ISSN 0738-9388

THE FESTIVUS

A publication of the San Diego Shell Club

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MEMBERSHIP AND SUBSCRIPTION

Annual dues are payable to San Diego Shell Club.
Membership (includes family). Domestic $15.00;
Overseas (surface mail): $18.00, (air mail): $30.00;
Mexico/ Canada (surface mail): $18.00, (air mail): $20.00.
Address all correspondence to the San Diego Shell Club, Inc.,
c/o 3883 Mt. Blackburn Ave., San Diego, CA 92111, USA.

The Festivus is published monthly except December.
The publication date appears on the masthead above.
Single copies of this issue: $5.00 plus postage.

Website at: http://www.molluscs.net/SanDiegoShell Club/index.html Email: cmhertz@pacbell.net

Meeting date: third Thursday, 7:30 PM,
Room 104, Casa Del Prado, Balboa Park, San Diego

PROGRAM

The Atlantidae - a Poorly-Known Group

Dr. Roger Seapy of California State University, Fullerton, will give a program on the very poorly-known and beautiful group of pelagic gastropods, the Atlantidae with images of these tiny, unique creatures from the deep ocean.

Meeting date: January 20, 2000
Shells of the month: pelagic gastropods

CONTENTS

CLUB NEWS

Minutes of the
San Diego Shell Club Meeting - November 18, 1999

Secretary Kim Hutsell opened the meeting at 7:30 p.m. by welcoming everyone. He presented the slate of officers and opened nominations from the floor. The slate for the year 2000 presented by the nominating committee was voted in unanimously: President, Mike Mason; Vice-president, Kim Hutsell; Recording Secretary, Silvana Vollero; Corresponding Secretary, Mark Scott; Treasurer, Linda Hutsell.

Carole Hertz announced the new Berry Supplement at $15.00 per copy. Margaret Mulliner announced there were no new book requests for the library from the membership. George Kennedy asked how one goes about requesting a new book and will see Margaret. Jules Hertz announced the particulars for the Club Christmas party [see review this page]. Hugh Bradner announced the Southern California Unified Malacologists (SCUM) will meet the second Saturday of January the 9th, at Scripps. Larry Lovell of Scripps will be moving the mollusk collection after the first of the year and will be asking for volunteers to help.

Kim Hutsell introduced the speaker for the evening, Dr. Tom Deméré, curator of Paleontology at the San Diego Natural History Museum. He gave a wonderful, illustrated talk on field work on the San Diego Formation. Two to 3 million year old finds were uncovered behind the Electric building in Balboa Park, the sea cliffs by Pacific Beach and Tourmaline Surfing Beach to Crystal Pier. The best exposures are in the Pacific Beach area which is rich in fossils along with Mt. Soledad to Pacific Beach, with many spreading along the Rose Canyon fault. In addition to discussing other rich areas, he told that the taxonomy of these fossils have been worked on since Dall (1874) worked on the first Pliocene invertebrates from the San Diego Formation. He told the audience what to look for in a deposit of shell accumulation and how he is interested in the paleobiological reconstruction of the then living community based on the dead remains.

A mini-auction of shell books by our own auctioneer, Carole Hertz, followed the program. Members Kay Klaus and Margaret Mulliner were the happy winners of the sale. The meeting was adjourned at 8:45 to look at the fossil shell displays brought by Dr. Deméré and by Nancy and Bill Schneider. The wonderful refreshments were provided by the Chritchlows and Billee Gerrodette. The door prize was won by Linda Hutsell.

Kay Klaus (for Silvana Vollero)

The Club Christmas Party

Each Club Christmas party always seems even better than the last. This one was truly special and the thirty-seven in attendance had a wonderful time.

Members and guests in their holiday attire enjoyed the social cocktail hour chatting with friends new and old; the room was lovely with presents under the tree; and the tables were decorated with Strombus shells donated by Don and Jean Pisor and filled with poinsettias by the Hutsells. Master of Ceremonies Jules Hertz welcomed the group with some very funny stories and after a delicious dinner, with table wine provided by the Club, he opened the more formal proceedings, again with hilarious yarns between the installation of officers and remarks by *The Festivus* editor, Carole Hertz and outgoing president Terry Arnold.

The highlight of the evening was a slide presentation by member and professional photographer, Richard Herrmann entitled "San Diego: Beauty in Every Direction." The images were outstanding and Richard's fine narrative enhanced them. It was appreciated by all. Following Richard's program, the traditional gift exchange was held with much excitement and laughter. And then the lovely centerpieces were raffled off to the holder of the winning number at each table. Members lingered to spend more time with each other and see all the shell gifts.

It was a great party.

Correction: The editor regrets the error in Skoglund (1999, vol. 31(11): 115, col. 2, para. 1). It should read "Dr. Rosewater returned the shells to Mert Goldsmith with the name *Alexania floridana* (Pilsbry, 1945). Rosewater's (1976) paper on a survey of Panamá cites the species from both ends of the Panama Canal. He also cited the Goldsmith shells as being from the Golfo de California without specifying the species name or mentioning the collecting locality."

SPONDYLUS LINGUAEFELIS SOWERBY, 1847 (BIVALVIA: SPONDYLIDAE) IN THE PANAMIC PROVINCE, WITH NOTES ON THE OCCURRENCE OF *SPONDYLUS NICOBARICUS* SCHREIBERS, 1793

CAROL SKOGLUND[1]

Associate, Santa Barbara Museum of Natural History, 2559 Puesta del Sol Road, Santa Barbara, California 93105-2936, USA

Abstract: *Spondylus linguaefelis* Sowerby, 1847, is reported for the first time on the continental shelf of the Panamic Province at Isla Jicarita, Golfo de Chiriquí, Panamá. It is also the first report of occurrences on several oceanic islands within the province. These islands include Islas Clarión, Socorro and Roca Partida in the Archipiélago Revillagigedo, México; Isla de Malpelo, Colombia; and Islas Salvador and Pinta in the Archipiélago Galápagos, Ecuador. Specimens previously reported from the Panamic Province as *Spondylus nicobaricus* Schreibers, 1793, are herein considered *S. linguaefelis*.

Introduction

The previously known distribution of *Spondylus linguaefelis* includes the Solomon Islands, Hawaii (Plate I, Figure A), Philippines, and northwestern and northern Australia (Lamprell, 1987). Kaiser (1997) reported specimens from the LACM collections, figured herein, from the Galápagos as *Spondylus* sp. (Figure 1).

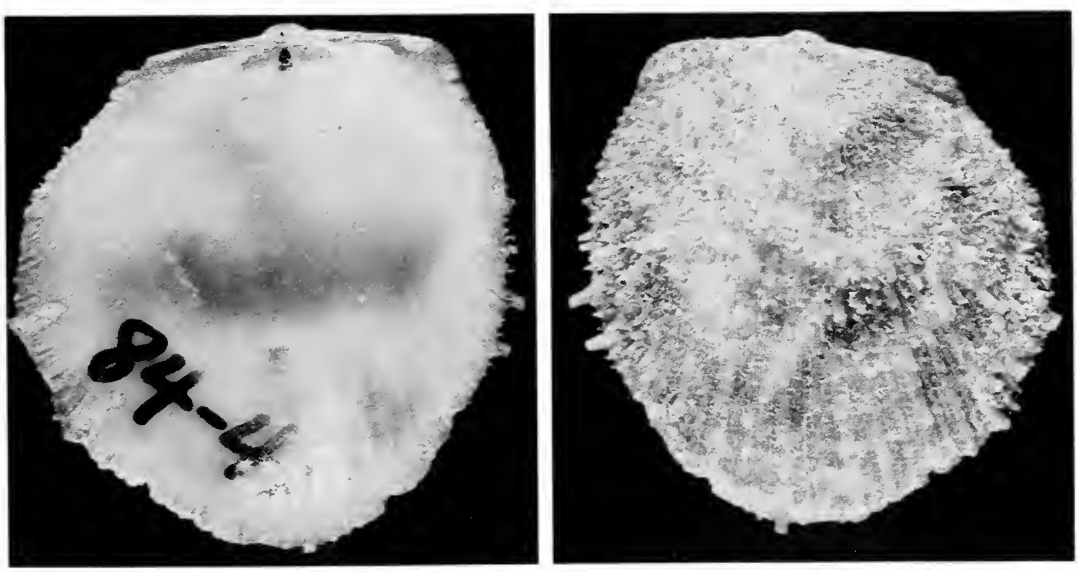


Figure 1. *Spondylus linguaefelis*, 14.6 x 14.0 mm, two views. LACM 84-41, S side of Isla Pinta, Islas Galápagos, 15-24 m. Photo: D. K. Mulliner.

[1]Mailing address: 3846 E. Highland Ave., Phoenix, AZ 85018, USA.

The color of *Spondylus linguaefelis* varies widely. A lot of three specimens taken at 55 m off Lahaina, Maui, Hawaii (SBMNH 345320) illustrates the color range of the species from Hawaii. One shell is all white, a second orange, and a third dark rose. All but one of the over 50 Panamic Province specimens seen by me are variations of the dark rose color.

Abbreviations used here are: HC, Jules and Carole M. Hertz Collection, San Diego, California; KC, Kirstie L. Kaiser Collection, Puerto Vallarta, México; LACM, Los Angeles County Museum of Natural History, Los Angeles, California; PC, Donald L. Pisor Collection, San Diego, California; SBMNH, Santa Barbara Museum of Natural History, Santa Barbara, California; h, height; w, width.

Description of Panamic Province Specimens Studied

Spondylus linguaefelis Sowerby, 1847.

Synonyms: *Spondylus gloriosus* Dall, Bartsch & Rehder, 1938; *S. minus* Dall, Bartsch & Rehder, 1938; *S. kauaiensis* Dall, Bartsch & Rehder, 1938.

Spondylus linguaefelis size, not including spines, h 27.7, w 23.1 mm to h 113.1, w 80.5 mm; shape variable with substrate. Exterior of numerous slender, needle-like spines on top valve; partly attached bottom valve with ruffling on some shells as well as needle-like spines. Exterior color dark rose with occasional blotches of yellow or orange on bottom valves of young specimens. Interior with teeth on bottom valve bifid on young shells, pronounced in small specimens, fading with growth and usually not apparent on larger shells. Inner margin with a broad color band matching exterior shell color, occasional specimens with a wide brown inner band. Hinge plate with some brown color.

Material studied

Panamic Province distribution of *Spondylus linguaefelis*:

Islas Revillagigedo, México

Isla Clarión: three specimens and one broken valve, h 58.1, w 35.1 to h 80.0, w 66.5 mm; depth: 15 to 20 m (KC).

Roca Partida: one specimen, h 101.4, w 83.1 mm; depth: 9 to 19 m (KC) (Figure 2).

Isla Socorro: one specimen, h 62.7, w 48.0 mm; depth: 10 to 11 m (KC). An additional specimen taken by Donald R. Shasky at Isla Socorro (SBMNH 345413) is pink with white on early growth and later growth a dark rose color. Size: w 29.5 mm, h 34 mm.

This is the first report of the species in the Islas Revillagigedo, as well as the northernmost occurrence.

L'île Clipperton [France]

Twenty-two specimens from h 27.7, w 23.1 to h 113.1, w 80.5 mm; largest shell examined having both broad inner band and brown hinge plate; umbones yellow; depth: 9 to 27 m (KC). An additional specimen, h 68.5, w 62.4 mm, was taken from 10 to 20 m (HC) (Plate I, Figure B).

Isla del Coco, Costa Rica

Twenty-four specimens from seven localities around the island from h 36.0, w 32.8 mm to h 97.3, w 78.3 mm; depth: 20 to 80 m (KC) (Plate I, Figure C).

Isla Jicarita, Golfo de Chiriquí, Panamá

Single live collected specimen, h. 88.1, w 71.2 mm; depth 24 m (Figure 3). This is the first report of the species on the continental shelf of the Panamic Province. The shell is unusual in that the bifid teeth in the lower valve are still visible at this large size (KC).

Isla de Malpelo, Colombia

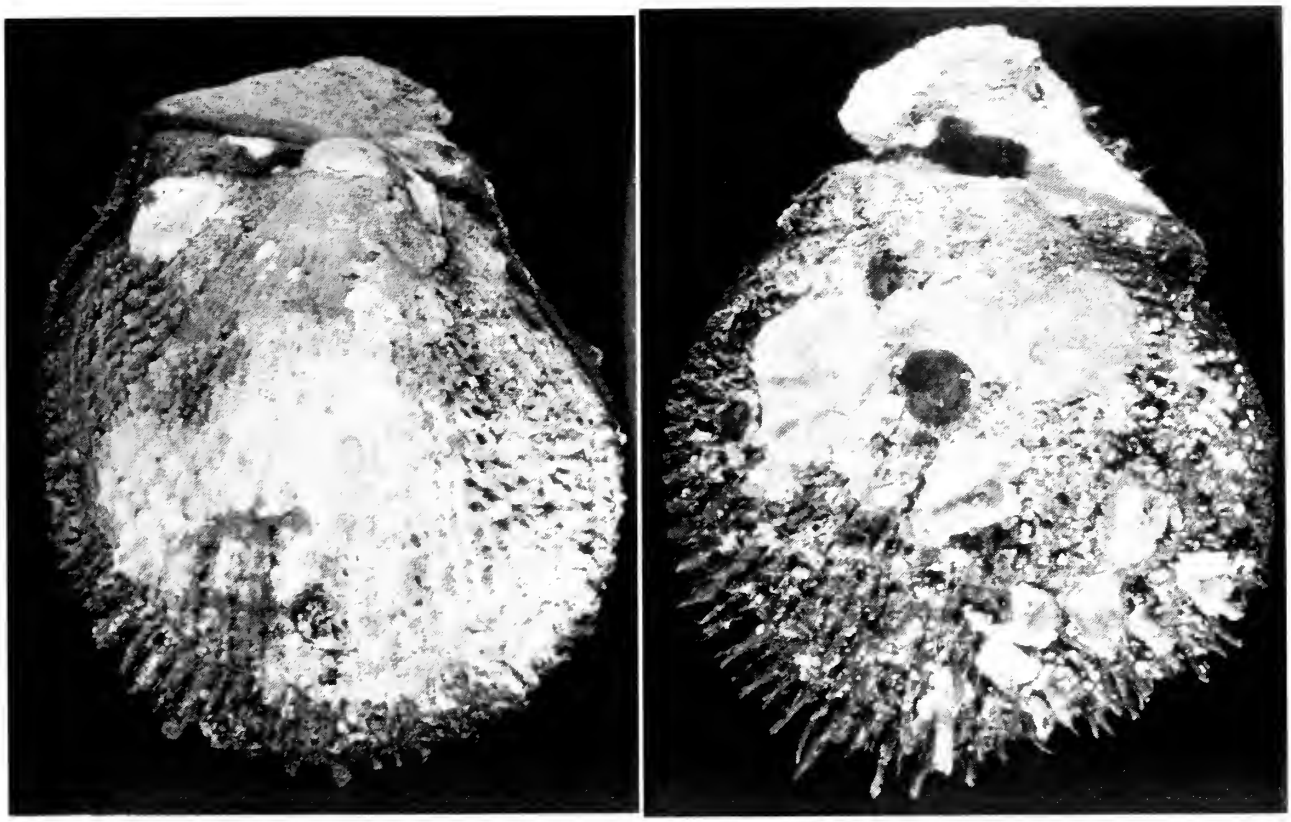
One specimen, h 77.2, w 70.8 mm; depth 15 to 26 m. (KC) (Figure 4). This is the first report of the species from Isla de Malpelo.

Islas Galápagos, Ecuador

Two valves, one from Isla San Salvador taken in 1938 in 66 to 73 m, h 17.1, w 18.1 mm (LACM 38-56) and one from Isla Pinta taken in 1984 in 15 to 24 m, h 14.6, w 14.0 mm (LACM 84-41) (Figure 1).

Discussion

Spondylus linguaefelis from the Panamic Province has previously been identified in collections and in the literature as *Spondylus nicobaricus* and as *Spondylus gloriosus*. *Spondylus gloriosus* was reported from L'île Clipperton [France] by Hertlein & Allison (1966) and Salvat & Ehrhardt (1970). Keen (1971) listed the species but did not figure it. Both Kay (1974) and



Figures 2, 3 *Spondylus linguaefelis* (2) 98.8 x 85.6 mm, Roca Partida, Islas Revillagigedo, 9-19 m, KC (3) 88.1 x 71.2 mm, Isla Jicarita, Golfo de Chiriquí, Panamá, KC. Photos: D. K. Mulliner.

Lamprell (1987) synonymized *S. gloriosus, S. minus and S. kuaiensis* with *S. linguaefelis*.

Spondylus nicobaricus was first reported from Isla del Coco by Shasky (1983). The 12 Shasky *Spondylus* lots from Isla del Coco now at the SBMNH were examined. Shasky's labels read *Spondylus nicobaricus*, but all are clearly *S. linguaefelis*. Two specimens in the Hertz Collection collected and identified by Shasky from Isla del Coco are also *S. linguaefelis*. Bernard, McKinnell & Jamieson (1991) also placed *S. nicobaricus* at Isla del Coco based on a personal communication from M. Montoya. I have not examined the Montoya material, but since Montoya, Kaiser and Shasky were on the same trips to Isla del Coco, I am assuming his specimens are also *S. linguaefelis*. The single shell in my collection from Isla del Coco taken by Gene Everson labeled as *S. nicobaricus* by Everson is also *S. linguaefelis*.

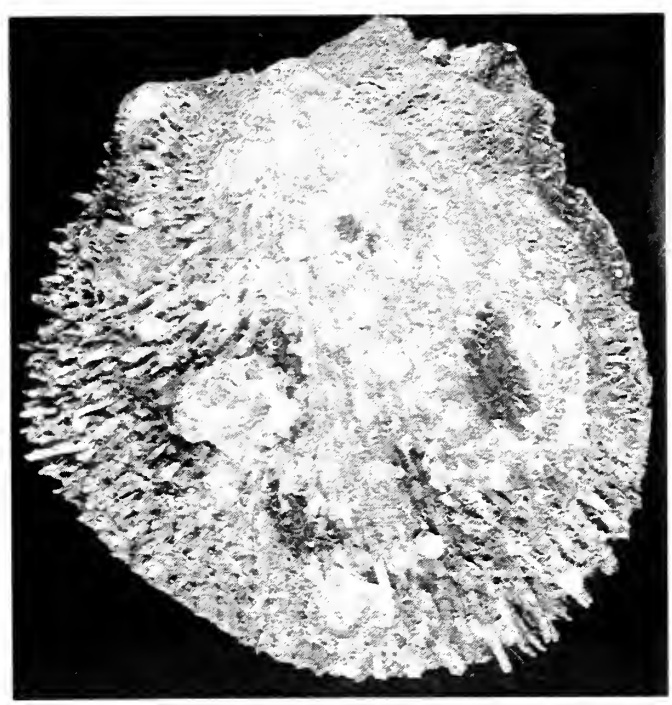


Figure 4. *Spondylus linguaefelis*, 77.2 x 70.8 mm, Isla de Malpelo, Colombia, (KC). Photo: D. K. Mulliner.

Conclusion

Spondylus nicobaricus has sharply pointed ribs with striated interstices (Plate I, Figure D). The color is usually arranged in radiating rows of dark angular spots, upon a white ground (Sowerby, 1847). None of the shells from Isla del Coco examined by me has these characteristics and all fall well within the range of *S. linguaefelis*.

Since all the *Spondylus* seen by Kaiser on eight diving trips to Isla del Coco and those seen by me are the same species, I would, therefore, seriously doubt that *S. nicobaricus* is found at Isla del Coco and remove it from the list of species that occur there.

Acknowledgments

Many people contributed to this paper. My sincere thanks to all of them. Kirstie L. Kaiser was the diver who found the specimens in Panamá and the offshore islands and brought the project to my attention. James H. McLean and Lindsey T. Groves (LACM), Jules and Carole M. Hertz, and Donald L. Pisor lent specimens. Henry W. Chaney made the material at SBMNH available for study. Paul Valentich Scott read the manuscript and offered many valuable suggestions. David K. Mulliner took the excellent photographs.

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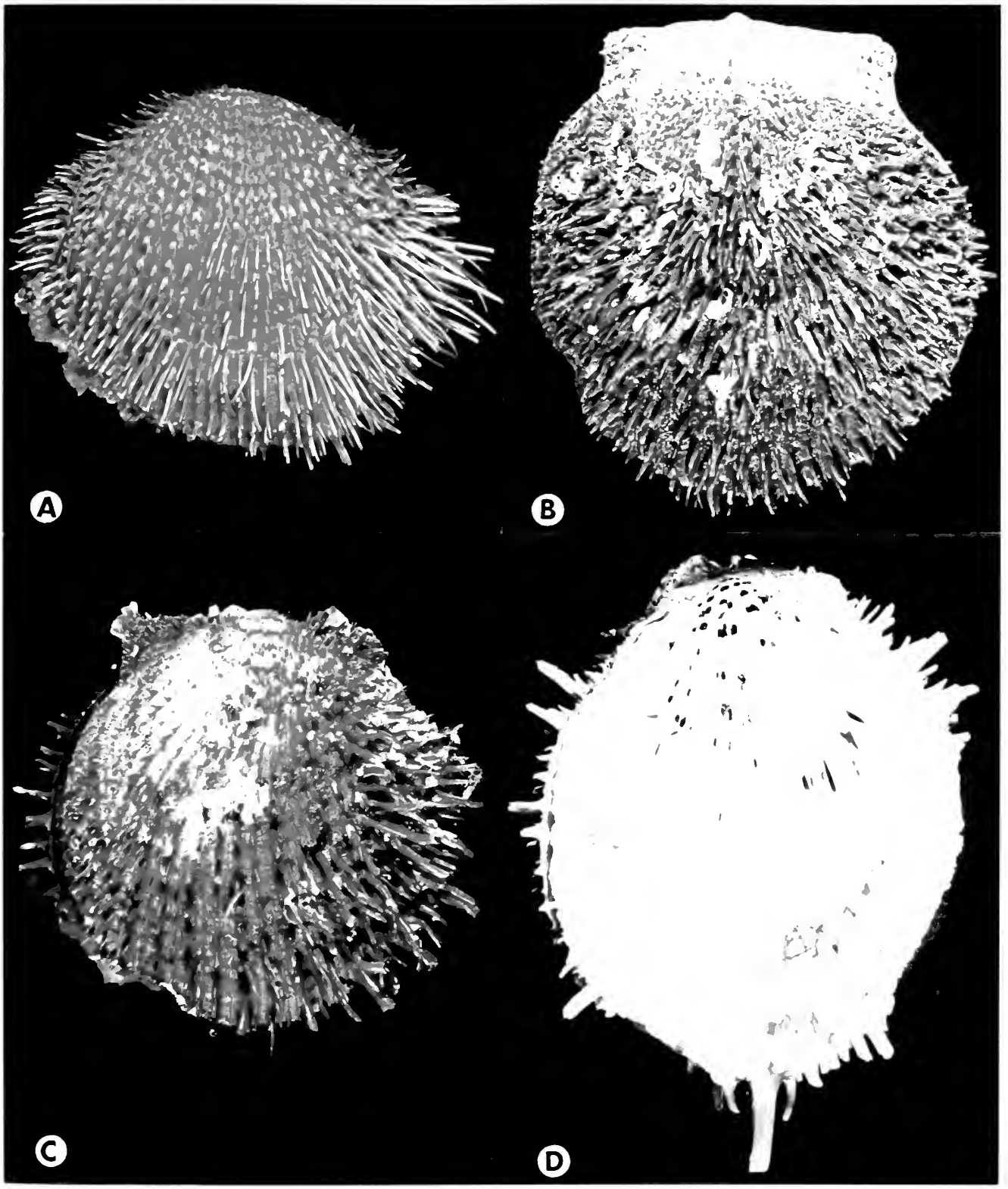

Plate I, Figures A-C: *Spondylus linguaefelis*. (A) 73.9 X 76.2 mm, Lanai, Hawaiian Islands, on a pipe on a submarine at 73-79 m (240-260 ft), PC. (B) 68.5 x 62.4 mm, SW side L'ile Clipperton, 10-20 m, HC. (C) 58.1 x 60.6 mm, E side of Isla Manuelita, Isla del Coco, KC. Plate I, Figure D: *Spondylus nicobaricus*, 67.4 x 52.9 mm, Singapore, HC. Photos: D. K. Mulliner.

NEW DISTRIBUTIONAL RECORD FOR *FAVARTIA (MUREXIELLA) MILDREDAE* POORMAN, 1980 (GASTROPODA: MURICIDAE)

BARBARA W. MYERS[1]

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Introduction

The type locality of *Favartia (Murexiella) mildredae* Poorman, 1980, is 5 km south of Tetas de Cabras, near Bahía San Carlos, Sonora, México (Estero San Carlos by Poorman). Nine specimens were dredged from 100 m in October 1976. The holotype is in the Los Angeles County Museum of Natural History (LACM 1913, ex Shy Collection) and measures 19.7 x 10.8 mm. One paratype 18.4 x 9.5 mm is in the San Diego Natural History Museum (SDNHM 91454 formerly TS 511, ex Shy Collection) (Figure 1). Of the other paratypes, one is in the National Museum of Natural History, Smithsonian Institution (USNM 74901), one is in the Carol Skoglund Collection (ex Shy Collection) 3 are in the Santa Barbara Museum of Natural History (SBMNH 345414) (ex Poorman Collection) and two most likely remain in the Shy Collection. Additional material has been found in the collections of Donald R. Shasky of Oceanside, California, and Carol Skoglund of Phoenix, Arizona, which provide new distributional information for the species.

Figure 1. *Favartia (Murexiella) mildredae* Poorman, 1980, 18.4 mm, paratype, SDNHM 91454. Photo: D. K. Mulliner.

Material examined

Three specimens, maximum length: 17.6 mm, dredged 100 - 200 m, Chatham Bay, Isla del Coco, Costa Rica, May 1986, Shasky Collection (Figure 2).

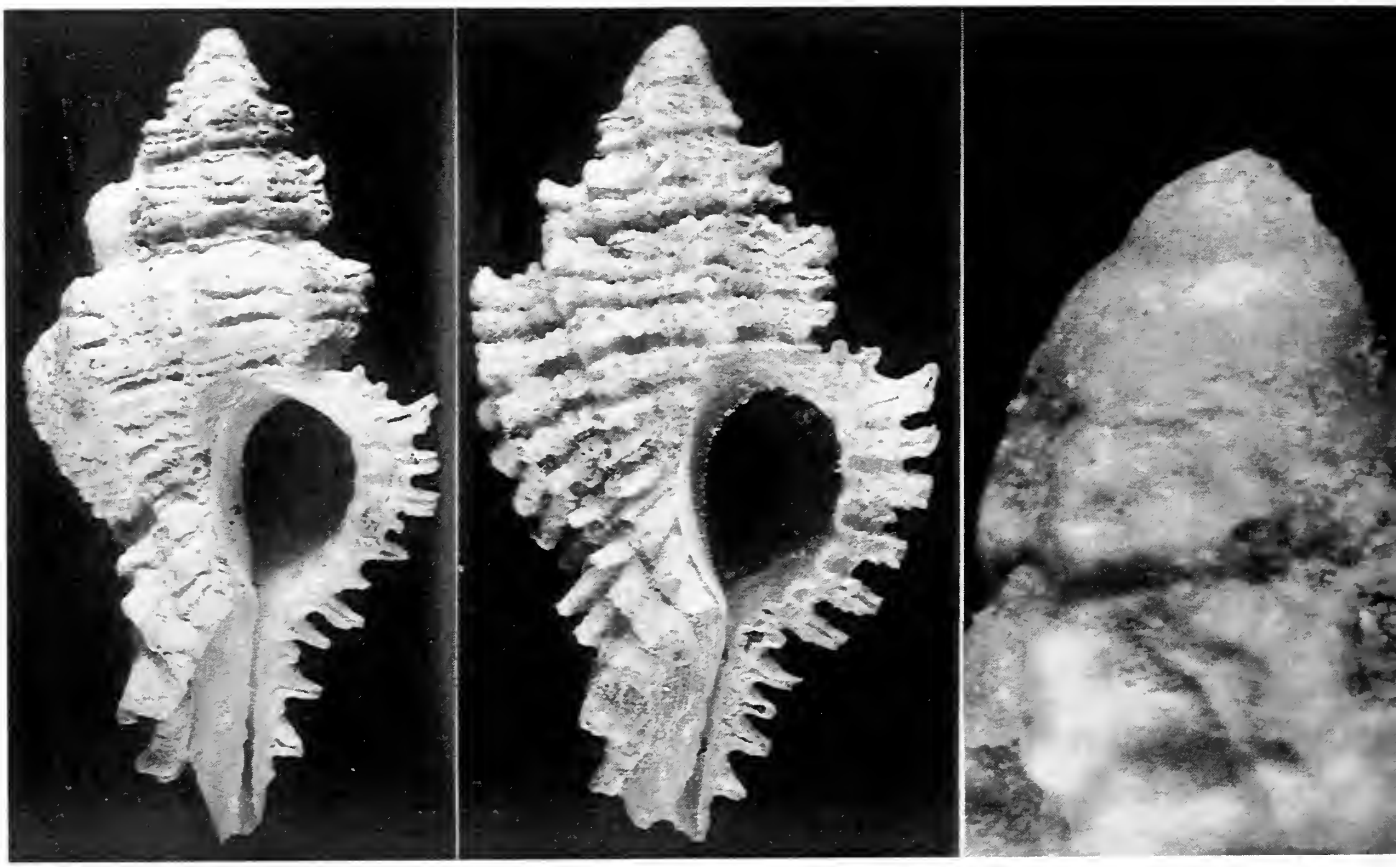
1 specimen, 8.0 mm, dredged 70 - 80 m, SW side of Isla Manuelita, Isla del Coco, Costa Rica, March 1984 Shasky Collection (Figures 3, 4).

1 specimen, 18.0 mm, dredged 61-90 m, 3 mi S of Tetas de Cabras, Sonora, México, November 1981, Skoglund Collection.

2 specimens, both 129 mm, dredged 120-170 m, NW of Isla Smith, Bahía de los Angeles, Baja California, México, May 1991, C. Skoglund Collection.

1 paratype from type locality, 18.1 mm, C. Skoglund Collection, ex Shy Collection.

[1] 3761 Mt. Augustus Ave, San Diego, CA 92111, USA.



Figures 2-4. *F. (M) mildredae*. (2) 17.4 mm, Shasky Collection. Dredged Bahía Chatham, Isla del Coco, Costa Rica. from 100 m. (3) 8.0 mm, Shasky Collection. Dredged from 70-80 m, SW side of Isla Manuelita, Isla del Coco. (4) Shasky Collection, same specimen as in Figure 3, showing closeup of the protoconch. Photos: D. K. Mulliner.

Discussion

I identified four specimens in the Donald R. Shasky Collection from Isla del Coco, Costa Rica, as *F. (M.) mildredae* after comparing the specimens with the paratype in the San Diego Natural History Museum and figures and description of the holotype. The only other published record for this species is Bahía de los Angeles, Baja California, México, from 182 m (Skoglund, 1983).

Although Poorman described five varices for the holotype, I found the paratype and the Shasky specimens to have six. Also there is a moderate anal sulcus on the Shasky specimens and the paratype, in contrast to Poorman's statement "no apparent anal sulcus."

The discovery of these four specimens from Isla del Coco extends the known distribution of *F. (M.) mildredae* south more than 2000 km.

Acknowledgments

I wish to thank Donald R. Shasky of Oceanside, California, and Carol Skoglund of Phoenix, Arizona, for allowing me to study their specimens of *Favartia (Murexiella) mildredae*. My thanks to the San Diego Natural History Museum for the loan of their paratype of *F. (M.) mildredae* and for other courtesies and Paul Scott, of the Santa Barbara Museum of Natural History, for paratype information. Further, my thanks to David K. Mulliner for the photographs of the specimens and Carole and Jules Hertz for helpful suggestions.

Literature Cited

POORMAN, LEROY H.
1980. Two new molluscan species (Gastropoda: Muricidae) from the tropical eastern Pacific. The Veliger 22(4): 361-363, 1 pl.

SKOGLUND, CAROL
1983. Range extensions of Muricidae in the Gulf of California, Mexico. The Festivus 15(11): 107-108, 4 figs.

BOOK NEWS

Catalogue and Bibliography of the Marine Shell-Bearing Mollusca of Japan
By Shun'ichi Higo, Paul Callomon and Yoshiro Goto
1999. Elle Scientific Publications, Osaka, Japan.
A4 size, 749 pages.
Domestic agent: Odyssey Publishing, c/o John D. Jackson, 11558 Rolling Hills Drive, El Cajon, California 92020. Odyssey@adnc.com. $130.00

The tradition of checklists on Japanese mollusks has spanned the 20th Century. Of these the most notable date from the 1952 *Checklist and Bibliography of the Recent Mollusca of Japan* by Tokubei Kuroda and Tadashige Habe which appeared in English, followed by a more ambitious catalogue by Shun'ichi Higo in 1973 and, 20 years later, by *A Systematic List of Mollusca Shells from the Japanese Islands and the Adjacent Area* by Higo in collaboration with Yoshiro Goto. The scope of this 1993 work included freshwater and terrestrial mollusca and remains a useful reference to general malacology, despite the fact that the text is in Japanese.

The present work, produced in English, is a refinement on these earlier checklists. As the title indicates, the authors have restricted their coverage to marine, shell-bearing mollusks, thus excluding the nudibranchs and cephalopods. They have followed previously published taxonomic schemes and have clearly defined the geographic scope of their coverage to "the coastal waters of Japan and immediate adjacent sea areas not separated by any major feature such as a trench or island chain." The text is divided into an informative introduction, a catalogue of species that contain over 6600 species-level taxa, a bibliography, two indices listing taxa both in Latin and Japanese, and a concluding section of distribution maps. This work is in fact the first of a projected two-volume opus, with the second installment to contain figures of each species.

