



## Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive  
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October, 2000

### SCAMIT Newsletter

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<b>SUBJECT:</b>	Animals In Situ - images from camera survey in Santa Monica Bay
<b>GUEST SPEAKER:</b>	Dr. Brian Edwards, USGS
<b>DATE:</b>	13 November 2000
<b>TIME:</b>	9:30 a.m. to 3:30 p. m.
<b>LOCATION:</b>	Times Mirror Room Natural History Museum of Los Angeles County 900 Exposition Blvd.

#### IN MEMORIAM



In recent Newsletters we have had a series of obituaries for noteworthy taxonomists and biologists. Austin Williams has now been eulogized in the Proceedings of the Biological Society of Washington (Lemaitre & Collette 2000). We must sadly add Dr. Ruth Turner to the list of those we have lost. The notice below was written by George Buckley and is reprinted from the bionet DeepSea newsgroup [thanks to member Larry Lovell for forwarding it].

“Ruth Dixon Turner died on Sunday, April 30. She held the Alexander Agassiz Professorship at Harvard University and was a Curator of Malacology in the University’s Museum of Comparative Zoology where she also served as co-editor of the scientific journal “Johnsonia”. She graduated from Bridgewater State College, earned a Masters degree at Cornell University

*Cardiomya lanieri* Strong & Hertlein 1937  
LA City San. Dist., FB 12, Loc: SMB 68m 1/11/00  
ID by T. Phillips & D. Cadien  
Image by K. Barwick, 31 Oct 00

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and a PhD at Harvard/Radcliffe under the direction of Dr. William J. Clench who brought her to Harvard from the Clapp Labs in Duxbury.

Turner who had begun her scientific and teaching career in a one room schoolhouse in Vermont went on to become the world's expert on Teredos, bivalved mollusks called shipworms. These marine borers cause widespread destruction by eating wood in the ocean environment, destroying piers, docks and wooden boats. She became known affectionately as "Lady Wormwood" for her work in this field. It was she that explained why there was little wood left on the sunken liner Titanic when it was discovered by fellow scientist Robert Ballard.

During her career which spanned some five decades Dr. Turner kept laboratories in La Parguera in cooperation with the University of Puerto Rico, Northeastern University's Marine Sciences Institute at Nahant, the Marine biological Laboratory at Woods Hole and at Harvard. Her work led to collaboration with the United Nations Food and Agriculture Organization, U.S. Navy Office of Oceanography which funded much of her research and the Woods Hole Oceanographic Institution where she became the first woman scientist to utilize the Deep Submergence Research Vehicle ALVIN to study the deep sea.

Over some two decades she participated in several dozen oceanographic expeditions. The Oceanographic Institution later named Turner a "Women Pioneer in Oceanography". She received many other honors including a number of honorary degrees. The venerable Boston Sea Rovers, an ocean education group of which she became an esteemed member named her "Diver of the Year" and in recognition of her accomplishments the U.S. Navy dedicated their book on "Biodegradation in the Sea" to Professor Turner. Other book dedications noted that she was a "Biologist par

Excellence" and quoted her oft repeated motto "know your animals". Dr. Turner's last major project was as a member of the scientific team that investigated the wreck of the "Central America"- a sunken steamer that contained millions in lost gold. It has been called the most scientifically studied shipwreck ever by a Federal judge.

A past President and beloved member of the Boston Malacological Club and the American Malacological Union, Dr. Turner provided leadership to these organizations and guidance to their members who study seashells and other mollusks. She was a Director of the Marine Ecology Project and a consultant to many organizations including the National Geographic Society and its programs on deep sea vent systems. Lecturing widely, she shared her knowledge and love of the sea and its life. A dedicated teacher and skilled dissectionist and illustrator, Turner was a mentor to hundreds of students around the world. She trained people, opened doors for them and watched proudly as they started out on their own careers.

Dr. Turner leaves her sisters Winifred Garrity and Lina MacNeil. She is predeceased by her parents and her brothers Henry and Arthur and sisters Jessie, Mary and Frances. Contributions are being accepted to a Memorial Fund that has been established in her name at the Woods Hole Oceanographic Institution. A wake will be held on Thursday from 4-8 PM at Long Funeral Home in Porter Square, Cambridge with services on Friday at 11 AM.

