



**Southern California Association of  
Marine Invertebrate Taxonomists**

3720 Stephen White Drive  
San Pedro, California 90731

February 1989

Vol. 7, No. 11

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**NEXT MEETING:** Infaunal Trophic Index

**GUEST SPEAKER:** Jack Word, Battelle Northwest Inc.

**DATE:** Wednesday, March 29, 1989  
In-lieu of the regularly scheduled meeting

**LOCATION:** Orange County Sanitation Districts  
10844 Ellis Avenue  
Fountain Valley, CA 92708  
RSVP, (714) 540-2910

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**MINUTES FROM MEETING ON February 14, 1989**

The guest speaker, Dr. James Carlton, from the Oregon Institute of Marine Biology, presented a fascinating talk entitled "Biological Invasions: Introduced and Cosmopolitan Species; Implications for Biological Surveys". The source of many of these biological invasions can be traced to commercial ship traffic. Historically wooden ships were inadvertent, yet effective, vehicles for transporting exotic species throughout the seas. Wooden ships often had fouling growth measuring up to a meter thick and open galleries large enough to hold macrofauna within the planking. The ships spent long periods of time docked in harbors which allowed for the addition of these exotic species into the native fauna.

In California, following the 1849 gold rush, large numbers of ships from all parts of the world docked, or were left abandoned, in San Francisco Bay. Many foreign species of invertebrates and algae were introduced during this period creating a "pulse" invasion. A second pulse invasion followed the completion of the transcontinental railroad in 1869. Large shipments of live oysters from the east coast were shipped to San Francisco for consumption or shipped on to other destinations. At that time, mariculture projects were attempted along the entire western coast from Alaska to San Diego. Shipments of oysters from mariculture frequently contained mud, debris, vegetation and invertebrates from Chesapeake Bay, resulting

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in the introduction of at least 50 exotic species. When mariculture ventures of the east coast oysters were unsuccessful, a second attempt to culture oysters on the Pacific Coast was tried in the 1920's using the Japanese oyster. Shipments from Japan were transplanted along the entire coast from Alaska to San Diego, resulting in another pulse invasion.

Since World War II, most ships ceased to be transport vehicles of fouling organisms due to the use of modern anti-fouling paints, higher ship speeds and shorter port residency times. However the use of seawater ballast in steel ships resulted in a new mechanism for pulse invasions. Usually ballast water is taken in by ships as they leave port and discharged at their destination. Vast quantities of water, up to 10 million gallons per ship, containing large numbers of organisms are held in ballast tanks. Dr. Carlton and his colleagues found in their surveys that crustaceans account for nearly 35% of the species in ballast water. Smaller but significant contributions are made by species of platyhelminthes, polychaetes, coelenterates, molluscs, echinoderms and others. In some samples, the number of organisms was enormous; one sample contained 200 spionid polychaetes per cubic meter of water.

This history of shipping activity has resulted in the homogenization of biotic assemblages. In Oregon, the native species of Zostera surfgrass has been supplanted by the Japanese species of Zostera. First discovered on the North American coast 25 years ago, the Japanese species now covers thousands of square kilometers. These densely rooted vegetations stands, that were formerly mud flats, have caused dramatic changes in the affected marine estuaries. Another example involves a small corbulid clam from Asia which was first collected in San Francisco Bay in 1986. By 1987 the clam was extremely common. Currently, in 1989, beds of the clam in northern San Francisco Bay have reached densities of 25,000 per square meter. A dominant species by any measure!

While describing other invasion events, Dr. Carlton explained that these pulses may have created world-wide biota in many shallow water coastal areas. Consequently this requires that taxonomists must consider whether new species in their surveys are truly undescribed or are merely recent invaders from other regions. In closing, Dr. Carlton noted that it appears certain areas of the world have the propensity to donate species to other parts of the world which act as recipients. Many factors play a role in this donor-recipient concept. These include frequency and direction of ship traffic, amount of biological survey activity, and the diversity of biota in the recipient region.