Volume Two is slated to appear in 2002 (hopefully). However, even without Volume Two the present work is of great value to any student of marine malacology and is absolutely indispensable to Pacific specialists and serious collectors. The bibliography alone is worth the price as it is easily the most extensive ever published on Japanese literature and includes a review of all the Japanese serials. The catalogue contains references, not only to species, but to all the higher taxa as well. The Japanese vernacular names for each species are given in the Roman alphabet, a change from all previous works where these names appeared in kana. While there are minor errors and some curious bibliographic omissions, this by no means detracts from the overall value of this work, particularly given its complexity.

Sumptuously bound in cloth and leatherette, with slipcase, this work is a credit to its authors and is highly recommended.

Henry W. Chaney
Santa Barbara Museum of Natural History
Department of Invertebrate Zoology, 2559 Puesta del Sol Road, Santa Barbara, CA 03105-2936

Note: This volume will be available in the Club library at the January meeting.

FOURTH ANNUAL GATHERING
SOUTHERN CALIFORNIA UNIFIED MALACOLOGISTS (SCUM)

Saturday January 15, 2000, Munk Seminar Room--10 AM
Institute of Geophysics & Planetary Physics
Scripps Institution of Oceanography, La Jolla, CA 92093
Host: Hugh Bradner

SCUM is an informal association of professional, amateur, and student malacologists and paleontologists in southern California who are active or interested in research on mollusks. The continuing purpose of the

annual gathering is to facilitate contact and keep one another informed of research activities and opportunities. There are no dues, officers, or publications. Previous SCUM gatherings at San Diego State University (SCUM I, 1997), Natural History Museum of Los Angeles County (SCUM II, 1998), and National University, La Jolla (SCUM III, 1999) were highly successful events.

All persons interested in Recent and/or fossil mollusks are invited to attend. Presentations and discussions should be informal and briefly cover research interests. A slide projector and overhead projector will be available for those wishing to treat their work in more detail. Premeeting coffee and donuts will be provided.

For the lunch break, there are numerous restaurants and sandwich shops (especially the Cheese Shop) about a mile south of SIO off La Jolla Shores Dr.

Parking will be available for a $3.00 fee (good incentive to car pool). Maps and detailed directions to the meeting place will be provided (maps are also available on the IGPP home-page: http://igpp.ucsd.edu)

Please contact SCUM IV meeting host Hugh Bradner privately for further information. Hope to see you there!

Hugh Bradner, 1867 Caminito Marzella, La Jolla, CA 92037. Tel.: (858) 459-7681; Fax: (858) 459-0657; E-mail: hbradner@ucsd.edu

CONCHOLOGISTS OF AMERICA GRANTS

CONCHOLOGISTS OF AMERICA (COA) is pleased to announce its year 2000 program of grants to support molluscan research. Grants of up to $1,500 will be available to qualified persons undertaking field or laboratory research on recent or fossil mollusks. Awards are made only to citizens or permanent residents of the Americas or to students attending graduate school in the United States. Awards are not made to high school students, and rarely to college students.

Although proposals of up to $1,500 will be entertained, grants rarely exceed $1,000, due to the large number of qualified applicants. Partial funding is not unusual. For a list of previous grantees, see <http://coa.acnatsci.org/conchnet/grantees.html>.

THE DEADLINE FOR APPLICATIONS is February 1, 2000. This is a postmark deadline, not a receipt deadline.

INSTRUCTIONS FOR APPLICATION are at <http://coa.acnatsci.org/conchnet/coagrant.html> and are repeated below.

There is no official application form. Applications should not exceed six pages single spaced and should include the following items:

1) title of project;
2) summary of project, not to exceed 150 words;
3) body of the proposal including
   a) background information necessary to understand the project and its significance;
   b) materials and methods, and proposed plan of research;
   c) itemized budget of estimated expenses;
   d) references cited.
4) a one page biography or resume including address, phone number and other means of contacting the applicant. US citizens and residents should include their social security number.

STUDENT APPLICANTS should also submit a letter of recommendation from an academic or professional source. If funding is being requested from several sources, an overall budget for the project may be presented, with items and total amount requested from COA clearly indicated. Normal budget items include supplies, expendable equipment, and travel expenses. Grants will not cover salaries, overhead, permanent equipment, conferences or meeting costs.

Applications must be sent in TRIPLICATE via regular mail to:

Dr. Gary Rosenberg
Director for Grants, COA
Academy of Natural Sciences
1900 Benjamin Franklin Parkway
Philadelphia, PA 19103-1195 USA

rosenberg@acnatsci.org

Applications are judged by the COA Grants Committee. Awards will be announced by April 30th.

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MEMBERSHIP AND SUBSCRIPTION
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Meeting date: third Thursday, 7:30 PM,
Room 104, Casa Del Prado, Balboa Park, San Diego

PROGRAM

Extinction Dynamics of the Late Neogene Pectinidae of California

Travis Smith, who will receive his Masters Degree in Ecology, Behavior, and Evolution at UC San Diego, will give a slide presentation on the Recent and fossil pectens of California.

Meeting date: February 17, 2000
Shells of the month: Recent and fossil pectens

CONTENTS

CLUB NEWS

Club Granted 501C(3) Status By the IRS

The San Diego Shell Club has been a non-profit organization since its incorporation in January 1969. All gifts to the Club from that time forward were considered tax deductible. Recently, however, questions were raised by the IRS concerning the Club's non-profit status even though the Club's non-profit position was grandfathered by its original non-profit designation.

In December 1999 the Club applied for and received a letter of determination reaffirming the Club's status as a non-profit organization under current IRS regulations. Now, anyone wishing to receive tax credit for subsequent donations will be provided with the Club's 501C(3) identification number.

Minutes of the San Diego Shell Club Meeting - January 20, 2000

President Mike Mason welcomed everyone to the first meeting of the millenium and the minutes of the January meeting were approved as published in *The Festivus*. The membership welcomed out-of-town member Lewis Deschaine.

Mike announced that the Club was granted its non-profit status by the federal government [see above].

Librarian Kay Klaus showed the new books available in the Club library, the wentletrap book [reviewed this issue], the new Tom Rice directory and Volume 1 of *Marine Shell Mollusca of Japan* [see review in January issue]. Volume two will be published later and will contain the plates. Also in the library is the latest issue of *Basteria*. Kay also mentioned that the library is open and available but since the wheels need to be replaced, it cannot be wheeled into the meeting room area.

Mike introduced the speaker for the evening, Roger Seapy of California State University, Fullerton. Roger spoke on heteropods and told that his interest in this bizarre group of shells began in graduate school.

The three families in the group are the Atlantidae, the Carinariidae and the Pterotracheidae (which have no shell). They are small pelagic animals best identified using a combination of shell, eye, opercular and radular characters. His images of these live, transparent animals were incredible and he explained their anatomy and life style in a manner easily understood by those in attendance. These animals are all good predators. There is only one species of atlantid found off the California coast.

Roger had a number of handouts of copies of articles, color plates and other information on the heteropods for those who were interested.

After the talk, a desk diary and calendar set was auctioned and won by Kay Klaus. The winner of the door prize was Karen Mason. The meeting was adjourned to look at some of the original SEMs for plates of heteropods that Roger brought in and to enjoy the refreshments from Carole and Jules Hertz and Linda and Kim Hutsell.

Silvana Vollero

San Diego Shell Club Auction/Potluck - 2000

Mark your calendars!! The date for the Club's annual Auction/Potluck has been set for 1 April 2000. Does that say something? We've been very fortunate, once again, that Wes Farmer has agreed to host the event at the clubhouse of his condo. A map will be in the March issue.

It is definitely not too early to prepare your donations for the auction. Bring them to the February or March meetings or arrange for pickup by a board member. Remember that your donations go to support the Club's activities such as *The Festivus*, donations to scientific organizations, participation in the Greater San Diego Science Fair, library purchases and social events.

And plan to come to the auction/potluck. It's a great party.

A Generous Donation to the Club

A generous donation by Don and Ursula Shasky of many cartons of plastic boxes was made to the Club. The boxes of many different sizes, small and large, and both new and used will be available for sale at a future Club meeting. The Club thanks them for their gift.

NEW DISTRIBUTIONAL RECORDS FROM BAHÍA MAGDALENA, BAJA CALIFORNIA SUR, MÉXICO

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Bahía Magdalena, Baja California Sur, México, is in a transitional zone, where both Panamic and Californian species can be found. There are no checklists or other reports on the mollusks that occur there and the only source of published records is Keen (1971), with the exception of a few mollusks with type localities in Bahía Magdalena. Many species that occur toward the north end of the Golfo de California could be expected to occur in Bahía Magdalena. Near the entrance of the bay there are many species characteristic of the Californian Province, but further within, summer temperatures can be expected to be higher and the fauna more typical of that of sheltered bays in the Golfo de California (McLean, pers. comm.).

The material discussed and figured herein was collected at Bahía Magdalena on 10 December 1997 by John Jackson of San Diego, California. He collected it by shaking rocks and large shells and by scooping grunge from under rocks at a depth of 9-12 m (30-40 ft) just inside the entrance (Punta Entrada) to the bay. The material was given to Kirstie L. Kaiser of Puerto Vallarta, Jalisco, México. The larger material was separated, and I was given the opportunity to sort the dried grunge for minute species. To my surprise, this sorting produced a number of new distributional records. This material is now in the Kaiser Collection.

Figures 1 and 2 are two views of a specimen of *Rissoina (Rissoina) stricta* Menke, 1850, a very variable species. Abbott (1974) placed *Rissoina fortis* (C.B. Adams, 1852), *R. favilla, R. io, R. gisna, R. mazatlanica,* and *R. dina* all of Bartsch, 1915, into synonymy of *R. (R.) stricta*. Keen (1971) reported *R. (R.) stricta* at Cabo San Lucas through the Golfo de California and south to the Islas Tres Marías, México.

Figures 1, 2. *Rissoina (Rissoina) stricta* Menke, 1850, 7.2 mm L. Photos: D. K. Mulliner.

Abbott (1974) reported the distribution as the Golfo de California and the Islas Galápagos, Ecuador. Emerson (1995) extended the distribution to the Islas

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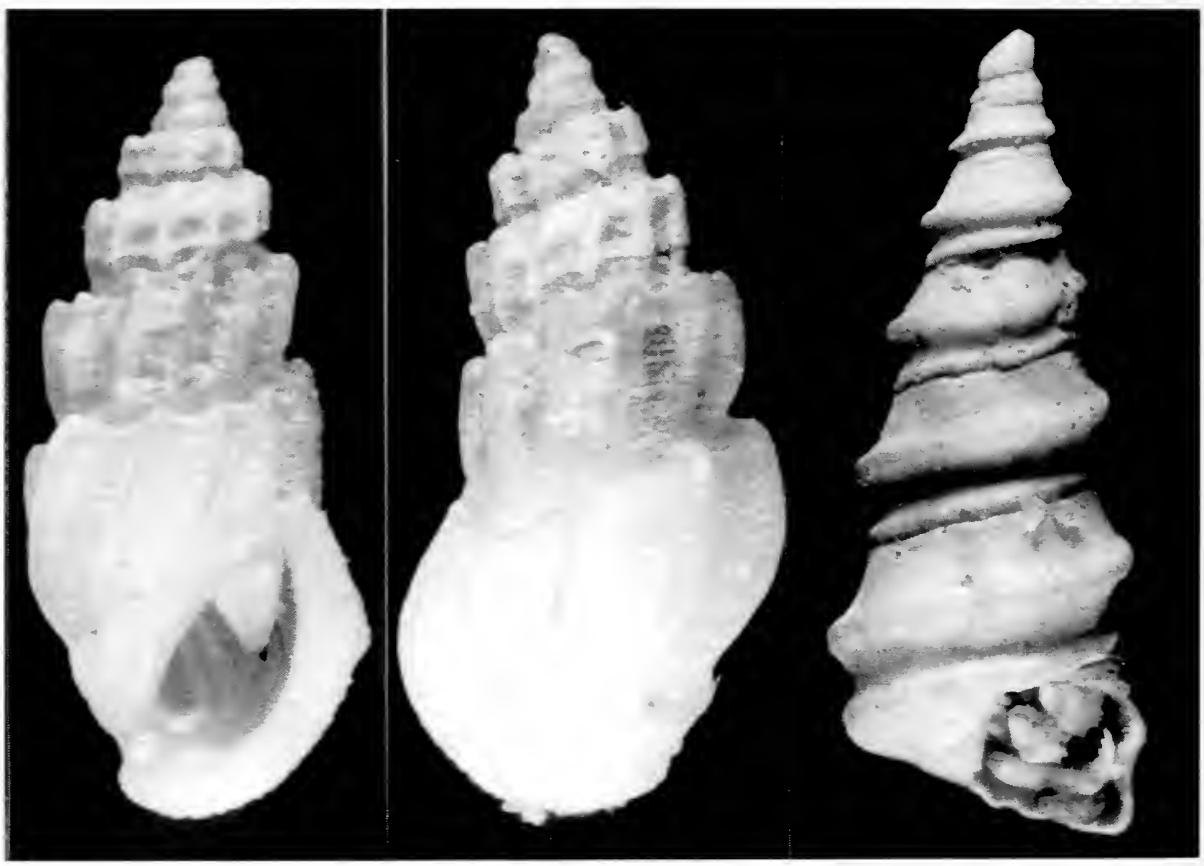
Revillagigedo, México, and Shasky (1996) reported the species at Isla del Coco, Costa Rica. The occurrence at Bahía Magdalena extends the distribution north on the west coast of Baja California Sur.

Two views of a shell of *Folinia insignis* (de Folin, 1867), not A. Adams & Reeve, 1850, are shown in Figures 3 and 4. Ponder (1985) raised *Folinia* Crosse, 1869, to the genus level and placed *Rissoina (Folinia) signae* Bartsch, 1915, into the synonymy of *F. insignis*. Keen (1971) listed Panamá as the locality for *F. signae*. Draper (1974) extended the distribution north to the upper Golfo de California and south to the Islas Galápagos. Skoglund and Koch (1995) confirmed the distribution to Estero Morua, Puerto Peñasco, Sonora, México. The occurrence at Bahía Magdalena extends the distribution to the west coast of Baja California Sur.

Jalisco, México, to El Salvador. Draper (1972) extended the distribution north to Santa Rosalía, Baja California Sur, and Keen and Coan (1975) reported it from near Bahía Kino, Sonora, México. Finet (1994) reported it from the Islas Galápagos. The finding of this species at Bahía Magdalena extends the distribution to the west coast of Baja California Sur.

Figure 6 is an apertural view of *Seila assimilata* (C.B. Adams, 1852). Keen (1971) reported the distribution of this species as the Golfo de California to Panamá. DuShane and Draper (1975) stated the distribution as Bahía Todos Santos, Baja California (outer coast), throughout the Golfo de California and south to the Islas Galápagos, and northern Perú. The distribution has been extended to include Isla de Malpelo, Colombia (Birkeland, Meyer, Stames &



Figures 3, 4. *Folinia insignis* (de Folin, 1867), not A. Adams & Reeve, 1850, 2.3 mm L. Photos: D. K. Mulliner.

Figure 5. *Vermicularia frisbeyae* McLean, 1970, 5.7 mm L. Photo: D. K. Mulliner.

A specimen of *Vermicularia frisbeyae* McLean, 1970 is shown in Figure 5. Keen (1971) reported the distribution of this species as Bahía de Tenacatita,

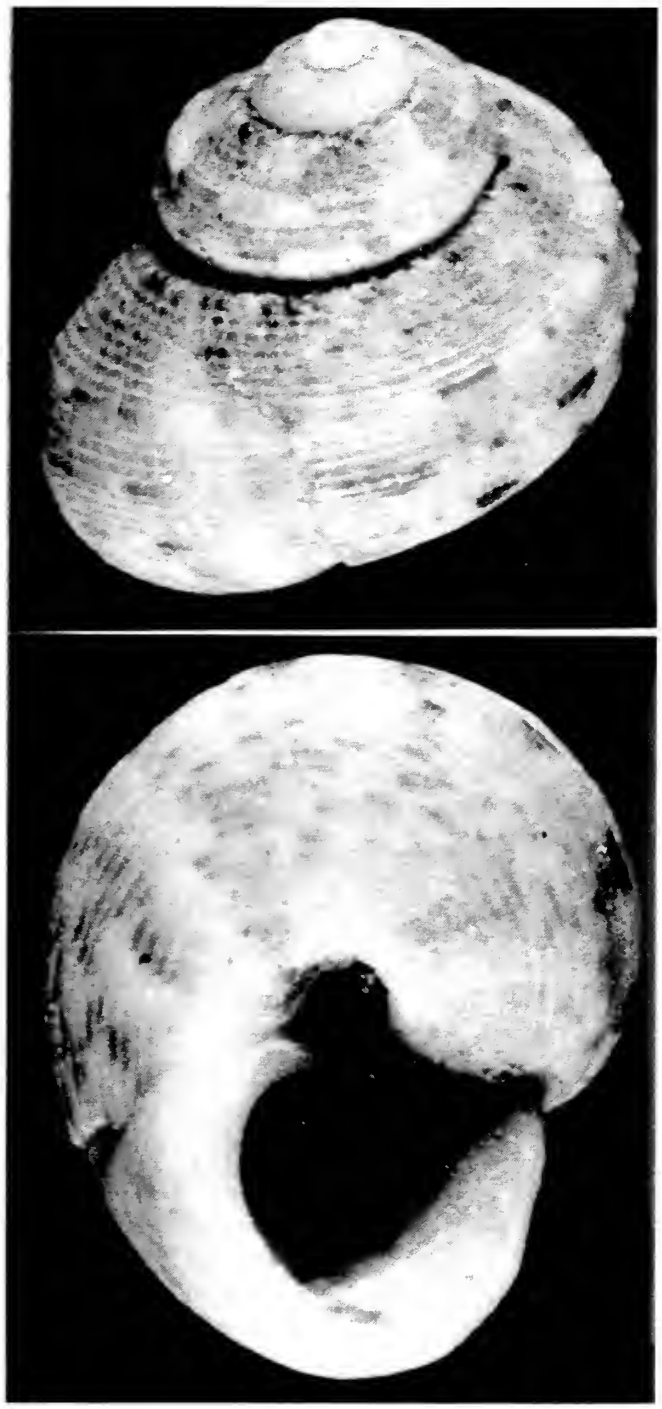
Buford, 1975), and Isla Gorgona, Colombia (Cosel, 1984). The lot cited from Bahía Todos Santos (LACM 66-5) has been identified by McLean (pers. comm.) as

unusually small specimens of *S. montereyensis* that do not show the color pattern of *S. assimilata*. The occurrence of *S. assimilata* at Bahía Magdalena is, therefore, the first found on the west coast of Baja California.

Figure 6. *Seila assimilata* (C. B. Adams, 1852), 3.8 mm L. Photo: D. K. Mulliner.

A specimen of *Otollonia fricki* (Crosse, 1865) is shown in Figures 7 and 8. Keen (1971) gave the distribution of *Arene (Otollonia) fricki* as Golfo de California to Santa Elena Peninsula, Ecuador. Hickman and McLean (1990) raised *Otollonia* to a genus. This is the first report of the species on the west coast of Baja California Sur.

A specimen of *Cerithiopsis bristolae* Baker, Hanna & Strong, 1938, is shown in Figure 9. The holotype of this species is decollate, and was previously only known from the type locality at Cabo San Lucas, Baja California Sur. Per Henry W. Chaney, *Cerithiopsis cassi* Hertlein & Strong, 1938, is a synonym of *C. bristolae* (in this case by the narrowest of page priorities) and in fact is nothing but a worn *C. bristolae*.



Figures 7, 8. Two views of *Otollonia fricki* (Crosse, 1865), 3.8 mm diam. Photos: D. K. Mulliner.

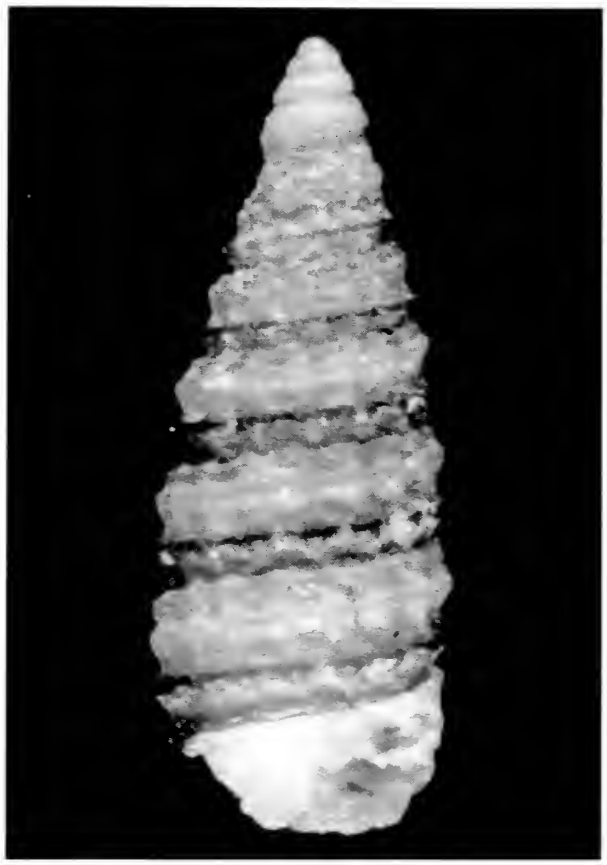


Figure 9. *Cerithiopsis bristolae* Baker, Hanna & Strong, 1938, 1.8 mm L. Photo: D. K. Mulliner.

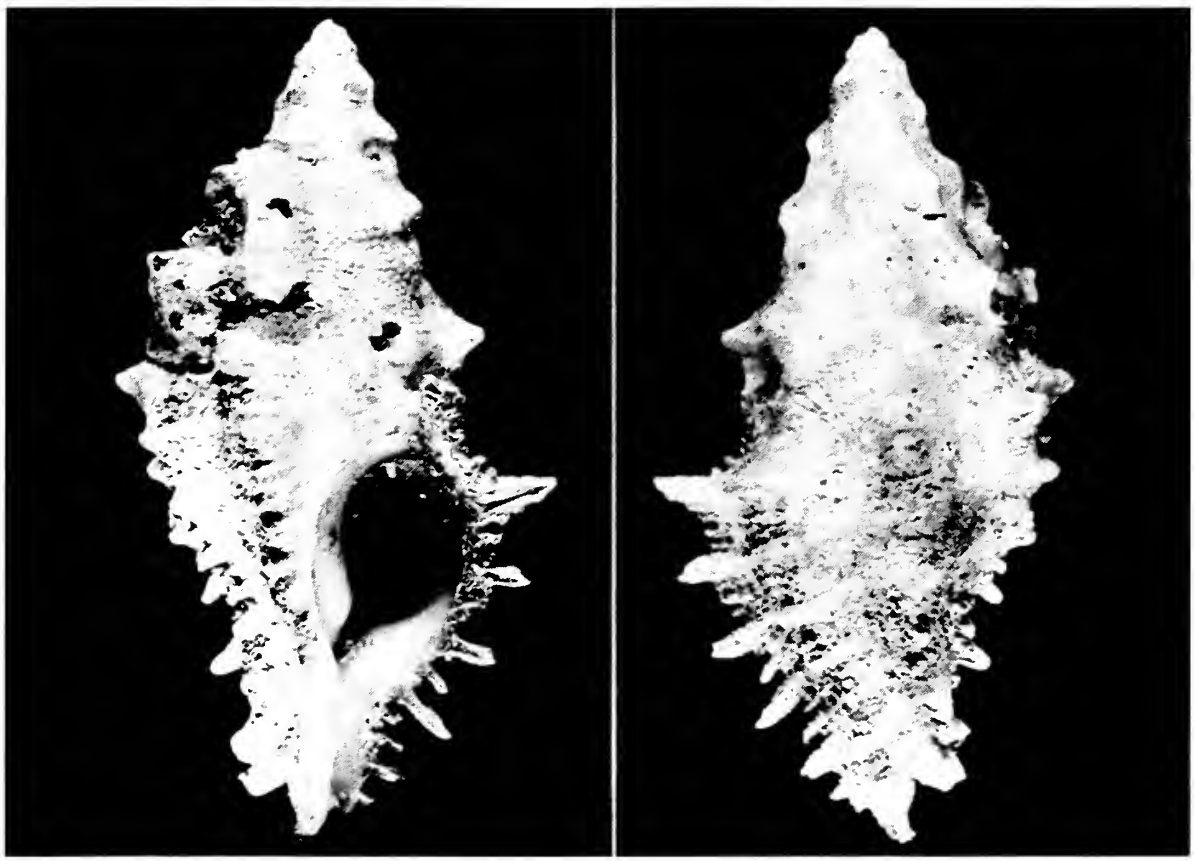
Figure 10. *Clathurella rigida* (Hinds, 1843), 5.0 mm L. Photo: D. K. Mulliner.

Keen (1971) reported *Clathurella rigida* (Hinds, 1843) as occurring from the Golfo de California to the Islas las Perlas, Panamá. Shasky (1989) extended the distribution to the Islas Galápagos, Ecuador, and Shasky (1996) noted its occurrence at Isla Benedicto, Islas Revillagigedo, México, and Isla del Coco, Costa Rica. It has also been found at L'île de Clipperton, [France], by K. L. Kaiser (pers. comm.) The grunge from Bahía Magdalena yielded two specimens, each 5.0 mm, of *C. rigida* with immature lips. One of these is shown in Figure 10. The specimens were compared with large lots of material, from juvenile to mature specimens, in the Carol Skoglund Collection.

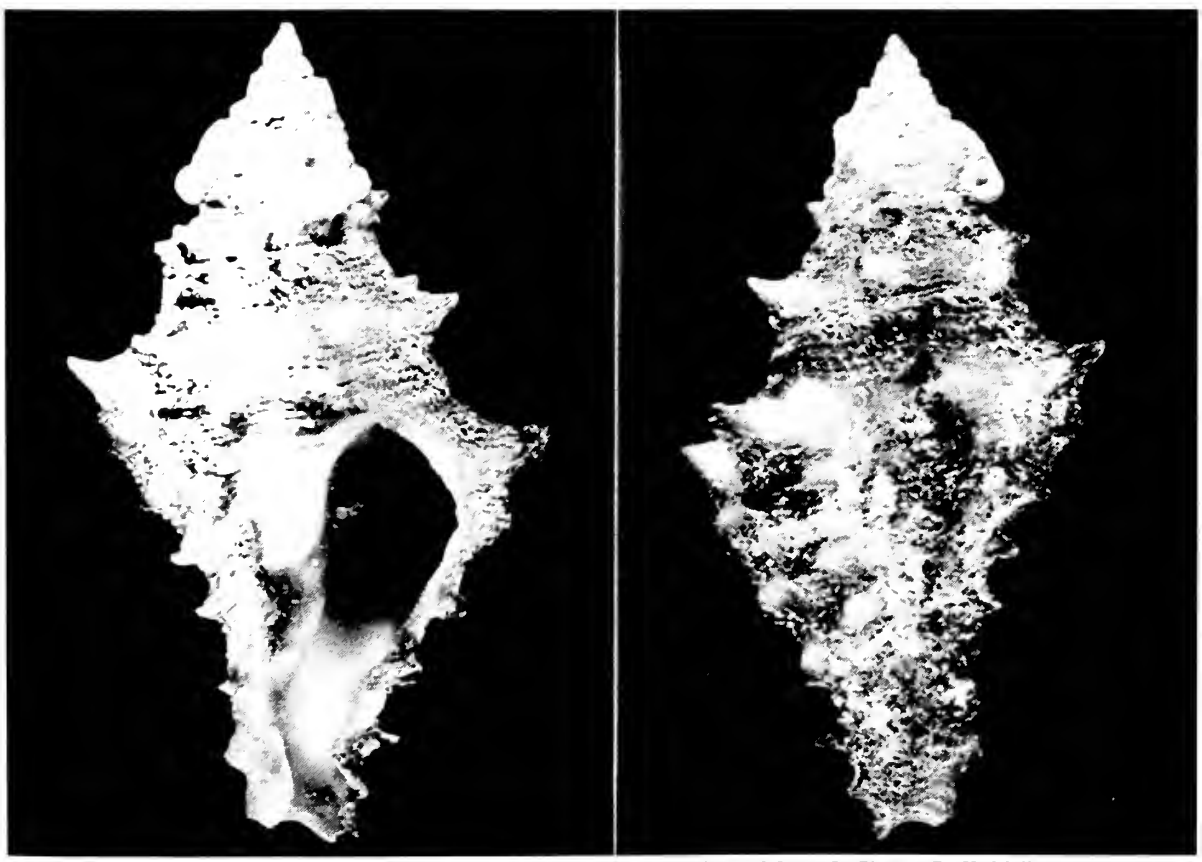
In addition to the minute shells discussed above, some larger shells were found which had not previously been reported from Bahía Magdalena. Figures 11 and 12 are two views of an adult (31.3 mm) specimen of *Muricopsis armatus* (A. Adams, 1854). Keen (1971) reported this species as coming from the Golfo de California. Vokes (1988) extended the distribution south to Panamá. This is the first time it has been reported from the outer coast of Baja California.

Another *Muricopsis* reported for the first time from Bahía Magdalena is *Muricopsis zeteki* Hertlein & Strong, 1951. Keen (1971) reported it occurring from Puertecitos near the head of the Golfo de California to Guayaquil, Ecuador. Radwin & D'Attilio (1976) extended the distribution to the Islas Galápagos, and Cantera, *et al.* (1979) reported it from Isla Gorgona, Colombia. Gemmell, Hertz and Myers (1980) extended it north to San Felipe, Baja California. An immature shell found at Bahía Magdalena is shown in Figures 13 and 14.

Figure 15 is an external view of the two valves of a 27.3 mm specimen of *Chione (Chione) subimbricata* (Sowerby, 1835). Keen (1971) listed the distribution for this species as La Paz and Guaymas, Golfo de California, to Bayovar, Perú. Alamo and Valdivieso

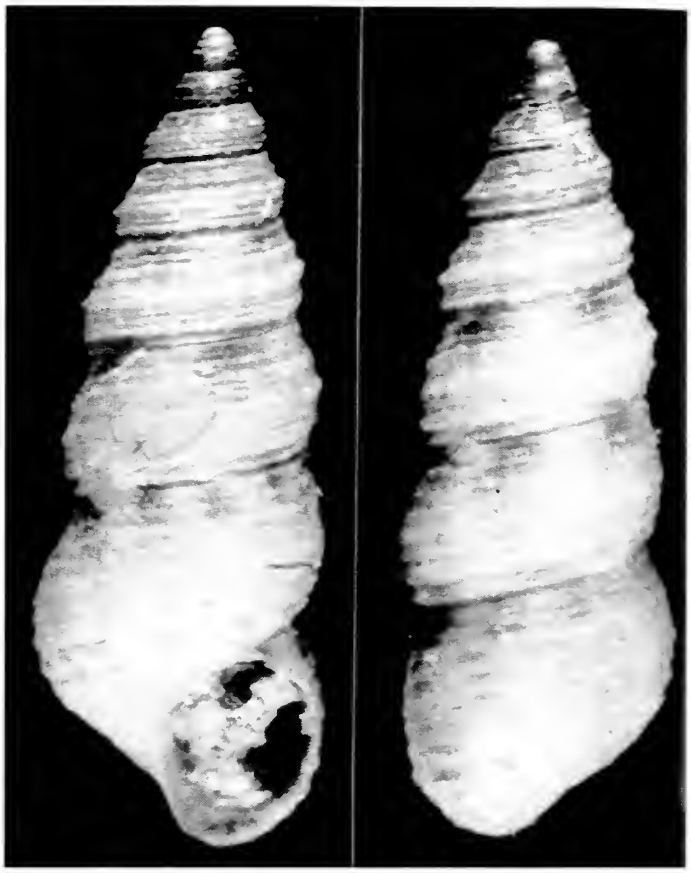


Figures 11, 12. Two views of *Muricopsis armatus* (A. Adams, 1854), 31.3 mm L. Photos: D. K. Mulliner.



Figures 13, 14. Two views of *Muricopsis zeteki* Hertlein & Strong, 1951, 15.8 mm L. Photos: D. K. Mulliner.

Figure 15. Exterior of valves of *Chione (Chione) subimbricata* (Sowerby, 1835), 27.3 mm L. Photo: D. K. Mulliner.



Figures 16, 17. Two views of *Alabina excurvata* (Carpenter, 1857), 4.0 mm L. Photos: D. K. Mulliner

(1987) extended the distribution south to Chicama, Perú, and Finet (1991) reported the species from the Islas Galápagos. This is the first report of the species on the west coast of Baja California Sur.

Two additional minute species, previously reported from Bahía Magdalena, are also figured here. The first, *Alabina excurvata* (Carpenter, 1857), is actually Keen's Figure 564 (see Keen & Coan, 1975). The specimen shown here in Figures 16 and 17 looks quite different from the photograph in Keen. Carpenter's drawings of this species (Brann, 1966) illustrate its variability. Baker, Hanna and Strong (1938) previously reported the species from Bahía Magdalena. Abbott (1974) placed it into *Finella,* but McLean (pers. comm.) believes that it should remain in *Alabina*.

The second minute species shown here that has previously been reported from Bahía Magdalena is *Elephantulum heptagonum* (Carpenter, 1857). The material found by John Jackson had many specimens of *Caecum californicum* Dall, 1885, but only a single specimen of *E. heptagonum*. It is shown in Figure 21.

Figure 18. *Elephantulum heptagonum* (Carpenter, 1857), 2.8 mm L. Photo: D. K. Mulliner.