[George adds the following personal comments]:

As a teenager I began working for Ruth Turner and Bill Clench in the Mollusk Dept. at Harvard University's Museum of Comparative Zoology. Being the person with a car I became the "designated driver" so to say and ended up being in charge of field expeditions in the local area which led to many enjoyable afternoons and very early morning "Minus tides" - the



better to collect marine specimens as well as leading to muddy feet and a very messy car as all sorts of marine fauna and flora were brought back to Harvard. Ruth provided sage council on my winning high school science fair projects on “Radula the teeth of snails” and was duly proud of my achievements. The job grew in importance as I had the prime responsibility on many occasions of getting Ruth “to the sub on time” at Woods Hole.

As I entered college the collecting went further afield with trips to the Everglades, the Altamaha River and Puerto Rico. Ruth was always there to provide guidance, support, training in dissections whatever was needed. I particularly enjoyed going to conferences and seminars with Ruth and observing the great good will shown towards her. She truly loved what she did and greatly enjoyed interacting with people and people loved her. I taught a course on Ocean Environments with her for many years at the Harvard University Extension School and even after she retired and I kept teaching the course she would accompany us on our field trips - “Cape Cod Expeditions” as they are known-well into her eighties much to the benefit and enjoyment of my students. Ruth will be missed by legions of students.”

The above obituary was intended to be part of the May Newsletter. As this dragged out and was eventually replaced by the compendium issue, this text was unintentionally omitted. It is included here, belatedly, to inform our readers of Dr. Turner’s death. We have suffered several more losses since then; both Willard Bascom, former director of SCCWRP, and Dr. Gil Jones, formerly of USC and the Allan Hancock Foundation have died from complications of broken bones. Information on Willard Bascom is available on the SCCWRP website (SCCWRP.org), but details of Dr. Jones death are still sketchy. He suffered a fall, was hospitalized then transferred to a convalescent facility, and there contracted infections in his setting bones that eventually

took his life. He apparently died sometime in late August or early September, but the date remains uncertain. Any readers who have information on his passing, or any former students or associates who would like to share memories of Gil with others are encouraged to contact the editor.

### NEW LITERATURE

In the last NL we discussed a recent paper in which the relationship between live coloration and speciation of starfish was considered. Deheyn et al (2000) consider similar evidence which suggests that the ophiuroid *Amphipholis squamata* is more than one genetic unit. This species, which is “cosmopolitan” and is reported locally in southern California, exhibits considerable variation in disk and arm coloration and pattern, and in the intensity of bioluminescence. The authors evaluated specimens from England, France, New Zealand, and Papua-New Guinea with regard to their coloring and bioluminescence, and found patterns that suggest direct genetic linkage of these parameters. They did not, in support, do any enzymatic analyses or DNA sequencing. This is one of a series of reports by the same authors on this organism, and perhaps they will in the future provide molecular evidence in support of their color and bioluminescence separation. Their current data does seem to suggest that the taxon *Amphipholis squamata* conceals a series of discrete taxa. [Dimitri Deheyn is now pursuing graduate studies with ophiuroids at Scripps. A nice write-up of some of his and co-workers current activities with bioluminescence is presented by Jennings (2000) in the magazine produced by SIO, Explorations. My thanks to member Larry Lovell for providing me a copy of the issue.]

Less problematic is a new species of the crab genus *Paralomis* found on a whale carcass off southern California (Williams et al 2000). As is usually the case with prolific and collaborative workers such as the late Austin B. Williams, his publications keep on coming for some time



after his demise. Two specimens of this new crab were found on an intentionally emplaced whale carcass at 1922m in the San Clemente Basin. This new species is not closely related to either of the known species in the genus from California, *Paralomis multispina* and *P. verrilli*. All three are found in depths greater than currently sampled in POTW monitoring. Unlike the two other species in our waters which have spined carapace and legs, the new species has a knobbed and granular carapace and legs.

Fiege et al (2000) tackle one of those messy problems having to do with missing types, unpublished illustrations, and a history of confusion of two separate forms as one. They reexamine the polychaete *Magelona mirabilis*, erect a new taxon closely related to it, and summarize the status and characters which differentiate the seven species known in the genus from European waters. Along the way they make observations useful to southern California workers and refer to the local species *M. sacculata* and *M. pitelkai*.