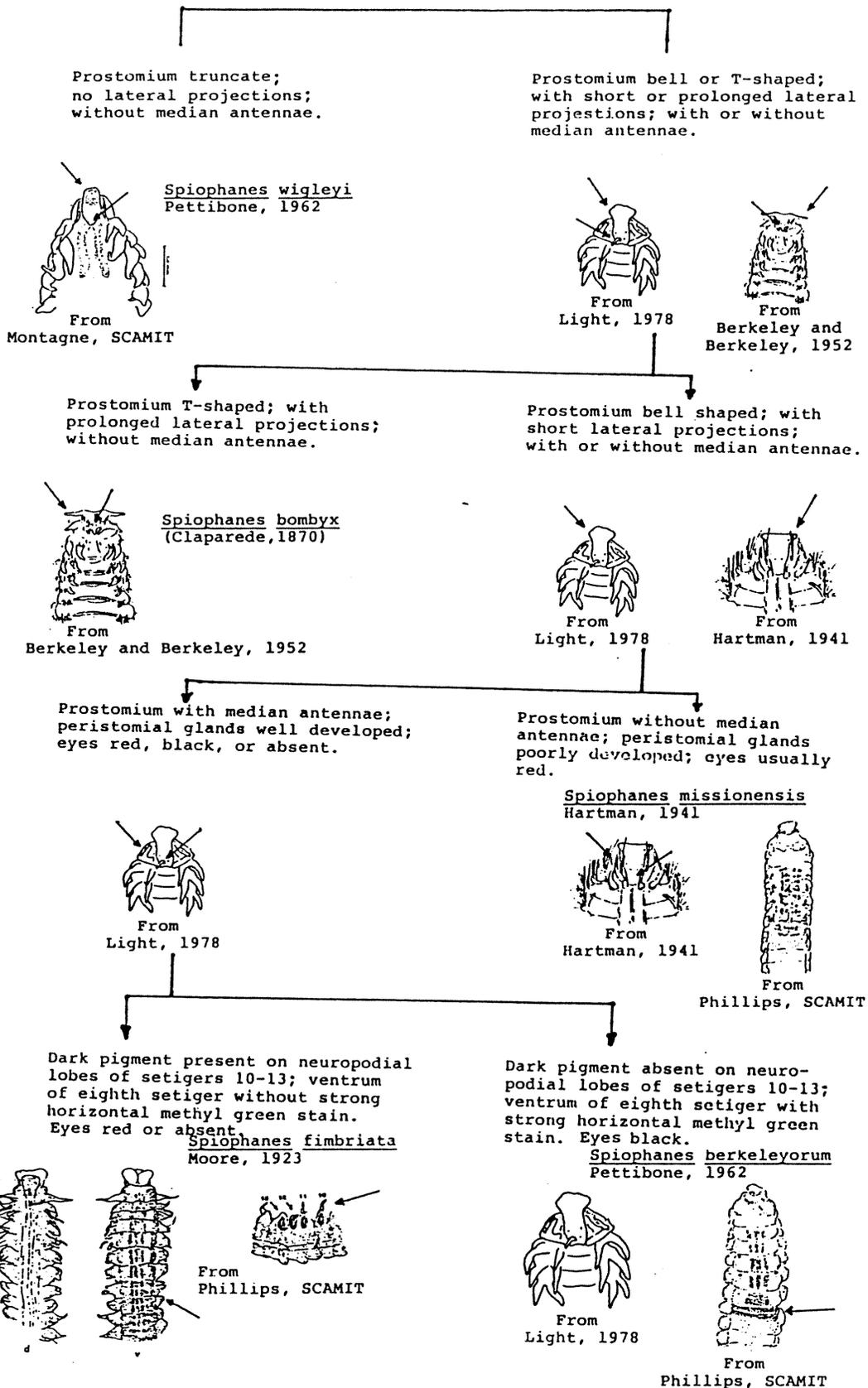
#### ADDITIONAL NOTES

Members should have already received two announcements that preceded this newsletter. The first detailed the information concerning the next meeting that will be held in late March at Orange County Sanitation Districts. Those interested participants need to call in their RSVP. The second announcement was a call for officer nominations that are also important to turn-in!

