



**Southern California Association of  
Marine Invertebrate Taxonomists**

3720 Stephen White Drive  
San Pedro, California 90731

October, 2001

**SCAMIT Newsletter**

Vol. 20, No. 6

<b>SUBJECT:</b>	Edwardsiid Anemones Revisited
<b>GUEST SPEAKER:</b>	John Ljubenkov and Meg Daly
<b>DATE:</b>	11 January 2002 - <b><u>Friday</u></b>
<b>TIME:</b>	9:30 a.m. to 3:30 p. m.
<b>LOCATION:</b>	Dancing Coyote Ranch



*Foxiphalus obtusidens* (Amphipoda:  
Phoxocephalidae) and *Majoxiphalus major*  
(below) from October SCAMIT meeting 2001.  
- D. Pasko

Delay in newsletter production has led to release of this issue after the November meeting. There is no meeting and no Christmas Party in December this year. Have a happy and safe holiday season and join us again in 2002!

In regards to the January meeting, contact Secretary Megan Lilly for directions to Dancing Coyote Ranch. John has suggested that we might want to make the long trek earlier and spend the night.

**NEW LITERATURE**

The sophistication of recently developed genetic methodologies is used for examination and reconstruction of past dispersive events by O'Foighil et al (2001). They examined a series of western and eastern Atlantic samples of the brooding clam *Lasaea* spp. in an attempt to map the genetic similarities and differences in Iberian and macronesian populations, and try to relate western Atlantic populations to those of

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FUNDS FOR THIS PUBLICATION PROVIDED, IN PART BY  
THE ARCO FOUNDATION, CHEVRON, USA, AND TEXACO INC.  
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the eastern Atlantic. The results were rather interesting in that they seemed to indicate that current circulation visible today may not correspond to that in place when these animals were expanding their range in the past. The genetic “trail” left behind in terms of similarity between genomes of the tested animals (210 individuals in this study, and another 60 in an earlier study using the same methodology) pointed to a total separation between the western, and down-current eastern, Atlantic populations. Although the existing data cannot confirm an ultimate pathway, data were consistent with an interpretation of dispersal based on rafting in subsurface waters propelled by retroflection from the predominant surface movement. Such detective work is fascinating and well worth pursuing. We look forward to further efforts at historical reconstruction, particularly with other groups lacking teleplanic larval forms, such as peracarid crustaceans.

Living animals offer many clues to their identity which is lost with preservation. Color and color pattern fall in this category in many cases, with few pigments conserved in preserved animals. Often groups of co-occurring specimens which have been separated on the basis of color or color pattern in the field, will prove to have subtle morphological differences as well, easily missed if the group separation had not been performed on the living material. Anker (2001) examines the situation of closely similar sibling species in snapping shrimp. Two new species are described from Sri Lanka in the paper, but more importantly for its broader application, the author provides a compilation of potential cryptospecies complexes worldwide. This should provide useful information in most areas of the globe, and it does here in California.

Another examination of a distant area with implications for local practice is found in evaluation of amphipod trophic diversity in the Weddell Sea (Dauby et al 2001). Many of the

animals considered were much larger than our local species, and offered the authors a chance to perform both gut analyses, and make behavioral observations on captive animals. Food-choice experiments were also performed on aquarium maintained specimens. They derive a rather comprehensive treatment of the potential trophic spectrum for amphipods, which should be considered by those interpreting the local biology of these animals.

Examinations of our biota for invasive, non-indigenous species (NIS) have become both more numerous and more structured in recent years. As we come to realize that U.S. waters are suffering constant invasion because of the strength of international commerce, we are better able to consider both the mechanisms, and the consequences of invasion. Carlton (2001) provides a broad overview of the problem, while Chapman (2000) provides a more focused view of a particular aspect. Invasions do not happen outside an ecological context, and it is this that Chapman seeks to provide in his symposium review of the zoogeography of estuarine peracarid invasions. Those of us at the October workshop got to hear John deliver, essentially, this treatment as a talk. Persons unable to attend that meeting will have to content themselves with reading the article. Carlton’s review is available by request from the Pew Memorial Trust and can also be downloaded as a PDF file from their website. The covers of the hard copy of this article bear a truly frightening image of the Chinese woolly-handed crab *Eriochir sinensis* taken in Germany.