The myzostomids are an odd little group and despite their heavy modifications for symbiotic relationships with other taxa, they have usually been considered annelids. In the few instances when I have seen them as associates with echinoderms in local trawl catches they have looked, to me, like aberrant polychaetes. As part of the continuing cladistic reevaluation of animal classification, they have come under scrutiny (see also Boore & Brown 2000 for a consideration of the position of leeches, polychaetes, pogonophorans, and arthropods). A recent communique on the annelida web-site from Geoff Read dealt with this, characterizing the upshot of Eeckhaut et al 2000 as "Molecules move Myzostomida". DNA sequencing of two genes suggests that myzostomids are more closely related to flatworms than annelids. This result, if verified

by others, would indicate that some of the characters previously viewed as uniting clades within the Animalia (such as possession of a trochophore larva) are instead homoplaseous.

One must remember that molecular data is not always paramount and may not agree with morphological data. Case in point is the aptly named article by Westheide et al 1999, "Systematization of the Annelida: different approaches". In what is basically a review article covering the most recent attempts to cladistically analyze annelids, three differing views are presented sequentially: those of Greg Rouse; those of Damhnait McHugh; and those of Wilfried Westheide and Günter Purschke. Each approach uses different methodology to approach the goal of annelid reassessment. Rouse' morphological analysis supports a monophyletic Polychaeta, while the other two suggest that Polychaeta is a paraphyletic concept. Comparison of the three proves interesting and each presents a plausible argument. No "winner" is declared, the nature of the existing controversy is merely laid out compactly for the reader. The placement of the annelids among other animal groups is considered by Jenner (2000).

Knowlton & Highsmith (2000) deal with less inclusive matters; the interactions of a predator population (the nudibranch *Archidoris montereyensis*) and its sponge prey (*Halichondria panicea*). The authors describe the relationship between this species pair as "a chase through space and time". The prey species is basically a fugitive, hiding from its pursuing predator in a matrix of uncertainty - patchily distributed in both space and time. When the predator comes across the prey it devastates it, but often the prey is missed by chance, in a system where chance is a design element.

Fractals give the same impression of chance and randomness hiding rigid design. Fractal geometry is applied to a consideration of habitat and patch structure in aquatic





environments by Schmid (2000). Mathematically this is tough sledding for some biologists (such as myself), but the author successfully attempts to distill the appropriate conceptual precis from the math. A series of concrete examples are also provided. This paper could be advantageously read by anyone concerned with interpreting the distribution of animals.

Although already assuming the dimensions of “a classic” the Bivalve Book [please take note of the capital B’s] has only been available since June of this year. Like many other things its review was orphaned by the compendium issue of the Newsletter. The long anticipated and eagerly awaited debut of Coan, Valentich Scott and Bernard’s Bivalve Seashells of Western North America has passed and it is now available. I expect most readers to already have one close at hand. Those of you who do not should waste no time in remedying that lack. You can do so at:

<http://www.sbnature.org/atlas/bivbook.htm>

The volume represents completion of work originally outlined by Dr. Frank R. Bernard prior to his death. His catalogue (Bernard 1983) gives some idea of the gestation period of this work. The degree of intensity applied by his coauthors to the project’s completion can be seen in the short time between release of a species checklist (Coan and Scott 1997), and the arrival of the work itself. Although the concept was Frank’s, and much of the background work was done prior to his death, final writing and preparation of the text and illustrations was done by Gene Coan and Paul Valentich Scott. The result is exactly what would make the long wait for completion worthwhile, a truly inclusive treatment of the bivalve mollusk fauna of the northeast Pacific.

The book, at 764 large format pages, **covers** the marine bivalves from Baja California to the arctic, and from the intertidal zone out to 4500+ meters of water. All marine forms, from

the tiniest on up, within this geographic and bathymetric coverage area are treated. Each species is described, illustrated, and a synonymy provided. In nearly all cases an example of the species has been digitized, providing both internal and external views of the shell. Illustrations are in high contrast black and white and are uniformly presented. Supplemental illustrations of anatomy (typically whole body with one shell removed) are peppered throughout the book. These are drawings rather than photographs, which provide clarity instead of an uninformative sheen of moist tissue. Within each family the taxa are arranged into a comparative character table (or several in very large groups), which allows direct comparison of their salient characteristics. Subfamily and higher taxa are briefly keyed here and there throughout the book but the lower level separation is by character table.

