

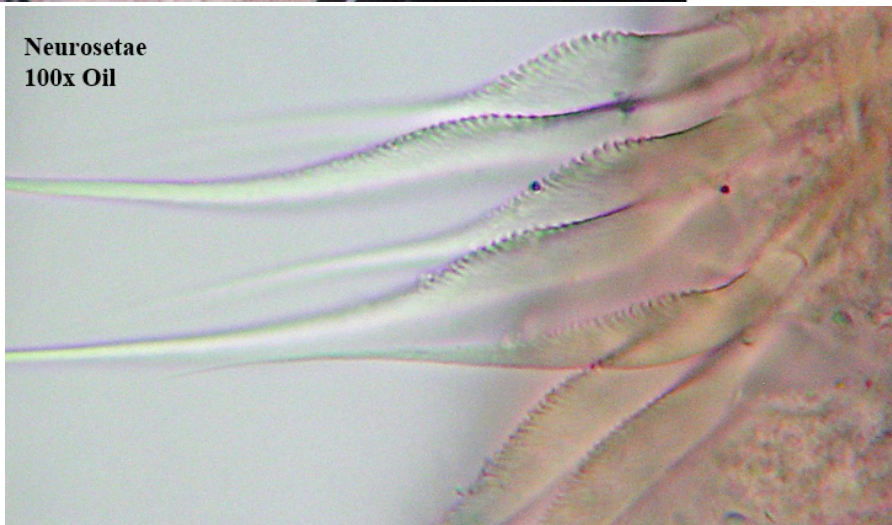
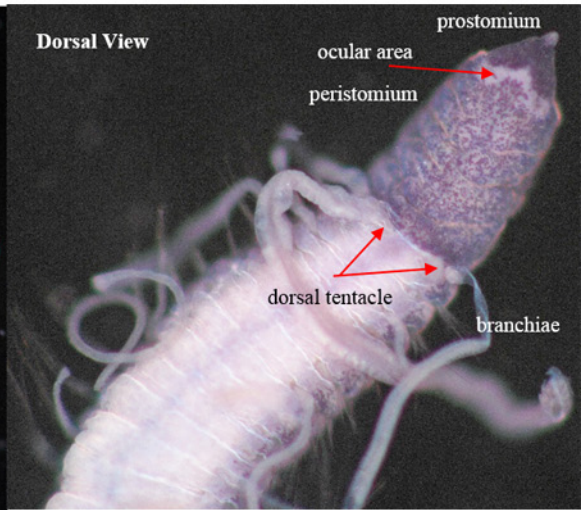
SOUTHERN
CALIFORNIA
ASSOCIATION OF
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Vol. 36 No. 1



Kirkegaardia tesselata
 Photos by:
 V. Rodriguez-Villanueva

This Issue

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

Publication Date: August 2017

12 JUNE 2017, CIRRATULIDAE, CSD; V. RODRIGUEZ-VILLANUEVA, LEAD

Attendees: Kathy Langan, Ricardo Martinez Lara, Veronica Rodriguez-Villanueva (CSD); Mike McCarthy, Ernie Ruckman, Kelvin Barwick (OCSD); Brent Haggin, Bill Furlong (LACSD); Cody Larsen, Jennifer Smolenski (CLA-EMD).

The business meeting was opened by Kelvin Barwick. He thanked Veronica for taking on the unenviable task of trying to provide some insight into the cirratulids. He also queried attendees to see how many people thought the meeting started at 9,