It has been suggested in the past that healthy ecosystems are largely resistant to invasion. Two papers by Jackson (2001) and Jackson et al (2001) consider the history of the coastal ocean in the US and comment on why we are where we are today [among other things, inundated with introduced species]. While a number of potentially onfounding influences are manifest, the authors find a clear pattern of decline which begins with over-exploitation of



marine stocks by humans. In some cases these impacts can be traced back to indigenous peoples, and are not totally a result of the emigration of European peoples to North America. This initial unbalancing of the coastal ecology they see as leading to a cascade of effects and impacts leading to a microbialization of coastal waters. That is, that a previously complex food web is collapsed by removal of key species (usually the largest) by human exploitation. This appears to be a well supported thesis, and not a very comforting one.

### AMPHIPOD WORKSHOP MINUTES

Participants in the two day amphipod workshop included Dr. John Chapman, Jim Roney, Tony Phillips, Phil Hoover, Don Cadien, Lisa Haney, Carol Paquette, Dr. Doug Diener, Ron Velarde, Eric Nessler, and Dean Pasko. Visits from Dr. Jody Martin, Leslie Harris, and Todd Haney added briefly to the group. After a brief business meeting we got down to the work at hand.

On Tuesday the 9th we started out with distribution of a new phoxocephalid key prepared by Dean Pasko. It was designed to bring together all of the taxa, regardless of collection depth, taken in the waters of the Southern California Bight. Dean produced this at the request of Don Cadien, with an eye to the possibility that the upcoming regional sampling in 2003 will include sampling offshore in the Southern California Borderland. The workshop served as a good opportunity to vet the key and get immediate feedback from interested users. It also helped us focus on the problems at hand by selecting "key" characters currently used for separation of species in the family. The key drew from a number of precursors prepared by Barnard, Jarrett & Bousfield, Cadien, CSDMWW's own in-house key, and others. None of these was as comprehensive as Dean's resulting construction. He is modifying the draft used at

the workshop to incorporate what we learned. The final product should be available in the near future and will be included with a newsletter.

One of the first items we reviewed was how to interpret the presence/absence of subapical spines on uropods 1 & 2. This is important as it occurs in couplet 2 of the key, and you will go terribly wrong if you interpret the structure incorrectly. Subapical spines are not apical, that is they are not the same as the apical nail. Instead they lie just below the apical nail, and are lateral on the ramus. They are typically small and posteriorly directed (lying nearly prostrate on the ramus), but are well separated from any more basal spination.

We began our consideration of problem taxa with the phoxocephalid genus *Foxiphalus*, focusing particularly on the methods used to separate *F. cognatus* from *F. obtusidens*. This complicated intercalibration reidentification of SCBPP samples six years ago. The keys at that time tended to emphasize the structure of the epistome and the ensiform process of the second antenna. As initially pointed out by Jim Roney, the epistome illustrated for *F. obtusidens* is quite variable. Some of this variation came from the fact that the concept of the species "obtusidens" has contracted significantly from its treatment in Barnard's 1960 monograph on the family. He illustrated a number of forms under the name *F. obtusidens* later described as other species in J. L. Barnard & C. M. Barnard (1982). Even once these extraneous images were set aside, there remained a significant core of variability in the characters used to discriminate *F. obtusidens* from its congeners. In preparation for the meeting Don Cadien and Lisa Haney had examined LACSD vouchers of *F. cognatus* (two lots only) which had been separated from *F. obtusidens* on the basis of the epistome and the ensiform process size. In review of the literature it was concluded that the only definitive difference of a non-equivocal nature was the presence of a bifid right lacinia mobilis



in *F. obtusidens*, and a simple right lacinia mobilis in *F. cognatus*. We removed and mounted the right mandibles of specimens from each of the two lots identified as *F. cognatus*. They uniformly had a bifid lacinia mobilis of a characteristic appearance; with the distal branch only about one-third to one-half the length of the proximal, and gently curved away from the axis of the structure. We showed examples of this to the participants using the digital imaging system brought along by the attendees from the Pt. Loma Lab. The animals were thus misidentified *F. obtusidens*.

Jim Roney pointed out that the two differed in a more easily accessible way; in the spination of the second uropod. Jim said that he had found the presence of a single medial spine on the inner ramus of uropod 2 to be diagnostic of *F. cognatus*. There is no spine on the inner ramus of uropod 2 of *F. obtusidens*. Several specimens whose identity as *F. obtusidens* had been confirmed with the right mandible, the epistome, and the antennal ensiform process were examined for medial spines on the inner ramus of U2. They were absent as expected. We then pulled the holotype of *Foxiphalus cognatus* from the Museum collection, and began to check the characters which seemed to be potential discriminators: the right lacinia mobilis and the U2 spination.