One of the outstanding aspects of this effort is the degree to which it gathers references to a species taxonomy, nomenclature, morphology, physiology, life history, associations, etc. at the end of each species description. This provides access to a large amount of literature; over 4700 references are included in the 123 page literature cited section. Citations are presented COMPLETE, without abbreviations, and with full authorship. Our hats are off to the authors who fought to have such useful completeness included [“you can’t do that, it’ll make the book bigger and more expensive”] in the face of economic realities. The utility of the result more than justifies the additional cost entailed. Around the central core of systematically arranged species descriptions are a wealth of supporting information. Included are such uncommon items as a review of human-clam interactions (farming and fishery), a summary of the current understanding of the origin of the Bivalvia and it’s relationship to other molluscan groups. More usual items are also presented, including a brief treatment of bivalve anatomy and shell structure, and a glossary.



So far I have only heard of two points of dissatisfaction among consumers - one related to a design decision, and the other an unavoidable consequence of the project itself. The first is that individual figures are not separately identified on compound plates. They are, of course, associated with the taxon name, but no figure numbers are provided to facilitate citation. This leads to references such as "*Panopea abrupta* on Plate 104" rather than "Plate 104, Figure 4". This has struck some users as an awkward and unnecessary complication. For most users of the book however, who are not including plate references in other publications, this is not an issue.

The second point is that this massive tome weighs a great deal. Being on coated paper, which allows the high quality printing of plates and text which characterize it, it can only be comfortably used on a table or lap. Hand holding is restricted to those with wrists the size of small trees. A very minor quibble, and an unavoidable consequence of completeness and high quality of the book itself.

Fortunately most of us have the requisite resting places for the book. Since the binding is very strong and well done, we can expect this volume to last physically despite its weight. The content should age gracefully as well, but like all major additions to knowledge it will promote its own obsolescence. This new tool should considerably stimulate research on bivalves in a good part of the world, an undoubted aim of the authors. It will be comprehensive for only a short time as it serves to smoke out new records of extralimital taxa and assist in the recognition of new forms within the coverage area.

First the Taxonomic Atlas series and now this book; the Santa Barbara Museum is emerging as a publishing powerhouse and major source of new taxonomic resources. This volume

should be the constant companion of all west coast mollusk workers who do not restrict themselves to non-bivalves. Frank Bernard would have been proud of it.

### OLD LITERATURE

Major areal monographs from other areas often wait years before being checked for applicability to our fauna. Such was the case with Bouchet & Warén (1980, 1985, 1986, 1993), whose multi-part revision of Atlantic gastropods was recently acquired by your editor. It is remarkable that all are still available in this age of rapid remaindering, but they are, as are the Kaas and Van Belle Chiton monographs discussed in the last Newsletter.

Much of the contents of these volumes does not directly relate to our local fauna but there is overlap in a few areas. Most useful is probably that dealing with the eulimids and epitoniids (Bouchet & Warén 1986), two families which are well represented in our fauna and in which generic level discrimination remains contentious. Anders Warén is pretty much the authority worldwide on the eulimids at present, and his observations and approach to their generic level taxonomy is useful reading for any mollusk worker worldwide. Although a number of individual papers have come from him in the last decade dealing with eulimid taxonomy, the revision in this series is by far the most comprehensive.

### 10 SEPTEMBER MEETING MINUTES

#### Upwelling and Oxygen Minimums

Dr. Lisa Levin of SIO recently gave a talk at SCCWRP which outlined her work on the communities of hypoxic and dysoxic environments associated with the Oxygen Minimum Layer in various parts of the world. She pointed out that the presence of these features is usually linked to upwelling systems. We always mention that upwelling is a prominent feature of the Southern California Bight but none of the programs currently monitoring POTW discharges measure



upwelling in their study areas. Upwelling can be inferred from water column profiles of temperature, salinity, and dissolved oxygen taken during quarterly regional water column data cruises, but between these quarterly points data are lacking.