ACKNOWLEDGMENTS

I am grateful to John Jackson and Kirstie Kaiser for providing the material for study. James H. McLean of the Los Angeles County Museum of Natural History, Henry W. Chaney and Paul Valentich Scott of the Santa Barbara Museum of Natural History, and Carol Skoglund all were very helpful in identifying specimens. I am particularly beholden to David K. Mulliner for his excellent photographs, particularly for those of the microshells, to James H. McLean for critically reviewing the paper, and to Carol Skoglund for providing comparative material.

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AN UNUSUAL POPULATION OF *MURICOPSIS PAUXILLUS* (A. ADAMS, 1854) AT PLATANITOS, NAYARIT, MÉXICO

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and

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A specimen of a small, almost all-white *Muricopsis* was collected by Hertz intertidally on a rock at low tide (0.33 m) at Platanitos, Nayarit, México in February 1999. The unusual specimen was given to Carol Skoglund for identification. She noted that she had 12 additional specimens in her collection as *Muricopsis* sp. from the same locality. They were found, also intertidally among rocks, in December 1972.

After comparing these 13 specimens with Panamic *Muricopsis* species in the collection of the San Diego Natural History Museum (SDNHM) and the Skoglund, Hertz and Myers collections, we determined that the specimens were a variant form of *Muricopsis pauxillus* (Figure 1).

Comparison of the protoconchs of the Skoglund and Hertz specimens with that of *M. pauxillus* showed them to be the same, both with 1½ strongly angulate whorls, tilted opposite to succeeding whorls with a cord at the shoulder (Figure 2). This can be compared with the protoconch of *M. pauxillus* illustrated in Radwin & D'Attilio (1976: 170, fig. 108).

The spiral sculpture of the thirteen white specimens is scarcely lamellose. Mature specimens have an all-white aperture and are noded at the varices, rarely with

Figure 1. *Muricopsis pauxillus*, 14.6 mm, a white variant form of the species from Platanitos, Nayarit, México, Skoglund Collection. Photo: D. K. Mulliner.

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a spine. The other *M. pauxillus* specimens are scaly, form short, sharp spines at the varices, and have an aperture color from deep mauve to off-white, showing spiral bands within.

Interestingly, the study of 17 lots of *M. pauxillus* in the SDNHM from Jalisco, Nayarit and Sonora, México, as well as specimens in the Hertz and Skoglund collections, revealed no other all-white specimens.

Our appreciation is extended to Carol Skoglund for making her specimens available for study, to David K. Mulliner for the photo of the variant specimen, and to Joyce Gemmell for the camera lucida drawing of the protoconch of a Platanitos specimen.

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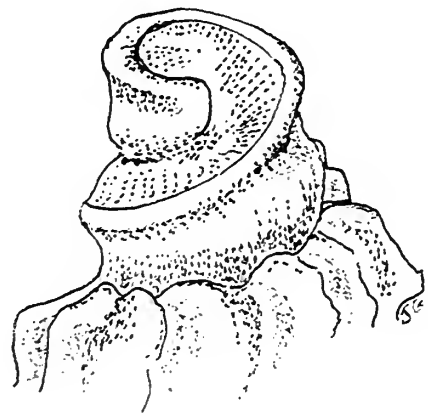

Figure 2. *M. pauxillus*, protoconch of a 7.0 mm specimen in the Skoglund Collection from the same locality. Drawn with the aid of a camera lucida attachment on a Wild microscope (x 50). Drawing: Joyce Gemmell.

2000 LOW TIDES FOR THE NORTHERN GULF OF CALIFORNIA

The entries below show periods of low tides of -4.0 feet and below. The times of low tides are given in Mountain Standard Time. To correct for San Felipe, subtract one hour from listed times which are for Puerto Peñasco (San Felipe is on Pacific Standard Time). Tides below the midriff of the Gulf cannot be estimated using these entries. All entries are approximated times and tides.

Feb. 17	6:30 pm	-4.2	May 4	7:45 am	-4.5	Aug. 1	8:30 am	-4.0
Feb. 18	7:15 pm	-5.0	May 5	8:15 am	-4.4	Aug. 28	7:00 am	-4.0
Feb. 19	8:00 pm	-5.3	June 1	6:30 am	-4.1	Aug. 29	7:45 am	-4.2
Feb. 20	8:45 pm	-4.3	June 2	7:10 am	-4.4	Aug. 30	8:10 am	-4.0
Mar. 5	7:15 pm	-4.0	June 3	8:00 am	-4.7	Nov. 11	7:10 pm	-4.2
Mar. 6	8:00 pm	-4.0	June 4	8:45 am	-4.2	Nov. 12	8; 00 pm	-4.1
Mar. 18	7:15 pm	-4.2	July 1	7:15 am	-4.2	Dec. 9	6:00 pm	-4.0
Mar. 19	8:00 pm	-4.1	July 2	8:00 am	-4.6	Dec. 10	7:00 pm	-4.6
Apr. 5	8:00 am	-4.2	July 3	8:40 am	-4.3	Dec. 11	7:45 pm	-5.0
Apr. 6	8:30 am	-4.2	July 30	7:15 am	-4.2	Dec. 12	8:30 pm	-4.3
May 3	7:00 am	-4.1	July 31	8:00 am	-4.6			

BOOK NEWS

The Wentletrap Book: Guide to the Recent Epitoniidae of the World
By: Art Weil, Leonard Brown and Bruce Neville
1999. Evolver srl, Rome, Italy. 244 pages, 70 color plates, 507 figures.
Price: $120.00.
Agent: Evolver srl. Via C. Federici 1, 00147 Rome, Italy. Domestic Agent: Mal de Mer Enterprises, P.O. Box 482, West Hempstead, NY 11552, USA. E-mail: maldemer@masdemer.com

This is a book for collectors, by collectors. It covers a particularly exasperating family (taxonomically speaking) of exquisite shells, which until now has not been dealt with on a global scale, unless one goes back to Lovell Reeve (1873-74) or G. B. Sowerby (1844). Most of the wentletraps are small, diverse, almost invariably white and look the same to a casual observer or even an impatient collector. Recent monographic coverage of the epitonids has been the regional monographs of Helen Dushane (primarily the eastern Pacific) and Richard Kilburn (Southern Africa). They still remain indispensable.

The present work consists of a short introduction (written somewhat idiosyncratically), a series of eight chapters in which taxa are arranged regionally and by structural similarity, two major appendices, one grouping nominal names by authors and the other presenting descriptions of the myriad genera and subgenera which have been created in the Epitoniidae. The bibliography is adequate only in coverage of the major works and does not cite all the authors listed in the appendices.

The authors have endeavored to figure as many species as possible and by their estimate have included more than 80% of the described taxa. Each figure has a brief narrative, which mentions distinguishing characters, size, and distribution. These accounts are not necessarily consistent but are informative. Many of the figures used are of type specimens and are vouchered. The photographs were taken by the senior author, who bears responsibility for their varying quality. In some cases, original figures, either engravings or earlier photographs, were adapted for use here.

This book can be recommended to collectors interested in the Epitoniidae because despite any deficiencies in the text or presentation it represents an advance in the coverage of this group and is not likely to be superseded in the foreseeable future. "The Wentletrap (sic) Book" is bound in the black glossy boards, which seems to be the hallmark of mollusk books from Italian publishers.

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Note: This volume will be available in the Club library at the February meeting.

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MEMBERSHIP AND SUBSCRIPTION

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Meeting date: third Thursday, 7:30 PM,
Room 104, Casa Del Prado, Balboa Park, San Diego

PROGRAM

World Record Size Shells - a Discussion

Kim and Linda Hutsell, two of the authors of the *Registry of World Record Size Shells,* will lead a discussion on the process of registering potential records and the implications of record size shells. Members are encouraged to bring in their record size shells -- and any that might be.

Meeting date: March 17, 2000
Shells of the month: record size shells - and any that might be

CONTENTS

CLUB NEWS

Minutes of the
San Diego Shell Club Meeting - February 17, 2000

President Mike Mason called the meeting to order at about 7:45 p.m. The minutes of the January meeting, as published in *The Festivus* were approved. Mike discussed the upcoming auction and a signup sheet was passed around for the potluck dinner. Donations are needed and can be given to any Board member. [See col. 2, this page.] Mike said that a host is still needed for meetings. [If you are willing to take this post, contact Mike at 619-482-1098.]

Mark Scott announced that the used plastic boxes at the back of the room are free to Club members and were donated by Ursula Shasky. New boxes will be sold at an upcoming Club meeting. Mark also read a letter from a woman in France interested in exchanging shells. He will pass on the details to anyone interested.

Kim Hutsell introduced the speaker for the evening, Travis Smith. Travis is working on his PhD at Scripps Institution of Oceanography. His Master's work related to tying together the story of Recent and fossil pectens. He studied the extinction patterns of the region from Humboldt Bay to Isla Cedros. He said that pectens fossilize well and are easy to identify and that there are eleven species of pectens in California today. This is about a 70% extinction rate since there were thirty species in California at one time. There has been no evolutionary rebound. He considered three possible causes for the extinction: taxonomy, body size and latitudinal range. He found that large species have large ranges and that small species have small ranges. If a species is in a restricted area, an environmental change to the area can effect extinction. Geographical range, he said, may be the most influential factor.

The winner of the door prize was Don Guthrie. The meeting was adjourned to look at some of the shells brought in by Kim (pectens from Diamond Island), Mark (cowries) and the Schneiders (fossil pectens) and to enjoy the refreshments contributed by John Bishop, Mike and Silvana.

Silvana Vollero

Member Ron McPeak at Mission Trails Park

Ron H. McPeak, longtime Club member now living in Washington state, will give a slide presentation and sign his new book *Amphibians & Reptiles of Baja California*, a new field guide in the *Sea Challengers* series beautifully written and photographed by Ron. His presentation and book signing will be at Mission Trails Regional Park auditorium, One Father Junipero Serra Trail, San Diego, on Saturday, 18 March from 7:00 - 9:00 p.m. For directions call (619) 668-3275.

Come to the Auction/Potluck

The Club's annual Auction/Potluck will be held on April 1st at the Summer Hill Clubhouse [see map, last page]. Festivities will begin at 5:00 p.m. (with "Dave's Punch" and soft drinks) while you browse the auction table and the silent auction goodies. Dinner will begin promptly at 6:00 p.m. and the auction will start at 7:00 p.m. on the button!

There will be some exceptional shells including such "raries" as *Acanthtrophon sorenseni, Cancellaria centrota, Pterynotus bequaerti, Voluta bednalli,* cypraeids *nigropunctata, jeaniana, venusta* and *rosselli* and *Latiaxis pilsbryi.*

This is the Club's big fundraiser and the biggest social event of the year. The auction provides the Club with the funds necessary to support its many activities such as *The Festivus*, Club library purchases, donations toward student grants and the Greater San Diego Science Fair.

It's still not too late to donate to the auction; if you can't make the March meeting, contact Carole Hertz (858-277-6259) and arrange for pickup. And if you have no shells to donate, you can still attend the auction, have a marvelous time and the goodies you buy will help your collection -- and the Club.

Too Late for the Roster

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GROWTH SERIES OF THREE SPECIES OF *PITAR (HYSTEROCONCHA)* WITH COMMENTS ON A FOURTH SPECIES (BIVALVIA: VENERIDAE) FROM THE PANAMIC PROVINCE

CAROL SKOGLUND[1]

Santa Barbara Museum of Natural History, 2559 Puesta del Sol Road,
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Years ago, while dredging in Caleta de Los Angeles, Bahía Tenacatita, Jalisco, México, my husband Paul and I brought up several very small *Pitar* specimens that were difficult to identify. These were taken using a dredge with 1/8 inch wire mesh on a mud bottom at a depth of 6 to 20 m. They ranged in size from 3.5 to 4.0 mm width (Figure 1). Although the sturdy shells were very similar, there were slight differences in the overall shape, color, and concentric ribbing that led us to believe that more than one species might be present, perhaps of the subgenus *Lamelliconcha*.

Further dredging of the same area and in other places along the coast of México from the states of Nayarit to Colima over several years provided a growth series needed to prove that our shells were not adults but juvenile *Pitar* of three distinct species, all in the subgenus *Hysteroconcha*. Species in *Hysteroconcha* have concentric lamellae with the posterior area bordered by spines (Keen, 1971). Sizes herein do not include spines.

We dredged *Pitar (H.) lupanaria* (Lesson, 1830) and *Pitar (H.) roseus* (Broderip & G. B. Sowerby II, 1851) at Caleta de Los Angeles and *Pitar (H.)*

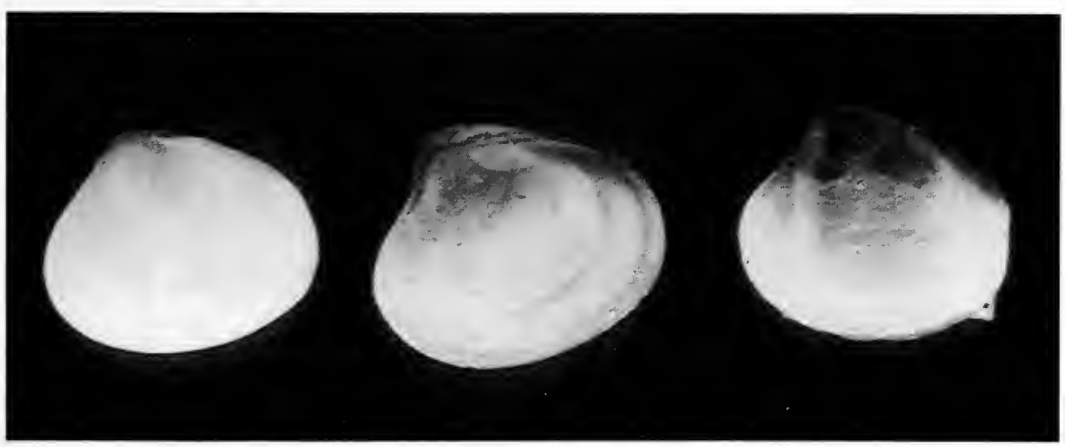

Figure 1, left to right: *Pitar lupanaria* 3.5 mm; *Pitar roseus*, 4.0 mm; *Pitar multispinosus*, 3.5 mm.

[1] Mailing address: 3846 E. Highland Ave., Phoenix, AZ 85018, USA

multispinosus (G. B Sowerby II, 1851) at both Lo de Marcos, Nayarit, and at Bahía Santiago, Colima, México. Paul photographed the shells, and I reported on them at an annual meeting of the Western Society of Malacologists (Skoglund, 1976).

Abbreviations used herein are: AMNH, American Museum of Natural History, New York; ANSP, The Academy of Natural Sciences, Philadelphia; CAS, California Academy of Sciences, San Francisco; LACM, Los Angeles County Museum of Natural History, Los Angeles; SBMNH, Santa Barbara Museum of Natural History, Santa Barbara; USNM, National Museum of Natural History, Smithsonian Institution, Washington, D.C.

The shell of *Pitar lupanaria* at 5.0 mm is white with rolled concentric ribs and a slightly truncate posterior end (Figure 2). As the shell matures, the ribs become lamellar near the margin, and the ventral third takes on a rosy color. The first spines on the posterior slope appear at about 9 mm (Plate I, Figure A). At 21 mm in size, the shell is almost adult except that there

Figure 2. *Pitar lupanaria* 5.0 mm.

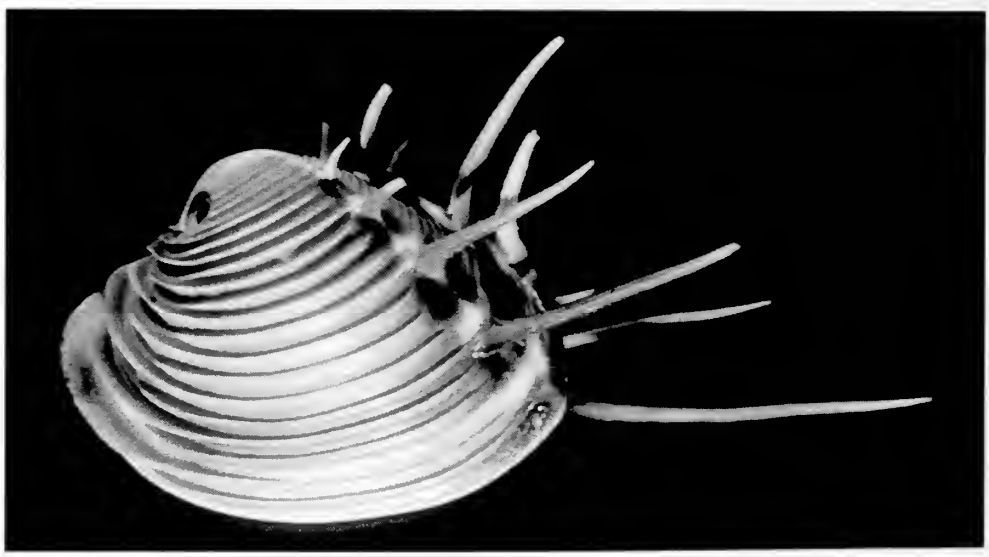

Figure 3. *Pitar lupanaria,* 21 mm.

are two rows of spines instead of the single row in the adult (Figure 3). While the figured shell was rose colored when the photo was taken in 1976, it has now faded to light tan. As the shell matures (Plate I, Figure B), the new concentric ribs are rolled, while raised lamellae flare over the anterior edge of the most often rosy or violet colored shell. A second row of long spines is present until the shell reaches about 20 mm, then becomes obsolete. Mature shells have blotches of purple on the disc at the base of each spine. The color range of other specimens in my collection is from almost pure white to a bright brown. The species can attain a size of 100 mm, including spines (Hutsell et al., 1997). The shell without spines reaches 78.5 mm

(Hutsell, pers. comm).

Pitar multispinosus, in contrast, already has both the first spines and the first rose-colored, raised lamellae near the ventral margin at 4.5 mm (Figure 4).

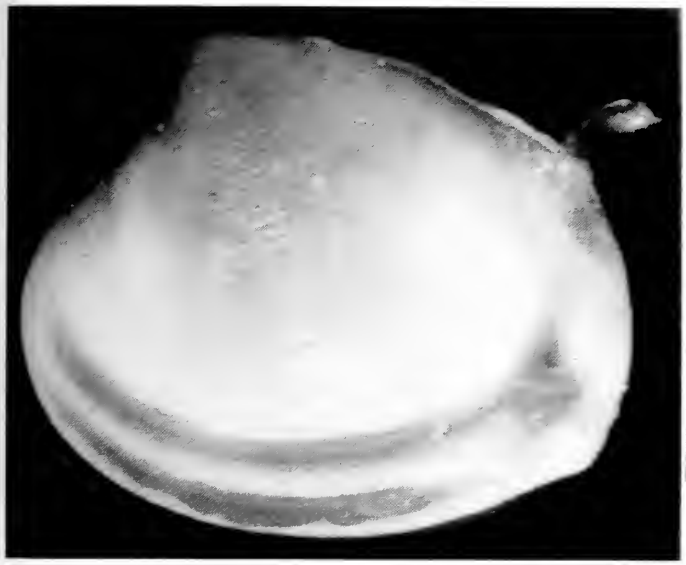

Figure 4. *Pitar multispinosus*, 4.5 mm.

The umbones are more pronounced and of a dark rosy-purple color; the rolled concentric ribs are less pronounced than on the early stages of *P. lupanaria*. More ribs and spines are added as the shell grows to 6 mm (Plate I, Figure C). At 17.5 mm the shell appears to be mature. Except for the umbonal area, the concentric ribs are all raised lamellae, which are higher just anterior to the first of two rows of close-set spines. This area is file-like to the touch, and this is a good diagnostic feature of this species (Plate I, Figure D).

Pitar lupanaria is smooth in this area and the spines are placed farther apart. Keen (1971) says that *P. multispinosus* is brown rather than purple and attains 40 mm. My shells, from Lo de Marcos, Nayarit, México, south to Salinas, Ecuador, were a rosy color when fresh, and still retain more of a rose than a brown color. The largest *P. multispinosus* in my collection is 31 mm.

Pitar roseus starts out much as the other two species, but is slightly more elongate (Plate I, Figure E). At 5 mm, the shell is rosy with whitish areas on both the anterior and posterior slopes. The umbones are rosy-purple and the concentric lamellae are raised (Figure 5). At 6 mm the iridescent periostracum charactistic of the species can be seen on most live-taken material. This periostracum is apparently fragile, as it

Figure 5. *Pitar roseus*, 10 mm.

is rarely seen on beach-drift material. As the shell grows, either one or two rows of very short spines appear. A thin white stripe occurs under the anterior-most row of spines. The second, more posterior, row becomes obsolete by about 15 mm, and even this apparently wears off as the shell matures. The rolled concentric ribs become raised lamellae on the anterior slope (Plate I, Figure F). Some shells are white in this area. The largest specimen in my collection is 55 mm.

A fourth species, *Pitar brevispinosus* (G. B. Sowerby II, 1851) (Figure 6), completes the list of *Hysteroconcha* currently known from the Panamic Province (Keen, 1971). I have only seen mature *Pitar brevispinosus*. The all-white shell is similar to *P. roseus*, but more trigonal and with large, fold-like, concentric ribs. It has a shiny periostracum but without the iridescence seen in *P. roseus*.

Pitar brevispinosus is figured by Olsson (1961) with a distribution as "Gulf of California to Ecuador". Olsson states that he has seen the shell, which he calls rare, only from southern Colombia and Ecuador. He cites the original description by Sowerby as the source for a shell from California. Sowerby (1851) cites a shell from the Cuming collection as coming from California. Since Cuming did not collect in California, it is possible that Olsson used the Golfo de California instead of California as his distribution. Keen (1971) used the Olsson illustrations and distribution.

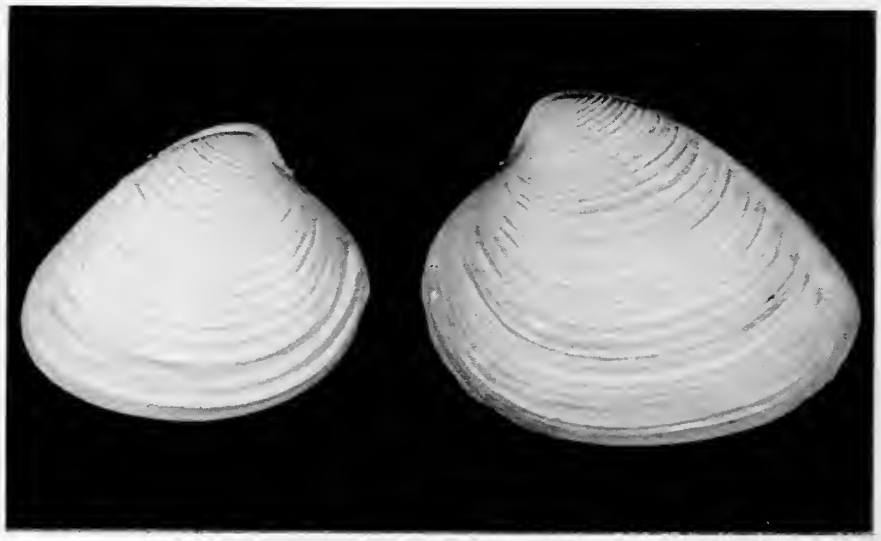

Figure 6. *Pitar brevispinosus*, 42.0 mm. Photo: D. K. Mulliner.

I collected four *P. brevispinosus*, still alive at the high tide line near the village of Camerones, Esmeraldas, Ecuador, in April, 1981. Virginia Maes and I also found 12 valves in the intertidal area. These valves are now at ANSP (356905). One shell of my lot is now at SBMNH (345321). Neither LACM or CAS has the shell in their collections. The shells in the collection of AMNH labeled as *P. brevispinosus* from California were not that species. The Smithsonian Institution (USNM) has three lots, none of which I have seen. The distribution is from Nicaragua (USNM 703665), the Golfo de Panamá (USNM 6228) to Ecuador (USNM 517723).

I have never seen this species in many years of collecting in the Golfo de California, México, and unless more information comes to light, would limit the distribution from Nicaragua to Ecuador.

My thanks to Lindsey Groves (LACM), Liz Kools (CAS), Raye Germon (USNM) and Ned Gilmore (ANSP) for checking their collections; Henry Chaney (SBMNH) and Jay Cordeiro (AMNH) for the use of material in their institutions and David K. Mulliner for photographing the *Pitar brevispinosus*. All other photographs were taken by the late Paul Skoglund.

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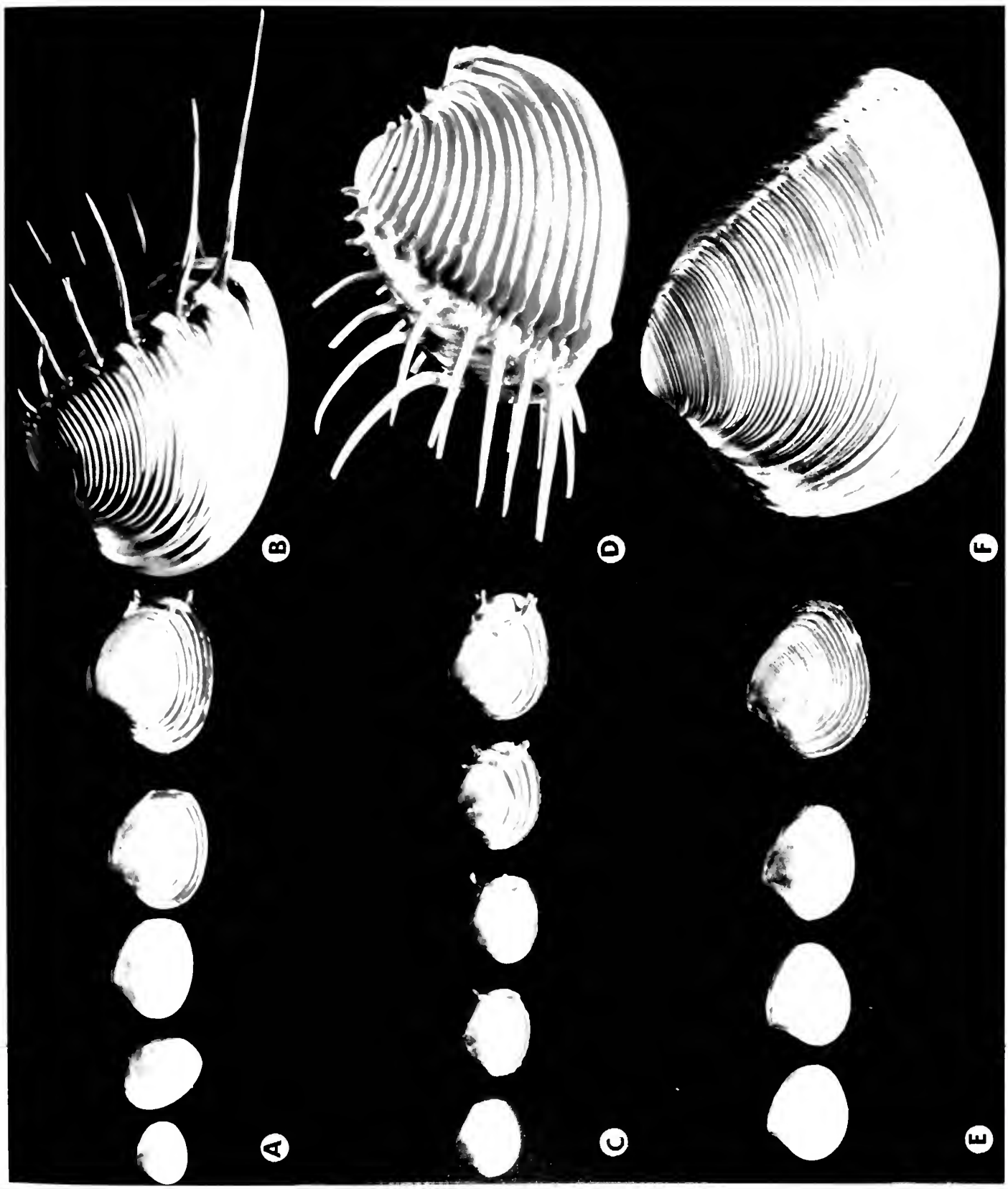
Color Plate I, Figures A to F. (A) *Pitar lupanaria*, 5 specimens(left to right), 3.5 to 9.0 mm (B) *P. lupanaria*, 21 mm (C) *Pitar multispinosus*, 5 specimens (left to right), 3.5 to 6.0 mm (D) *P. multispinosus*, 17.5 mm (E) *Pitar roseus*, 4 specimens (left to right), 3.5 to 11.5 mm (F) *P. roseus*, 55 mm.→


A
B
C
D
E
F

FOURTH ANNUAL SCUM MEETING

The fourth annual meeting of the Southern California Unified Malacologists (SCUM) was held 15 January 2000 in San Diego in the Munk Seminar Room, Institute of Geophysics & Planetary Physics, Scripps Institution of Oceanography, La Jolla, California. Hugh Bradner hosted the meeting in this beautiful room high on a cliff overlooking the La Jolla shoreline. The meeting began at 10:00 a.m. and early arrivals enjoyed coffee and donuts while conversing with other attendees. There were approximately 35 in attendance with some from as far away as Long Beach and Los Angeles. At the beginning of the meeting, there was a round of self introductions followed by informal presentations of 15 minutes or less from each attendee, outlining recent or current projects and accomplishments.

Larry Lovell opened the meeting with a discussion of the Scripps Institution of Oceanography (SIO) Collection and the status of moving it to a new building. Kent Trego showed slides and discussed work on benthic material from Port Foster (caldera rim), Deception Island, off Antarctica. He talked about five bivalve species and mentioned articles which appeared in *Antarctic Science*. Terry Arnold told of collecting fossil cowries in the lower Miocene Muddy Creek beds near Hamilton, Victoria, Australia, and what times of the year were good for collecting and what times one might encounter many poisonous snakes. Wes Farmer discussed his collecting during the past four years at Torrey Pines State Park and his inability to get a permit this year. He hoped that some of the attendees might be of help in resolving his problem. Kim Hutsell told of a recent collecting trip to Diamond Island in the Coral Sea, and he brought a display of some of the larger shells found there. Tom Deméré and Jim McLean reported on current status of events at the San Diego Natural History Museum (SDNHM) and Los Angeles County Museum (LACM), respectively. Tom reported on the status of the new museum addition in San Diego, and Jim gave an update on new funding available at Los Angeles. Tom discussed his fossil work which covers "whales to snails," mentioning Eocene material from the Scripps Formation. Jim also updated the status of the book he is authoring on gastropods from Alaska to Baja California. Carole Hertz talked about a project that she and coworkers are doing on turrid species collected by Joyce Gemmell in San Felipe, Baja California. Mike Miller gave a slide presentation of beautiful nudibranchs from Negros Oriental in the Philippines. One of the slides showed *Nembrotha mullineri* named for Dave Mulliner, who was also in the audience. George Kennedy reported on Eocene material from near Oceanside and off Rancho Bernardo. Nancy Schneider talked of fossil material that she and her husband Bill have collected over many years from a Pleistocene Terrace off Mulegé, Baja California, and described the donations they had provided to set up a Museum in Mulegé, including display cabinets and specimens. Hans Bertsch showed pictures of preserved specimens of *Bathydoris aioca* collected off Oregon in approximately 2800 meters (paper in press). LouElla Saul is working on fossil volutes from 85 million years ago from Vancouver, British Columbia to Baja California. Yvonne Albi showed drawings of rudistids; she is working on the morphology and taxa of this group from the late Cretaceous of Jamaica. Roger Seapy is busy writing chapters for books on heteropods, pteropods, etc. Christine Louie spoke of her work on pipefish and limpet studies tied to eelgrass beds from San Diego to Sitka, Alaska. Don Cadien and John Ljubenkov briefly discussed environmental studies being conducted off the southern California coast and web sites on the Internet where one could download some of the results. Don mentioned finding an *Akera* specimen off our coast which would be a first. Daniel Geiger talked about his work on worldwide abalone and on the phylogeny of scissurellids. Lance Gilbertson is working on new species and anatomy of land snails of the Southwest. Others in the audience also made brief statements about their recent endeavors.

The meeting was adjourned early in the afternoon and attendees were invited by Larry Lovell for a guided tour of the new facilities for housing the SIO collections.

The fifth annual meeting of SCUM will be hosted at the LACM.

Jules Hertz

STUDENT GRANTS AVAILABLE

As part of their commitment to the continued study of mollusks, the Western Society of Malacologists, the Santa Barbara Malacological Society, the San Diego Shell Club, and the Northern California Malacozoological Club are again pleased to announce the availability of grants to support student research in malacology.

Funds are available for actual research costs, including but not limited to, field and laboratory equipment, chemicals, photographic supplies, computer time and supplies, microscope usage fees, and reasonable research travel costs.

ELIGIBILITY: Applicant must be a full time student in a formal graduate or undergraduate degree program. The thesis, dissertation or research project must be focused primarily on the systematics, biology, ecology, physiology, biochemistry, or paleontology of marine, terrestrial or freshwater mollusks. Research currently in progress or beginning in the 1999-2000 academic year will be considered.

REQUIREMENTS: Six copies of the following documents are required for each application:

1. Cover application page with proposal title, applicant name, addresses, contact numbers, etc, including a listing of no more than five keywords that describe the proposed research.
2. The proposal, limited to two pages, which discusses the research project and its malacological significance including details of the work to be aided by this grant.
3. A budget which outlines how the grant funds will be used.
4. A resume or outline of the applicant's academic background.
5. A letter of recommendation from the applicants research advisor (original and 5 copies to be sent separately by advisor).
6. A list of grants and amounts that are currently being received or have been applied for in the 1999-2000 academic year.

No electronic submissions, mail it. Remember 6 copies.

AWARD: Research grants up to $1,000 are available.

APPLICATION DEADLINE: Completed applications must be received no later than 15 APRIL 2000. Awards will be announced during the joint meeting of the Western Society of Malacologists and the American Malacological Society, July 7-12, 2000.