The holotype is a fully dissected specimen whose parts remain loose in the preservative of the inner vial of the jar housing it. After rinsing it out into a dish for examination Don Cadien began to panic as he watched the disconnected parts whirl around in the alcohol, realizing that he had to find and replace all the individual mouthparts, etc., or permanently impair the condition of the holotype. At least the necessary parts were found and examined.

The right mandible was located and mounted. Upon examination it was found to have a simple lacinia mobilis, as advertized. Jarrett and Bousfield (1994) had indicated in their treatment that the right lacinia mobilis might

actually be lacking. The reason for this statement was clear in the condition of the holotype. The right lacinia cannot easily be separated from the spines of the raker row except by position. There is nothing in the structure of the lacinia that differentiates it from the raker spines. One must act on the conviction that loss of the lacinia on one of the two mandibles is less likely than that the lacinia should converge structurally on the raker spines in order to report a right lacinia in this animal. Counts of the molar hump spines proved nearly impossible in the mounted specimens, so no serious attempts were made to check the reported differences between *F. cognatus* and *F. obtusidens* in molar spine count. Images of the right lacinia of both *F. cognatus* holotype, and selected *F. obtusidens* specimens were captured with the digitizer, and are available at the Point Loma Lab (contact Dean Pasko).

The urosome of the holotype was partially intact, with the uropods removed from one side. Attempts to resolve the condition of the U2 which remained attached were unavailing. The removed appendage was eventually found after much searching, and showed that the holotype did have a medial spine on the inner ramus of U2 as expected. This was also digitized and should be available from Dean Pasko.

Finally, examination of the epitome of *F. cognatus* showed it to be of the “acute” form as illustrated by Barnard (1960) (images available from Dean Pasko, CSDMWWD). And, in conclusion, while the epitome of *F. obtusidens* has proved to be highly variable in its degree of production – with the more extremely produced state creating the confusion cited above – it is consistently blunt or apically rounded.

The result of these examinations is that we should downplay the use of the characters previously considered diagnostic - the epistome and the ensiform process - and concentrate on



the characters we verified during this meeting. It is recommended that the initial identification as *F. cognatus* be based on the configuration of U2 (according to Dean's key), and that the ID be confirmed via the right mandible. Based on examination of CLACSD collections and an initial foray into the 21 lots identified as *F. cognatus* in the NHMLAC collections, this is not a common species in the SCB. There is a set of J. L. Barnard identified *F. cognatus* specimens in the collection (5 lots) which will provide useful information on the constancy of other character states once examined.

Distribution of *F. cognatus* must, however, be unsure until existing material is reexamined. Thirteen lots from the BLM project now at the museum need reevaluation. The first *F. cognatus* examined from that material proved to be an *Eobrolgus spinosus*, and a nice large one at that (remember, however, that these identifications predate the erection of *Foxiphalus* and *Eobrolgus* by Barnard in 1979 and the key introduced by Barnard & Barnard in 1982).

After considerable delay (about 20 inspections of the dish) it was determined that all of the holotype had been returned to its vial, and we pushed on to a consideration of another *F. obtusidens* related issue, separation of *Majoxiphalus major* from *F. obtusidens*. Originally described as a subspecies of *F. obtusidens* by J. L. Barnard in 1960, it gradually progressed to being recognized at species level as *F. major*, then finally was made the type species of a new genus by Jarrett and Bousfield (1994).

Don Cadien has felt comfortable with this separation, as he had access to considerable material collected in Central California, where the species is common. He feels that the two can easily be separated on a gestalt basis related primarily to the configuration of the head and rostrum. Others who have not seen many (or any) specimens, found the differences as discussed by Barnard (1960) and Jarrett and Bousfield (1994) more problematic. Carol

Paquette was kind enough to bring in two lots taken in shallow water off Atascadero State Beach (Morro Bay) in NPDES sampling. Each contained a number of specimens of *M. major*, including some very large adults. One large female was pulled for comparison. An equivalent sized female was selected from among *Foxiphalus obtusidens* material brought by CSDMMWD. The two were placed side by side in a dish and direct comparison of various characters was facilitated. The conditions of both these animals were documented with the digitizing camera, and are available from Dean Pasko.