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Pictorial Key to the Spiophanes of Southern California

by Lawrence L. Lovell



Additional Cumacea Notes:

Tony Phillips  
Hyperion Treatment Plant

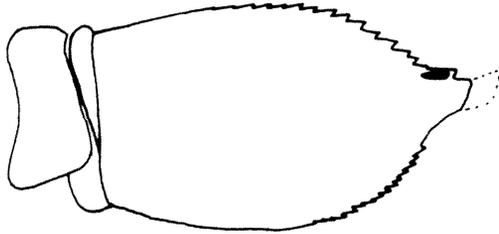
As a follow-up to the Cumacea meeting on the Family Bodotriidae I looked at the lots of Vaunthompsonia housed at the Los Angeles County Museum of Natural History (LCMNH). On the master list of Cumacea, supplied by Hans Kuck, Crustacea Collections Manager, were two lots listed as V. sp and one lot listed as V. serratifrons Gamo, 1964. I actually found five lots of V. sp. on the shelves of the LCMNH. Four lots were taken during the BLM baseline survey. The fifth lot was material identified by Dr. Robert Given as V. nr pacifica; this material was all in poor condition and should be left as V. sp.

One lot of the BLM material was from year one and the other three lots were from year two. The material from year one (all labelled as V. sp.) was a mix of V. pacifica and Glyphocuma sp. A (see voucher this newsletter). The three lots of V. sp. from year two contained two provisional species of V. sp. The specimens labelled as V. sp. A were all V. pacifica. The specimens labelled as V. sp. B were all Glyphocuma sp. A. The lot listed as V. serratifrons contained only specimens of Glyphocuma sp. A.

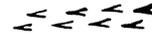
I made some drawings of V. sp. A. (the drawings are not camera lucida)(see figures). They compare well with the drawing of V. pacifica depicted in Lomakina, 1958. I feel the specimens of Vaunthompsonia found in our offshore waters are V. pacifica.

I was also able to look at 2 lots of the unidentified Cumacea from year 2 of the BLM survey. I found among the many species five specimens of Petalosarsia sp. A (Family Pseudocumidae). All five specimens were found at the Santa Rosa Ridge in fine-medium sand at a depth of 236-246 meters. They were all adult females, one being gravid. This species was described by Doug Diener (SCAMIT Vol. 6, No. 12) from a single specimen. Within the collection presently housed at the LCMNH are 174 lots of unidentified Cumacea. The unidentified lots from southern California hold the potential for revealing additional specimens of rare or new species. I plan on looking through these lots in the future.

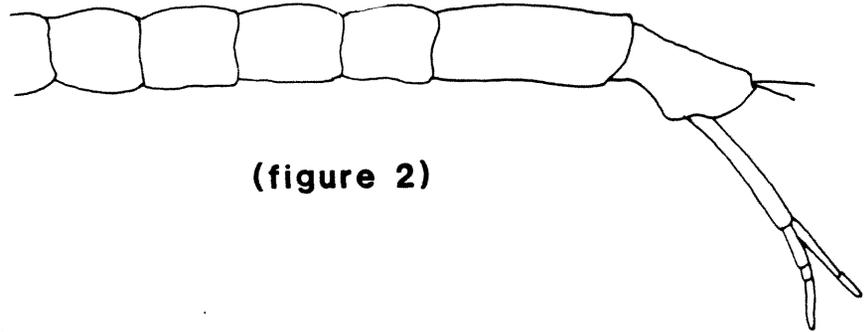
Los Angeles County Museum of Natural History  
Station 23088 BLM Baseline Survey Year 1  
Date Examined: December 20, 1988  
Drawing by: Tony Phillips, HYP



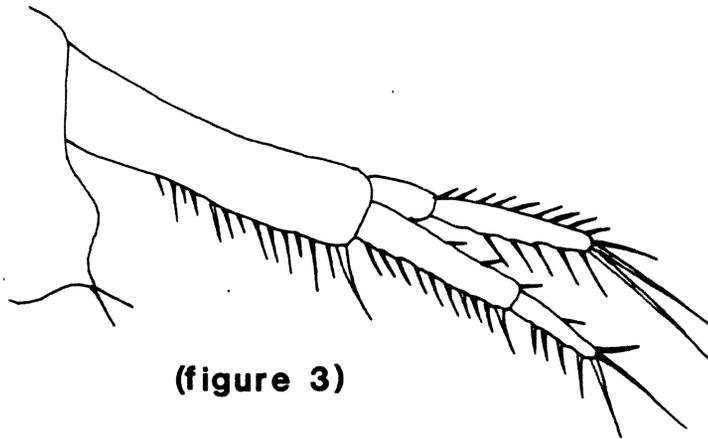
(figure 1)



(figure 4)



(figure 2)



(figure 3)

figure 1. carapace; figure 2. lateral view pleonal segments;  
figure 3. peduncle and right uropod; figure 4. dorsal view of  
double row of spines.

