  - References
3. List emendations process
    - a. All members can propose changes
    - b. Committee can propose and approve changes
    - c. Two main change categories
      - Non-controversial
        - ◇ Changes in orthography (binomial and or authority)
      - Controversial
        - ◇ Add (New taxa record)
        - ◇ Delete (Record included in error)
        - ◇ Replace
        - ◇ Reorder (change in phylogeny)
        - ◇ Merge (combine with senior synonym)
        - ◇ Changes in authority
        - ◇ Split (remove from synonymy)
    - d. Resolution (accept or reject proposals)
      - Non-controversial (accepted without comment)
      - Controversial (require approval by committee and/or subcommittee(s))
        - ◇ Accepted
          - \* Citation for inclusion
          - \* Individual making proposal
          - \* Committee comments
        - ◇ Hold (not accepted)
          - \* Temporary (awaiting additional action)
          - \* Permanent
            - ◆ No indication of a resolution possible
- B. Users reporting requirements
1. Committee
    - a. Publish updated annual list (July 1)
    - b. PDF
    - c. Front Matter
      - Managing editors
      - Editors of Phyla
      - Citation for accepted phylogeny
      - Explanation of how list was compiled
      - Orthographic requirements
    - d. Phylogenetic list
      - Electronic file format
      - Orthographic requirements
      - Hierarchy
  2. General members
    - a. View and download formatted copy of current or former lists including:
      - publication date (version)

- publication authors
  - front matter
  - complete phylogeny
  - synonymies
- b. Eventual linkage to additional information (future goal)
- Pollution index codes (BRI, ITI, etc.)
  - Morphology
  - Occurrences
    - ◇ Mapping
      - \* Ranges
      - \* abundances
    - ◇ Statistical calculations
  - References
3. Regional stake holders
- a. CSV (or other format) flat files of List (excludes Front Matter)
  - b. p-code updates feeding into BRI, ITI, and other indices
  - c. Rules for assignment of codes
  - d. Web app for BRI calculation
  - e. Ability to revert to previous versions for species list comparisons or to “lock” a given version for a multi-year project such as Bight
4. Scientific Community?

#### POTWs (Regional)

1. CSV (or other format) flat files of SLRC item I. (above) excludes Front Matter
2. p-code updates feeding into BRI, ITI, and other indices
3. Web app for BRI calculation
4. Ability to revert to previous versions for species list comparisons or to “lock” a given version for a multi-year project such as Bight

#### For SCAMIT and its members:

- I. PDF of SLRC item I. (above)
- II. Updated Toolbox names and hierarchy
- III. Species page update
  - A. Linkage to Toolbox
  - B. Distribution/occurrence data (map)
  - C. Photos
- IV. Literature linkage
  - A. Part of the toolbox/species list
  - B. Questions regarding copyright, etc to be addressed at December 2016 meeting with Dean Pentcheff

#### For Agencies: (In progress)

**S**OUTHERN  
**C**ALIFORNIA  
**A**SSOCIATION OF  
**M**ARINE  
**I**NVERTEBRATE  
**T**AXONOMISTS



March–April, 2017

SCAMIT Newsletter

Vol. 35 No. 6



*Photis brevipes*, mature male. Photo by D. Pasko.

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

**Publication Date: July 2017**

**13 MARCH 2017, HETERONEMERTEA, CSD; D. PASKO, LEAD**

**Attendance:** Dean Pasko, Tony Phillips, private consultants; Larry Lovell, Don Cadien, Terra Petry, Chase McDonald, LACSD; Patricia McGregor, SFPUC; Gabriel Rodriguez, Wendy Enright, Ron Velarde, Kathy Langan, Katie Beauchamp, Robin Gartman, Megan Lilly, CSD; Angelica Zavala Lopez, MTS; Dot Norris, retired; Ben Ferraro, OCSD.

**Remote attendees:** Matt Hill, EcoAnalysts; Dany Burgess, WADOE; Erica Keppel, Smithsonian.

**UPCOMING MEETINGS**

Visit the SCAMIT website at: [www.scamit.org](http://www.scamit.org) for the latest upcoming meetings announcements.

The business meeting started with a “round robin” of introductions. After introductions it was announced that officer elections are in progress and attendees were urged to please submit ballots by March 29<sup>th</sup>.