instead of the usual 9:30. It turns out the meeting time on our website needs to be changed to 9:30. We occasionally start meetings at 9, but those are usually under special circumstances. Kelvin will email Dean Pentcheff, our webmaster, and ask him to change the time in the “upcoming meetings” box. He then briefly covered upcoming meetings. We were reminded that B’18 is looming nearer and there will be a B’18 kick-off meeting at SCCWRP on September 14th, 2017. There has been some discussion of moving in to fresh water habitats, but for the most part the POTWs will remain interested in the offshore environments and maybe some sampling in the basins. Also, the Channel Islands are an area of concern as they have been showing some degradation in past surveys; there will most likely be a push to do more sampling in that region. At this point Kelvin asked SCAMIT members to consider how SCAMIT can benefit and contribute to the B’18 project. For example, specialty taxonomy? This has been an option in past Bight projects for taxa where consistency of identifications amongst SCB taxonomists was problematic. The answer was to hire an individual as a consultant to work on that specific taxa; in the past this has been done for the anthozoa and polycladida. However, for B’13 there was no budget for specialty taxonomy and that may turn out to be a problem again for this upcoming project. Anyway, Kelvin asked that anyone who has thoughts, ideas, opinions, etc, to please let him know.

UPCOMING MEETINGS

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

Kelvin then gave us a quick overview of the work of the SCAMIT Species List Review Committee. Final emendations are due to Don Cadien by June 15th and Edition 12 of the List is on schedule to be published on July 1st. He also called for any interested parties to join the committee if they so desire. Just send Kelvin an email letting him know of your interest.

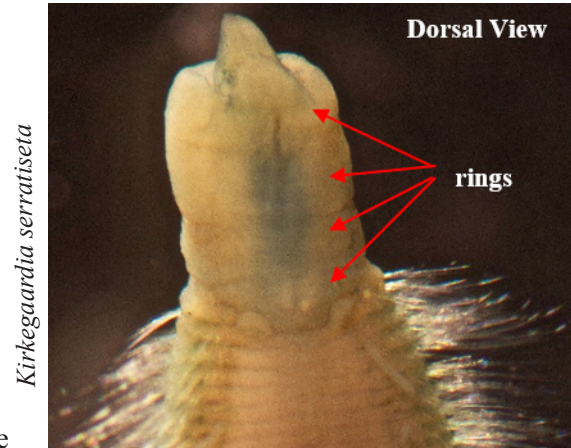
With that it was time for the taxonomy portion of the meeting. Veronica had put together a presentation on cirratulids and below are questions and comments that arose during her presentation. [Ed Note: All photos contained in this newsletter are credited to Veronica Rodriguez-Villanueva].

Ricardo started out by observing that *Monticellina* was previously used as the name for a Platyhelminthes group; therefore the switch from *Monticellina* to *Kirkegaardia* for cirratulids is just a straight name change.



Kelvin then asked - Could weak annulations of the peristomium be due to preservation? Some peristomiums appear elongated while others seem contracted. The annulations (rings) don't really wrap all the way around the peristomium. Ricardo replied that it could be natural variability, but in the literature, they are referred to as pseudo-segments or pseudo-annulations.

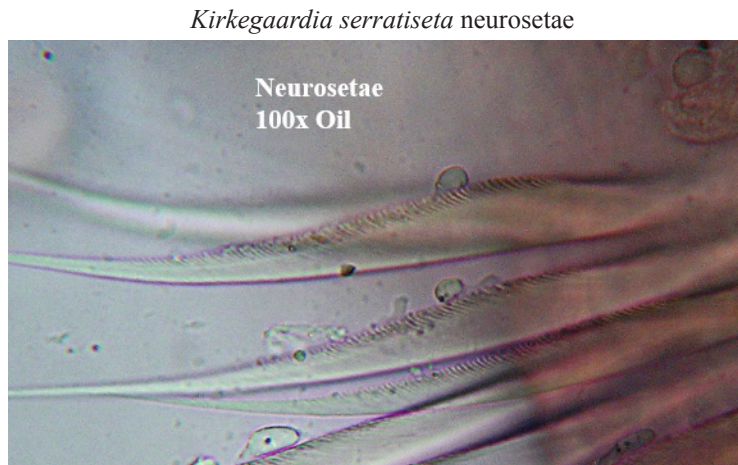
Mike asked - Are there general characteristics that we can use to initially classify a cirratulid as being in *Kirkegaardia* without having to mount them and look for the serrated teeth on the neurosetae?