Mail to: Malacology Grant, Department of Invertebrate Zoology, Santa Barbara Museum of Natural History, 2559 Puesta del Sol Road, Santa Barbara, CA 93105 USA.

For further information contact: Henry Chaney at (805) 682-4711, ext. 334 (voice); (805) 963-9679 (fax); hchaney@sbnature2.org

JOINT MEETING OF AMS AND WSM

The 2000 joint meeting of the American Malacological Society and the Western Society of Malacologists will be held at San Francisco State University from Friday, July 7 to Wednesday, July 12. At this meeting, AMS and WSM will sponsor three symposia:

The Place of Malacology in Comparative Biology, convened by Michael Ghiselin, California Academy of Sciences, Golden Gate Park, San Francisco, CA 94118; phone: (415) 750-7084; fax: (415) 750-7090; e-mail: mghiselin@calacademy.org

Systematics and Ecology of Opisthobranch Gastropods, convened by Angel Valdes, California Academy of Sciences, Golden Gate Park, San Francisco, CA 94118; phone: (415) 750-7110; e-mail: avaldes@calacademy.org; fax: (415) 750-7090.

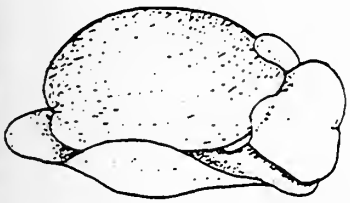
Advances in the Study of the Behavior of Recent and Fossil Cephalopods, convened by Roland Anderson, The Seattle Aquarium, Pier 59, 1483 Alaskan Way, Seattle, WA 98101-2059; phone (206) 386-4359; e-mail: roland.anderson@ci.seattle.wa.us; fax: (206) 386-4328.

The meeting will include a banquet at the California Academy of Sciences and the AMS Annual Auction. Optional field trips, including excursions to Mt. San Bruno with Neil Fahy, Monterey Bay Aquarium with Angel Valdes, and Pt. Reyes National Seashore and Mt. Tamalpais with Terry Gosliner will be available for participants to attend following the conclusion of formal sessions.

Housing will be available in several categories at San Francisco State University dorms. The accommodations are designed to provide affordable housing to students as well as hotel-style private rooms with daily maid service. All housing options include breakfast.

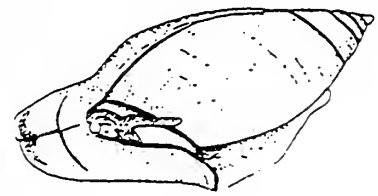
For further information and registration please send an e-mail to: ams-wsm@calacademy.org or visit our web site at http://www.calacademy.org/research/html/malacological_meeting.html

SAN DIEGO SHELL CLUB



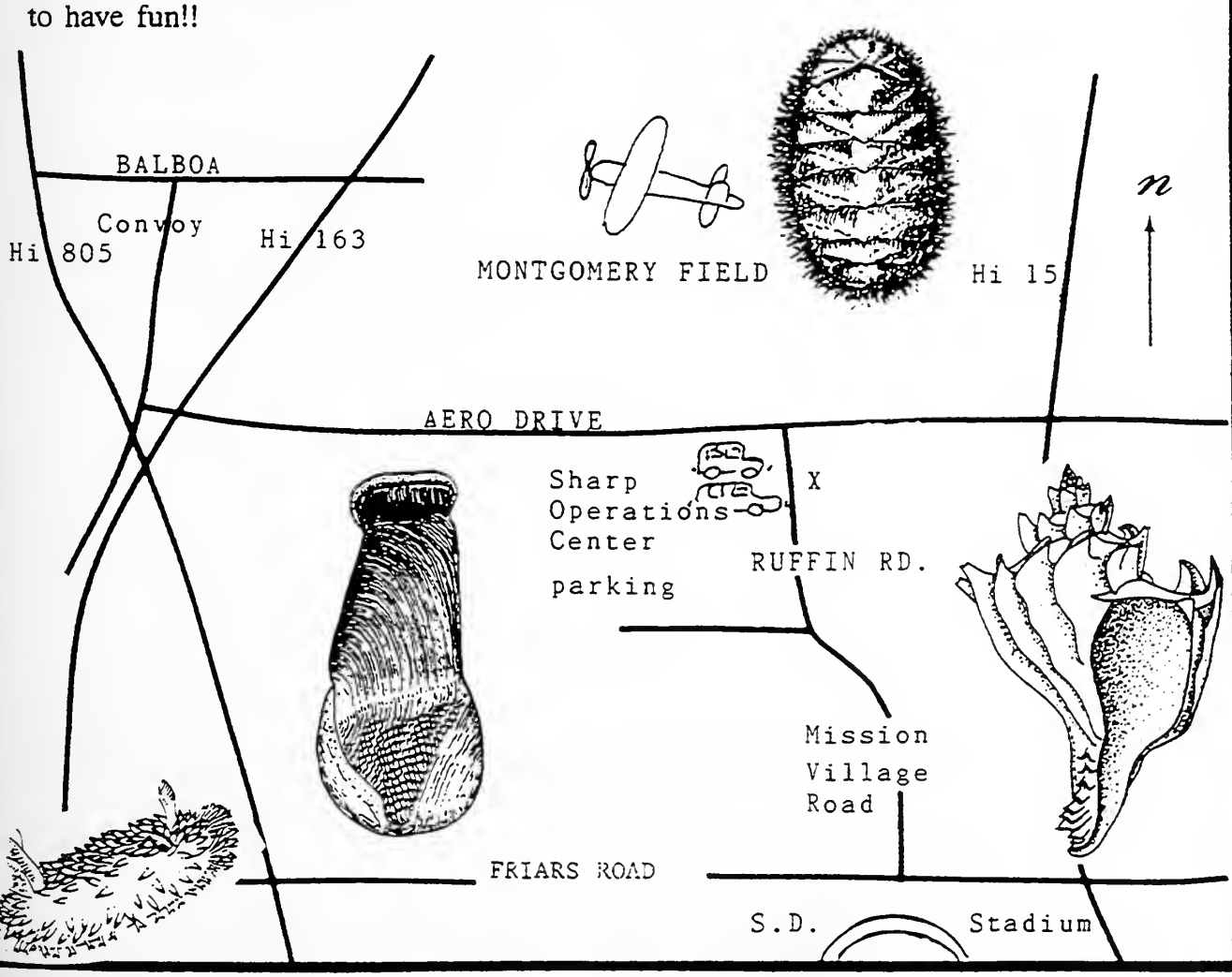
AUCTION/POTLUCK

April 1, 2000



DIRECTIONS TO THE AUCTION: from 805: exit onto Balboa, east to Convoy, south to Aero Dr., east to Ruffin Rd., south about a block or two. Clubhouse on East side of street; park at Sharp Operations Center on West side.
From San Diego Stadium on Friars Road: up Mission Village Drive to Ruffin Rd., right turn or north about a half mile, parking on the west side of the street at Sharp Operations Center across from the Clubhouse.
THE ADDRESS: 3575 Ruffin Rd. at the Summer Hill Clubhouse.
TIME: 5:00 p.m. - ??

REMEMBER TO BRING: Your potluck dish with serving utensils. Also, please bring eating utensils for yourself (plates, cups and napkins will be provided). And come ready to have fun!!



ISSN 0738-9388

THE FESTIVUS

A publication of the San Diego Shell Club

Volume: XXXII | April 13, 2000 | Number: 4

MEMBERSHIP AND SUBSCRIPTION
Annual dues are payable to San Diego Shell Club.
Membership (includes family). Domestic $15.00;
Overseas (surface mail): $18.00, (air mail): $30.00;
Mexico/ Canada (surface mail): $18.00, (air mail): $20.00.
Address all correspondence to the San Diego Shell Club, Inc., c/o 3883 Mt. Blackburn Ave., San Diego, CA 92111, USA.

The Festivus is published monthly except December.
The publication date appears on the masthead above.
Single copies of this issue: $5.00 plus postage.

Website at: http://www.molluscs.net/SanDiegoShell Club/index.html Email: cmhertz@pacbell.net

Meeting date: third Thursday, 7:30 PM,
Room 104, Casa Del Prado, Balboa Park, San Diego

PROGRAM

There is no regular meeting this month. The Club Auction/Potluck was April 1st .
Next regular meeting: May 18th .

CONTENTS

CLUB NEWS

Minutes of the San Diego Shell Club Meeting - March 16, 2000

President Mike Mason called the meeting to order at 7:45 p.m. The minutes of the February meeting were approved as published in *The Festivus*.

Mike reminded everyone of the upcoming Auction. The potluck sign-up sheet was passed around and members were asked to give their donations to a board member. Kay Klaus reported on new library holdings and, as historian, Kay pointed out that pictures from the September party were on display. Linda Hutsell said that the next Botanical Garden Society meeting will be on May 11th. A zoo representative will discuss the plans for expansion. Everyone is invited to attend and bring his/her concerns.

Our own Kim Hutsell was the speaker for the evening. He discussed the *Registry of World Size Records* and how members can measure their shells and the importance of having these world size records. Kim, Linda and Don Pisor took on this project because it had been dropped for about seven years.

Kim explained that the scientific method of measuring the length of a gastropod is from the tip through the axis of the shell and for a bivalve, from the umbo to the ventral margin. For the *Registry*, however, the largest measurement attainable is used. This includes the length to the tip of the spines for *Spondylus*, for example. The maximum length of any shell is measured in any dimension. The *Registry* accepts a minimum size for mature cowries, marginellas and strombus only. Subspecies are used only if they are recognized in the literature and all entries need to be verified by a second party. All in all, the publication contains about 6,000 species but does not include freshwater or terrestrial shells, chitons or fossils. The book is fun and useful and the discussion was very enjoyable. Check your shells at home for records!

The winner of the drawing was Nancy Schneider. Thanks to John Bishop and Terry Arnold for the delicious refreshments.

The meeting was adjourned at 8:55 p.m.

Silvana Vollero

Too Late for the Roster

Lavaleye, M.S.S., De Ruyterstraat 58, 1792 AK Oudeschild, The Netherlands. E-mail: LAVA@NIOZ.NL

Perini, Maurizio A., via Pedrazza 9, I-36010 Zane (VI), Italy, Phone: 39.0445.380378, FAX: 39.0445.384784, E-mail: mperini@witcom.com

Change of Address

Thompson, Fred G., P.O. Box 117800, Gainesville, FL 32611-7800.

Upcoming Mollusk Meetings

The 2000 Bay Area Malacologists (BAM)
The gathering will be held on Saturday, April 29 in the Trustees Room at the California Academy of Sciences in Golden Gate Park in San Francisco. The meeting will start about 9:00 a.m. Hosts at the Academy will be Dr. Terrence M. Gosliner and Dr. Angel Valdes. For further information contact Matt James: Phone 707-664-2301; e-mail <matt.james@sonoma.edu>

AMS/WSM Annual Meeting - see March issue.

COA 2000 - Houston, Texas
The annual meeting of the Conchologists of America will be held in Houston from June 22-26 at the Wyndham Greenspoint Hotel. In addition to the regular program, there will be a welcome party, banquet, bourse and field trips. For further information contact Convention chairperson Lucille Green at 281-376-5630 or e-mail at <dgreen@comwerx.net>

Molluscs 2000 meeting in Sydney, Australia
December 4-8, 2000. For the latest information, e-mail http://www.austmus.gov.au/science/division/invert/mal/malsoc/confer3.htm

Club Library Receives a New Book

The Club library has received a new copy of *Saudi Arabian Seashells* by Doreen Sharabati published in 1981. This 119 page, hardcovered book is attractive and figures some of the mollusks of the area. It is designed as a "layman's introduction to the subject of marine molluscs in general and to those of the Red Sea and Arabian Gulf in particular." There is generalized information on the area and some of the mollusks are pictured *in situ* others in artistic arrangements.

The book will be available at the May meeting.

NEW DISTRIBUTION RECORDS FOR TWO SPECIES OF *MURICOPSIS* (MURICIDAE) FROM THE PANAMIC PROVINCE

BARBARA W. MYERS[1]

Associate, Santa Barbara Museum of Natural History,
2559 Puesta del Sol Road, Santa Barbara, California 93105, USA

George E. Radwin and Anthony D'Attilio described *Muricopsis tulensis* (Figure 1) in the Appendix of their book, *Murex Shells of the World* (1976: 233-234, figs. 184, 185). The type locality was listed as Rancho El Tule, Baja California, México. The holotype and four paratypes were from Rancho El Tule and other paratypes were from Cabo San Lucas and El Pulmo Reef, Baja California Sur. These three localities are all at the tip of the Baja Peninsula; Cabo San Lucas is at the western end and El Pulmo reef is at the eastern tip. Centered between the two lies Rancho El Tule. There has been no record published of this species since it was described.

A specimen of *Muricopsis tulensis* from Los Islotes, Isla Partida, Golfo de California, México, collected by Donald R. Shasky of Oceanside, California, 30 July 1975, was brought to my attention. I compared it with the holotype and paratype in the San Diego Natural History Museum and found it conspecific. Isla Partida, in the Golfo de California, is approximately 150 km north of the type locality. I also identified six specimens in the Carol Skoglund Collection as *M. tulensis*. These specimens were collected intertidally in April 1977 at Shipwreck Beach ½ to 1 mile east of Cabo San Lucas, Baja California Sur. The maximum length of the six Skoglund specimens is 6.4 mm.

A similar species, *Muricopsis pauxillus* (A. Adams, 1854), when juvenile (Figure 2), often bears a close resemblance to *M. tulensis*. *Muricopsis pauxillus*, however, attains a length of 18 mm compared to 7.8 mm for *M. tulensis*. Essentially, *M. pauxillus* has a black shell with white spiral bands and *M. tulensis* is a white shell with chestnut spiral bands. In addition to being longer and broader than *M. tulensis*, the protoconch of *M. pauxillus* is strongly angulate whereas *M. tulensis* has a convex protoconch.

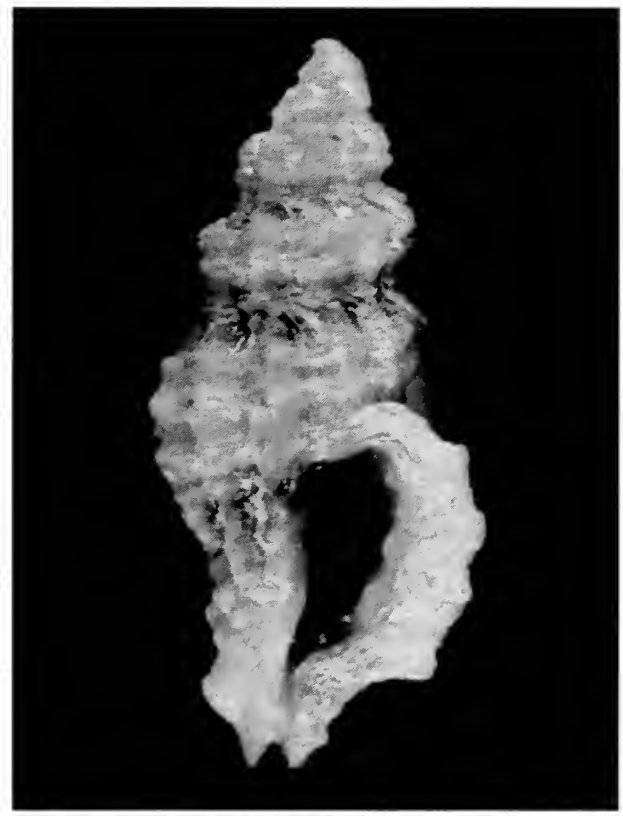


Figure 1. *Muricopsis tulensis* Radwin & D'Attilio, 1976. Paratype, 7.6 mm L (SDNHM 61231), collected by Faye Howard at Rancho El Tule, Baja California, México. Photo: D. K. Mulliner.

[1]Mailing address: 3761 Mt. Augustus Avenue, San Diego, CA 92111, USA.

Drawings of the protoconchs of both species can be found in Radwin & D'Attilio (1976).

DuShane and Poorman (1967) recorded *M. pauxillus* from Guaymas, Sonora, México. Keen (1971) restricted its distribution to the southern Golfo de California especially around Mazatlán. Radwin and D'Attilio (1976) extended its distribution south to Central America. Three specimens of *M. pauxillus* collected by D. R. Shasky in 1989, in 5 to 9 m off an islet in front of Bahía Saladita, Guaymas, Sonora and four specimens (SDNHM 61873) from the same locality in 11 m (also collected by Shasky) confirm the northern distribution to Guaymas on the mainland side of the Golfo de California.

M. Mulliner (1996) reported three specimens of *M. pauxillus* collected in 50 to 60 m from off Isla Danzante on the Baja California side of the Gulf, and specimens in the Carol Skoglund Collection (one from Bahía San Nicolas collected in 1964 and two from Puerto Escondido collected in 1977) both on the Baja side of the Gulf, extend the distribution of *M. pauxillus* across the Golfo de California to the Baja Peninsula.

ACKNOWLEDGMENTS

I wish to thank Donald R. Shasky and Carol Skoglund for the opportunity to examine their specimens and Carole M. Hertz, who located the photograph of the paratype of *Muricopsis tulensis*. My thanks to David K. Mulliner for permission to use the photo of *M. tulensis* and also for photographing *M. pauxillus*. Lastly I wish to thank the San Diego Natural History Museum, for providing space for me to continue my work in malacology, especially David Faulkner, Collection Manager, Department of Entomology in whose department I am presently a guest.

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Figure 2. *Muricopsis pauxillus*, 9.3 mm L, Bahía Saladita, Guaymas, Sonora, México, in 5-9 m under rocks, Shasky Collection. Photo: D. K. Mulliner.

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1971. Sea Shells of Tropical West America. Marine Mollusks from Baja California to Peru. Stanford University Press, Stanford, xiv +1064, 22 color pls., numerous illustrations.

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1996. Dredging around Isla Danzante, Gulf of California, Mexico, or what you find at the end of a line. The Festivus 28(6): 62-70, figs. 1-17.

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1976. Murex Shells of the World. An Illustrated Guide to the Muricidae. Stanford University Press, 284 pp., 32 pls., 192 text figs.

LIST OF CYPRAEOIDEAN AND TRIVIOIDEAN LITERATURE 1994 through 1999

LINDSEY T. GROVES

Natural History Museum of Los Angeles County
Malacology & Invertebrate Paleontology Sections
900 Exposition Boulevard, Los Angeles, California 90007, USA
lgroves@nhm.org

ABSTRACT Since 1993 at least 552 publications that include Recent and fossil cypraeoideans and trivioideans were published subsequent to the compilation of Groves (1994). Additionally, 383 earlier publications not cited by Schilder & Schilder (1971) or Groves (1994) are listed.

INTRODUCTION

At least 552 publications that deal either entirely or partially with cypraeoideans and/or trivioideans were published from 1994 through 1999. The second part of this report lists 383 pre-1994 publications not listed in Groves (1994) and/or Schilder & Schilder (1971) that also deal with cypraeoideans and/or trivioideans. References listed include those that emphasize cypraeoideans and/or trivioideans, those that include them in faunal surveys and lists, and general-interest books and articles. Titles marked with an asterisk (*) indicate works that deal entirely or in part with fossil cypraeoideans and/or trivioideans. Unless otherwise noted, all references are in English and those non-English titles that have English abstracts and/or summaries are likewise noted. Entries not credited to an author, editor, or publisher are referred to as "anonymous." With the exception of theses and dissertations, unpublished works are not included.

Despite the extensive search of recent literature, particularly journals and other publications received by the Malacology and Invertebrate Paleontology Sections, Natural History Museum of Los Angeles County, some titles may have been inadvertently overlooked. The author requests that missed titles be brought to his attention for inclusion in a future compilation.

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THE FESTIVUS

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Meeting date: third Thursday, 7:30 PM,
Room 104, Casa Del Prado, Balboa Park, San Diego

PROGRAM

Species Identification: A Discussion of Genetic vs Morphologic Methods

Club member Kent Trego will give a presentation discussing identification of species using shell and animal characters and/or genetic characters. He will illustrate his talk with slides.

Big Sale of New Plastic Boxes (see page 70)

Meeting date: May 18, 2000
Shells of the month: epitoniums

CONTENTS

CLUB NEWS

The Auction/Potluck

The affair was a huge success! Over fifty people, members and guests, joined at Wes Farmer's Clubhouse to enjoy another auction/potluck — and enjoy they did. The activities began at 5:00 p.m. with Dave's punch, soft drinks and appetizers as members socialized, perused the auction table with all its treasures, and the silent auction loaded with bargains. At 6:00 p.m. the dinner began with many special dishes prepared for the occasion. The food was delicious and there was an abundance of it.

By 7:00 p.m. when the voice auction began, all were sated and mellow. And what an auction it was! Auctioneer Carole Hertz opened the auction with the usual instructions and then chose as the first shell on the block, a very large, beautiful *Voluta nodiplicata* and the game began. Bidding was fast, fun and furious. Even though the auction began promptly and moved along rapidly, it didn't end until 10:30 p.m. And very few people left early — there were still gems on the table at the very end.

Many members worked hard to make the affair the fun it always is -- the board members that prepare the shells for the auction and set up the venue and those who remain to help with the cleanup. Then there are those friends who donated the shells and related items that make the auction possible. They are: Ed Boyd, Marge & Hugh Bradner, Twila Bratcher-Critchlow, Billee Gerrodette, Carole & Jules Hertz, Linda & Kim Hutsell, John Jackson, Scott Jordan, Kirstie Kaiser, Kay Klaus, Mike Mason, Margaret & Dave Mulliner, Charlotte & Hal Norrid, Rosemary & Frank Pierce, Jeanne & Don Pisor, Chuck Reitz, Dale Roberts, Barry Roth, Nancy & Bill Schneider, Mark Scott, Carol Skoglund, Kent Trego and Charlie Waters. The Club's thanks to you all.

And last but definitely not least — a special thank you goes to Wes Farmer who has willingly hosted the party year after year.

Too Late for the Roster

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The 46th Annual Greater San Diego Science and Engineering Fair

For the 28th consecutive year, the San Diego Shell Club has participated in the Science Fair. This year the Club judges were Terry Arnold (chair), Carole Hertz and Kim Hutsell.

Selected as this year's Club winner was Heather Elizabeth Ibey, a 12th grader at Mt. Miguel High School who also won a first place in zoology. Her winning research project is entitled *Mucus trails of marine mollusks — biologically expensive or an investment?*

Elizabeth will choose a book award (offered each year by the Club), either Barnes' *Invertebrate Zoology,* Ricketts, Calvin & Hedgpeth's *Between Pacific Tides* or Morris, Abbott & Haderlie's *Intertidal Invertebrates of California.*

A date will be selected for Elizabeth to present an overview of her winning project to the Club and receive the Club's book award of her choice.

Plastic Boxes for Sale at the May Meeting

New plastic boxes in a variety of sizes will be available for sale at bargain prices at the May meeting.

As always, all purchases are on the honor system. Bring your money, come early and get some good buys. The sizes are as follows: 1½ x 2 x 1; 2 x 3 x 1¼; 1½ x 1 x ½; 3 x 4 x 1; 1¼ x 1 ½ x ¾; 1 x 1 x ½. Available also, in various sizes, are used plastic boxes which are free to those who want them.

The Club's remaining t-shirts and sweatshirts will also be on sale. The range of sizes is limited, however.

The Club's New Library Cabinets

The Club now has two of the standing library cabinets in Room 104 in addition to its regular portable library. This will make the club's books more accessible to members as well as providing more space for the Club's growing library holdings. The transfer of some of the books to the new cabinets will take place at the May meeting.

THE MARQUESAS ISLANDS (FRENCH POLYNESIA) - A PRELIMINARY AND BRIEF ACCOUNT OF MOLLUSCAN FINDS RESULTING FROM A RECENT EXPEDITION

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The Marquesas Islands have always been remote and, to most travelers, can still be considered well off the beaten track. The islands are 2500 miles south of Hawai'i and 900 miles north east of Tahiti. They are high, steep-sided and volcanic in origin. The islands are divided into two groups, some 60 miles apart, and consist of 15 islands - only 6 are inhabited (Figure 1). Nuku Hiva is the largest island of the archipelago and, like all the rest of the islands, breathtakingly beautiful. There is an airport on the northern part of Nuku Hiva, which is connected to the main village, Taiohae, by a 2 hour, 4-wheel drive trek across the island centre. Taiohae is the administrative capital of the region and has a population of around 2000 people. The present day population of the Marquesas Islands is around 7500 persons.

The islands were originally named, "Te Henau Enana" or "Land of the Men", by the first inhabitants. Their history is long and tragic. It is thought the islands' were originally settled around AD 500 when Polynesians migrated from Tonga and Samoa. European contact, with all its nasties (armed conflict, disease, enforced religion etc), decimated the Marquesan culture and population, which then numbered around 50,000 inhabitants.

The archipelago rests some 9 degrees below the equator on the boundary of two major regions - the east Pacific Ocean and the west Pacific Ocean faunal zones. The fauna of the islands has many species common to Hawai'i and the Tuamotus and is essentially Indo-west Pacific in nature. A degree of endemism, as a result of geographic isolation, is also an important make-up of the molluscan assemblage.

Figure 1. Map of the Marquesas Islands. Photo: H. Morrison.

Although I have not researched the collecting history of the islands it appears that over the last century and a half organized scientific collecting has been spasmodic. In 1848 the sail ship "Sulphur", under the command of Captain Belcher, dredged in Taiohae Bay, Nuku Hiva (Figure 2). Over a hundred years later, in 1964, The National Geographic Society funded the Smithsonian Institution and the Bishop Museum in a joint expedition to the islands on board the "Pele". During this expedition specimens were collected by various techniques - dredging to 768 feet, scuba to 70 feet, snorkeling and intertidal collecting. Nearly 3000 lots of molluscs were collected representing a wide range of habitats. The Muséum National d' Histoire

Figure 2. Taiohae Bay, Marquesas Islands.

Naturelle, Paris, has made substantial deep water collections from dredging and also some intertidal collections. Private shell collecting has been somewhat limited due to the islands remoteness, expense of getting there and the lack of dive operators. As such, shell material is still highly sought after on the open market.

On the 17th October 1999 our group of 16 people arrived at Nuku Hiva airport from Tahiti under the watchful and attentive care of our travel host, Ann Fielding of Island Explorations. The occupational breakdown of the group is of interest as it consisted of biologists (malacologists, an ichthyologist and several entomologists), institutional associates, holiday makers and private shell collectors. Group members, represented to varying degrees, six institutions; the Santa Barbara Museum of Natural History, Western Australian Museum, Bishop Museum, University of Connecticut, Smithsonian Institution and the Muséum National d' Histoire Naturelle, Paris.

The original itinerary called for us to visit 3 islands over 15 days with a small contingent staying an extra 6 days to visit the remote island of Eiao. This plan became the victim of strong winds and a denied collecting permit for our visit to Eiao. A revised itinerary resulted in only 2 islands being visited, Nuku Hiva and Ua Poa. All collecting was done either by snorkeling, intertidal collecting or by scuba from a small boat operated by the local dive shop proprietor.

within the Indo-west Pacific region. The species identifications listed below are preliminary but still of interest, either for their rarity, distribution status or endemic uniqueness.

Cypraea thomasi Crosse, 1865 - was originally collected during the "Pele" voyage and wrongly labeled as *C. beckii* Gaskoin, 1836. Live collected specimens are known only from the Marquesas on fine-rubble slopes.

Cypraea astaryi Schilder, 1971 - a particularly vivid color form (Color plate 1, figure B).

Cypraea mappa Linnaeus, 1758 - is rare with a distinctively blurred color pattern.

Cypraea contaminata Sowerby, 1832 - first record for the islands.

Conus bullatus Linnaeus 1758 - very large examples of the species around 2 inches long (Color plate 1, figure A).

Conus gauguini Richard & Salvat, 1973 - found buried in the sand pockets on rocky slopes (Color plate 1, figure C).

Conus nobilis marchionatus Hinds, 1843 - albino and chocolate form (Color plate 1, figure **).

Chicoreus thomasi (Crosse & Fischer, 1872) - endemic to the islands.

Lambis crocata pilsbryi Abbott, 1961 - an endemic subspecies (Figure 3).

Cyrtulus serotinus Hinds, 1874 - an endemic fasciolarid (Figure 5)

Terebra trochlea Deshayes, 1857 - endemic to the islands (Figure 4).

A collection of opisthobranch mollusks, with accompanying photographs, was also made and is lodged with the Western Australian Museum.

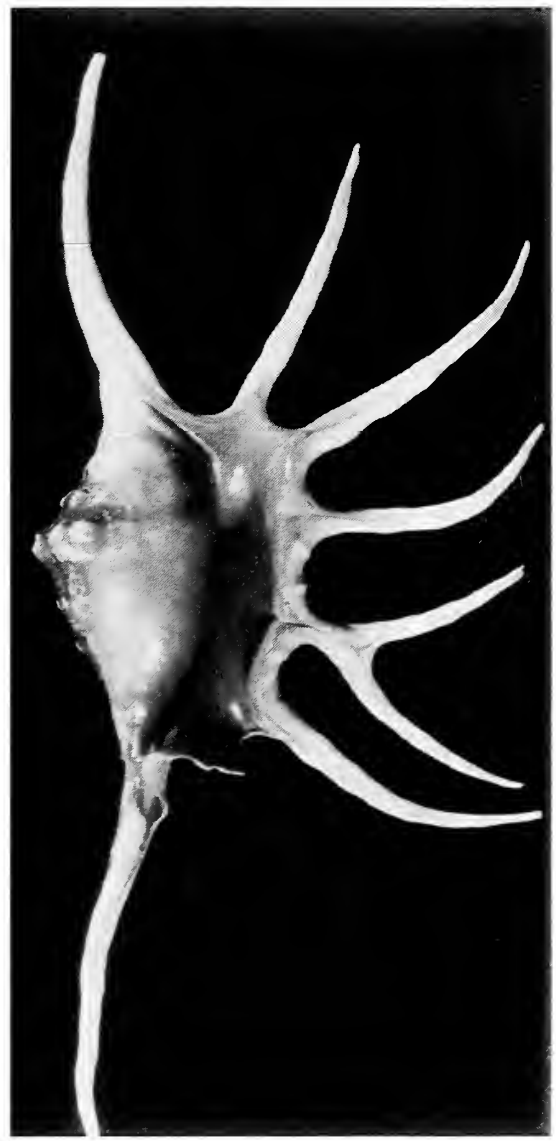

Figure 3. *Lambis crocata pilsbryi* Abbott, 1961.

Figure 4. *Terebra trochlea* Deshayes, 1857.

Phyllidia tula Er. Marcus & Ev. Marcus, 1970 (Color plate 1, fig. E). Although the coloring is paler than normal, dissection of the forgut clearly shows the two longitudinal stripes on the oral tube. Known only from Micronesia, this record constitutes a huge range extension.

Fryeria guamensis Bruncknorst, 1993. (Color plate 1, fig. F). Marginal coloration is slightly different. Preliminary dissections point to this species. This is another large range extension.

DNA tissue samples from encountered *Cypraea* species were also taken and forwarded to researcher, Chris Meyers for phylogenetic analysis. Three other phyla (fish, echinoderms and insects) were also recorded and selectively sampled for inclusion in institutional collections.

The logistics of the trip were facilitated by several organizers within the participating group and by the diligent planning of Ann Fielding of Island Explorations. The excellent diving services and advice offered by Xavier Curvat of Centre Plongee Marquises are also acknowledged. I would also like to thank all members of the expedition for the effort they made in collecting opisthobranch molluscs after my sudden departure and to John Hoover and Kirstie Kaiser for the photography of the specimens.

Figure 5. *Cyrtulus serotinus* Hinds, 1874.

Color Plate 1. Figures A to F. (A) *Conus bullatus* Linnaeus, 1758, dorsal and apertural views (B) *Cypraea astaryi* Schilder, 1971, group (C) *Conus gauguini* Richard & Salvat, 1973, apertural view (D) *Conus nobilis marchionatus* Hinds, 1843, proboscis extended (E) *Phyllidia tula* Er. Marcus & Ev. Marcus, 1970 (F) *Fryeria guamensis* Brunckhorst, 1993.

A RECORD SIZE FOR THE RAZOR CLAM *SILIQUA PATULA*

JOHN A. BISHOP

3026 Freeman Street, San Diego, Ca. 92106

To the committed malacologist, going on a fishing trip to find shells might not seem too logical, but that is the way it happened. In June of 1999 I went with four fishing friends to a "new" sportsman's lodge located in the town of Sandspit, in the Queen Charlotte Islands, Canada. The accommodation and food were first class but after two days of fishing out of our scheduled five days, the owner's two fishing boats were out of commission. The computer controls on the new motor in one ceased to function and the second became inoperable after smashing the lower unit on a rock. In order to make up for this misfortune he gave us the use of his four-wheel-drive Suburban and an ATV.

The Islands are a verdant naturalists' paradise and the home of the Haida Indians. While driving over the roads we saw many Sitka black-tailed deer, frequent brown bears, and a large number of Bald Eagles. Along the eastern and northern parts of the Islands are miles of sandy and rocky shores ideal for shell collecting and accessible by car.

On one of our days we crossed to the northern island by ferry and drove to the town of Masset. East of Masset is Rose Spit Ecological Reserve famous for its agates and shells. A rutted dirt road goes for about 20 miles along this beach and it was there that we came across a small shack in front of a wilderness home where two young girls were displaying their wares. They had a good selection of local shells but the one that caught my eye was an unusually large specimen of the razor clam *Siliqua patula* (Dixon, 1788) (Figures 1, 2). They gladly parted with it and a number of others for the sum of three American dollars.