In addition to the relative lengths of the head and rostrum, we examined the condition of the 3rd pleonal epimeron, and the 5th and 7th pereopods of both animals. The quantitative differences in the width of the 4th and 5th articles of both these legs were much easier to appreciate when the two species were directly compared. Most participants seemed satisfied that the two were clearly differentiable, and based on the side-by-side comparison, they had a good fix on the appearance of the two species. Along the way we also examined specimens of *Foxiphalus golfensis* to demonstrate the dorsal setation along the posterior margins of the pleonites, and the strong ventral setation of the basis of P7. These features clearly separate this species from *F. obtusidens*.

*Foxiphalus similis* also came up with regard to the reported variability of the epistomal conformation in the male. Lisa Haney pointed out that the degree of sexual dimorphism exhibited by this species seemed greater than that reported for other species, and wondered if perhaps there was un- or under-appreciated sexual dimorphism in other members of the genus. We never really got to the examination of material from the NHMLAC collections which might address this issue, and we will need to address the question more thoroughly in the future. Fortunately most agencies have plenty of their own material of *F. similis* to



examine at home with an eye to sexually dimorphic variation. Lisa also wondered if males might be misidentified as other taxa because their epistomes differed so strongly from those of the females. Jim Roney opined that males of *F. similis* had reduced epistomes compared to females of the species, but not as reduced as in other congeners.

Character variability was a concern which ran through both days of this workshop (see *Corophium* discussion below). Several times we paused to grapple (usually without definite outcome) with such questions as “why does the presence of one spine on an appendage define a species level difference in some taxa, while broad variation in most characters is tolerated in others?” In other words, is the species concept applied evenly throughout the group? The answer was always “well, no...” to this particular question. There was no answer to the follow-up question “Well, why not?” The argument that eurytopic species might be expected to have a greater variability in character states than stenotopic species was put forward for consideration, but no consensus was reached. As mentioned, such interludes broke out sporadically over the two day workshop, but in the end no satisfactory treatment of the question of variability was reached.

After a break for lunch we returned to tackle a problem that arose from Dean’s key. In the key he had chosen to return to the use of the species name *Parametaphoxus fultoni* for specimens in that genus taken in Southern California. Operating on the assumption that *P. fultoni* was a North Atlantic species, and not appropriate for use in our area, some local workers had been identifying local *Parametaphoxus* specimens as *P. quaylei*. In their original description of that species Jarrett & Bousfield (1994) were careful to note a series of minor differences between their species from Puget Sound (and other northern waters) from southern specimens identified as *Metaphoxus fultoni* by Barnard (1960). Piqued

by Dean’s key Don Cadien and Lisa Haney attempted to find evidence in LACSD specimens identified as *P. quaylei* that would either prove them to be such, or prove them to belong to another species. Character states examined were those provided by Jarrett & Bousfield, and also the condition of the copulatory spines on the 4th article of the 7th pereopod in the male. Barnard did not illustrate or describe them in the material he examined from the southern California Bight, and western Mexico. They were well illustrated for *P. quaylei* by Jarrett & Bousfield, and a good illustration of the copulatory spines of *P. fultoni* from European waters was provided by Lincoln (1979). It was hoped that this specialized secondary sexual character could be the key allowing us to decide if the southern California material belonged to a new species, or to one of the described ones.

Male copulatory spines were easily seen on the legs. A series of male legs from animals collected off Palos Verdes by CSDLAC showed an interesting situation. The male copulatory spines were definitely not the same as shown for *P. fultoni* by Lincoln (1979) so we ruled that out as a name to be used for our local specimens. Separating our specimens from *P. quaylei* will be more difficult as they are similar, if not the same, in copulatory spines. Our initial examination was of a first sexual molt juvenile male, whose antennae had barely begun to elongate. His copulatory spines were very different from those illustrated for *P. quaylei*, being more numerous, shorter, not flattened distally, and located higher up on the face of the segment.

Examination of more mature males from southern California showed nearly all these differences to be related to molt stage, not to interspecific differences. There does seem to be some variability in the appearance of the copulatory spines in mature males from our area, and they could overlap the condition illustrated for *P. quaylei* if we allow a little



variability in that species (not yet documented). No northern specimens identified as either *P. quaylei* or *P. fultoni* were available in the Museum collections.