Bill Furlong chimed in and stated that for initial genera ID, he's noticed that what he calls *Kirkegaardia* tend to have shorter neurosetae than *Aphelochaeta*. Ricardo responded by stating that he wasn't sure if *Kirkegaardia* necessarily have shorter neurosetae than *Aphelochaeta*. He felt it more likely that the neurosetae are shorter than the notosetae in *Kirkegaardia*, whereas the neurosetae and notosetae are more or less of equal lengths in *Aphelochaeta*. For example:



Veronica stated that she mounts everything and mostly relies on the presence of serrated teeth on the neurosetae. For example:



At this point someone mentioned Tony Phillip’s “rule of thumb”: If you can’t see the teeth @ 40X, then it’s not *Kirkegaardia*. But Veronica stated that she would still look for teeth at 100X to verify between *Kirkegaardia* and *Aphelochaeta*.

Veronica then went on to discuss staining; it is only a tool to be used in combination with morphological characters, don’t rely solely on stain patterns. Bill Furlong explained that he “throws every cirratulid in stain. If it stains, it tells you one thing. If it doesn’t stain, then it tells you another thing”. Ricardo commented that for cirratulids, stain patterns within species can be quite variable.

Veronica described her method of leaving cirratulids in stain sometimes up to 2 weeks and stated that she has not seen differences in stain patterns for different saturation times (using methyl green).

Ricardo added - if you stain for 1 day, the stain eventually fades but if you stain for 2 weeks, the stain pattern remains. So he suggested staining for at least 24 hours in order to try and keep things consistent amongst taxonomists

Veronica noted that she doesn’t really see nuchal organs in *Kirkegaardia* except for *K. cryptica*. The body of *K. cryptica* also tends to spiral, and the abdominal segments begin to expand appearing bead-like.

Brent Haggin discussed his technique - If he sees an individual with compact thoracic segments, but are slightly expanded (parapods are slightly separated), then he goes with *Aphelochaeta glandaria* Cmplx instead of *Kirkegaardia serratiseta*.

Veronica wrapped up the meeting addressing two species of *Kirkegaardia*. For *K. siblina*, the first thing you notice is the dorsal crest, more so than the position of the branchiae. For *K. tessellata*, the most noticeable characters are: (1) the peristomium bluntly terminating at the anterior border of setiger 1, and (2) its distinct membranous tube with multiple lateral extensions through which the branchiae protrude.

15 MAY 2017, PYCNOGONIDA, NHMLAC; BONNIE BAIN, GUEST SPEAKER

Attendees: Bonnie Bain, Dixie State University (guest speaker); Ron Velarde, Katie Beauchamp (CSD); Danny Tang, Kelvin Barwick, Mike McCarthy (OCSD); Craig Campbell, Erin Oderlin, Cody Larson, Jennifer Smolenski (CLA-EMD); Dean Pentcheff, Leslie Harris (NHMLAC); Don Cadien (LACSD); Larry Lovell, Dean Pasko, Tony Phillips (Private Consultants); Beth Horvath, Westmont College.

Kelvin started with a summary of the upcoming meetings through October. Leslie also added that we were trying to arrange for Mary Wicksten to make it out to California in June. Kelvin mentioned that Danny was leading the Copepod conference and the banquet would be held here at NHMLAC. They also announced that the Polychaete International Conference website was up and running.

Kelvin then introduced our Guest Speaker, Bonnie Bain. She was originally a molluscan taxonomist and charter member of SCAMIT. After getting her MS at SDSU, she moved to Manhattan, where she first began her studies on Pycnogonids.



After introductions were complete, Bonnie began her presentation, “Pycnogonid Biology: an Overview or What the Textbooks Never Tell you.” Unfortunately, we experienced some software difficulties with the presentation that delayed its implementation. During the technical delay, Bonnie opened the floor to general questions. Kelvin asked about *Nymphon pixellae*, which Bonnie thought might not be the same as the originally described species, its type locale being Washington State. Bonnie mentioned that the West Coast taxa probably needs a complete re-working. Another genus in question is *Nymphoxus*.