On returning home I searched my copy of *Registry of World Record Size Shells*, 2nd edition, by Hutsell, Hutsell & Pisor, 1999, and discovered that this shell is not listed there. Review of current publications such as Abbott & Dance (1986) and Abbott (1974) give its size as 130 mm or 5 to 6 inches respectively. The measurement of this specimen is 172 mm which should make it an undisputed candidate for the record size.

Figure 1. *Siliqua patula* (Dixon, 1788), exterior view of a 172 mm specimen.

An application has been submitted for its inclusion in the Registry.

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1974. American Seashells, 2nd Edition. Van Nostrand Reinhold Co., New York 663 pp., 24 color pls., 6405 figs.

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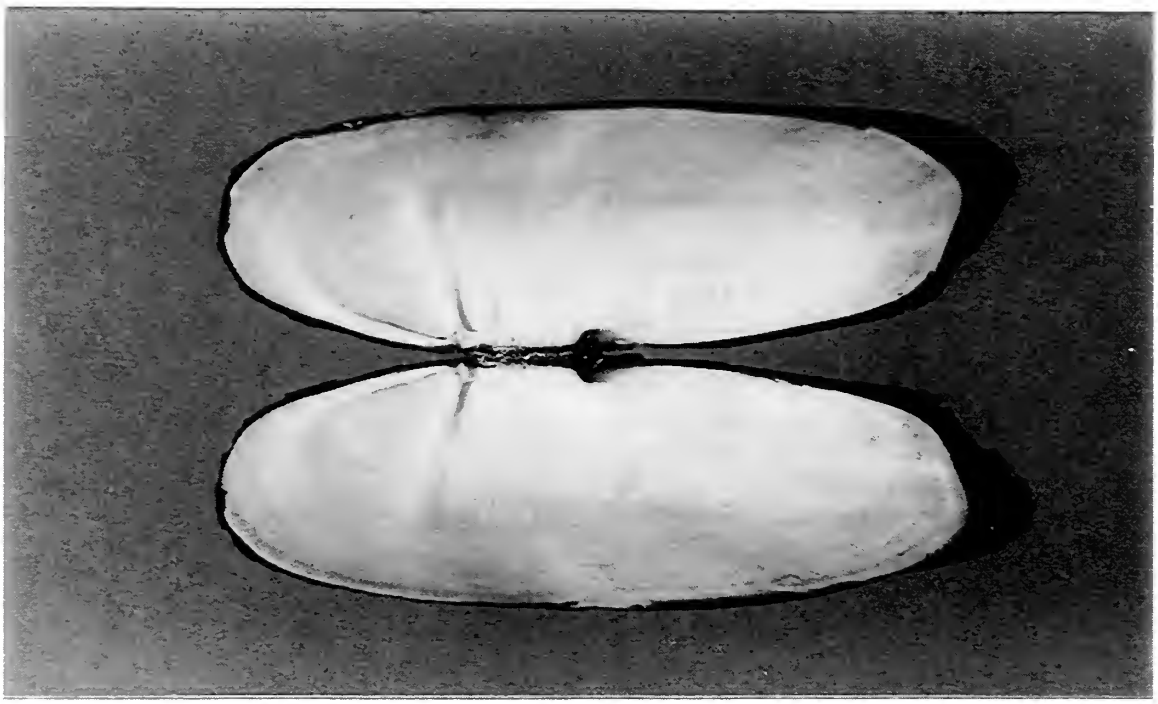

Figure 2. *Siliqua patula,* interior view of specimen in Figure 1.

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THE FESTIVUS

A publication of the San Diego Shell Club

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Website at: http://www.molluscs.net/SanDiegoShell Club/index.html Email: cmhertz@pacbell.net

Meeting date: third Thursday, 7:30 PM,
Room 104, Casa Del Prado, Balboa Park, San Diego

PROGRAM

Shelling in the Marquesas

Dr. Henry Chaney of the Santa Barbara Museum of Natural History will give highlights of his recent dive trip to the Marquesas Islands. He will accompany his talk with slides.

Meeting date: June 15, 2000
Shells of the month: Shells of the Pacific islands

CONTENTS

CLUB NEWS

Minutes of the
San Diego Shell Club Meeting - May 18, 2000

In the absence of President Mike Mason, Kim Hutsell called the meeting to order at 7:45 p.m. The minutes of the March meeting were approved as written in *The Festivus*.

Treasurer Linda Hutsell reported that the Club is financially solvent. The Club did very well at this year's auction. More color issues of *The Festivus* are planned, though articles are always needed. Linda also mentioned our new permanent library cases. Larry Lovell recently donated two SIO mollusk catalogs to the library.

Kim Hutsell announced the sale of new plastic boxes at the back of the room at cut-rate prices. He also read a letter from member Roger Clark on a diving trip he is leading to Ketchikan, Alaska and another nearby location that has incredible intertidal collecting. The trip runs from 28 July to 4 August. For further information, contact Roger Clark at <insignis@cdsnet.net>.

Terry Arnold, Chair of the Club's Science Fair judging committee, introduced this year's Club winner, Heather Elizabeth Ibey, who gave an overview of her winning project. She studied the mucus trails of turbans, whelks, chitons, and limpets. She found that the mucus trails serve to attract prey for the mollusks to feed on. She was awarded Barnes' *Invertebrate Zoology* for her project prize. She will be studying biology at UCSD this fall.

Kim introduced the speaker for the evening, Kent Trego. Kent's interest is in *Nautilus*, and his presentation included slides of the various species. *Nautilus pompilius* is banded as a juvenile and then is banded and white as an adult shell. Patterns are never found in the albino form from the Philippines. *Nautilus scrobiculatus* has some pattern variation; it has no albino form and has accented growth lines. *Nautilus macrophyllus* has no albino form, has a wide umbilicus, and is a branch formed from *pompilius*. Kent mentioned that molecular data is providing useful information about systematics. Kim commented that this kind of data is revealing that there are not as many subspecies as previously thought. Kent suggested that this varies from family to family. There was a lively debate on this subject; it will require a lot more study.

The winner of the shell drawing was John LaGrange. Thanks to Ron Deems for the delicious refreshments. The meeting was adjourned at 8:45 p.m.

Silvana Vollero

New Members

Clark, Roger, 1839 Arthur St., Klamath Falls, OR 97603-4617, (541) 883-7582, E-mail: <insignis@cdsnet.net>.

The Bailey-Matthews Shell Museum, P.O. Box 1580, Sanibel Island, FL 33957, (941)395-2233, FAX (941) 395-6706, E-mail: <bmshell@gate.net>.

New Bivalve Book Available at June Meeting

The long-awaited *Bivalve Seashells of Western North America* by Coan, Valentich Scott and Bernard will be available for sale at the June meeting. The profusely-illustrated book documents over 470 species from southern California to northern Alaska, from the intertidal zone to depths of more than 4,500 meters.

Giant Reprint Sale

There will be a hugh sale of reprints of papers on mollusks donated by the June King estate. In addition, there also will be some books on natural history subjects.

IN MEMORIAM
Rudolf Stohler
Ruth D. Turner

TURRIDAE (MOLLUSCA: GASTROPODA) FROM THE SAN FELIPE AREA, BAJA CALIFORNIA, MÉXICO, IN THE GEMMELL COLLECTION

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Abstract: Forty species of turrids in 24 genera were identified in the Gemmell Collection from the San Felipe area. Nine of the species are reported for the first time in the northern Golfo de California (also referred to herein as "the Gulf").

Introduction: Dall (1919), in his major review of the Turridae, described over 89 species from the Panamic Province fauna. Powell (1966) monographed the worldwide turrid genera emphasizing the importance of the posterior anal sinus for classification. McLean *in* Keen (1971), the last major study, was a revision of the eastern Pacific Turridae. Since that time, new Panamic Turridae have been described, but no major review has been undertaken (see Skoglund, 1992).

In our continuing study of the mollusks from the Gemmell Collection, we here present an annotated listing of the Turridae species collected by Gemmell from San Felipe to San Luis Gonzaga in the northwestern Gulf of California from 1965 to 1976. Specimens were either dredged, collected in grunge, from sea star stomachs, or found intertidally. Unless otherwise noted, all material was collected by Gemmell and is in the Gemmell Collection. It is housed, at this time, in the San Diego Natural History Museum.

Format: The species are arranged in taxonomic order according to McLean *in* Keen (1971) and Skoglund (1992). An asterisk before a species indicates a range extension. Keen numbers are used to facilitate the finding of the illustrations in Keen (1971). "Figured" indicates the species was not illustrated in the original description, "Also figured" denotes an additional figure reference although it has already been illustrated in the original description.

Each species entry is followed by the original citation, synonyms if present, number of specimens and size range, collecting data for the species, remarks, if any, and current known distribution.

Under **Distribution**, we refer to the "head of the Gulf," "throughout the Gulf," "northern Gulf," or "the Gulf," all referring to the Gulf of California. This is a result of the varying entries in Keen (1971). Hertz wrote to Dr. Keen concerning these different entries, and in a letter written in 1981, Dr. Keen stated, "My

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recollection of what I intended about ranges 'to' and 'into' the Gulf of California is that I deliberately left it a little fuzzy. If I had definite records of species in the northern end of the Gulf, I was careful to say 'to and through' the Gulf. If the documentation was not clear (many older workers would say 'Gulf of Calif.' when they really only meant 'West Mexico'), I left it for future workers to determine how far up the Gulf the long-ranging forms might go ...."

The species which are range extensions are figured herein. All the drawings were done by Gemmell with the aid of a camera lucida attachment to a Wild microscope.

Family TURRIDAE
Subfamily PSEUDOMELATOMINAE
Genus *Hormospira* Berry, 1958

Hormospira maculosa (Sowerby, 1834)

Proceedings of the Zoological Society of London (for 1833): 135. Figured: Keen #1575.

Specimens collected: 39 specimens 19.5-56.2 mm, San Felipe at Ensenada Blanca and Playa Alicia 35 km (22 mi) S of San Felipe, January 1964, intertidal on sand bars, live collected.

Remarks: Gemmell's notes state "on sand bars south to Puertecitos ...." Hertz & Hertz, 1975: 36, figured the species and its egg capsules.

Distribution: Head of the Golfo de California, México, to Guayaquil, Ecuador, intertidally to 30 m (McLean *in* Keen, 1971); Olsson (1971) extended the depth to 117 m.

Subfamily DRILLINAE Morrison, 1966
Genus *Kylix* Dall, 1919

Kylix hecuba (Dall, 1919)

Proceedings of the United States National Museum 56: 9, pl. 20, fig. 9. Also figured: Keen #1595.

Specimens collected: 49 specimens, 6.9-18.6 mm, Playa Alicia, 35 km (22 mi) S of San Felipe, on sand bar on minus 1.5 m (-5 ft) low tide, 26 April 1975.

6 specimens, 6.0-10.0 mm, dredged by fishing boat *Chamizal* I [station C] (31°20'18"N to 31°02'30"N and 114°41'W to 114°48'W), 1-8 km (.75 to 5 mi) offshore, N of Pta. San Felipe, in sand and mud to embedded rock rubble in 20-48 m (11-26 fm), 28 June 1968.

Distribution: Head of the Gulf to Bahía Concepción on west coast of Baja California to Puerto Peñasco, Sonora, México (McLean *in* Keen, 1971); Bahía San Carlos, Sonora (Poorman & Poorman, 1988).

Genus *Drillia* Gray, 1838

Drillia cunninghamae McLean & Poorman, 1971

The Veliger 14(1): 95, fig. 14. Also figured: Keen #1619 (holotype).

Specimens collected: 3 specimens, 20-22.5 mm, Bahía San Luis Gonzaga, dredged by fishing boat *Chamizal* II [station 10] (29°49'36"N, 114°21'42"W), E side of Isla Willard, 0.8 km (0.5 mi) N of S end of island, in sand and pumice in 18-27 m (10-15 fm), 10 July 1969.

Distribution: Sonora from Río Tastiota to Guaymas (McLean *in* Keen, 1971); off Nayarit, (Reguero & García Cubas, 1987); across Gulf to off Isla Danzante in 60-90 m (Skoglund, 1991).

Drillia roseola (Hertlein & Strong, 1955)

Bulletin of the American Museum of Natural History 107(2): 221-223, pl. 2, fig. 27. Also figured: Keen #1621 (syntype).

Synonym: *Pleurotoma rosea* Sowerby, 1834, not Quoy & Gaimard, 1833.

Specimens collected: 3 specimens, 22.5-26.0 mm, dredged by fishing boat *Chamizal* II [station 10] (29°49'36"N, 114°21'42"W), E side of Isla Willard, 0.8 km (0.5 mi) N of S end of island, in sand and pumice in 18-27 m (10-15 fm), 10 July 1969.

Remarks: Some specimens of *D. roseola* have spiral lines but they are much finer and not all over as in *D. cunninghamae*. The species was described as a *Cymatosyrinx*.

Distribution: Golfo de Tehuantepec, México, Bahía Octavia, Colombia and off Cabo Pasado, Ecuador (Hertlein & Strong, 1955); Head of the Gulf to Bahía Santa Elena, Ecuador (McLean *in* Keen, 1971); Bahía San Carlos, Guaymas, Sonora, México (Poorman & Poorman, 1988).

Genus *Globidrillia* Woodring, 1928

Globidrillia micans (Hinds, 1843)

Annals and Magazine of Natural History 11: 18. Figured: Keen #1630.

Synonym: *Elaeocyma aeolia* Dall, 1919.
Specimens collected: 394 specimens, 4.6-9.6 mm, collected intertidally at Playa Alicia, 35 km (22 mi) S of San Felipe on minus tides -1.5 m (-5 ft), on sand, 20 May 1967 to April 1968 and May 1971.
Remarks: From Gemmell's notes, "Also found in seastar stomachs occasionally."
Distribution: Head of the Gulf to Bahía Santa Elena, Ecuador (McLean *in* Keen, 1971).

Subfamily TURRINAE
Genus *Polystira* Woodring, 1928

**Polystira oxytropis* (Sowerby, 1834)
(Figure 1)

Proceedings of the Zoological Society of London [for 1833]: 135. Figured: Keen #1648 (holotype of *P. artia*).

Synonyms: *Pleurotoma albicarinata* Sowerby, 1870; *Pleuroliria artia* and *P. parthenia* both of Berry, 1957.
Specimen collected: 1 specimen, 6.8 mm, dredged by fishing boat *Chamizal* II, [station 10] (29°49'36"N, 114°21'42"W), E side of Isla Willard, Bahía San Luis Gonzaga, in 18-27 m (10-15 fm), in sand and pumice, 10 July 1969.
Remarks: This is the first report of the species on the east side of the Baja peninsula.
Distribution: Isla Cedros, Baja California, N in Gulf to Bahía Tepoca, Sonora, México, and S to La Libertad, Ecuador (McLean *in* Keen, 1971); Isla Gorgona, Colombia (Cosel, 1984); off Bahía San Carlos, Sonora (Poorman & Poorman, 1988).

Subfamily COCHLESPIRINAE Powell, 1942
Genus *Knefastia* Dall, 1919

Knefastia dalli Bartsch, 1944

Proceedings of the Biological Society of Washington 57: 28. Figured: Keen #1656.

Specimens collected: 2 specimens, 45.1 & 55.5 mm, Puertecitos, W side of bay, 28 December 1966, live collected.

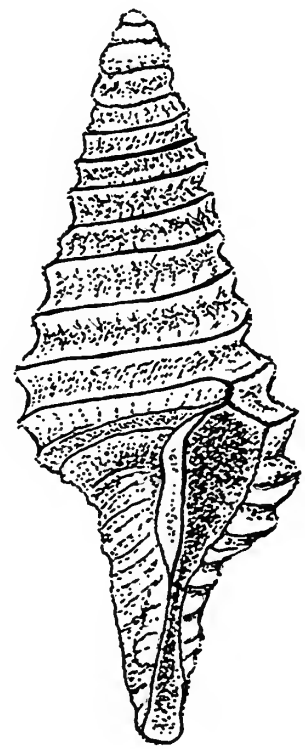


Figure 1. *Polystira oxytropis* (Sowerby, 1834), apertural view of juvenile specimen, 6.8 mm, dredged, San Luis Gonzaga in 18-27 m, 10 July 1969.

5 specimens, 24.0-49.6 mm, Bahía San Luis Gonzaga, 20 April 1966, live collected.
21 specimens, 27.3-63.4 mm, Playa Namar, 8 km (5 mi) S of Agua Chale [Sulphur Mine] to Bahía Willard, San Luis Gonzaga, 1965-1967, live collected.
1 specimen, 57.3 mm, Puertecitos, W side of bay at low tide, March 1965, live collected.
Remarks: From Gemmell's notes: "all found on and among mossy rocks ... observed small orange specimens with large brown specimen ... *Knefastia* found bumping in sand around base of rocks north of Puertecitos. In spring March '65 on large boulders bedded in sand clustered copulating both colors [together]. Dark brown periostracum and orange or horn colored."
Distribution: Head of the Gulf to Guaymas, Sonora and La Paz, Baja California Sur (McLean *in* Keen, 1971).

Subfamily CRASSISPIRINAE
Genus *Crassispira* Swainson, 1840

**Crassispira maura* (Sowerby, 1834)
(Figure 2)

Proceedings of the Zoological Society of London [for 1833]: 134. Figured: Keen #1676.

Synonyms: *Turricula nigricans* Dall, 1919; *Drillia inaequistriata* Li, 1930; *Crassispira perla* M. Smith, 1947.
Specimen collected: 1 specimen, 38.3 mm, Radar Beach, San Felipe, leg. P. Clover, June 1968, collected dead.
Remarks: This is the first report of this species from San Felipe. This specimen is now in the Gemmell Collection.
Distribution: Bahía de los Angeles, Golfo de California to Bahía Santa Elena, Ecuador (McLean *in* Keen, 1971).

Crassispira unicolor (Sowerby, 1834)

Proceedings of the Zoological Society of London [for 1833]: 138. Figured: Keen #1679 (holotype of *C. erebus*).

Synonyms: *C. erebus* Pilsbry & Lowe, 1932; *C. tangolaensis* Hertlein & Strong, 1951.
Specimens collected: 74 specimens, 12.0-26.3 mm, San Felipe, intertidal among rocks, March 1968.
Distribution: The species is reported from the head of the Gulf to Bahía Santa Elena, Ecuador (McLean *in* Keen, 1971).

Crassispira bifurca (E. A. Smith, 1888)
(Figures 3-7)

Annals and Magazine of Natural History: [series 6] 2(10): 308-309. Figured: Keen #1691.

Synonym: *Crassispira flavonodosa* of authors, not Pilsbry & Lowe, 1932.
Specimens collected: 108 specimens, 6.8-17.3 mm, Pta. San Felipe and south, among rocks, March 1968.
Remarks: Gemmell's notes state "also at Playa Alicia, S of San Felipe."

We had difficulty separating this species from *Pilsbryspira nymphia,* both from the head of the Gulf, although the two species are in different genera. Both species are about the same size and color with sculpture of large tubercles on the periphery and a deep anal sinus. According to McLean *in* Keen (1971: 720), *C. bifurca* has a "parietal callus nearly obstructing the opening" whereas *P. nymphia* has no callus. In specimens with an immature lip, however, this is often not discernible. We found the sculptural details as shown in the annotated drawings most helpful (Figures 3-7). In *Crassispira bifurca* there is a row of large yellowish-white nodes at the periphery of each whorl. Below each node on the body whorl there appears to be an axial riblet which is actually a double row of smaller rounded nodes, hence the name *bifurca*. *Pilsbryspira nymphia*, by contrast, has a row of large bicolored nodes on the periphery which are orange above and white below. Immediately beneath these nodes on the spire is a heavy orange, sinuous cord which appears node-like (Figure 6). On the body whorl the sinuous cord is absent and instead there are rows of disconnected flattened nodes, elongate horizontally.
Distribution: Head of the Gulf to Santa Elena Peninsula, Ecuador (McLean *in* Keen, 1971); Guaymas, Sonora, México (DuShane & Poorman, 1967 [as *flavonodosa*]).

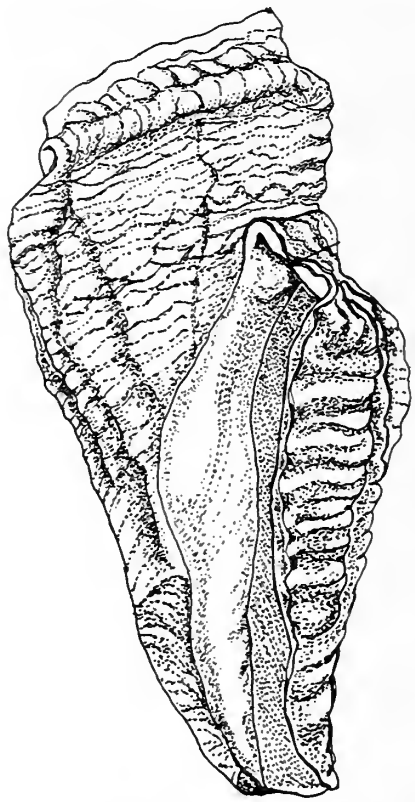
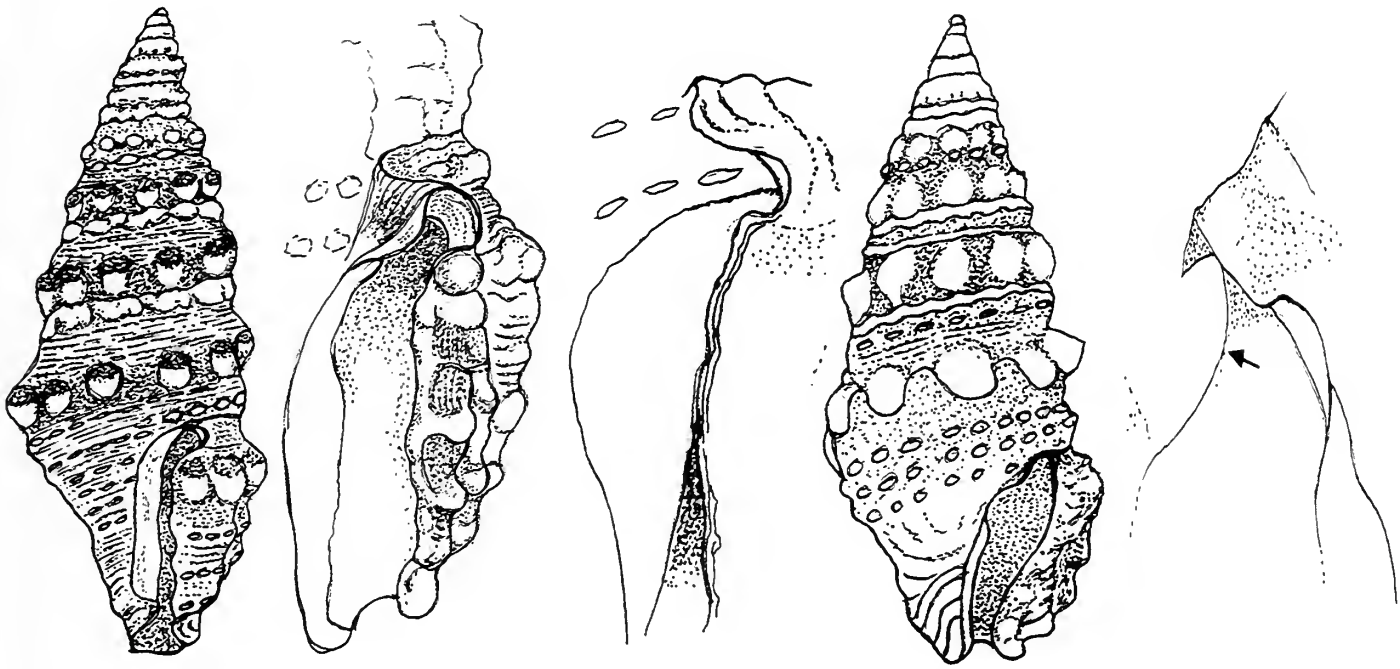


Figure 2. *Crassispira maura* (Sowerby, 1834), detail of aperture of 38.3 mm specimen showing tubercle on parietal wall, Radar Beach, San Felipe, collected dead by P. Clover, June 1968. Gemmell Collection.



Figures 3-7. (3- 5) *Crassispira bifurca* (E. A. Smith, 1888), 6.8 mm, Pta. San Felipe, among rocks, March 1968. (3) apertural view (4) detail of aperture (5) detail of sinus showing callus and suture. (6, 7) *Pilsbryspira nymphia* (Pilsbry & Lowe, 1932), 5.5 mm, Campo Uno, San Felipe, November 1971 (6) apertural view of 5.0 mm specimen (7) detail of sinus showing sutural slot and lack of callus.

Crassipira kluthi E. K. Jordan, 1936

Contributions from the Department of Geology of Stanford University 1(4): 153, pl, 18, fig.1 Also figured: Keen # 1699 (holotype of *S. lucasensis*).

Synonyms: *Clavatula luctuosa* Hinds, 1843, not *Pleurotoma luctuosa* Orbigny, 1842; *Striospira lucasensis* and *S. tabogensis* both of Bartsch, 1950.

Specimens collected: 51 specimens, 11.6-18.0 mm, Pta. San Felipe, between and under stones.

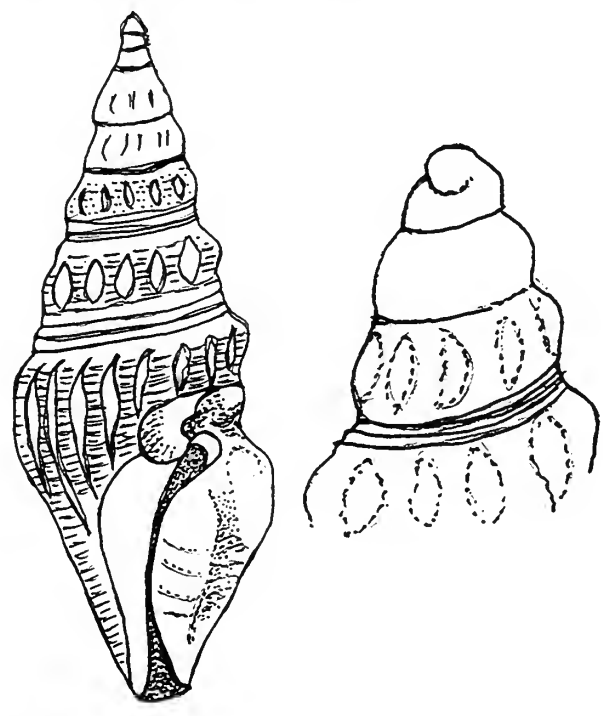
1 specimen, 12.4 mm, San Felipe, June 1969, from seastar stomach.

Distribution: Isla Cedros, Baja California, outer coast throughout the Gulf, S to Isla Salango, Ecuador (McLean *in* Keen, 1971); Guaymas, Sonora (DuShane & Poorman, 1967).

**Crassispira xanti* Hertlein & Strong, 1951
(Figures 8, 9)

Eastern Pacific expeditions of the New York Zoological society. XLIII. Mollusks from the west coast of Mexico and Central America. Part X. Zoologica, NY, 36: 74-75, pl. 1, fig. 3. Also figured: Keen #1702 (holotype).

Specimens collected: 2 specimens, 14.0 & 15.1 mm,



Figures 8, 9. *Crassispira xanti* Hertlein & Strong, 1951, 14.3 mm specimen, dredged by fishing boat, *Chamizal* I, off Agua Chale in 2-3 m, 27 June 1968 (8) apertural view (9) detail of spire.

dredged by fishing boat *Chamizal* I, [stations 4-5] (30°41'N to 30°51'12"N and 114°32'W to 114°41'W), 3-13 km (2-8 mi) off Agua Chale, in 9-18 m (5-10 fm), 27 June 1968.

Remarks: This is the first report of this species in the San Felipe area.

Distribution: Pta. Lobos, Sonora to Bahía Santa Elena, Ecuador (McLean *in* Keen, 1971); Puertecitos, Baja California (DuShane, 1962); Guaymas, Sonora (DuShane & Poorman, 1967).

Crassispira pluto Pilsbry & Lowe, 1932

Proceedings of the Academy of Natural Sciences of Philadelphia 84: 49-50, pl. 2, fig. 12. Also figured: Keen #1706 (holotype, left).

Specimens collected: 25 specimens, 11.7-19.6 mm, Pta. San Felipe.

Distribution: Head of the Gulf to Guaymas, Sonora, México, on the east and Cabo San Lucas on the west (McLean *in* Keen, 1971); Consag Rock, San Felipe (DuShane & Brennan, 1969); Puertecitos (DuShane, 1962); San Luis Gonzaga (DuShane & Sphon, 1968).

Genus *Lioglyphostoma* Woodring, 1928

**Lioglyphostoma ericea* (Hinds, 1843)

(Figures 10, 11)

Proceedings of the Zoological Society of London [for 1833]: 39. Figured: Keen #1714.

Synonyms: *Glyphostoma sirena* Dall, 1919; *Clathurella erminiana* Hertlein & Strong, 1951.

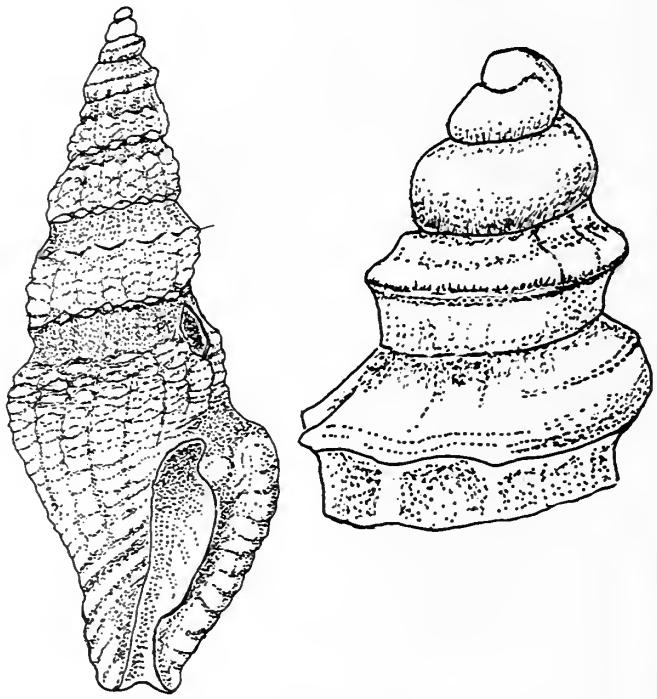
Specimens collected: 1 specimen (juv.), 9.0 mm, dredged by fishing boat *Chamizal* II [station 7] (30°04'54"N, 114°34'00" W), W of S end of El Muerto, in sandy grunge in 15 m (8 fm), 9 July 1969.

1 specimen, 10.0 mm, dredged by fishing boat *Chamizal* II [station 10] (29°49'36"N, 114°21'42"W), E side of Isla Willard, 0.8 km (0.5 mi) N of S end of island in fine sand and pumice in 18-27 m (10-15 fm), 10 July 1969.

Remarks: This is the first report of the species in the northern Golfo de California.

Distribution: Isla Tiburón, Golfo de California to Isla Gorgona, Colombia and the Islas Galápagos in 40-120 m (McLean *in* Keen, 1971).

Genus *Miraclathurella* Woodring, 1928



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Figures 10, 11. *Lioglyphostoma ericea* (Hinds, 1843), 10.0 mm, dredged by fishing boat *Chamizal* II, E side of Isla Willard, San Luis Gonzaga, in 18-27 m in sand and pumice, 10 July 1969 (10) apertural view (11) detail of spire.

Miraclathurella bicanalifera (Sowerby, 1834)

Proceedings of the Zoological Society of London [for 1833]: 136. Figured: Keen #1719 (holotype of *Lioglyphostoma acapulcanum*).

Synonyms: *Pleurotoma variculosa* Sowerby, 1834; *P. gracillima* Carpenter, 1856; *Lioglyphostoma acapulcanum* Pilsbry & Lowe, 1932.

Specimen collected: 1 specimen, 19.9 mm, off Pta. Estrella, San Felipe, in seastar stomach, June 1968.

Remarks: Specimen cited in Gemmell, Hertz & Myers (1980: 46) not found.

Distribution: Consag Rock, San Felipe, Baja California [as *Clathurella acapulcana*] (DuShane & Brennan, 1969; Gemmell, Hertz & Myers, 1980); to Puerto Utria, Colombia (McLean *in* Keen, 1971).

Genus *Carinodrillia*

Carinodrillia hexagona (Sowerby, 1834)

Proceedings of the Zoological Society of London [for 1833]: 139. Figured: Keen #1725 (holotype of *Clathrodrillia pilsbryi).*

Synonym: *Clathrodrillia pilsbryi* Lowe, 1935
Specimens collected: 31 specimens, 12.7-25.4 mm, San Felipe, intertidal, live collected, May 1976.
37 specimens, 11.0-26.9 mm, Playa Alicia, 35 km (22 mi) S of San Felipe and Ensenada Blanca, San Felipe, intertidal, live collected on outer edges of rocks, May 1967 and April-May 1973.
1 specimen, 13.4 mm, dredged by fishing boat *Chamizal* II,[station 10] (29°49'36"N, 114°21'42"W), E side of Isla Willard, Bahía San Luis Gonzaga, 0.8 km (0.5 mi) N of S end of island, in 18-27 m (10-15 fm) in sand and pumice, 10 July 1969.
Distribution: Head of the Gulf to La Libertad, Ecuador (McLean *in* Keen, 1971).

Subfamily STRICTISPIRINAE
Genus *Strictispira* McLean, 1971

Strictispira stillmani Shasky, 1971

The Veliger 14(1): 68-69, fig. 3. Also figured: Keen #1728 (holotype).