SCAMIT CODE: HYP

Date Examined: March 8 1989  
Voucher By: Tony Phillips, HYP

Literature: Hale, H.M. 1944; Jones, N.S. 1969; Lomakina, N.B. 1958

Diagnostic Characters:

1. Dorsum of carapace with a median longitudinal carina coarsely toothed on anterior half of female and sub-adult male.
2. Pseudorostral lobe does not extend in front of ocular lobe.
3. Male with exopods on first four pereopods, female with exopods on first three pairs of pereopods.
4. Third maxilliped with basis prominently produced distally; ischium at least as long as wide (figure 2a).
5. Telsonic somite produced posteriorly between uropods (figure 3).

Related Species and Character Differences:

Cyclaspis sp. A (see Vol. 4, No. 12) appears similar in external morphology to Glyphocuma sp. A (figure 1), but can be differentiated by noting the number of pereopods with exopods. The Genus Cyclaspis has only the first pair of pereopods with exopods in either sex. The Genus Vaunthompsonia differs in maxilliped 3 with the basis slightly produced distally and the ischium being at least as long as wide (figure 2b). Vaunthompsonia pacifica has a double row of spines on the the mid-dorsal carapace. Female and sub-adult male Glyphocuma have a single row of spines. The Genus Leptocuma could be confused with the male of Glyphocuma. They can be separated by pereopod 2. Pereopod 2 of Leptocuma (figure 4a) has a distal brush of setae on the propodus and dactylus, but no spines. Pereopod 2 of Glyphocuma (figure 4b) has no brushes of setae on the distal segments, but with spines on at least the dactylus. The Genus Leucon also has a dorsal crest, but no eye is present.

Comments:

The Genus Glyphocuma was originally described by Hale in 1944. Four species were included within the genus. Their distribution was found between South Australia and New South Wales, extending out to Tasmania. Since this initial description of the genus and new species there have been no new published records in the literature.

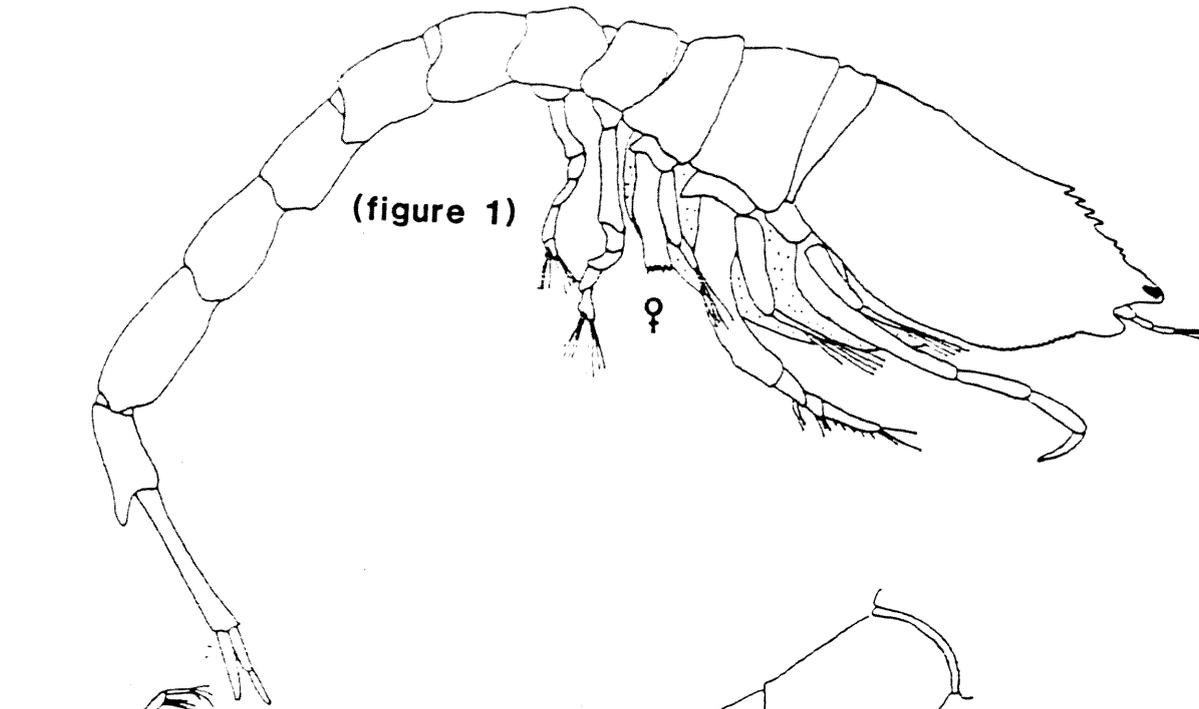
In his original description of the Genus Glyphocuma, Hale described the dorsal crest as being a sexual dimorphic character. The adult female and sub-adult male have the crest of the carapace coarsely serrate; the adult male not showing a coarsly serrated crest, being smooth. The material I have looked at includes 28 females and 2 sub-adult males. I have not seen any male specimens at this time.