After resolving the computer issues, we started the presentation. Pantopoda are strictly marine and range to the deep sea, with sizes reaching as large as 70 cm leg span. The west coast pycnogonids are typically small, making their identifications difficult. They are infrequently collected because of their cryptic coloration which helps them blend in amongst the fouling organisms they reside upon, e.g. bryozoans. Some species are even good swimmers, such as *Stylopallene longicauda*, which lives on bryozoans in Westernport Bay, Australia. A paper by Sherwood et al 1998, describes how this species is protected by alkaloids.

Pycnogonids are typically predatory (e.g., *Anoplodactylus*) on snails, shrimps, hydroids, bryozoans, anemones; while others are scavengers (e.g., *Achelia*). Some feed on whale fall (Braby et al 2009), or on the anemones that colonize whale carcasses. Others live on wood fall in shallower water. In short, they have a broad range of feeding behaviors.

Bonnie then went into a general discussion of the morphology of pycnogonids, noting that pycnogonids really do have a true abdomen, contrary to some published accounts. Appendages 1, 2, and 3 are the Chelifores, Palps (Pedipalps), and Ovigerous legs, respectively. These are followed by 4 walking legs, though some genera have 5 or as many as 6.

She then addressed a commonly asked perplexing question: How to tell the difference between males and females? Females are generally bigger than males. Males have the eggs/larvae present on the ovigerous legs, while females carry them on the femurs. The eggs of the female are actually within the leg (femur), and are visible as a white ring. The dimensions of the male and female femurs are different, with the female having an expanded distal end. If they are immature, then you must look at other structures, e.g., the gonopores, found distally and ventrally on the second coxal joint of females. Female gonopores are oval, while male gonopores are represented by tiny circles. So if the gonopore is difficult to see, you may likely be dealing with a male. In addition, females will have a gonopore on all four legs, while males vary such that they may have gonopores on only one leg, two, three or all four. Males are also the only gender that carries cement glands, which look like little spigots and are usually present on the femur, though some species have them on tibia 1.

Bonnie reviewed what little is known about the pycnogonid life cycle. Females seem to choose a male to copulate with; this is based on direct observations. The fertilization appears to be external, but not too many details are known. The males may then gather the released eggs and cement them onto the ovigers where they are provided with ventilation and protection from predators. Where known, it is mostly the males that demonstrate paternal care. In other groups, however, such as Colossendeidae, there is no information about eggs or larvae. Males often carry multiple egg masses, and it is not resolved if they carry only eggs that they have fertilized or if they also carry the eggs of other males. Some species, such as *Nymphon aequidigitatum* carry different generations of young (e.g., released juveniles and newly acquired eggs). Some species have been demonstrated to live as long as 10+ years.



Bonnie then went into details of pycnogonida larval development and the several different recorded approaches - typical, atypical, encysted, and attaching.

After lunch, Bonnie completed the discussion of development in pycnogonids and moved on to taxonomy and classification. The Class Pycnogonida will soon be re-classified as the Order Pycnogonida under the Class Arachnida. There are over 2,000 species worldwide, with roughly 93 extant genera in 8, 9, or more, families. Regarding the Classification Scheme of Fry (1978), which looked at overall similarity of structure among species, Bonnie suggested that we look at it as an interesting blip in the historical record of pycnogonids. Unfortunately, all of Fry's data was destroyed after his death and there is no way to recreate his efforts. She then showed a table comparing historical classification efforts: Hedgpeth (1947, 1982), Arnaud & Bamber (1987), Stock (1994), and Bamber (2007) (see attachment at the end of the newsletter).

Bonnie then presented slides discussing difficulties of several families: Callipallenidae, Endeidae, Tanystylidae, and Austrodecidae. For example, Bonnie explained the complex evolution of the family Callipallenidae Hilton, 1942 based on the confusion of the use of the genus *Pallene* by Johnston (1837), which was a name previously occupied by a genus of Coleoptera.

After describing the complexity of previous analyses and configurations, Bonnie suggested that one of the most important features for developing a cladogram of the pycnogonids is the structure of the ovigerous leg, not just presence/absence. The basic difference is whether the structure is complete or modified. They have multiple functions that make them very important evolutionarily: egg handling during mating (males & females), carrying eggs/larvae (males only), stimulating females in courtship, grooming, and food handling.