Specimens collected: 7 specimens, 12.0-12.6 mm, Pta. San Felipe and Playa Alicia, 35 km (22 mi) S of San Felipe, 1968, collected live.
25 specimens 12.6-15.4 mm, Pta. San Felipe and S, around small rocks, collected prior to 1969.
Remarks: Gemmell's notes state, "alive - San Felipe Point to Puertecitos."
Distribution: Head of the Gulf to Bahía de Panamá (McLean *in* Keen, 1971); Manabí Province, Ecuador (Shasky, 1984).

Subfamily ZONULISPIRINAE
Genus *Zonulispira* Bartsch, 1950

Zonulispira grandimaculata (C. B. Adams, 1852)

Catalogue of Shells Collected at Panama. pp. 143-144. Figured: Turner (1956, vol. 2(20), pl. 7, fig. 9); Keen #1731.

Synonyms: *Crassispira dirce* Dall, 1919; *Z. reigeni* Bartsch, 1950.
Specimens collected: 38 specimens, 8.0-20.0 mm, Pta. San Felipe, live collected.
Remarks: Gemmell's notes indicate specimens found from San Felipe to Puertecitos "not common."
Distribution: Head of the Gulf to Santa Elena Peninsula, Ecuador (McLean *in* Keen, 1971).

Genus *Compsodrillia* Woodring, 1928

Compsodrillia albonodosa (Carpenter, 1857)

Catalogue of the Collection of Mazatlan Shells ... p. 397. Figured: Keen #1733.

Synonym: *Carinodrillia halis soror* Pilsbry & Lowe, 1932.
Specimens collected: 7 specimens, 6.4-9.6 mm, Pta. Estrella, San Felipe, May 1968.
109 specimens, 5.0-18.7 mm, Playa Alicia, 35 km (22 mi) S of San Felipe, live on sand at minus 1 m (-4 ft) tide, March 1976.
92 specimens, 6.7 - 18.7 mm, San Felipe, live on extreme minus tides, 19 April 1975.
1 juvenile specimen, 8.0 mm, dredged by fishing boat *Chamizal* I, [station A] (30°41'12"N, 114°40'01"W), 3.2 km (2 mi), off Pta. Estrella, San Felipe, on sand in 9 m (5 fm) from seastar stomachs, 27 June 1968.
Distribution: Consag Rock, San Felipe (DuShane & Brennan, 1969); Guaymas, Sonora (Dushane & Poorman, 1967); Gulf to Bahía Banderas (McLean *in* Keen, 1971); Pta. Estrella, San Felipe from seastars (Gemmell, Hertz & Myers, 1980).

Compsodrillia alcestis (Dall, 1919)

Proceedings of the United States National Museum 56(2288): 18, pl. 5, fig. 6. Also figured: Keen #1734 (holotype).

Synonym: *Carinodrillia dariena* Olsson, 1971.
Specimen collected: 1 specimen, 5.0 mm, dredged by fishing boat *Chamizal* I, [station A] (30°41'N to 30°51'12"N and 114°32'W to 114°41'W), Pta. Estrella, San Felipe, offshore on sand in 9-18 m (5-10 fm), from seastar stomachs, 27 June 1968.
Remarks: See Gemmell, Hertz & Myers (1980: 46, fig. 42).
Distribution: Guaymas, Sonora, to Puerto Utria, Colombia (McLean *in* Keen, 1971); Consag Rock, San Felipe (DuShane & Brennan, 1969); Pta Estrella, San

Felipe (Gemmell, Hertz & Myers, 1980).

Compsodrillia haliplexa (Dall, 1919)
(Figures 12, 13)

Proceedings of the United States National Museum 56(2288): 19, pl. 5, fig. 5. Also figured: Keen #1739.

Specimens collected: 2 specimens, 19.4 & 24.2 mm, Campo Uno, Pta. San Felipe, in mud at minus 1m (-4 ft) tide, 16 January 1968.
2 specimens, 25.0 & 26.3 mm, Playa Alicia, 35 km (22 mi) S of San Felipe, one dead, one collected living, 17 March 1968.
1 specimen, 12.7 mm, Playa Laguna, San Felipe, leg. P. Clover, dead collected, Gemmell Collection, 17 March 1968.
1 specimen, 15.5 mm, Bahía San Felipe, October 1971.
Distribution: Bahía Magdalena, outer coast of Baja California, through the Gulf and S to Bahía Santa Elena, Ecuador (McLean *in* Keen, 1971).

Pilsbryspira Bartsch, 1950

**Pilsbryspira bacchia* (Dall, 1919)
(Figures 14, 15)

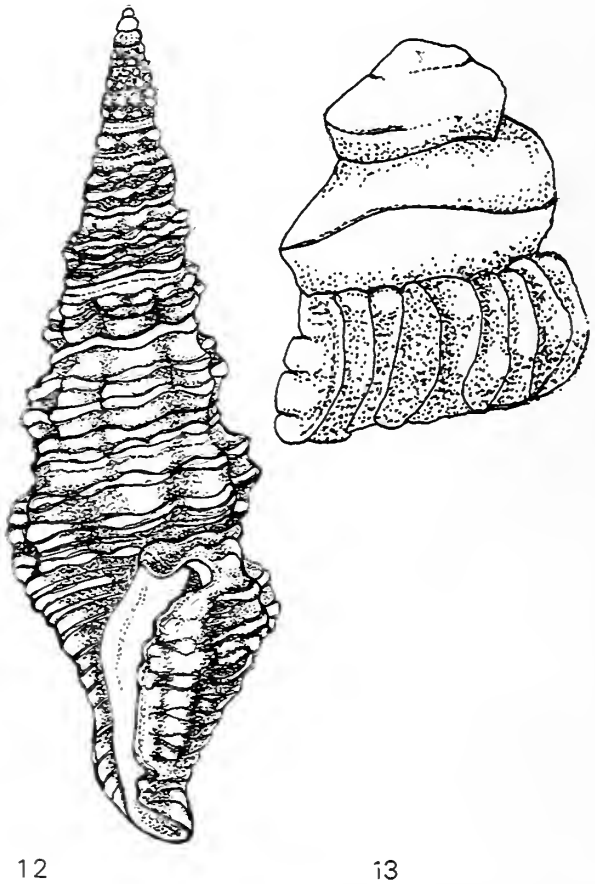
Proceedings of the United States National Museum 56(2288): 25, pl. 6, fig. 1. Also figured: Keen #1755.

Specimens collected: 82 specimens, 6.0-14.5 mm, Pta. San Felipe to Playa Alicia, 35 km (22 mi) S of San Felipe, around and under stones, in mud, collected living, 1967, 1968, 1973.
Remarks: Gemmell's notes state, "collected all year round" intertidally. This is the first report of the species living at San Felipe.
Distribution: Guaymas, Sonora to Cabo San Lucas, Golfo de California (McLean *in* Keen, 1971); Manabí Province, Ecuador (Shasky, 1984).

Pilsbryspira nymphia (Pilsbry & Lowe, 1932)
(See Figures 6, 7)

Proceedings of the Academy of Natural Sciences, Philadelphia 84: 51, pl. 10, fig. 11. Also figured: Keen #1756.

Specimens collected: 30 specimens, 10.5-18.7 mm, from Pta. San Felipe, Playa Alicia, 35 km (22 mi) S of San Felipe, Puertecitos, and Bahía San Luis Gonzaga.
1 specimen, 5.5 mm, Campo Uno, San Felipe, November 1971.
Remarks: Gemmell's notes state, " *C. bifurca* more common" [than *P. nymphia*].
Distribution: Head of the Gulf to Guaymas and Cabo San Lucas (McLean *in* Keen, 1971); Bahía Willard and San Luis Gonzaga (DuShane & Sphon, 1968); Guaymas (DuShane & Poorman, 1967); Puertecitos (DuShane, 1962); off Bahía San Carlos, Sonora (Poorman & Poorman, 1988).



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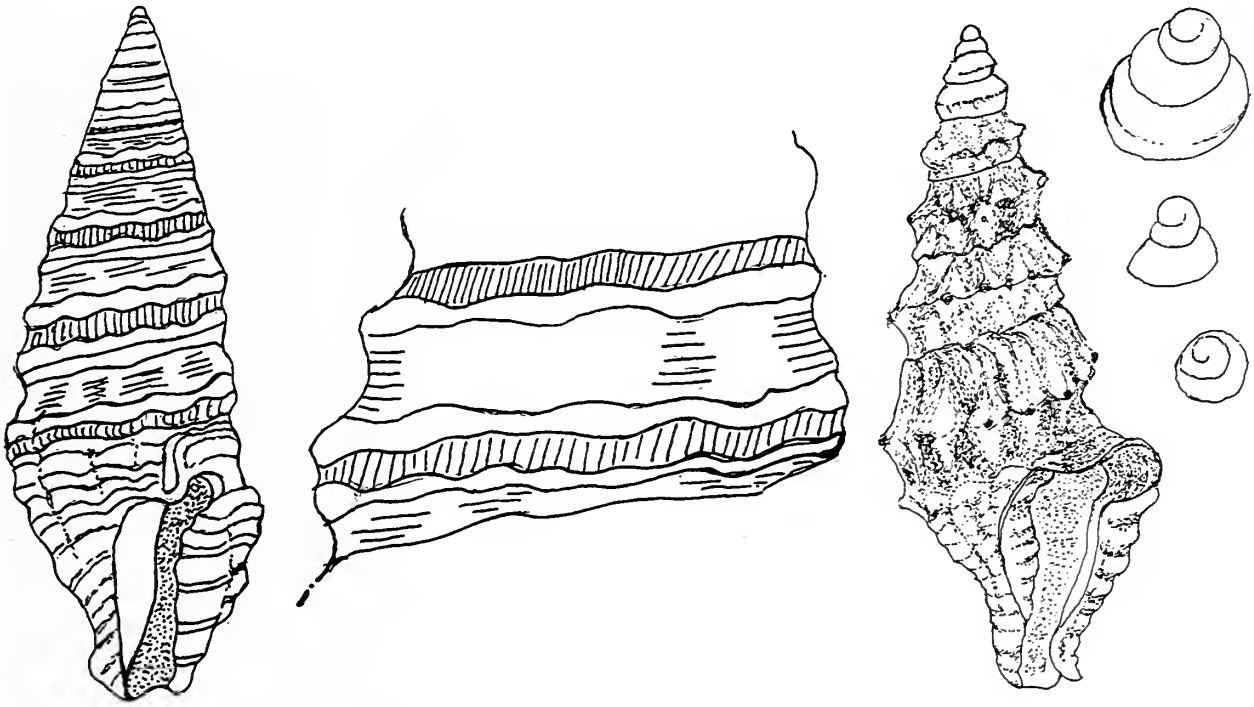
Figures 12, 13. *Compsodrillia haliplexa* (Dall, 1919), 24.2 mm specimen, Campo Uno, Pta. San Felipe, intertidal, minus 1.2 m tide, 16 January 1968 (12) apertural view (13) view of protoconch.

Subfamily CLATHURELLINAE
Genus *Nannodiella* Dall, 1919
Nannodiella nana (Dall, 1919)
(Figures 16, 17)

Proceedings of the United States National Museum 56(2288): 59-60, pl. 20, fig. 7. Also figured: Keen #1778 (holotype).



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Figures 14-17. (14, 15) *Pilsbryspira bacchia* (Dall, 1919), 6.0 mm specimen, Pta. San Felipe, living around and under stones, 1967 (14) apertural view (15) detail of spire. (16, 17). *Nannodiella nana* (Dall, 1919), 4.9 mm specimen, dredged by fishing boat *Chamizal* II, W of Isla Salvatierra, Bahía San Luis Gonzaga, in fine grunge in 26 m, 8-9 July 1969 (16) apertural view (17) three protoconch views, shown from above.

Specimen collected: 1 specimen, 4.9 mm, dredged by fishing boat *Chamizal* II, [station 5] (29°57'48"N,114°28'00"W), W of Isla Salvatierra, Bahía San Luis Gonzaga, in fine grunge taken on broken shell bottom, in 26 m (14 fm), 8-9 July 1969.

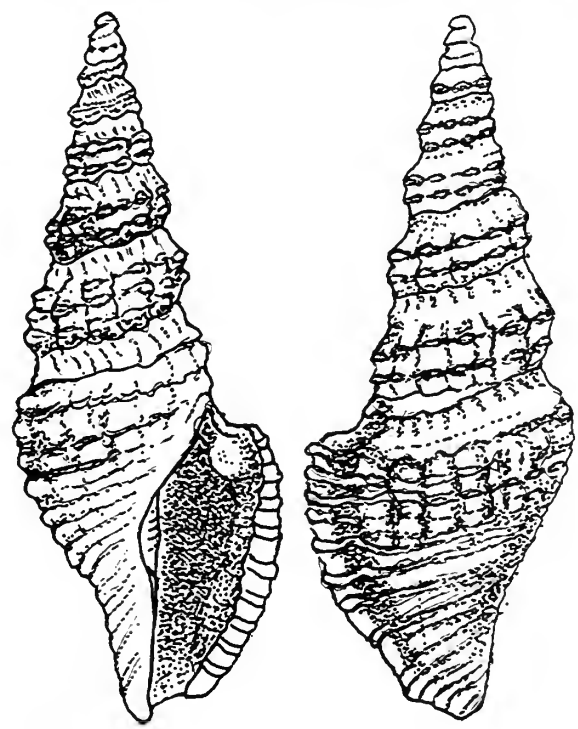
Distribution: Bahía San Luis Gonzaga, Golfo de California to Isla Gorgona, Colombia (McLean *in* Keen, 1971); Manabí Province, Ecuador (Shasky, 1984).

Genus *Glyphostoma* Gabb, 1872
Glyphostoma neglecta (Hinds, 1843)
(Figures 18-19)

Proceedings of the Zoological Society, London [for 1843]: 45. Figured: Keen #1781 (holotype of *Lioglyphostoma armstrongi*).

Synonyms: *Defrancia intercalaris* Carpenter, 1856; *Clathurella aurea* Carpenter, 1857; *Glyphostoma adria* and *G. adana* Dall, 1919; *Lioglyphostoma armstrongi* Hertlein & Strong, 1951; *Glyphostoma myrakeenae* Olsson, 1964.

Specimens collected: 3 specimens, 13.8-15.1 mm, Playa Alicia, 35 km (22 mi) S of San Felipe,



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Figures 18, 19. *Glyphostoma neglecta* (Hinds, 1843), 15.0 mm, Playa Alicia, 32 km S of San Felipe, living, on minus tide, May 1970 (18) apertural view (19) dorsal view.

collected live on minus tide, May 1970.

Distribution: Head of the Gulf to Santa Elena Peninsula, Ecuador (McLean *in* Keen, 1971); off Bahía San Carlos, Sonora (Poorman & Poorman, 1988).

Subfamily MANGELIINAE
Genus *Kurtziella* Dall, 1918

Kurtziella antiochroa (Pilsbry & Lowe, 1932)
(Figures 20-26)

Proceedings of the Academy of Natural Sciences of Philadelphia 84: 56, pl. 3, fig. 8. Also figured: Keen #1788 (holotype).

Possible synonym: *Mangelia cymatias* Pilsbry & Lowe, 1932.

Specimens collected: 2 specimens, 2.0 & 3.0 mm, [station D] (31° 12' 12" N to 31° 12' N and 114°17'36"W to 114°31'30"W), dredged by fishing boat *Chamizal* I, 5 -16 km(3-10 mi) from Consag Rock, in 20-38 m (11-21 fm) on sand and clay, in seastar stomachs, 29 June 1968.

74 specimens, 4.0-9.8 mm, Playa Alicia, 35 km (22 mi) S of San Felipe, at low tide, intertidal, live-collected March 1976.

Remarks: In Gemmell, Hertz & Myers (1980: 46), we reported on two juvenile specimens from seastar stomachs and their resemblance to the synonym *K. cymatias*, concluding that they were *K. antiochroa*. Since that time, we have examined 74 additional specimens from juvenile to adult (4.0 to 9.8 mm) collected intertidally by Gemmell and a lot of 14 specimens collected by H. N. Lowe as *cymatias* from Puerto Peñasco in 18 m (10 fm) (SDNHM 22335).

We compared these specimens with photographs of the holotypes of *K. antiochroa and K. cymatias* (Figures 20, 21) as well as paratypes of both nominal species in the SDNHM collection (SDNHM 51196 [*antiochroa*] and 50998 [*cymatias*]) which appear to be separate species (Figures 22, 23).

Some of the Gemmell specimens have a broader shell (by 0.5 to 1.0 mm, a periphery with a stronger peripheral spiral cord with pointed tubercles at the angle of the axial ribs and a more elongate-appearing aperture. These features are pronounced in *K. cymatias* (Figures 21, 23). The holotype and paratype of *K. antiochroa* appear to have a more slender shell with a smaller aperture and more prominent chocolate colored bands below the periphery.

20 21

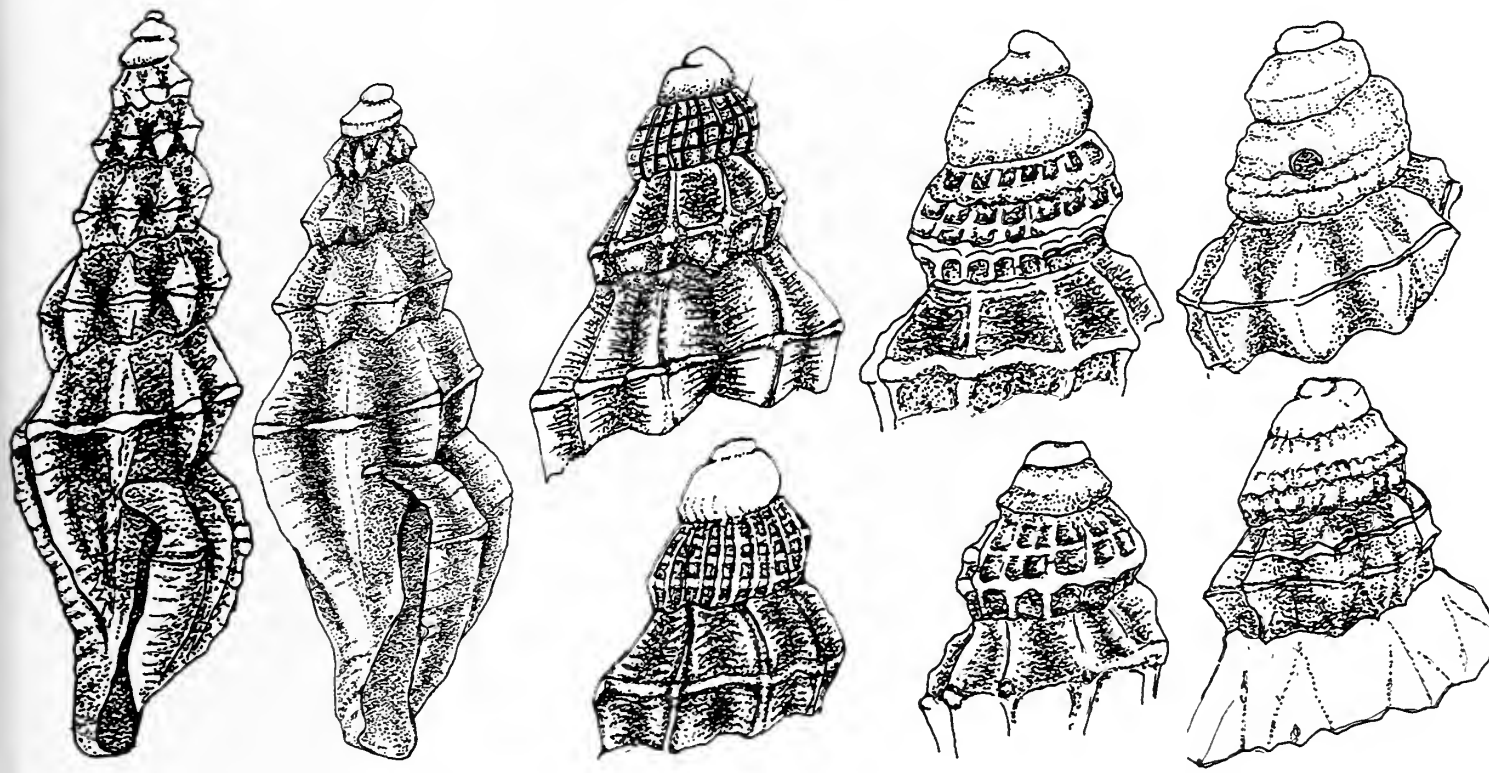
Figures 20, 21. (20) *Kurtziella antiochroa* (Pilsbry & Lowe, 1932) holotype, (ANSP 155190), 9.0 mm. Photo: V. O. Maes. (21) *K. cymatias*, holotype, (ANSP 155191), 6.0 mm. Photo: V. O. Maes.

We further examined the protoconchs of paratypes of the two nominal species and the Gemmell specimens and found differences. All had 2¼-2½ whorls. In *K. antiochroa* the two whorls are smooth, broadly rounded and brown, sculpture beginning just beyond the second whorl. In *K. cymatias* the protoconch is more conical, cream colored, the first whorl is smooth, the second smooth but for the beginning of a central spiral keel which develops into the mature sculpture by 2½ whorls (Figures 24-26)). The protoconch in the Gemmell specimens is like that of *K. antiochroa.*

The differences in the protoconch in the two species and the sculptural variation creates a question as to whether or not *K. cymatias* should be considered a synonym of *K. antiochroa.* Anatomical work would be necessary to resolve this question. Based on the protoconch, the Gemmell specimens are *K. antiochroa.*

Distribution: Head of the Gulf to La Libertad, Ecuador (McLean *in* Keen, 1971).

Kurtziella powelli Shasky, 1971



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Figures 22-26. (22) *K. antiochroa*, paratype (SDNHM 51196) (23) *K. cymatias*, paratype (SDNHM 50998) (24) *K. antiochroa*, 7.5 mm, detail of spire of Gemmell specimen, 2 views (25) *K. antiochroa*, 8.5 mm detail of spire of paratype (SDNHM 51196), 2 views (26) *K. cymatias*, 5.2 mm, detail of spire of paratype (SDNHM 50998), 2 views.

The Veliger 14(1): 70-71, fig. 7. Also figured: Keen #1790 (holotype).

Specimens collected: 13 specimens, 2.8 - 5.6 mm, dredged by fishing boat *Chamizal* I [station D] (31°12'12"N to 31°12'N and 114°17'36"W to 114°31'30"W), in 20-38 m (11-21 fm), 5-16 km (3-10 mi) S of Consag Rock, on sand and clay, in seastar stomachs, 29 June 1968.

2 specimens, 4.1 & 4.7 mm, Playa Alicia, 35 km (22 mi) S of San Felipe, in drift, March 1969.

Distribution: Head of the Gulf to Santa Elena Peninsula, Ecuador (McLean *in* Keen, 1971).

Kurtziella cyrene (Dall, 1919)

Proceedings of the United States National Museum 56(2288): 62-63, pl. 21, fig. 5. Also figured: Keen #1793 (holotype).

Specimens collected: 3 specimens, 2.5-3.1 mm, Playa Alicia, 35 km (22 mi) S of San Felipe, in grunge.

Remarks: From Gemmell's notes, "One specimen trawled by shrimp boat in 60-80 ft (18-24 m), 11 November 1971, from seastar stomachs now in B. Draper Collection" (Gemmell, Hertz & Myers, 1980: 46).

Distribution: Head of the Gulf to Bahía San Francisco, Ecuador (McLean *in* Keen, 1971); off Bahía San Carlos, Guaymas, Sonora, México (Poorman & Poorman, 1988).

Tenaturris Woodring, 1928

Tenaturris merita (Hinds, 1843)

Proceedings of the Zoological Society, London [for 1843]: 42. Figured: Keen #1798.

Synonyms: *Cithara fusconotata* Carpenter, 1864; *Cytharella nereis* Pilsbry & Lowe, 1932.

Specimens collected: 11 specimens, 7.1-11.2 mm, Campo Uno, Bahía San Felipe, live on and under mossy rocks, 18 February 1968.

1 specimen, 7.5 mm, Bahía San Luis Gonzaga.

Distribution: Head of the Gulf to Santa Elena Peninsula, Ecuador (McLean *in* Keen, 1971).

Genus *Kurtzia* Bartsch, 1944
Kurtzia arteaga (Dall & Bartsch, 1910)

Canada Department of Mines, Geological Survey Branch, Memoir no. 14-N: 11, pl. 2, fig. 4. Also figured: Keen #1810.

Synonyms: *Mangelia arteaga* var. *roperi* Dall, 1919; *Kurtzia gordoni* Bartsch, 1944.
Specimens collected: 42 specimens, 2.0-5.0 mm, off Pta. Estrella, San Felipe, dredge trip on *Chamizal* I fishing boat, from seastar stomachs, 19 June 1968.
3 specimens, 2.0-6.4 mm, San Felipe, in grunge.
Distribution: Vancouver Island, British Columbia, throughout the Gulf and S to the Golfo de Tehuantepec (McLean *in* Keen, 1971); at Consag Rock [as *Mangelia roperi*] (DuShane & Brennan, 1969); from Guaymas, Sonora [as *M. roperi*] (DuShane & Poorman, 1967).

Genus *Agathotoma* Cossmann, 1899
Agathotoma alcippe (Dall, 1918)

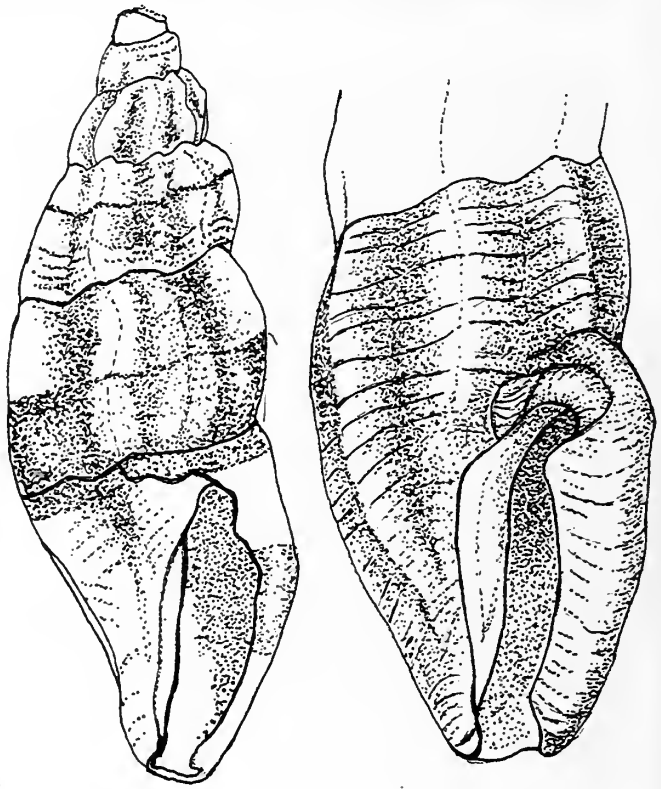
Proceedings of the United States National Museum 54(2238): 333. Figured: Keen #1816 (holotype of *Cytharella euryclea*).

Synonyms: *Pleurotoma parilis* E. A. Smith, 1888, not Edwards, 1860; *Cytharella euryclea and C. pyrrhula,* both of Dall, 1919.
Specimens collected: 26 specimens, 4.8 - 6.3 mm, Campo Uno, San Felipe, live under and on sides of small rocks at minus 1.5 m (-5 ft) tide, February 1968.
4 specimens, 6.1-7.0 mm, San Felipe.
Remarks: Gemmell's notes state also "Playa Alicia grunge."
Distribution: Head of the Gulf to Santa Elena Peninsula, Ecuador (McLean *in* Keen, 1971).

**Agathotoma neglecta* (C. B. Adams, 1852)
(Figures 27, 28)

Catalogue of Shells Collected at Panama: 149, R. Craighead, N.Y. Figured: Turner, 1956, pl. 8, fig. 4; Keen #1819 (holotype).

Synonyms: *Defrancia despecta* H. & A. Adams, 1853, unnecessary new name; *Cytharella phryne* Dall, 1919.
Specimen collected: 1 specimen, 3.4 mm, Bahía San Luis Gonzaga, dredged.



27 28

Figures 27, 28. *Agathotoma neglecta* (C. B. Adams, 1852), 3.4 mm specimen, dredged, Bahía San Luis Gonzaga (27) apertural view of specimen with outer lip broken (28) detail showing outer lip of 4.7 mm specimen, C. Skoglund Collection.

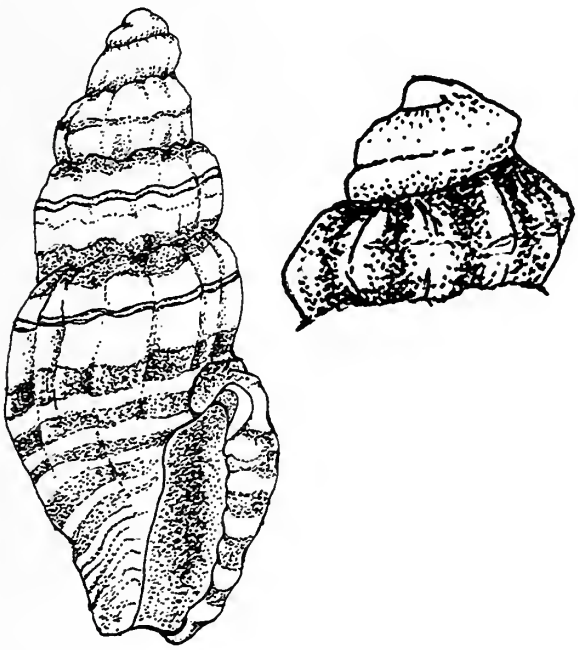
Remarks: This is the first report of the species in the northern Gulf.
Distribution: Islas Tres Marías, México, to Panamá (McLean *in* Keen, 1971); Bahía San Carlos, Sonora (Poorman & Poorman, 1988).

**Agathotoma stellata* (Mörch, 1860)
(Figures 29, 30)

Beitrage zur Molluskenfauna Central Amerika's. Malakozoological Blätter for 1860: 103. Figured: Keen #1821 (holotype of *Cytharella hippolita*).

Synonyms: *Cytharella hippolita* Dall, 1919; *C. taeniornata* Pilsbry & Lowe, 1932.
Specimens collected: 2 specimens, 3.6 & 4.5 mm, San Felipe, in grunge.
6 spec., 3.1-4.7 mm, Radar Beach, on hydroid.
Remarks: This is the first report of the species in the San Felipe area. The specimens were identified by Dr. J. H. McLean.
Distribution: Pta. San Hipolito, Baja California,

through the Gulf and S to Santa Elena Peninsula, Ecuador. "Mörch's specimen prabably [*sic*] came from Costa Rica or Nicaragua" (McLean *in* Keen, 1971).



29 30

Figures 29, 30. *Agathotoma stellata* (Mörch, 1860), 4.7 mm specimen from Radar Beach, San Felipe, on hydroid (29) apertural view (30) detail of protoconch.

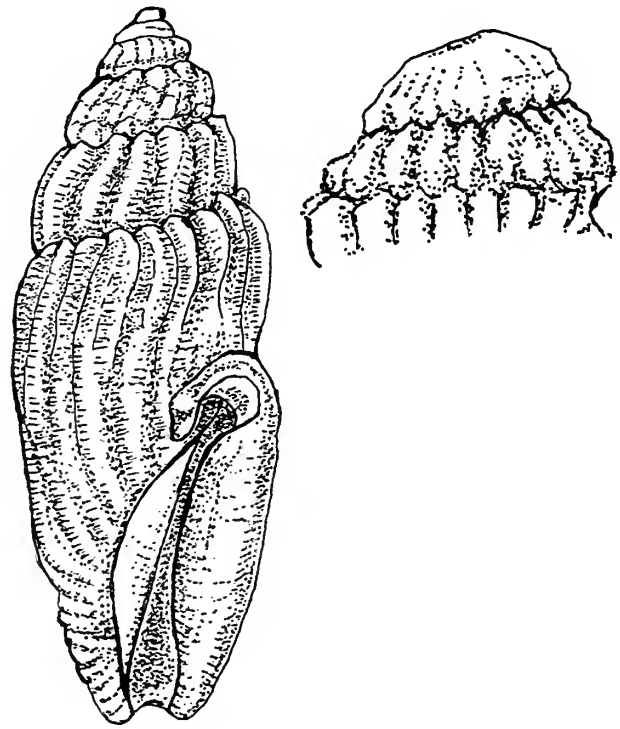
**Agathotoma (Vitricythara) klasmidia* Shasky, 1971.
(Figures 31, 32)

The Veliger 14(1): 71, 72, fig. 8. Also figured: Keen #1822.

Specimens collected: 3 specimens, 5.2-6.2 mm, N of Ensenada Blanca, San Felipe, 2 April 1973.
1 specimen, 8.5 mm, Bahía San Luis Gonzaga.
Remarks:.This is the first report of the species from the San Felipe area. Identification confirmed by C. Skoglund.
Distribution: Puertecitos, Baja California, to Bahía de Panamá (McLean *in* Keen, 1971); Manabí Province, Ecuador (Shasky, 1984).

Genus *Pyrgocythara* Woodring, 1928

Pyrgocythara danae (Dall, 1919)
(Figures 33-35)



31 32

Figures 31, 32. *Agathotoma klasmidia* Shasky, 1971. 8.5 mm, San Luis Gonzaga (31) apertural view (32) detail of protoconch.