The taxonomic portion of the day started with Dean Pasko stating that “none of us are experts”, which is certainly true when it comes to heteronemerteans (or any of the nemerteans for that matter). The primary challenge is one of consistency. In reviewing several sets of specimens that had been sent to Dean prior to the meeting, he found inconsistencies across the board with other taxonomists as well as within his own identifications.

Dean’s presentation started with a general overview of Nemertea. He started off by reviewing the differences between the Anopla, the Class in which the mouth and proboscis pore are separate and have an unarmed proboscis, and the Enopla, where the mouth and proboscis pore are united and have an armed proboscis. Most of these differences are clearly presented in several publications (e.g., Gibson 1982) or via the Internet.

The mouth is considered to be part of the body or trunk region, while that portion of the body anterior to the mouth is the head. The proboscis of some nemerteans can be branched, though no species with that trait are present on this coast. Cross-sectioning anoplans to view muscle layer and lateral nerve chord arrangement/organization is a vital technique when practicing “functional” taxonomy of the group. The trick for making a cross-section with a blade or scalpel, is to start at an angle, then press straight down. The outer muscle layer of heteronemerteans is always longitudinal as opposed to the Palaeonemerteans, which have circular muscle as the outermost layer.

Circular muscle, upon cross-sectioning, appears shiny/shimmery but one must be careful because connective tissue shows similar characteristics. In contrast, longitudinal muscle looks spongier (or grainy) and is typically darker.

The difficulty with applying even these basic characters is that for many of them we don’t have a good handle on the level of phenotypic plasticity that can be expressed. Another difficulty is that the original descriptions are often based on large specimens and most of what we sample are likely juveniles. Recently Sunderg et al (2010) performed a comparison on morphologically distinct species of *Cerebratulus* and found a lot of intra-specific variation in color and pigment patterns that we often use for identification purposes. They noticed that color as well as patterning changes with age. Similar results were found to apply more broadly to nemertea in general (Kvist et al 2014). In addition, Herrera-Bachiller et al (2015) noted that many original descriptions are



inadequate to compare against newly recognized species. Which lead Dean to state - “Maybe we are trying too hard”....but that is a discussion for another day.

Many of the primary resources shown at the end of the PowerPoint include species keys. And although several work well (e.g., Bernhardt 1979, Coe 1940, MacEwen 1980), one must be careful to validate current name usage and synonymization. See also SCAMIT NL Vol. 3, No. 4 (July 1984) for a complete listing of useful historical nemertean literature.

After the general overview we started discussing specific species addressed in Dean’s 2nd presentation of the day.

*Lineus bilineatus*

Often in either Chaetopterid or *Hermundura fauveli* tubes. Distinctive coloration includes a white mid-dorsal stripe and a white area on the dorsal surface of the head, against an olive-beige body; however, use caution as this pattern can often fade with preservation. In practice, it is probable that many of us performing routine identifications call any specimen with a longitudinal, mid-dorsal stripe against a darker background (green or brown) *L. bilineatus*, irrespective of whether the stripe extends onto the head.

*Lineus flavescens*

Head somewhat flattened, 3-7 ocelli (eyes).

Lineidae sp HYP1

Often found in *Diopatra ornata* tubes; brown dorsum with a white border at anterior edge of the head, enabling 2 large, dark eye spots to be viewed easily.

*Lineus pictifrons*

Banding of white rings.

*Cerebratulus*:

Consistent identification of species of *Cerebratulus* has eluded many of us performing routine identifications for Southern California Bight (SCB) monitoring agencies. This group has recently been the cause of considerable consternation for Dean, as he has had an opportunity to see specimens from an increasing number of laboratories in the SCB.

- Difficult because different colors develop in different habitats.
- Often broadened in the head region compared to *Micrura* (which is more uniform in width along the entire length of the animal).
- If dealing with large, pigmented specimens it may be helpful to look at the key in Light’s manual (Roe, P. et al., 2007).
- He included in his draft key an endnote that describes some of the difficulty he has experienced with this taxon.

*Maculaura* and *Micrura*

These genera tend to have shallow cephalic slits and a small mouth in contrast to *Cerebratulus*, which frequently will have deep cephalic slits and a large, often open mouth.

- *Micrura wilsoni* has a dark body, head white often with pigment spots; cephalic slits narrow, smooth.



*Baseodiscus*

Often sampled in bays; usually found farther south; the cephalic slits are very short and shallow.

- *Baseodiscus delineatus* has a longitudinal pigment pattern, while *Baseodiscus punnetti* has dorsal pigment.
- *Baseodiscus princeps* is yellowish with irregularly spaced red/brown spotting.