Regarding the ovigerous legs, certain characters such as spination, reduction in number or shape/size of specific segments, terminal segment morphology, may prove important in species distinctions, as in *Ammothea* which has the last four segments of the ovigerous leg modified. Then we have modified legs where the males and females differ (e.g., *Phoxichelidum* and *Anoplodactylus*). Bonnie's analysis of the ovigerous leg structure will likely change the traditional classification by combining some families (e.g., Nymphonidae and Callipallenidae) or combine three families (i.e., Phoxichilidiidae, Endeidae, Pycnogonidae); whereas others, such as Tanystylids, may be split into two families.

In addition, Bonnie went over the history of pycnogonid classification as it relates to insects, crustacea, and its own phylum or class, beginning with Linneus and Strom in the mid-1700s and continuing through Giribet et al (2001). She then provided strong evidence for the close relationship between arachnids, specifically the Acari (ticks and marine mites), and Pycnogonids based on a suite of shared character states. Moreover, her argument for the close morphological relationship between Acari and Pycnogonida is supported by separate analysis of molecular data. The problem with many cladistic analyses of the Arachnid-Crustacean relationship is that pycnogonid data are often excluded from the analysis because they don't know what to do with them.

Oviger and pedipalp characters are very valuable and useful in distinguishing species. Jennifer asked for clarification of the definition of a "neck", which Bonnie said is a bad term. It is more correct to discuss the shape of the cephalon.



The meeting ended with a round of applause as various members in attendance began asking Bonnie specific questions or sought clarification of particular issues. Just at the end, Dean mentioned that one of the problems he has is that existing keys try to key males and females together, but in some cases it might be easier to key the sexes separately. Though the point was now less important since Bonnie had explained how to differentiate males from females, she agreed that keys might indeed be simpler if they were segregated by sex. She said she'd give it some thought. And with that, the note taker left the building!

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Table 1: SUMMARY OF CURRENT CLASSIFICATIONS: A COMPARISON

Hedgpeth (1947, 1982)	Stock (1994)	Arnaud & Bamber (1987)	Bamber (2007)
Nymphonidae Wilson, 1878	Nymphonidae Wilson, 1878	Nymphonidae Wilson, 1878	Nymphonidae Wilson, 1878
Pallenidae ¹ Wilson, 1878	Callipallenidae Flynn, 1929	Callipallenidae Hilton, 1942	Callipallenidae Hilton, 1942
Phoxichilidiidae Sars, 1891	Phoxichilidiidae ² Sars, 1891	Phoxichilidiidae Sars, 1891	Phoxichilidiidae Sars, 1891
Endeidae Norman, 1908		Endeidae Norman, 1908	Endeidae Norman, 1908
Ammotheidae Dohrn, 1881	Ammotheidae ³ Dohrn, 1881	Ammotheidae ³ Dohrn, 1881	Ammotheidae ³ Dohrn, 1881 (restricted)
Tanystylidae Schimkewitsch, 1913			
Colossendeidae Hoek, 1881	Colossendeidae Hoek, 1881	Colossendeidae Hoek, 1881	Colossendeidae Hoek, 1881
Pycnogonidae Wilson, 1878	Pycnogonidae Wilson, 1878	Pycnogonidae Wilson, 1878	Pycnogonidae Wilson, 1878
	Austrodecidae Stock, 1954	Austrodecidae Stock, 1954 ⁴	Austrodecidae Stock, 1954 ⁴
	Rhynchothoracidae Thompson, 1909	Rhynchothoracidae Fry, 1978	Rhynchothoracidae Thompson, 1909
			Pallenopsidae Fry, 1978
			Eurycydidae Sars, 1891 (emend)

¹*Pallene* is a preoccupied name (Flynn, 1929); replaced with *Callipallene*

²Includes *Endeis* and *Pallenopsis*; ³Includes *Tanystylidae*; ⁴Includes *Pantopipetta*