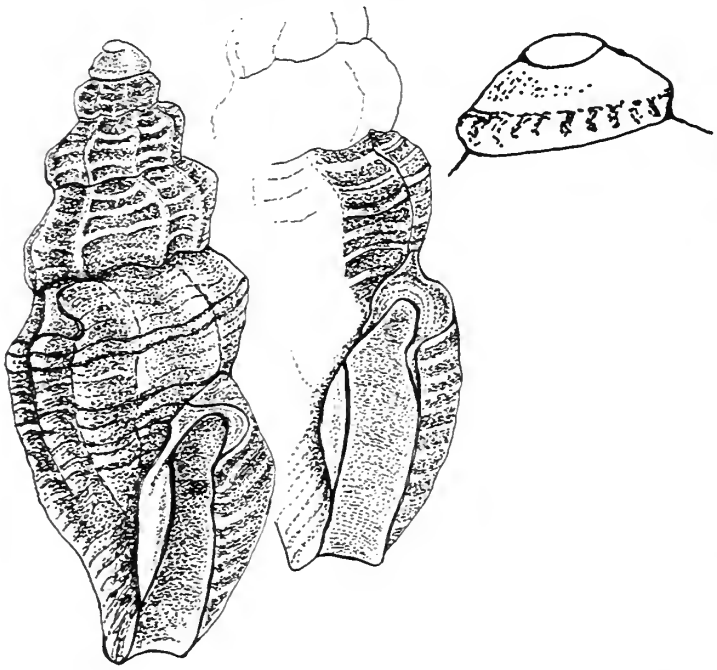
Proceedings of the United States National Museum 56(2288): 63, pl. 21, fig. 6. Also figured: Keen #1825 (holotype).

Possible synonym: *Crockerella pederseni* Hertlein & Strong, 1951.
Specimens collected: 3 specimens, 4.4-4.7 mm, Bahía San Felipe.
Remarks: As can be seen in Figures 33, 34, some of the Gemmell specimens more closely resemble the illustration of the synonym *Crockerella pederseni* in Hertlein & Strong (1951: 78, 79, pl. 1, fig. 5). In Hertlein & Strong's, description of *C. pederseni*, they mentioned " a slight swelling at the lower edge of the anal sulcus." This is apparent on the Gemmell specimens but is not seen or mentioned for *P. danae.*

McLean *in* Keen (1971) illustrated *P. danae* as the holotype. but the photo appears different than the illustration of *P. danae* in Dall (1919, p. 63, pl. 21 , fig. 6). Both have the same holotype number, but Dall's measurement of 4.5 mm differs from the 4.8 mm reported in Keen. Dall's figure seems to have an immature lip which he stated is smooth within. The figure in Keen appears to have a mature lip. If there are separate species, the Gemmell specimens would

be *P. pederseni*.

Distribution: Head of the Gulf to Guaymas, Sonora, México and Bahía Agua Verde, Baja California (McLean *in* Keen, 1971); as *Crockerella pederseni* at Guaymas (DuShane & Poorman, 1967: 435).



33 34 35

Figures 33-35. *Pyrgocythara danae* (Dall, 1919), 6.0 mm specimen, Bahía San Felipe, from seastar stomach, trawled in 9.4 m, June 1970 (33), apertural view (34) detail of aperture (35) detail of protoconch.

Pyrgocythara emersoni Shasky, 1971
(Figures 36, 37)

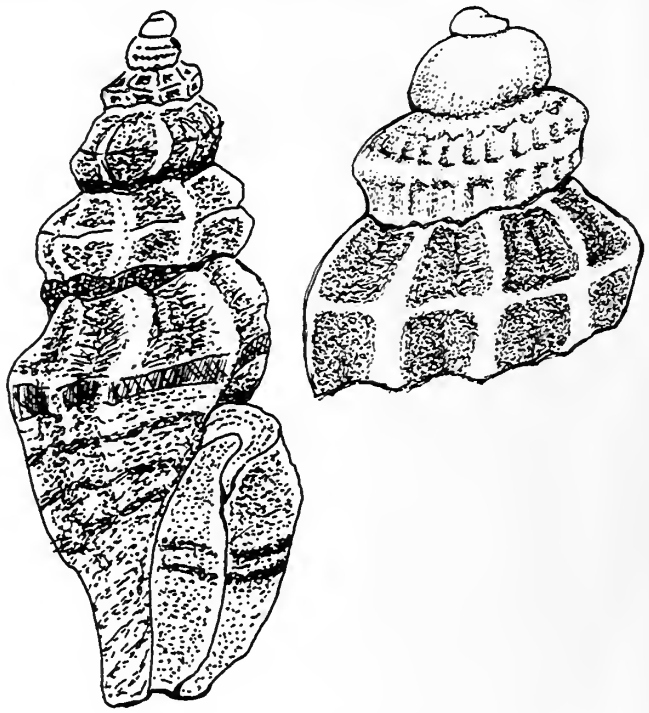
The Veliger 14(1): 72, fig.10. Also figured: Keen #1826 (holotype).

Specimens collected: 2 specimens, ±7.0 mm, Radar Beach near Pta Estrella at the S end of Bahía San Felipe [Station E], intertidal in -1.5 m (-5.0 ft.) low tide, collected from seastar stomachs, 1 June 1969 (Gemmell, Hertz & Myers, 1980: 47).

5 specimens, 5.2-7.1 mm, Playa Alicia, 35 km (22 mi) S of San Felipe, in intertidal grunge.

Distribution: Head of the Gulf to Guaymas and Puertecitos (McLean *in* Keen, 1971).

**Pyrgocythara scammoni* (Dall, 1919)
(Figures 38-40)



36 37

Figures 36, 37. *Pyrgocythara emersoni* Shasky, 1971, 6.5 mm, Playa Alicia, 35 km (22 mi) S of San Felipe, in grunge (37) apertural view (38) detail of protoconch

Proceedings of the United States National Museum 56(2288): 57, pl. 18, fig. 1. Also figured: Keen #1832 (holotype).

Specimens collected: 18 specimens, 4.5-7.0 mm, Playa Cadena, 5 km (3 mi) S of San Felipe, in intertidal grunge.

11 specimens, 3.6-6.7 mm, Bahía San Felipe, intertidal.

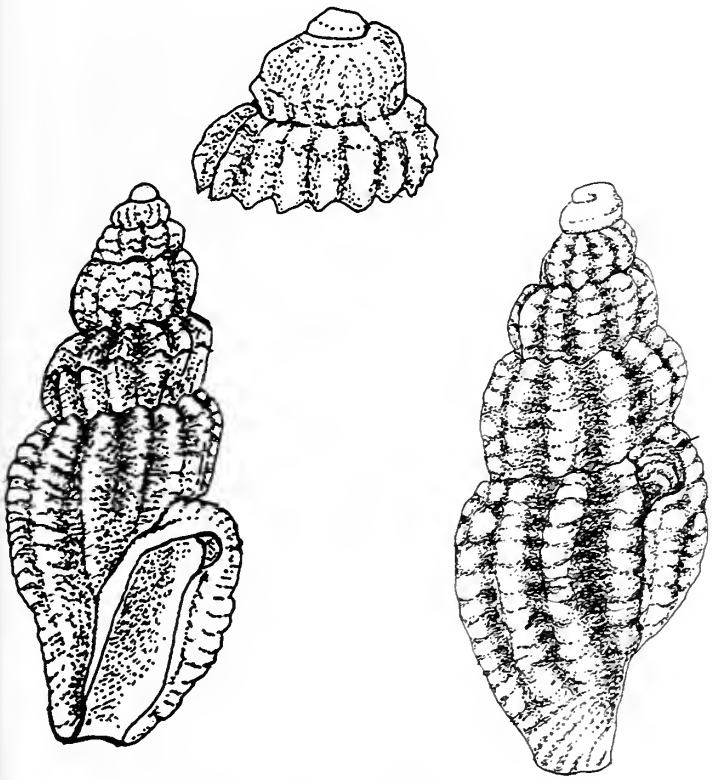
4 specimens, 2.4-4.1 mm, Bahía San Felipe from seastar stomachs, trawled in 9.4 m, June 1970.

1 specimen, 5.4 mm, from seastar stomach, San Felipe, June 1969

Remarks: The one 5.4 mm specimen from a seastar stomach was a problem to identify. Finally, the specimen was sent to Dr. J. H. McLean who identified it as a freak specimens of *P. scammoni*. He noted the "regrowth after the final lip with anal notch apparent on the dorsum of the shell" (Figure 40).

This is the first report of the species in the San Felipe area.

Distribution: Bahía Magdalena and the N end of the Gulf as far as Isla Tiburón (McLean *in* Keen, 1971); Bahía la Cholla, Sonora (Draper, 1975); Bahía San Luis Gonzaga (DuShane & Sphon, 1968); Guaymas, Sonora (Poorman & Poorman, 1988).



38 39 40

Figures 38-40. *Pyrgocythara scammoni* (Dall, 1919). 5.7 mm, Bahía San Felipe, intertidal (38) apertural view (39) detail of protoconch (40) "freak" specimen from seastar stomach showing dorsal sinus.

Subfamily Daphnellinae
Genus *Daphnella* Hinds, 1844

Daphnella bartschi Dall, 1919

Proceedings of the United States National Museum 56(2288): 74, pl. 19, figs. 4, 5. Also figured: Keen #1837 (holotype).

Specimens collected: 2 specimens, 15.1 & 15.2 mm, Bahía San Luis Gonzaga, beach specimens, April 1967.
Distribution: San Luis Gonzaga to Barra de Navidad, Jalisco, México, to Islas Galápagos (McLean *in* Keen, 1971).

Genus *Philbertia* Monterosato, 1884

Philbertia doris Dall, 1919

Proceedings of the United States National Museum 56(2288): 55, pl. 18, fig. 4. Also figured: Keen #1843 (holotype of *Clathurella crebriforma).*

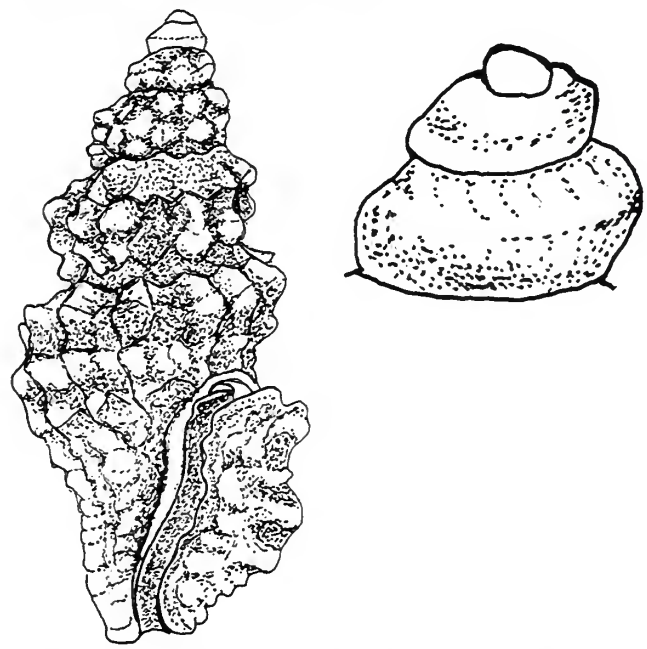
Synonym: *Clathurella crebriforma* Shasky & Campbell, 1964.
Specimen collected: 1 specimen, 5.0 mm, Playa Alicia, 35 km (22 mi) S of San Felipe, in intertidal grunge.
Distribution: Head of the Gulf to Bahía de Panamá (McLean *in* Keen, 1971); Manabí Province, Ecuador (Shasky, 1984).

Genus *Microdaphne* McLean, 1971

**Microdaphne trichodes* (Dall, 1919)
(Figures 41, 42)

Proceedings of the United States National Museum 56 (2288): 62, pl. 19, fig. 3. Also figured: Keen #1848.

Synonym: *Pleurotoma hirsutum* De Folin, 1867, not Bellardi, 1848.
Specimen collected: 1 specimen, 3.7 mm, San Felipe, in grunge.
Remarks: This is the first record of the species from San Felipe.
Distribution: Puertecitos, head of the Gulf, to Isla Gorgona, Colombia and the Islas Galápagos (McLean *in* Keen, 1971); Isla Cedros, off the Pacific coast of Baja California, to Perú (Emerson, 1991).



41 42

Figures 41, 42 *Microdaphne trichodes* (Dall, 1919), 3.7 mm, San Felipe, in grunge (41) apertural view (42) detail of protoconch.

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THE FESTIVUS

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Website at: http://www.molluscs.net/SanDiegoShell Club/index.html Email: cmhertz@pacbell.net

Meeting date: third Thursday, 7:30 PM,
Room 104, Casa Del Prado, Balboa Park, San Diego

PROGRAM

Collecting, Diving and Exploring in the Philippines

Club members Kay Klaus and Mike and Karen Mason will give a talk on their recent vacation in the Philippine Islands. They will show slides of some of the areas in which they dived and visited.

Meeting date: July 20, 2000
Shells of the month: Philippine shells

CONTENTS

CLUB NEWS

Minutes of the San Diego Shell Club Meeting - June 15, 2000

President Mike Mason welcomed everyone and called the meeting to order at 7:45 p.m. The minutes of the May meeting were approved as written in *The Festivus*, with a motion by Billee Gerrodette and seconded by Carole Hertz.

Linda Hutsell has taken over as our new Librarian. Editor Carole Hertz continues to request articles. Several guests were recognized and welcomed.

The date for the September Party is the 16th, (see col. 2). Mike also announced that Tom Rice's publication list is available and anyone interested in being included in Tom's *Who's Who in Malacology* should take a form and send it to Tom Rice.

Vice President Kim Hutsell introduced Dr. Henry (Hank) Chaney of the Santa Barbara Museum of Natural History, the speaker for the evening. Hank began by introducing the release of the long-awaited book, *Bivalve Seashells of Western North America* by Coan, Valentich Scott and Bernard. Copies were available for sale at the meeting. In addition to covering the bivalve mollusks from Alaska to southern California, the book contains an excellent bibliography.

Hank then talked about his recent trip to the Marquesas Islands, a remote set of islands near French Polynesia. There are four main islands. The group visited two of them (Nuku Hiva and Ua Pou). He said that the islands had a rich culture and were very populous until Cook's arrival. From then on, there was much more disease. Today only about 3,500 people occupy the islands. He and the others in the group stayed at an embayment at Taiohea. It was windy and there were sheer cliffs with little beach area. Although there was not much opportunity for intertidal collecting, diving was productive. The area is quite rich especially because of its forms of species that are isolated within these islands. For example, a subspecies of *Lambis crocata* there has very long spines. Often when a species was found, many of them were found together. There was a lack of bivalves and not much coral, though there were many sea urchins. His favorite shell from the trip was a beautiful *Chicoreus thomasi*.

Hank's program, with his fine slides, was not only very entertaining but gave a great deal of information about the islands and their history. It was a program greatly enjoyed by the large group in attendance.

The winner of the shell drawing was Margaret Mulliner. Thanks to the Masons and the Schneiders for the delicious refreshments. The meeting was adjourned at 8:40 p.m. for socializing and further browsing of reprints, books and plastic boxes on sale.

Silvana Vollero

New Member

Pras, Stephane, 15 Rue Marbeau, 75116 Paris, France

The September Party

The September party will be held on Saturday evening September 16th, again at the home of Terry and Marty Arnold. It will be another fantastic "Heavy Grazing" affair. Those who attend are asked to bring delicious munchies to fill the cravings of the always hungry guests.

Details and map in the August issue.

A New Club Librarian

With this issue, our friend and member, Kay Klaus, and her husband Del will be relocated to Texas. We thank Kay for her considerable help as interim librarian and appreciate Linda Hutsell's willingness to take over as Club librarian.

We will all miss Kay and hope that she will keep her promise to visit us often.

Club Historian and Host Needed

With the departure of member Kay Klaus, the Club needs a historian. It is not a difficult position — keeping the historian's book up-to-date with photos and items of interest pertaining to the Club. The historian's books are kept in the new permanent library cabinets and available for viewing by members at meetings.

The Club has also been in need of a Host since the beginning of last year. This is not a difficult job either. If you attend most meetings and would be willing to set up the refreshment table each time, please contact Mike Mason and offer to take over the position [E-mail: <mmason2706@aol.com> or phone: (619-482-1098].

NEW DISTRIBUTIONAL RECORDS OF OPISTHOBRANCHS FROM THE PUNTA EUGENIA REGION OF THE BAJA CALIFORNIA PENINSULA: A REPORT BASED ON 1997-1998 CONABIO-SPONSORED EXPEDITIONS

HANS BERTSCH[1], ORSO ANGULO CAMPILLO, and JOSÉ LUIS ARREOLA

Universidad Autónoma de Baja California Sur,
Aptdo. Postal 19-B, La Paz, Baja California Sur, México 23080

ABSTRACT We report range extensions of nine opisthobranch species (*Aplysiopsis oliviae, Thordisa rubescens, Peltodoris nayarita, Platydoris macfarlandi, Crosslandia daedali, Flabellina vansyoci, Catriona rickettsi, Cuthona albocrusta*, and *Cuthona lagunae*) to the central Pacific coast of the Baja California Peninsula, México.

INTRODUCTION

Almost 30 years ago, the southern distributional limits of many Californian opisthobranchs ended at La Jolla or San Diego. This was an artifact of collecting activities and politics, not biology. During the past 15 plus years, the opisthobranch fauna of the Pacific coast of the Baja California Peninsula has become much better known (e.g., Bertsch, 1990, 1991; Bertsch & Gosliner, 1986; and Bertsch & Willan, 1986). There are two distinct faunal provinces along this coastline. The northeastern Pacific coast of Baja California is clearly part of the warm temperate faunal province of southern California, which ends approximately at Punta Eugenia. The tropical Panamic (=eastern Pacific) Faunal Province begins at Bahía Magdalena and continues south to the Islas Galápagos and Perú (Keen, 1971).

However, the opisthobranch fauna of the central Pacific coastline of the Baja California Peninsula (between Punta Eugenia and Bahía Magdalena) remains one of the lesser-studied in the northeastern Pacific. During the mid-1980s, joint expeditions of the California Academy of Sciences (San Francisco, California) and the Universidad Autónoma de Baja California (Ciencias Marinas, Ensenada, Baja California) yielded significant new information for this region (see Bertsch, 1985; Gosliner, Ghiselin & Bertsch, 1985; Gosliner, 1994; and data incorporated in Behrens, 1991).

The area between Punta Eugenia and Bahía Magdalena represents a zone of provincial-level faunal overlap (Bertsch, 1993). Although the fauna is still greatly unknown, one can predict a mixture of temperate southern California and tropical Golfo de California species. Almost no data exist on seasonal variation for this region. In this ecotonal region southern range extensions of Californian temperate species and northern range extensions of tropical Panamic Province species are expected to be encountered.

Our grant from the Mexican federal biodiversity agency (Comisión Nacional para el Conocimiento y Uso de la Biodiversidad = CONABIO) involved two areas of research directly impacting this area:

a) First, a field study of the intertidal and subtidal biodiversity of opisthobranchs in Mexican federally designated *Regiones Prioritarias* # 5 (Vizcaino-Cedros-El Barril, basically from Isla Cedros to Punta Eugenia, including Bahía Tortugas), and # 7 (Cabo San Lucas, Bahía de La Paz and Loreto). Results from region # 7

[1]Mail correspondence to all authors to: 192 Imperial Beach Blvd. #A, Imperial Beach, CA 91932, USA.

are found in Angulo (2000, thesis, UABCS), and Bertsch & Valdés (in preparation). In this report we present significant new data and range extensions for opisthobranch mollusks from *Region Prioritaria #* 5.

b) The second aspect of our grant involved the "*repatriación de datos*," by which we were able to examine the collections of the three major natural history museums in California (California Academy of Sciences [CAS], Santa Barbara Museum of Natural History [SBMNH], and Los Angeles County Museum of Natural History [LACM]), and recorded the collecting data of all opisthobranch specimens from Pacific Mexican waters. This information has been incorporated into the Mexican National Biodiversity Data Base that will be available online through the auspices of CONABIO.

Our CONABIO-sponsored field and museum research expeditions yielded new distributional records of opisthobranchs. In Bertsch, Angulo & Arreola, 1999, we published reports and a discussion of new records of *Pleurobranchus areolatum* (Mörch, 1863), *Spurilla neapolitana* (Delle Chiaje, 1823), and *Aeolidiella indica* Bergh, 1888, from Baja California Sur (BCS).

In this article, we report range extensions of nine opisthobranch species (from the Golfo de California or the lower Baja California Peninsula, and from southern California) to the Punta Eugenia/Bahía Tortugas region of Baja California Sur. Our intertidal collecting site at Bahía Tortugas, is situated at 27° 41.6' N; 114° 53.3' W; Punta Eugenia is at approximately 27° 51' N; 115° 05' W.

Voucher specimens are in the collections of the Marine Biology Department of the UABCS, La Paz, BCS, México, with the exception of *Platydoris macfarlandi* which is in the collections of the LACM; color slides are in the collection of the senior author.

ORDER SACOGLOSSA
FAMILY HERMAEIDAE

Aplysiopsis oliviae (MacFarland, 1966)

Material Examined: 1 specimen, 5 mm in length; El Morro, Isla Cedros (28° 01' N; 115° 11' W); intertidal, on *Sargassum*; 23 April 1998; leg. Orso Angulo Campillo (OAC) & José Luis Arreola (JLA).

Description and Discussion: The dark coloration and distinctive rhinophore shape are diagnostic features for this species.

Its previous known range had been from Saltspring Island, British Columbia, Canada (Millen, 1980), to Monterey Bay, California (MacFarland, 1966). Our specimen represents a southern range extension of over 1150 km, and the first report from off the Pacific coast of the Baja California Peninsula, México.

ORDER NUDIBRANCHIA
SUBORDER DORIDACEA
FAMILY DISCODORIDIDAE

Thordisa rubescens Behrens & Henderson, 1981

Material Examined: 1 specimen, 6 mm total length; Las Gavilanes, Punta Eugenia, BCS (27° 51.22' N; 115° 04.38' W); subtidal, 5 m deep; 7 October 1998; leg. Hans Bertsch (HB) and OAC.

Description and Discussion: Distinctive external features of this species are the variously-sized dorsal papillae, and the brilliant red-orange body color mottled with gold flecks behind the rhinophores, along the midline of the dorsum, and around the branchial plumes.

Although this species may reach 90 mm in total length, our specimen measured only 6 mm.

Our specimen matched exactly the descriptions of *T. rubsecens* from southern California (Palos Verdes and San Clemente Island), and represents a southern range extension of more than 550 km and its first report from Mexican waters.

Peltodoris nayarita Ortea and Llera, 1981

Material Examined: 1 specimen; 18 mm; about 1 km NE of Punta Eugenia, BCS; 6 m deep; 15 August 1998 (74° F water temperature); leg. HB and OAC.

Description and Discussion: The orange red body with brown splotches match the original description, as do also the tubercles covering the dorsum, and the obviously elevated pockets surrounding the rhinophores and gills. Dr. Ángel Valdés informs me that our specimen exactly matches specimens of this species which he has collected south of the type locality.

The original description of this species was based on only a single specimen collected from Isla Isabela, Nayarit, México. In addition to being only the second specimen ever reported, our organism represents a significant northward range extension of nearly 1300 km from the center of the Panamic Faunal Province, and its first reported occurrence in nearly 20 years. It should also be noted that our specimen from the Punta Eugenia region was collected during a period of warm water for this region.

FAMILY PLATYDORIDIDAE

Platydoris macfarlandi Hanna, 1951

Material Examined: 2 specimens; 74 and 64 mm total preserved length; Bahía San Cristobal, BCS (27° 24' 28" N; 114° 39' 40" W); 30 m deep; April 1950; in the collections of LACM (1949-50).

Description and Discussion: This flat, disk-shaped dorid is distinctive for the minute villiform papillae which give it a velvety smooth appearance (Behrens, 1991). It has been reported only twice from the southern California bight region. Hanna (1951) described the species based on three preserved individuals which had been dredged from 157-201 m (86-110 fm) depth off Pismo Beach, California. Behrens & Henderson (1983) described two live specimens trawled from 55-113 m depth in the Redondo Canyon (33° 50' 20" N; 118° 25' 20" W), which had been on the yellow sponge *Subarites ficus* (Johnson, 1842). Now, nearly 50 years after the original description of the species, we report a southern range extension of over 700 km for this species, based on specimens deposited in the collections of the LACM a year before the species was named and its first record from the Pacific coast of BCS.

The "rarity" of this species may well be an artifact of collecting activity. Most nudibranch researchers study the intertidal and (only recently) scuba-accessible subtidal depths, not the deeper subtidal and continental shelf depths from which the specimens of *P. macfarlandi* have been reported. This is similar to known records of *Bathydoris aioca*, which had been reported only once from the Isla Guadalupe, Baja California, México, holotype by Marcus & Marcus (1962), before the deep water Oregon records published by Valdés & Bertsch (2000).

The patronymy and authorship of this species recall a most poignant moment in the history of west coast malacology. California Academy of Sciences paleontologist G Dallas Hanna, and original member of the Editorial Board of *The Veliger*, named this species in honor of Dr. Frank Mace MacFarland. Dr. Hanna published only this single nudibranch article in his entire professional life. He prefaced it with the following comments:

> "A few minutes before Dr. F.M. MacFarland collapsed on February 21, 1951, he discussed with me the generic position of a rather remarkable species of nudibranch which had been collected a few weeks previously. He unquestionably would have described this animal in his very thorough manner had fate permitted. As a poor substitute, I will endeavor to place it on record and it seems fitting that it be named for him."

The history of science and our understanding of the unknown is often made by such personal interactions.

SUBORDER DENDRONOTACEA
FAMILY SCYLLAEIDAE

Crosslandia daedali Poorman & Mulliner, 1981

Material Examined: One specimen, 10 mm total length; Malarrimo, Punta Eugenia, BCS (27° 47.98' N; 114° 43' W); 2 m deep; 17 August 1998; leg. HB & OAC.

Description and Discussion: The body shape and coloration patterns are quite distinctive for *C. daedali*: the wide winglike lobes extend laterally along the middle half of each side; they have numerous fimbriating retractable branchial tufts irregularly placed on the inside surface of the lobes and the adjacent dorsal surface. The color is greenish brown-orange, with brilliant blue small round spots medially along the side of the body (Poorman & Mulliner, 1981: 96-97).

This species had previously been reported only from the Sonoran shores of the Golfo de California, slightly north of Guaymas: Tinajas, Bahía Baco-chimbampo, and Punta Cuevas, Bahía de San Carlos.

Our specimen of *C. daedali* from the Punta Eugenia region (on the outer Pacific coast of the BC Peninsula) represents the first record other than the type locality region, the first report of this species from outside the Golfo de California, and its first finding in almost 20 years since the original description. Intermediate localities need to be examined for additional records and to establish its biology and natural history.

SUBORDER AEOLIDACEA
FAMILY FLABELLINIDAE

Flabellina vansyoci Gosliner, 1994

Material Examined: 3 specimens, 14, 15 and 18 mm in total length; reef by lighthouse at Campitos (Punta Eugenia region, BCS, 27° 49.42' N; 114° 51.07' W); 6 m deep; 3 October 1998; leg. HB & OAC.

Description and Discussion: This northward range extension of over 450 km is significant because our specimens are the first report of this species outside

the limits of the Panamic Province. Its only previous reports have been from Bahía Magdalena and south to Isla Ladrones, Panamá (Gosliner, 1994). This record (and that of *C. daedali*) emphasizes the provincial-level ecotonal nature of the region between Bahía Magdalena and Punta Eugenia discussed in the Introduction of this paper.

This species has been illustrated with a color photograph as *Flabellina* sp. 2 (Species # 173, Behrens, 1991).

FAMILY TERGIPEDIDAE

Catriona rickettsi Behrens, 1984

Material Examined: 2 specimens, 4 and 5 mm total length; Piedras Blancas, islands northeast of Punta Eugenia, BCS (approx. 27° 51.8' N; 115° 02' W); subtidal, 13 m deep; 18 August 1998; leg. HB & OAC.

Description and Discussion: This distinctively brilliantly colored eolid has previously been reported only from San Francisco Bay and La Jolla, California (Behrens, 1984). Our specimens are the first report from the Pacific BC coast of México, and represent a southward range extension of over 500 km.

Cuthona albocrusta (MacFarland, 1966)

Material Examined: 1 specimen, 4 mm total length; in front of the former PESCA station, Bahía Tortugas, BCS (approx. 27° 41.6' N; 114° 53.3' W); intertidal; 24 February 1998; leg. HB & OAC.

Description and Discussion: The white frosting markings on the body and cerata are specific diagnostic characters.

This species' previously known range is from the San Juan Islands, Washington, to Palos Verdes, California (Behrens, 1991). Our specimen represents a southward range extension of approximately 650 km, and the first report of this species from the Mexican waters of the Pacific coast of the BC Peninsula.

Cuthona lagunae (O'Donoghue, 1926)

Material Examined: 1 specimen, 5.5 mm total length; reef in front of former PESCA facility, Bahía Tortugas; intertidal; 25 December 1997; leg. HB & OAC.

Description and Discussion: The orange-red coloration on the rhinophores and on the tips of the cerata are distinctive. Overall body coloration is whitish, with black ceratal cores.

This species has been reported from Curry County, Oregon, USA, to Islas San Benito, BC, México (Behrens, 1991). Although our specimen represents only a very small southeastward range extension, it is important in establishing a possible long-term presence of this species along the Pacific coast of the BC Peninsula.

SUMMARY DISCUSSION AND PROPOSAL FOR RESEARCH PROJECTS

Publication of range extensions may sometimes appear problematic, trivial, or less than significant. However, this perhaps well-meaning perspective falters when natural history is considered. Our knowledge of marine invertebrate distributions is significantly limited. One only needs to look at field guides for mammals, birds or reptiles to see a distinct difference in the biological understanding of the natural history of different groups of organisms. If you or I see an unidentifiable bird or mammal, a simple perusal of distributional maps will usually allow us to properly identify it. By contrast, the complete or changing distributions of many opisthobranch species are unknown (as this paper demonstrates). Seasonal or yearly variation based on various climatic, substrate or other factors, are only partially understood. One cannot rely on known distributional maps.

We are in a marvelous period of discovery that will lead to significant information about the geographic and temporal variation of opisthobranch species. If we properly record variations in occurrences of species and improve our knowledge of the biodiversity of interrelated marine habitats, we will better understand the long-term selective and chance processes that impact evolutionary processes and how we can act to preserve them rather than push organisms to the verge of extinction.

Therefore I propose an ongoing research publication project concerning marine molluscan biodiversity. Scientific journals (such as *The Veliger, The Festivus, Journal of Molluscan Studies*, etc.), and electronic sites (such as Mike Miller's Opisthobranch Site, <www.slugsite.tierranet.com>, with its multiple online linkages), should publish more collecting data from various research expeditions. These data should not languish in individual record logs, but should be incorporated into accessible scientific databases.

With these data we can begin to understand the population dynamics of marine species that may have even a greater ecosystem role than some of the more

engaging species (i.e., those with the brown-eyed fuzzy factor) that conservation biologists need to present for public support of environmental protection programs. Since the earth is blue (the oceans cover over 70% of earth's surface) we need to pay greater attention to the slimy details of marine invertebrate diversity (Wilson, 1988; Reaka-Kudla, Wilson & Wilson, 1997).

ACKNOWLEDGMENTS

We are grateful to CONABIO for the grant which allowed us to perform this research; the assistance of the staff at the fishing cooperatives in Bahía Tortugas: including Manuel Higuera Serrano of La Purisima, and Francisco Robles of Cooperativa Natividad; to Francisco Javier Zacatzi Ayala and his family and crew at the Restaurant/Hotel Vera Cruz; and for the great warmth and hospitality shown us by all the inhabitants of the area who asked more than once, "What are you looking for? ¿Babosas del mar?"

We also thank the curators and collection managers of the California natural history museums (CAS: Robert van Syoc; SBMNH: Henry Chaney and Paul Valentich Scott; LACM: Lindsay Groves) for their invaluable assistance, and Dr. Terrence M. Gosliner (CAS) for his valued comments on the manuscript.

As with any scientific expedition, we extend special thanks to our families and loved ones who remained behind while we endured the rigors of the field.

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THE VELIGER - STOHLER MEMORIAL FUND

A memorial fund has been set up in honor of Dr. Rudolf (Ruedi) Stohler. Appropriately, it honors him by insuring that *The Veliger*, the prestigious journal which he nurtured from its modest beginning, will continue to be able to help young malacologists as it has done in the past.

"... Ruedi ... laid the solid foundation on which we continue to build. In its early years, he personally financed *The Veliger*, and with the help of Jean and Crawford Cate, and other friends, built an endowment that continues to subsidize the journal's publication today.

The Veliger Board met recently and discussed options for honoring our founding editor. We decided to create a memorial fund and invite our members and friends to make a contribution in his memory. These donations will be used to enhance the endowment that provides grants to students with limited resources to cover their page charges. Ruedi provided many of today's prominent malacologists with their first opportunity to publish in a scientific journal, and we think it highly appropriate to continue this important tradition in his name. We plan to dedicate the October issue in his memory, and contributors who make donations before July 31 will be acknowledged in this issue.

Please make your tax-deductible contributions to:

The Veliger - Stohler Memorial Fund
Dr. Henry Chaney, Secretary
Santa Barbara Museum of Natural History
2559 Puesta del Sol Road
Santa Barbara, CA 93105-2936, USA"

Sincerely,

Dr. William K. Emerson
Chair, Rudolf Stohler Memorial Fund

Dr. Terrence M. Gosliner
President, California Malacozoological Society, Inc.

DR. RUDOLF (RUEDI) STOHLER
December 5, 1901 - April 24, 2000

It is with sadness that we report the passing of Rudolf Stohler at the age of 98. He died on 24 April of heart failure at his home in Berkeley, California. Ruedi, born and raised in Basel, Switzerland, was interested in nature from early childhood and was a collector of all manner of objects natural and otherwise. He attended universities in Basel and Geneva and earned PhDs in both Zoology and Botany.