*Zygeupolia*

Cerebral sense organ (CSO) far back from proboscis pore. Animal usually pale with a highly contracted/wrinkled head region. Caudal cirrus present if animal entire.

In Dean's Anopla key there are many footnotes and endnotes to provide additional guidance and description.

The afternoon was spent looking at specimens and discussing the confounding degree of variation in cephalic slits. They can range from something as simple as a faint line suggesting a slit; to thin, tightly appressed slits; to deep, wide, open slits. They can also vary in length; from extending just a few mm past the tip of the head, to running the length of the head to the mouth. The differences between Valenciniidae and Lineidae were discussed without much resolution and for many of the provisional Heteronemerteans, the Family placement is uncertain.

Nemertean systematicists at Universities and Museums use serial sections to look at internal features (e.g., blood vessels, intestinal diverticula), which are beyond our capabilities and scope of work. With this group of organisms we truly are “functional” taxonomists trying our best to find ways to identify these enigmatic animals. One of the primary goals is to make sure that the SCB taxonomists are consistent amongst each other with their identifications. The idea is to recognize that we may have the wrong species name, but that we are all calling an animal with a specific set of characters by the same name so the data is comparable across the region with regards to biodiversity.

Editor's note: Both Dean's Heteronemertea presentations are available on the SCAMIT website in the Taxonomic Tools Section.



**18 APRIL 2017, PHOTIS SPP, CSD; D. PASKO, LEAD**

**Attendance:** Ron Velarde, Katie Beauchamp, Andy Davenport (CSD); Kelvin Barwick, Danny Tang, Ben Ferraro (OCSD); Larry Lovell, Chase MacDonald, Don Cadien, Jovairia Loan (LACSD); Kathy Omura, Leslie Harris (NHMLAC); Craig Campbell, Cody Larsen (CLA-EMD); Angelica Zavala Lopez (MTS).

**Remote Attendees:** David Drumm, Ecoanalysts; Dany Burgess, WADOE; Tara MacDonald, Biologica Environmental Service; Phillip Hoover.

The meeting was opened by our new President, Kelvin Barwick. He started out by thanking Dean for presenting and CSD for hosting. And while thanks were being given, he wanted to recognize and thank Larry Lovell, our retiring President, for all his years of hard work and dedication to SCAMIT. It was at this point that Don Cadien spoke up and reminded everyone that while Larry was retiring from Los Angeles County Sanitation Districts, he was not retiring from being active in SCAMIT and we should all expect to see him at future meetings. Kelvin agreed and cheerfully

stated that he already had committee assignments in mind for Larry.



K. Barwick and L. Lovell, 18 April 2017

Next on the agenda was a discussion of future meetings. At this point they are scheduled through October 2017. Please see the SCAMIT website for the most current listing. There was a brief sidebar regarding the idea of another General Membership (GM) meeting in September. If we decide to pursue it, Leslie graciously offered to “give up” her September Terebellid meeting. Kelvin iterated that the SCAMIT Executive Committee should decide if another General Membership meeting is needed or desired. Larry pointed out that at last year’s GM

meeting we were able to successfully schedule future meetings a year out. Which in of itself was a big success. Since we already covered much general SCAMIT information (history, future directions, etc.) last year, there is concern that we won’t have as much to discuss this year. Larry’s response was to have it be a combination meeting with a specific taxonomic topic in the morning and then a shorter GM meeting in the afternoon. Kelvin stated that the Executive Committee will take this in to consideration at their annual meeting. Kelvin reminded everyone that Friday, April 21<sup>st</sup> (just 3 days away) was SCAMIT’s official 35<sup>th</sup> birthday. He noted that some charter members were present at today’s meeting – Ron Velarde, Leslie Harris, Don Cadien, and Larry Lovell. On that note Kelvin announced that Larry Lovell would be awarded, by unanimous consent of the Executive Committee, an Honorary Life-Time SCAMIT Membership. By way of introduction, Kelvin reminisced about how he first came to California when Larry Lovell, then the Lab manager at MEC, offered him a job as a sorter. It was at MEC where he was given the opportunity to work with the late John Ljubenkov, training in Molluscan taxonomy. It was through that opportunity that Kelvin was introduced to SCAMIT. As with the rest of the members, it has been an essential part of continued taxonomic training. Larry was given a card proclaiming his honorary life-time membership status and thanking him for his 35 years of service. A bottle of



wine was included, for good measure, and we also celebrated SCAMIT's 35<sup>th</sup> birthday a few days early with, what else, a cake and candles.