Well they are available after all, just not in quite the fashion we might like. NOAA, through the Pacific Fisheries Environmental Laboratory, maintains a data record of upwelling intensity throughout the Pacific coast of the US. These data are gathered offshore and are derived from atmospheric data. Measurements are taken four times a day and have been taken since 1946 at some points, allowing a long-term view of upwelling in our area. These data provide upwelling evaluations for areas of the coast. Local bottom topography and current structure will modify this broad scale pattern in each area, yielding local patterns which vary from those provided by NOAA. The buoy derived data show, during the spring quarter at least, upwelling is virtually a daily phenomenon. There are considerable variations in intensity from day to day however, and these may be manifest locally by periods of intense upwelling followed by days in which upwelling is weak but still present. We should keep these patterns of fairly continual on-shore movement along the bottom and off-shore movement along the surface in mind when considering the movement of larvae of bottom invertebrates. Check out the data yourself at:

<http://www.noaa.gov/products/PFEL>

For a more involved and sophisticated examination of the wind forced upwelling system in the North Pacific you might seek out Parrish, Schwing, & Mendelsohn (2000). They provide a nice summary of the situation in the past two decades.

## 10 OCTOBER MINUTES

The upcoming 13 November SCAMIT meeting with Brian Edwards at the LACMNH was again announced and attendance was encouraged.

Next, the B'98 Review meetings were announced. The first, 27 October, dealing with polychaetes will be at SCCWRP. The second meeting will deal with Crustaceans and will be on 3 November at the LACoSAN district lab. And finally the Other Phyla, Molluscs and Echinoderms, will be reviewed at SCCWRP on 17 November.

Volume 7 of the MMS Atlas has been published and was circulated. A future SCAMIT meeting will be planned for the review of this volume.

A handout was passed around by Ron Velarde which deals with the introduction of *Caulerpa taxifolia* to Southern California. The pamphlet has photographs and text describing *C. taxifolia*, its life history, its invasive effects and what NOT to do if one sees it (disturb it). The phone numbers of agencies to call in case of any sightings are listed on the back. They are: National Marine Fisheries Service, (562)980-4043, California Dept. of Fish and Game, (858)467-4218, and SD Regional Water Quality Control Board, (858)467-2952.

It was announced that a visiting researcher, Rolando Bastida - Zavala, a Ph.D. student of Sergio Salazar - Vallejo, will be working on *Hydroides* at LACoSAN lab.

A CD Rom by Barrie GM Jamieson titled, Selected Polychaete Families and Their Feeding Mechanisms, is available and can be purchased for \$14.95.

The Southern California Exotic Species Survey was covered by Leslie at the meeting. It was discovered that 90% of the ascidians encountered were introduced. In addition, *Undaria* a Japanese alga, was found to be out-competing native algal species. In all, over 60



introduced species were discovered (so far), 26 of them within the Polychaeta. Most of the day was spent looking at specimens of *Pholoe* collected during the SCX. Later on in the afternoon participants were treated to a slide show by Leslie showing many beautiful live polychaetes, mostly Syllids.

### NOW IT'S GOOD?

POTW agencies, particularly the CSDLAC, are sensitized to the issue of DDT and DDT metabolites in the environment. We have dealt, and continue to deal, with a legacy of high body burdens and lingering environmental insult from discharges 30 years ago. From the monitoring perspective, DDT and related compounds are always a bad thing. This is in accordance with the position of the most of the developed world, and is behind a proposal now on the table to ban DDT production and use world-wide as part of the draft POPS (Persistent Organic PollutantS) treaty being considered by international agencies. Advocates of the ban maintain that there are other approaches for pest control more viable and less environmentally damaging than DDT use. The opponents of the ban marshal a broad range of evidence which suggests that where DDT use is curtailed or stopped in the tropics, an upswing in tropical disease - particularly malaria- follows immediately (see for instance Roberts et al 1997). They maintain that DDT should be retained for use in targeted applications, and especially for mosquito control. They do not advocate practices such as areal spraying, crop dusting, or pond spraying, but instead limited use inside homes and on mosquito netting in malaria infested regions. Those interested in this debate should be seeing references to it in newspapers and news magazines as press coverage seems adequate. A search for either DDT or malaria will yield many hits. On-line sources include journals

<http://www.sciencenews.org/20000701/bob2.asp>

and public opinion sites

<http://www.junkscience.com/ddtfaq.htm>

### SCX - AN OUTSIDER'S PERSPECTIVE

The last week of August, and a few days before it, brought the Southern California Introduced Species Survey (Southern California eXpedition) to town. Leslie Harris, a long-time participant in surveys in San Francisco Bay and in Puget Sound, served as host. Nearly all the participants stayed at her home in Pasadena, at least while in the Los Angeles area. I had intended to participate in as many days of field work as I could during the survey, and I did. All my vacation time had been spent in the Caribbean and so I could only participate in the evenings after work. This proved a daunting labor, but a most enjoyable one.