Evaluation of the variability of the copulatory spines in *P. quaylei* remains work for the future. We should continue to evaluate the variability in spine count, size, and appearance in material from southern California as additional males are encountered and processed.

A number of the character states identified by Jarrett and Bousfield proved difficult to evaluate since they dealt with coxal configuration. In our small animals it was usually necessary to use the compound microscope to get enough magnification. Unfortunately most of these characters were located along the thickest section of the animal, and in a whole body mount, were hopelessly obscured by the many overlapping structures. Several of the characters that could be seen seemed to point to differences between our local specimens and *P. quaylei*. In particular we found the differences cited by Jarrett and Bousfield in the size and shape of coxa 1, in the basis of P7, and in the posterior lobe of coxa 4, to be visible in the specimens examined. We need to keep examining these animals locally to develop a good idea of the degree of population variability in these characters. It is suspected that there is a local species separable from *P. quaylei*, a position which John Chapman endorsed as being his experience as well. We should at the very least discontinue use of *Parametaphoxus fultoni* as being inappropriate for our local material. We should begin to use a new provisional species *Parametaphoxus* sp A (a voucher sheet will be forthcoming) to refer to those specimens in the genus taken in southern California and northern Mexican waters. The range of this species, and if there is a gap or an overlap at the northern end of its distribution, with respect to *P. quaylei*, remains to be demonstrated.

We then considered two related species, *Metaphoxus frequens*, and *Cephalophoxoides homilis*, and how they are separated from *Parametaphoxus*. Dean was not happy with the reliance solely on examination of the mandibular molar for separation of *Cephalophoxoides* from the other two species. The presence of a tritulative molar proved a problem for CSDMWWD recently when a portion of the molar was left behind while pulling the mandible for closer examination. The resultant stub made a tritulative molar appear non-tritulative, resulting in a misidentification of a *Cephalophoxoides* as a *Metaphoxus*. While these two species can be readily distinguished by more easily observable characters (e.g., the setal pattern of coxae 1 and 2), we were unable to come up with another character which could be applied throughout the three genera. One species in each of the three genera is present in the Southern California Bight and are separated on the condition of the molar and second gnathopods.

Don Cadien maintains that *Cephalophoxoides homilis* can be separated from the other two on the basis of a thickened and/or reinforced carapace at the very end of the rostrum. This gives *C. homilis* the appearance of having an incipient "drip" at the end of its "nose". While this thickening is subtle, it is present in all specimens of the species examined to date. *Cephalophoxoides homilis* proved to be quite abundant in collections in the Bight, with 185 lots (114 of them identified by J. L. Barnard) in the Museum's collection.

Because the Times/Mirror Room in which we were meeting had been promised to another, we packed up in the late afternoon and moved to the Worm Lab to continue our specimen examination and discussion. We reverted to our earlier discussion of *Foxiphalus* with examination of the holotype of *F. xiximeus*, a species seen only rarely (there were no lots other than the holotype in the collection). We confirmed the inflexible nature of the apical nail of the inner ramus of U1, and also the



nature of the epistome in this species. As these are characters which feature in separation of *F. xiximeus* in the key, it was important to verify their utility. We also examined some specimens of *F. similis* in an attempt to appropriately describe the nature of the epistome in that species.

John Chapman had requested that specimens be pulled of *Rhepoxynius tridentatus* and *R. tridentatus pallidus*. He examined these to satisfy himself of the accuracy of the existing descriptions of these two forms. The first lot examined proved to be a label-squashed *R. heterocuspoidatus* instead. This was segregated for correction prior to its return to the collections.

John also examined material of *Melita oregonensis* from the collection. We finally broke up the workshop and headed out for dinner and then rest for the rigors of another day of podwork.

On Day 2, Wednesday the 10th of October, we began by hearing a brief presentation by Phil Hoover on the new amphiloichid revision (Hoover & Bousfield 2001). He informed us that, although being credited as first author, his role had been mainly in dissection and preparation. He expressed some unease about the new genera erected in the paper, a point where his views and those of his coauthor did not coincide. We will probably examine this family in more detail later, when we have gathered our material and spent more time applying the revised view of the Eastern Pacific forms presented in the paper, to the specimens we encounter in our monitoring.