We then dove into Dean's presentation on *Photis*. He noted that this group creates great difficulty for some people, and that his previous key to the species has problems that have frustrated many; hence, here he was making his third SCAMIT presentation on the group. The key frustrated people largely due to Dean trying to make it useful for immature and juvenile specimens as well as adults. Unfortunately, that effort generated more questions and problems than it solved.

Dean then started the presentation with a review of the corophioid amphipods, and the characters used to distinguish Corophiida from Caprellida according to Myers and Lowry (2003). He also noted that several of the characters, particularly the shape of the head, the degree to which the head lobe is extended, or depth to which the antero-ventral margin of the head is recessed, varies and can be difficult to apply. Photids fall within the Order Caprellida, and Dean then went into the characters that distinguish the Caprellids (including the Dulichiidae and Podoceridae, in addition to Caprellidae) from the Photoidea (Ischyroceridae, Kamakidae, Photidae). The Caprellids are, of course, distinguished by their elongate bodies, fused cephalon and pereonite 1, and very reduced abdomen; while Dulichids and Podocerids have strongly reduced (or absent) third uropods, and very elongated urosomite 1. On the other hand, Photoidea have the head distinctly separated from pereonite 1, fully developed third uropods, and varied length urosomite 1.

He then briefly reviewed his Artificial Key to the SCB Photoidea, which Dean produced in the course of training City of Los Angeles and Orange County Sanitation District staff in arthropod taxonomy. When one gets a specimen to the genus *Photis*, the key redirects the user to Dean's previously referenced Key to the *Photis* (Amphipoda: Isaeidae) from Coastal Shelf Bottoms of the Southern California Bight (Pasko, 1999); however, Dean had a simpler key to present. He cautioned that the revised and simplified key is reliable only for adult specimens, and then went on to explain this new key. [Dean is continually validating and updating the key, but it will soon be posted to the SCAMIT toolbox, and a final version will hopefully be out prior to the Bight'18 identification efforts.] This was followed by a presentation on some general guidelines for dealing with samples full of *Photis* specimens (repeated below).

*Photis* can be challenging and frustrating. To avoid wasting time and building up huge stores of anxiety, Dean suggests following this play-book until you get comfortable.

1. Review the *Photis* spp slides
2. Sort out the small specimens (< 2 mm is good starting point), but remember there are some pretty small species (*P. lacia*, *P. macrotica*, *P. linearmanus*, *Photis* sp A, *Photis* sp B, and *Photis* sp C are all around 3 mm)
3. Size makes a difference, especially when distinguishing among our most common species: *P. brevipes* and *P. californica*
4. Sort the specimens by color BUT do not use color as a single indicator; especially between regions
  - a. Specimens with pigment capped heads
  - b. Specimens with pigment dots at the end of Gnathopod 1 and/or 2
  - c. Specimens with pigment dots on the side of coxa 5
  - d. Specimens with pigmented antennae
  - e. Specimens with diffuse pigment throughout body



5. Sort by normal vs. large eyes
6. Sort by male (w/o brood plates) vs. female (with brood plates) – Check Cx 3
7. Males - Adult males are generally easy to distinguish by Gn2
  - a. Sort males by whether there is a tooth on dactyl of Gn 2 vs. not; then by Gn1 shape (concave palm vs. oblique palm)
  - b. Take them through simplified key
8. Females - Adult females can be distinguished by combination of Gn1 & 2
  - a. Sort by Gn2 shape (rounded vs. cornered)
  - b. Take them through simplified key
9. Certain species have very definitive characteristics
  - a. *Photis* sp A, *Photis* sp B, *Photis* sp C, *Photis brevipes*

The remainder of the presentation included photographs of specific character states (e.g., geniculate antenna 2, acutely produced vs. rounded female gnathopod 2, large vs. small eyes, etc.), as well as compiled illustrations of various species.

After a lunch break, Dean placed several dishes of mystery *Photis* at the three microscopes that Ron had kindly made available. Members were encouraged to use the revised key to identify the mystery *Photis* (consisting of males and females). He spent the remaining time visiting with SCAMIT members as they asked questions or puzzled over how to interpret various character states. Dean also spent some time revisiting a couple of provisional species he had left behind at the City of San Diego laboratory after his departure, and found that they appeared to be valid. He hopes to get time to review these provisional species in depth and come up with more definitive voucher sheets.



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