First, there were the people, many of whom I hadn't had a chance to see for years: Jim Carlton, Andy Cohen, John Chapman, Charlie and Gretchen Lambert, and others I met for the first time. A most interesting and interested group. Working with them in the lab was great fun as there were continual discoveries ("You've got to come take a look at this...")("Oh, THAT's what that is!") going on all around. The mode of work was examination of live animals, to enable use of ephemeral color patterns, behaviors and other identification cues lost with preservation. Literature was continually a problem in non-worm areas (Leslie and the Worm lab had that covered), although each person, in addition to their considerable expertise, brought a few essential references. I tried, with modest success, to flesh out the gaps with things from my library and that at the CSDLAC. Most of the missing items dealt with crustaceans as we went through the reported biota of each part of the world trying to find the identify of some of the "new" guys. And there turned out to be plenty of "new" guys to investigate.





This was the second major attraction of the SCX. I was very surprised at the number of animals in this community that were unexpected (at least by me). The benthic community seems to change much more slowly in composition than that of this fouling/intertidal rock/aufwuchs community. I spent a number of years examining the rocky intertidal community in Long Beach Harbor but found that the float/dock scrapings taken close to our sampling sites contained many species never encountered in over a decade of intertidal work. There were many familiar characters too, but a surprising number of forms were of interest, and probably originated on other continents.

Each evening when I arrived I would find John Chapman busily at work on crustaceans at one of the microscopes. During each field day several stations were occupied, and in some cases individual separate habitats within each station were sampled. Consequently each dish had to be labeled as to its source, since several samples were being treated simultaneously. Elsewhere in this melee several people were live sorting animals from benthic samples taken during the day and they would bring the result over intermittently in other dishes. There was usually a line of dishes beside each scope, like planes waiting to land at LAX. I would attempt to find something not yet begun by John, and begin working on that sample in parallel with him. Invariably he would find something in his dish to show me and vice-versa. While we did usually proceed in parallel, we would call each other into consultation on individual specimens. I, for instance, would shunt all encountered Corophiids to John, and received pycnogonids back in return. I'm sure the procedure looked disorganized, but it worked pretty well.

John and I usually would use the closest known local species as a "straw-man" identification, then try and find out why the specimen or specimens under consideration were not that species. John, who has been involved in these

surveys for years, always operated under the assumption that what we were seeing was introduced until we could definitely identify it as a species already known locally. This helped avoid 'pigeon-holing' and kept minds from reaching premature conclusions. As the local guy I was usually on the other side, assuming it was a known southern Californian form until proven otherwise. This quasi-adversarial approach was stimulating and seemed to work well. If we were able to demonstrate that the specimens being examined didn't belong to a known local species however, literature began to be extensively used.

With amphipods, Barnard and Karaman provided us a list of species known from the world recent enough to work from. With list in hand we tried to find good descriptions of each species in the literature; eliminating inappropriate candidates one by one. Sometimes this led us to a tentative ID, but more often we had to leave the identity unknown or suspected but not proved. With other groups of peracarids the species information was even less centralized. During each evening particularly good specimens of various species were submitted to Leslie to be photographed. A number of these shots turned out very well and added to the growing body of information on the live appearance of these animals. At the end of the evening we would preserve all the samples in preparation for receipt of another batch the next day.

While the main thrust of my involvement was with the microcrustaceans, there were questions on other groups as well. Jim Carlton or Andy Cohen would bring over a crab or a mollusk to ask my opinion of its identity. Often I had little or nothing to offer, since they only did this with the really unusual or problematic items. I had a much easier time with the things sorted out of the benthic samples, and could usually identify them. Vouchers were taken of each species encountered.



Although this was only one of a series of surveys undertaken by the core group during the summer, everyone seemed able to keep up their enthusiasm. Everybody was tired, and some began falling prey to exhaustion-based illness during the SCX. Even so, the cross-fertilization of seeing a series of different areas sequentially was useful. In several cases species seen only the week before in the Atlantic were recognized in local harbors.

Hopefully I will be able to participate more fully, including in the field, the next time the group comes to town. Working with these folks in this environment was both enjoyable and educational. I would recommend it highly to anyone who has the time and inclination to get involved.

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