John Chapman then gave a presentation dealing with non-indigenous species of peracaridans in the Eastern Pacific. This is substantially what he presented at the First National Conference on Marine Bioinvasions in 1999 (Chapman 2000). This was a most interesting and well presented hypothesis regarding the influence of climate on the NIS status of a region. John maintains that there

are naturally exporting regions and naturally importing regions, where placement of a region in one or the other category depends on the variability and diversity of its climate. Nearly all non-indigenous species in estuaries of the northern hemisphere are from western sides of the Pacific and Atlantic oceans. It turns out that within 25 to 60 N latitude, the eastern Pacific and Atlantic coasts are relatively consistent in climate but diverse in habitat; while along the western sides of these oceans there exist only narrow bands of consistent climate. In other words, climate changes relatively rapidly and is quite varied with increasing latitude on the western sides of the Pacific and Atlantic oceans. Consequently, those species moving from west to east are more likely to find a hospitable local to settle, while movement in the other direction offers a much smaller likelihood of hitting that narrow band of hospitable conditions. Those unable to attend can get a good representation of this hypothesis from the paper cited above. We had asked for a review of the results of last summer's NIS survey in Southern California boat harbors, bays, and estuaries. John was unable to provide much of a summary because collections made during that effort were still being examined. We will hope for a presentation on the result of the survey at a later date when the lab work is completed.

We also asked John to give us his views on the revision of the Corophiidae presented by Bousfield & Hoover (1997). He did not do so in detail. He did state that while he was in agreement with the authors on many points, he felt that the genus *Sinocorophium* was not supportable. Having consumed all morning in discussions we retired to the Museum cafeteria for lunch.

The first specimens examined on our return belonged to an introduced species in Los Angeles/Long Beach Harbors similar or identical to *Corophium heteroceratum* from the South China Sea. Specimens of this taxon came from Hyperion (CLA-EMD), collected in



outer Los Angeles Harbor in monitoring of the Terminal Island Treatment Plant, and from the inner portion of Long Beach Harbor (from Carol Paquette, MBC Applied Environmental Sciences). Initially it was thought that the two forms might not be the same. Differences in proportions, spine counts, configuration of telson posterior margin, etc. all seemed to point towards separate species. This was the initial position. In the ensuing examinations this changed repeatedly; for a time it seemed as if both *C. heteroceratum* and *C. homoceratum* were present in the Harbors. After good specimens of both sexes from both areas were viewed, John concluded that this was all one variable species, and that species was *C. heteroceratum* Yu. The character which seemed to unify all the variant individuals was the nature of the distal tooth on the 4th segment of antenna 2. In *C. heteroceratum* this is truncate terminally, while in all related species it comes to a sharp point. The question of character variability was discussed further in relation to the examination of these specimens.

Don Cadien then came forward with specimens he had identified as *Monocorophium californianum*, an unusual offshore endemic species. These had been taken in a trawl from about 30m off Palos Verdes. John examined the specimens and agreed. We also checked the material in the museum collection for comparison. The lot from off Palos Verdes contained over 20 specimens, more than the 3 lots in the museum collection combined. We considered why this animal was so rare, and the most likely explanation was that its preferred habitat was ecotonal, and not often

sampled. The Palos Verdes lot came from tubes on a dead gorgonian skeleton caught in a trawl net. Other captures in similar habitat have probably been tossed over the side without examination of the muddy tube mass. If *M. californianum* favors habitats of low relief in an otherwise soft bottom, most of its population would not be subject to sampling by remote means. John Chapman also pondered if this species might have been driven into marginal habitat by competition in more typical shallow embayments with introduced species of corophiids.

John also examined specimens of *Cerapus tubularis* Cmplx from southern California. Don Cadien asked him to examine the anterior face of the head on these animals to see if John saw the same structural complex of ridges and subrostral spine Don had previously described on the taxonomic list-server and previous SCAMIT Newsletters (April and November 1999). John saw this structure, and was interested in the suggestion that it was related to use of the bases of the first antennae as an opercular device, closing the aperture of the tube constructed by these animals.

At the end of the day the amphiloichid species *Gitana calitemplado* was viewed and images of this small animal were digitized by Dean Pasko. We all departed tired after two days of fruitful meetings. John Chapman stayed the rest of the week to review further materials from the museum collections. As in previous visits to SCAMIT meetings, we valued and enjoyed his contributions. Thanks John. [Thanks also to Dean Pasko and Lisa Haney for their assistance in preparation of the minutes from this workshop - Ed.]



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