The average size of the adult female and subadult specimens is 7 mm.

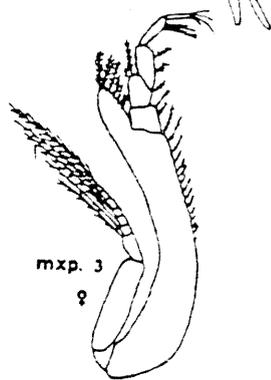
Distribution:

Hyperion material: Santa Monica Bay; 71-101 m; silty-sand, cobble bottom.

Los Angeles County Museum material: Santa Rosa Ridge, Santa Rosa Island, San Miguel Island; 90-108 m; silty-sand bottom.

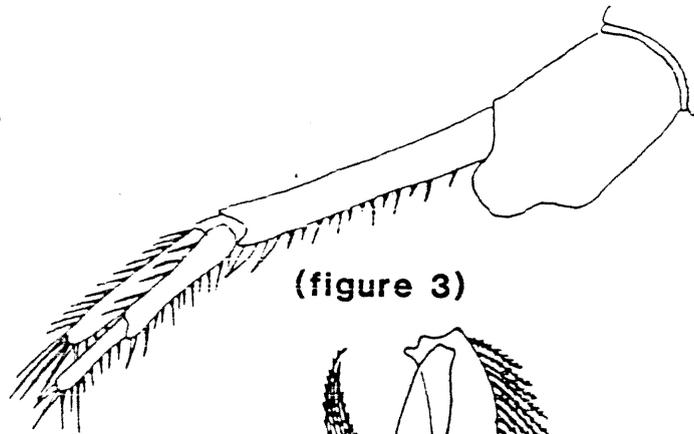


(figure 1)

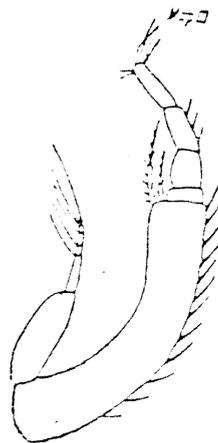


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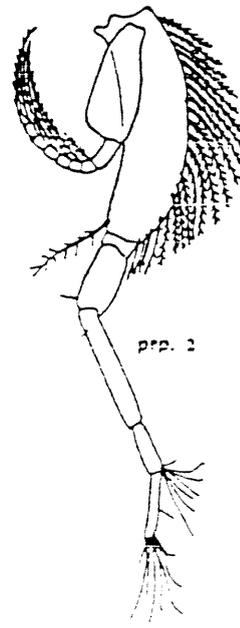
(figure 2a Hale, 1944)



(figure 3)

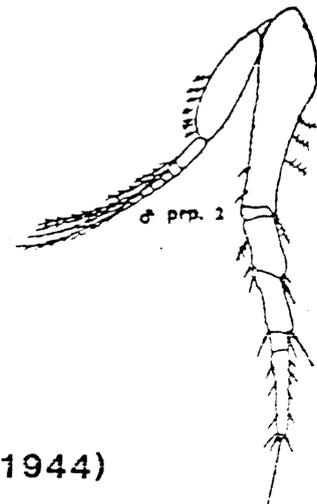


(figure 2b Lomakina, 1958)



ppp. 2

(figure 4a Hale, 1944)



♀ ppp. 2

(figure 4b Hale, 1944)

Figure 1, 2a, 3, 4b - Glyphocuma; Figure 2b - Vaunthompsonia;  
Figure 4a - Leptocuma