Dr. Stohler first came to the United States in 1928 on an International Exchange Fellowship at the Hooper Foundation for Medical Research in San Francisco. It was there that he worked on the problem of paralytic shellfish poisoning, proving that the red tide flagellates ingested by mussels and clams made them poisonous and that all other organisms feeding on the bivalves would also be toxic (Smith, 1983). It was as a result of his work that public health officials began a monitoring program, posting warnings during the occurrences of the toxic micro-organisms affecting the clams and mussels. At the September 1964 meeting of the San Diego Shell Club, Ruedi spoke of his work lightheartedly, advising members about eating mussels safely. He said, "...boil them, drain off the liquid, then open and discard the shells — now, throw away what remains"(Anon. 1964).

It was during his time at the Hooper Foundation that he met and married Genevieve J. Emerson, a premedical student working there as a laboratory technician. They went back together to Switzerland when Ruedi's fellowship was over and returned to the United States in 1932. Ruedi then became a citizen of this country, and together they raised a family of five children. In 1933 he was made a Research Associate at the University of California, Berkeley, where he started teaching a class in cytology and courses in zoology and biology at the university extension. He was the Curator of the Museum of Invertebrate Zoology at the university until his retirement in 1969.

He began collecting shells in 1941, being most interested in speciation and population genetics. With several colleagues, he founded the Northern California Malacozoological Club in 1952 and *The Veliger*, the Club's newsletter, was born in 1958. Ruedi named it *The Veliger* because he "hoped it would always continue to grow" (Cate, 1964). Ruedi became editor with Volume 2, doing the typing on an electric typewriter (the latest in technology then), collating on the dining room table, pre-addressing and sorting the envelopes, filling the mailbags by zip code and delivering them to the post office. For a fascinating read on these early years, see Cate, 1989. Under Ruedi's editorship (through Volume 25, in 1983) the mimeographed newsletter grew to become the distinguished journal we know today.

Dr. Rudolf Stohler. Photo: James H. McLean. With kind permission of the California Malacozoological Society, Inc. [*The Veliger*].

Besides being the founding editor of the premier journal, *The Veliger,* and a respected scientist (Cate, 1964,1989; Smith, 1983), Ruedi was a good friend to the San Diego Shell Club, an Honorary Life Member since 1965. Long-time members of the Club remember him with great affection; he spoke to the Club on several occasions in the 1960s, wrote articles for *The Festivus,* made the Club a part of his research on *Olivella biplicata*, and through his efforts, the *News of the Western Association of Shell Clubs* was born in 1961

and continued until 1969 as a vehicle for west coast shell clubs to share news. The four west coast clubs sent their news to Dr. Stohler's daughter Heidi, who put the bimonthly publication together and sent it out to member clubs.

The "Olivella Dives," the Club's part in Dr. Stohler's research on growth in the species *Olivella biplicata* (Sowerby, 1825), were a great adventure for those members who participated during the nine years of the project from 27 July 1959 to 13 July 1968. See the writeups in *News of the Western Association of Shell Clubs* [San Diego Shell Club] listed below. His early work on *O. biplicata* was published in *The Nautilus* (Stohler, 1952, 1959c, 1960a, b) and the results of the *O. biplicata* project were published in *The Veliger* (Stohler, 1962, 1969).

Ruedi was known for his many kindnesses to students and amateurs, encouraging them to publish their first papers, many in *The Veliger*. *The Festivus* has received letters and phone calls from Ruedi expressing his pleasure in issues he had received. Even after he was totally blind, he told me that his wife, Genevieve, read every issue of *The Festivus* to him.

The malacological world has lost a giant of a man.

Molluscan Species Described by Rudolf Stohler

Astraea (Uvanilla) rupicollina Stohler, 1959 = *A. turbanica* (Dall, 1910).

Macrarene coronadensis Stohler, 1959 = *Arene (Macrarene) coronadensis* (Stohler, 1959) = ? *Arene (Macrarene) californica* (Dall, 1908).

Taxa named in honor of Rudolf Stohler

Subgenus *Stohleria* Coan, 1984

Lepidozona (Lepidozona) stohleri Ferreira, 1985

Terebra stohleri Bratcher & Burch, 1970

Acanthodoris stohleri Lance, 1968 = *A. pina* Marcus & Marcus, 1967.

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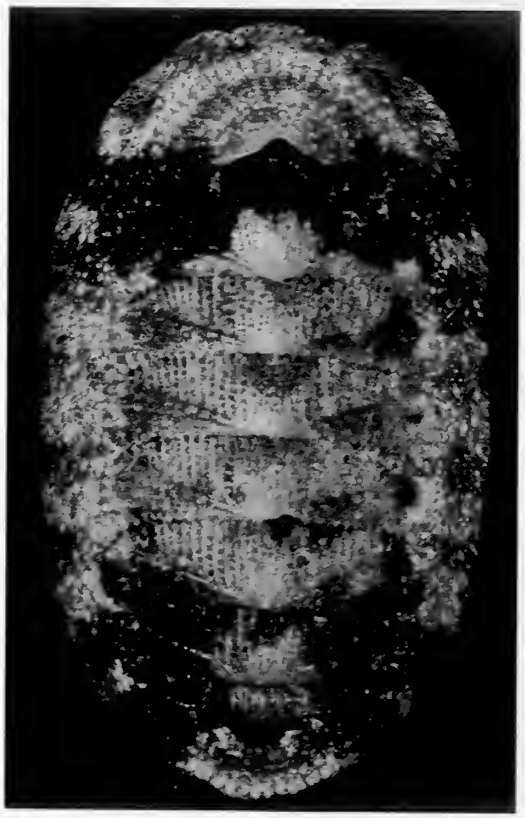

Figure 2. *Lepidozona (Lepidozona) stohleri* Ferreira, 1985. Bahía de los Angeles, Golfo de California, dredged, 70-130 ft., May 1976. Photo: Paul Skoglund.

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Figure 3. *Terebra stohleri* Bratcher & Burch, 1970, holotype, 21.4 mm. From *Living Terebras of the World*. With the kind permission of Twila Bratcher Critchlow.

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THE FESTIVUS

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MEMBERSHIP AND SUBSCRIPTION
Annual dues are payable to San Diego Shell Club.
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Single copies of this issue: $5.00 plus postage.

Website at: http://www.molluscs.net/SanDiegoShell Club/index.html Email: cmhertz@pacbell.net

Meeting date: third Thursday, 7:30 PM,
Room 104, Casa Del Prado, Balboa Park, San Diego

PROGRAM

Meanderings in the Vizcaino Biosphere Reserve

Dr. Hans Bertsch will present an illustrated talk on marine biology research in one of the most isolated regions of the Baja California peninsula — Punta Eugenia, Bahía Tortugas and the nearby Isla Cedros.

Meeting date: August 17, 2000

CONTENTS

CLUB NEWS

Minutes of the San Diego Shell Club Meeting - July 20, 2000

President Mike Mason welcomed everyone and called the meeting to order at 7:45 p.m. Guests for the evening, Jeremy and Christine Hutsell, were welcomed. The minutes of the June meeting were approved as written in *The Festivus*.

Librarian Linda Hutsell said that the club purchased a copy of the recently published, *Chitons of the World*. It will be available for circulation at the next meeting. The new bivalve book, *Bivalve Seashells of Western North America,* is available for purchase for $99 plus tax. A copy has been donated to the club by the authors and the book will be reviewed in *The Festivus*. Paul Valentich Scott will be the speaker at the October meeting and will also sign his books.

Nancy Schneider is considering accepting the position of Historian. The September Party, another "Munchie Madness," will again be at the Arnold's house and garden on Saturday evening, September 16th. [For further information, see map on last page of this issue.]

Kim Hutsell introduced members Kay Klaus and Mike Mason, who spoke to the group about their recent trip to the Philippines. They visited three areas: Luzon, Bohol, and Cebu. On their first day, they toured a cave in Bohol. They also showed pictures of a very interesting set of limestone mounds called the Chocolate Hills.

Kay learned to dive during this trip to the Philippines and showed some underwater pictures. Mike said that Cebu and all of the Mactan Island area is overpopulated. Dynamite fishing is done on a regular basis, devastating entire areas. There were almost no shells and no coral. Bohol was quite different. A guide is required to dive there and certain areas were closed to divers. Mike said that Cabalau was the best dive spot that they went to. A discussion ensued about the devastation of the natural habitats given the poor conditions of the country's residents.

The winner of the shell drawing prize was Bill Romer. The meeting was adjourned at 8:55 p.m.

Silvana Vollero

A Generous Donation to the Club

Member Gladys Weber of Modesto, California, has donated some fine books and several boxes of shells to the Club. The shells will make their way into the next Club auction and any of the books not already in the Club's library will be placed there and the rest sold, with the proceeds to be used to purchase new books for the library.

The Club is indebted to Gladys for her generous donation.

Additional Plastic Boxes Donated to the Club

Two additional cartons of used plastic boxes and one box of new plastic boxes have been donated to the Club by Ursula and Don Shasky. The new boxes will be available for sale along with the others they donated. The used boxes will be set out at meetings, free to those who can use them.

The Club's thanks to the Shaskys, once again, for this useful donation.

A New Book for the Club Library

A copy of *Bivalve Seashells of Western North America Marine Bivalve Mollusks from Arctic Alaska to Baja California* will be available for circulation in the Club library at the August meeting.

The book was kindly donated to the Club by authors, Eugene V. Coan and Paul Valentich Scott. A review of the volume will appear in the September issue of *The Festivus*.

The Western Society of Malacologists — 2001

The next annual meeting of the Western Society of Malacologists (WSM) in 2001 will be held here in San Diego from 27 to 30 June 2001.

President Hans Bertsch has already reserved a convenient meeting site at the Ramada Inn and Conference Center in Kearny Mesa.

This will be a fine opportunity for Club members to participate in this conference. Stay tuned.

NEW MOLLUSCAN RANGE EXTENSIONS AND AN UNDESCRIBED THYASIRID FROM ISLA SAN MARCOS IN THE GOLFO DE CALIFORNIA, MÉXICO

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In October 1999 my husband and I went on our annual dredging trip to Baja California and found a new area, Isla San Marcos, 15 km south of Santa Rosalia, Baja California Sur, México. We camped at the San Lucas RV Park, spending about 20 days dredging off the west side of Isla San Marcos.

The following list is of the 15 range extensions of molluscan species and one undescribed species that we dredged in 20-50 m, on sand and broken shell/rubble bottom. The specimens are all in the Mulliner collection.

The taxonomic arrangement is by Keen (1971) as modified by Vaught (1989) and Skoglund (1991,1992). Numbers from Keen (1971) are used where possible. Identification of material was confirmed by Carol Skoglund of Phoenix, Arizona. All material was collected dead. Number of specimens and previously published distributional records for each species are included.

I wish to thank Eugene Coan, Kim Hutsell, Paul Valentich Scott and Carol Skoglund, for help in identifying the species, Dave Mulliner for photography and Carole Hertz for help in setting up the paper.

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Keen No. Species and Remarks

BIVALVIA

117 *Tucetona strigilata* (Sowerby, 1833), 1 specimen, previously known from Guaymas, Sonora, México, to Ecuador (Keen, 1971); Isla del Coco, Costa Rica (Bernard, McKinnell & Jamieson, 1991). This brings the range across the Gulf (Figure 1).

301 *Thyasira* sp., 11 valves. Undescribed (pers. com., Valentich Scott, June 2000) (Figure 2).

310 *Amerycina cultrata* Keen, 1971, 1 specimen, previously known from Isla Partida, Isla Espíritu Santo, near La Paz, Baja California Sur (Keen, 1971); north to Guaymas, Sonora, México (Keen & Coan, 1975) (Figure 3).

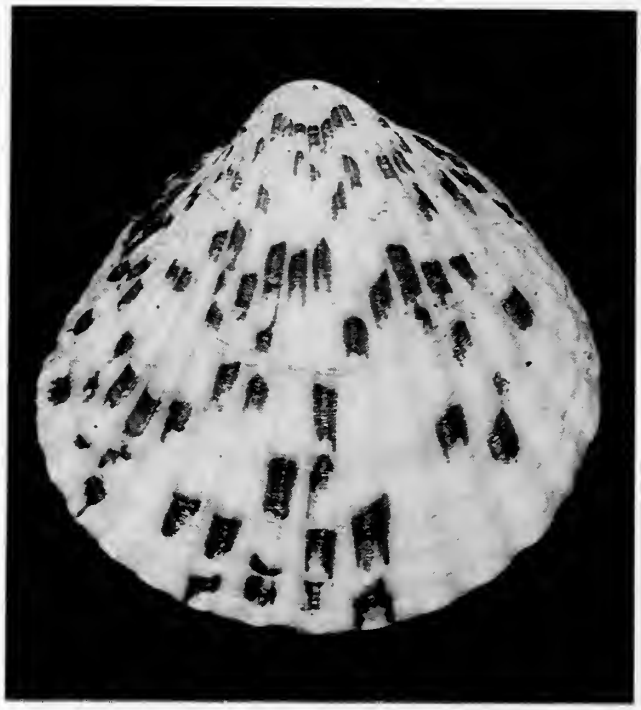

Figure 1. *Tucetona strigilata* (Sowerby, 1833), 29.9 mm. Photo: D.K Mulliner.

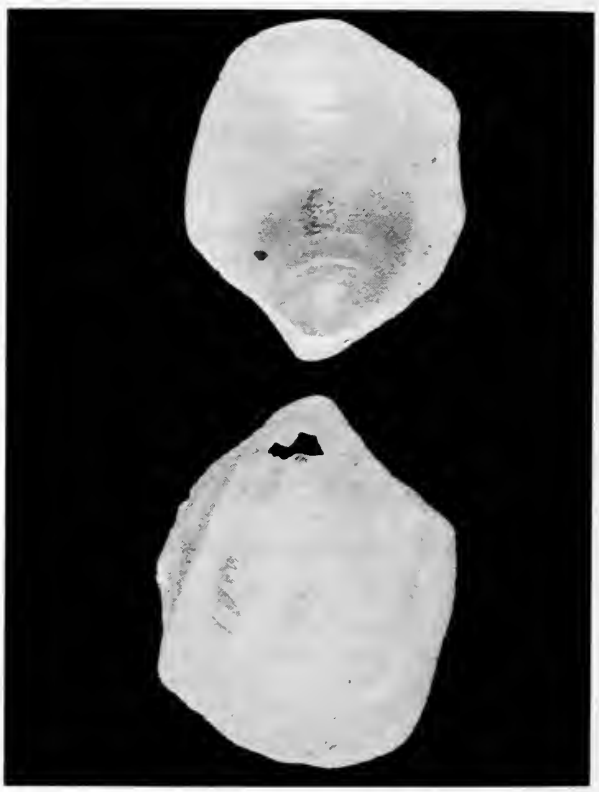

Figure 2. *Thyasira* species undescribed, 10.1 mm. Photo. D. K. Mulliner.

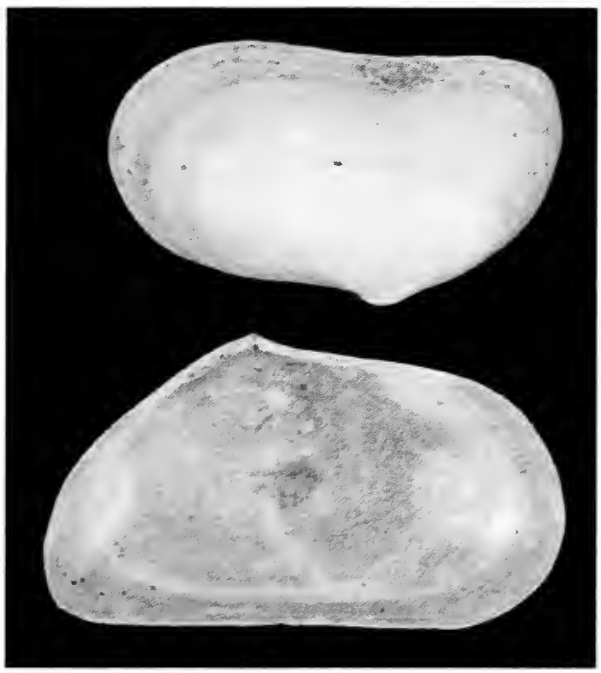

Figure 3. *Amerycina cultrata* Keen, 1971, 14.6 mm. Photo: D. K. Mulliner.

353 *Arcinella californica* (Dall, 1903), 2 top valves, previously known from Isla Cedros, Baja California to Panamá (Keen, 1971); into the Golfo de California at Bahía San Carlos, Sonora, México (DuShane & Poorman, 1967); south to Colombia (Bernard, 1976). This brings the range across the Golfo de California.

614 *Solecurtus guaymasensis* Lowe, 1935, 13 valves + 1 specimen, previously known from Bahía San Carlos, Sonora, México (DuShane & Poorman, 1967); off Isla Cedros, Baja California, to Golfo de Chiriquí, Panamá (Keen, 1971); Islas Galápagos, Ecuador (Finet, 1985); to southern California (Coan & Scott, 1997). This brings the range across the Golfo de California.

GASTROPODA

750 *Niso interrupta* (Sowerby, 1834), 10 specimens, previously known from Isla San Pedro Martír, off Sonora, México, to Guayaquil, Ecuador (Keen, 1971). This brings the range across the Golfo de California (Figure 4).

Figure 4. *Niso interrupta* (Sowerby, 1834), 29.5 mm. Photo: D. K. Mulliner.

814 *Crepidula onyx* Sowerby, 1824, 1 specimen, previously known from Southern California to Chile (Keen, 1971); San Pedro, California, to Costa Rica and possibly Panamá (Hoagland, 1977); Isla Gorgona, Colombia (Cosel, 1984); Islas Galápagos, Ecuador (Finet, 1985). This is the first published report of the species in the Golfo de California.

837 *Xenophora conchyliophora* (Born, 1780), 1 specimen, previously known from Guaymas, Sonora, to La Paz, Baja California Sur, Golfo de Tehuantepec, México (Keen, 1971); Puerto Peñasco to Golfo de Panamá (Ponder, 1983); Guayas Province, Ecuador (Skoglund, 1990b). This is the first report of the species north of La Paz on the Baja side of the Golfo de California.

1522 *Terebra armillata* Hinds, 1844, 13 specimens, previously known from Puertecitos (DuShane, 1962); Bahía Santa Maria, Baja California, México, to Perú (Keen, 1971); Islas Galápagos, Ecuador (Bratcher & Burch, 1971); Isla del Coco, Costa Rica (Montoya & Kaiser, 1988). This is the first report of the species on the Baja side of the southern Golfo de California.

--- *Terebra guayaquilensis* E. A. Smith, 1880, [Keen #1535, left figure], 9 specimens, previously known from Roca Consag [as *T. ira* Pilsbry & Lowe, 1932] (DuShane & Brennan, 1969); west coast of Baja California, México, to Ecuador (Bratcher & Cernohorsky, 1987); Isla del Coco, Costa Rica (Montoya & Kaiser, 1988); Islas Galápagos, Ecuador (Finet, 1985). This is the first report of the species in the southern Golfo de California on the Baja California side.

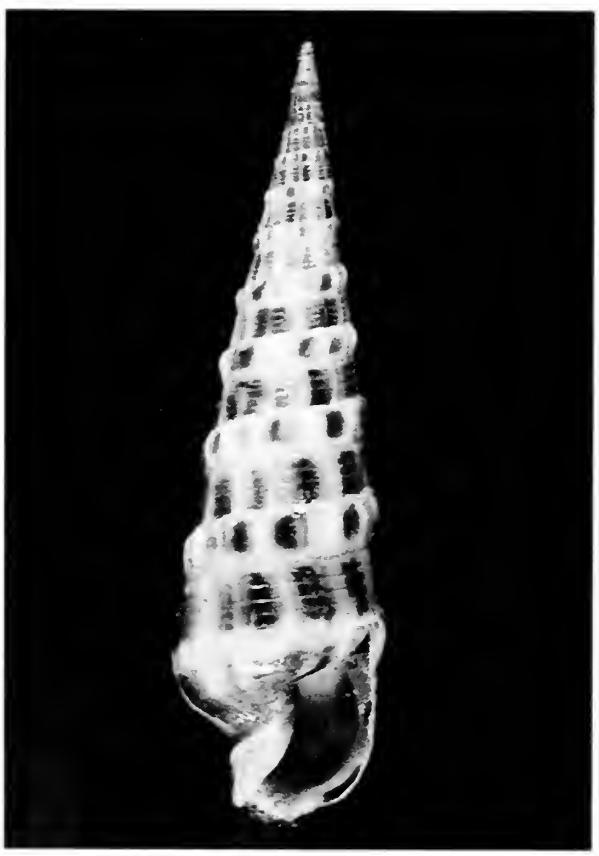

Figure 5. *Terebra variegata* Gray, 1834, 37.9 mm. Photo: D. K. Mulliner.

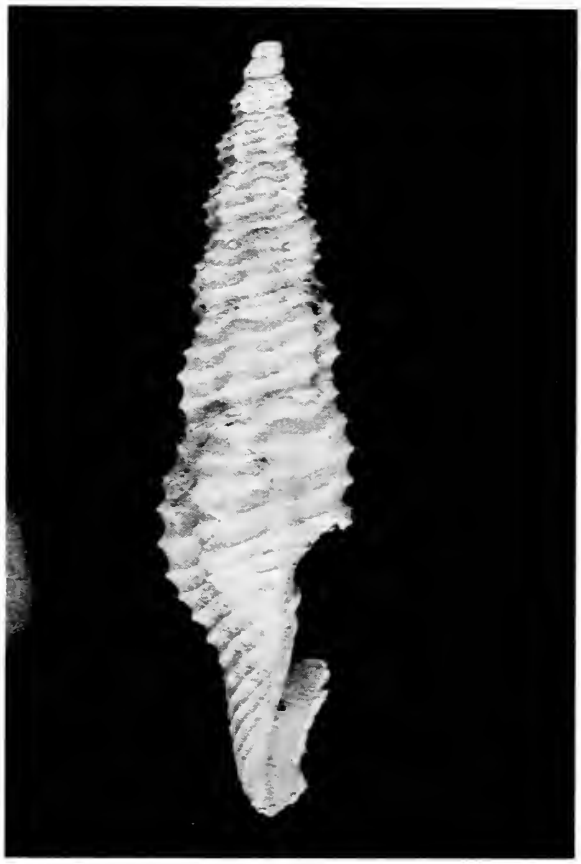

Figure 6. *Diptychophlia occata* (Hinds, 1843), 9.9 mm. Photo: D. K. Mulliner.

1571 *Terebra variegata* Gray, 1834, 11 specimens, previously known from Puertecitos (DuShane, 1962); Bahía Santa Maria, Baja California Sur, México, Islas Galápagos (Bratcher & Cernohorsky, 1987); Isla del Coco, Costa Rica (Montoya & Kaiser, 1988). This is the first report of the species on the Baja side of the southern Golfo de California (Figure 5).

1579 *Calliclava alcmene* Dall, 1919), 1 specimen, previously known from the northern Golfo de California at Isla Tiburón to Isla Espíritu Santo in the south (Keen, 1971). This brings the range north from Espíritu Santo on the Baja side of the Golfo de California.

1627 *Drillia salvadorica* (Hertlein & Strong, 1851), 2 specimens, previously known from the northern Golfo de California at Isla Tiburón to

La Libertad, El Salvador (Keen, 1971); off Golfito, Puntarenas Province, Costa Rica (Skoglund, 1991b). This brings the range across the Golfo de California to off Isla San Marcos.

1655 *Cochlespira cedonulli* (Reeve, 1843), 1 specimen, previously known from the northern Golfo de California at Isla Tiburón, to Puerto Utría, Colombia (Keen, 1971). This brings the range across the Golfo de California to off Isla San Marcos.

1702 *Crassispira xanti* Hertlein & Strong, 1951, 2 specimens, previously known from Agua Chale (San Felipe area) (Hertz, Gemmell & Myers, 2000); Punta Lobos, Sonora, México to Santa Elena Bay, Ecuador (Keen, 1971). This brings the range south on the Baja side of the Golfo de California.

1773 *Diptychophlia occata* (Hinds, 1843), 1 specimen, previously known from Guaymas, Sonora, México to Puerto Utría, Colombia (Keen, 1971). The brings the range across the Golfo de California to Baja California (Figure 6).

ADDITION AND CORRECTION

Addition: Thanks to a note from Lindsey Groves of the Museum of Natural History of Los Angeles County, we learned of an additional genus and species named for the late Rudolf Stohler which should be included in C.M. Hertz (2000) [*The Festivus* 32(7): 105-107] — a valid species of ovulid, *Stohleroma stohleri* Cate, 1973.

Correction: It has just been brought to our attention that in Skoglund (2000) [*Spondylus linguaefelis* Sowerby, 1847 ... in the Panamic Province, with notes on the occurrence of *Spondylus nicobaricus* Schreibers, 1793 [*The Festivus* 32(1): 3-7, pl. 1 & figs. 1-3)], there is a reversal of photographs. On Page 5, Figure 3 is the Roca Partida specimen and Figure 2 is the Isla Jicarita specimen. We apologize to the author and thank Kirstie Kaiser for notifying us of the error.

CATALOG OF RECENT AND FOSSIL CYPRAEIDAE AND EOCYPRAEINAE (OVULIDAE): 1994 through 1999

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INTRODUCTION

Groves (1994a) published a lengthy catalog of cypraeid and eocypraeid taxa described subsequent to Schilder & Schilder (1971). Herein is a list of taxa described since Groves (1994a), those inadvertently omitted, and additional information received and/or determined after publication. Four taxa described prior to 1971 that were not included in Schilder & Schilder (1971) are also included. Names introduced without descriptions are not included.

Seventy-six taxa of cypraeids and eocypraeids are treated herein, of which 28 are Recent taxa and 48 are fossil taxa. Of the Recent taxa 23 were described as new, two were not included in Groves (1994a), and three are updated. Of the fossil taxa 42 are described as new, four were not included in Groves (1994a), and two are updated. Taxonomic allocations listed in the **Remarks** sections, unless cited otherwise, represent the opinion of the author.

ABBREVIATIONS

The following abbreviations are used herein for locality and/or type numbers.

AMNH = American Museum of Natural History, New York, NY, USA.
FAU = Florida Atlantic University, Boca Raton, Florida, USA.
GMANH = Graves Museum of Archaeology and Natural History, Dania, Florida, USA.
HNC = Haus der Natur, Cismar, Germany.
HUJ = Hebrew University, Jerusalem, Israel.
IO = Institute of Oceanology, Academica Sinica, Qingdao, China.
KBIN = Koninklijk Belgisch Instituut voor Naturuwetenschappen, Brussels, Belgium.
LACMIP = Natural History Museum of Los Angeles County, Invertebrate Paleontology Section, Los Angeles, California, USA.
MFM = Mizunami Fossil Museum, Mizunami, Gifu Prefecture, Japan.
MNHN = Muséum National d'Histoire Naturelle, Paris, France.
MUG = Miyagi University of Education, Department of Geology, Sendai, Japan.
NSMT = National Science Museum Tokyo, Japan.
NHB = Naturhistorisches Museum, Basel, Switzerland.
PRI = Paleontological Research Institution, Ithaca, New York, USA.
SBMNH = Santa Barbara Museum of Natural History, Santa Barbara, California, USA.
SMF = Senckenberg Museum, Frankfurt, Germany.
UCMP = University of California, Museum of Paleontology, Berkeley, USA.
UF = Florida Museum of Natural History, University of Florida, Gainsville, Florida, USA.
USNM = National Museum of Natural History, Smithsonian Institution, Washington DC, USA.

ACKNOWLEDGMENTS

Many thanks to all who contributed to this project. Jiri Zidek, editor of the now defunct *The Cowry new series* (New Mexico Bureau of Mines & Mineral Resources, Socorro, New Mexico) suggested the original catalog (Groves, 1994a) and subsequent updates. Andre Delsaerdt (Aarschot, Belgium), Dirk Fehse (Berlin, Germany), Richard Goldberg (Columbia, Maryland), Felix Lorenz (Gießen, Germany), Eduard L. Heiman (Rehovot, Israel), Hitoshi Ikeda (Kanagawa, Japan), Luc Notelteirs (Belgium), Werner Massier

(Cape Town, South Africa), Ed Petuch (FAU), and Susumu Tomida (Tokyo, Japan) provided reprints and/or pertinent papers. Richard E. Petit (North Myrtle Beach, South Carolina) provided pertinent pages of an extremely obscure reference [Tessier, 1952]. James H. McLean (LACM, Malacology) reviewed the original manuscript.

RECENT TAXA

Family Cypraeidae

albanyensis [*Zoila (Zoila) marginata*] Raybaudi, [1985:9, fig. 7A], 1994b:21-23, figs. 103-109. King George Sound, Albany, Western Australia. Holotype presumably in the collection of L. Raybaudi Massilia, Rome, Italy; 1 paratype in the Tokyo Institute of Malacology, Tokyo, Japan.
Remarks: Groves (1994a) considered the following subspecific taxa of the *Zoila marginata* "group" to be synonymous with the nominal species: *Z. marginata albanyensis* Raybaudi, 1994b; *Z. m. ketyana* Raybaudi, 1978; and *Z. m. raybaudii* Lorenz, 1992. However, the recent works of Biraghi (1993; 1994), Raybaudi (1993a-c; 1994a-c), Lorenz (1992), Lorenz & Hubert (1993), and Wilson (1993) clearly demonstrate that there are at least four distinct subspecies within the group. *Zoila marginata consueta* Biraghi, 1993 is considered to be a junior synonym of *Z. marginata* s.s. (Wilson, 1993).

Raybaudi (1985) originally introduced the subspecific name *Z. marginata albanyensis* in a price list without a valid description, designation of type material and/or type locality, and without comparison to similar species. In 1994b he officially described the subspecies and designated type material and type locality.

alfrediana [*Cypraeovula-Luponia amphithales*] Raybaudi, 1994d:12-13, figs. 10-14. Presumably from off Port Alfred, Cape Prov., South Africa but not designated. Type material not designated.
Remarks: Apparent hybrid of *Cypraeovula capensis* (Gray, 1828) and *C. alfredensis* Schilder & Schilder, 1929). This name is invalidated as per ICZN, Article 1(b) (3), which states that hybrids are excluded from the provisions of the code. Therefore, this taxon is considered a junior synonym of *C. amphithales* (Melvill, 1888).

androyensis [*Palmadusta*] Blöcher & Lorenz, 1999:13-14, fig. 1, pl. 3, figs. 1-3. Between deltas of Mandrare and Manambovo Rivers, southwest of Fort Dauphin, southern Madagascar. Holotype HNC 52872, 1 paratype HNC 52873, 2 paratypes in the collection of M. Blöcher, Duisburg, Germany, 1 paratype in the collection of F. Lorenz, Gießen, Germany.

bealsi [*Erronea*] Mock, 1996:63-66, figs. 1-6. In fish trap from 220-260 m off Talikud Id. [= Talicod Id.], Davao Gulf, Davao Province, Mindanao Id., Philippines (approx. 6°89'N, 125°69'E). Holotype SBMNH 143416, 1 paratype SBMNH 143417, 1 paratype in collection of M. Beals (Inglewood, California).
Remarks: Probably a deep water form of *E. hungerfordi* (Sowerby, 1888).

clavicola [*Bistolida stolida*] Lorenz, 1998:56-58, figs. 73 [radula], 74 [right fig.], pl. 26, figs. 1-6. Off Nungwi village, northern Zanzibar, Tanzania. Holotype HNC 48715, 3 paratypes HNC 48716-48718, 7 paratypes in collection of F. Lorenz, Gießen, Germany.
Remarks: Possibly a junior synonym of *B. stolida* (Linné, 1758).

delicatura [*Zoila*] Chandler & DuRoss, 1997:65, 15 unnumbered figs. Off the northwest shelf of Western Australia, near the Monte Bello Islands. Holotype in Western Australian Museum, Perth.
Remarks: Probably a junior synonym of *Z. eludens* Raybaudi, 1991.

donghaiensis [*Erronea (Adusta)*] Ma, 1997:78-79, 260-261, pl. 6, fig. 3. In 90-100 m depth, northeast of Okinawa, East China Sea (27°50'N, 126°00'E). Holotype IO M37330.
Remarks: Junior synonym of *E. (A.) hungerfordi* (Sowerby, 1888).

ganteri [*Cribrarula cribraria*] Lorenz, 1997:1-2, pl. 1, figs. 1-7. Beach at Mount Lavinia, 10 km south of Colombo, Sri Lanka. Holotype HNC 44662, 7 paratypes in collection F. Lorenz, Gießen, Germany.
Remarks: Possibly a junior synonym of *C. cribrarula* (Linné, 1758).

gonubiensis [*Cypraeovula capensis*] Massier, 1993:21-26, fig. 1 (left fig.) [radula], pl. 5, figs. 1-7, 13. Gonubie, northeast of London, Cape Province, South Africa. Holotype HNC 30807, 1 paratype HNC 30809, 2 paratypes in the collection of W. Massier, Margate,

Natal, South Africa, and 1 paratype in the collection of F. Lorenz, Gießen, Germany.
Remarks: Possibly a junior synonym of *Cypraeovula capensis* (Gray, 1828). Treated as a form by Lorenz & Hubert, 1993.

Hiraseadusta Shikama, 1971:103. Type species: *Cypraea hirasei* Roberts, 1913.
Remarks: Subjective synonym of *Nesiocypraea* Azuma & Kuroda, 1967.

iutsuina [*Cypraeovula-Crossia amphithales*] Raybaudi, 1995c:70-72, figs. 13-17. Presumably from deep water off Algoa Bay/Port Alfred, Cape Prov., South Africa. Holotype in the collection of L. Raybaudi Massilia, Rome, Italy.
Remarks: Apparent hybrid of *Cypraeovula (Crossia) iutsui* Shikama, 1974 and *C. capensis* (Gray, 1828). This taxon is considered a junior synonym of *C. iutsui* Shikama, 1974 (see ICZN note on p. 117).

jandeprezi [*Pustularia*] Poppe & Martin, 1997:81-88, pl. 1, figs 1-5. South of Borongan, Samar, the Philippines. Holotype MNHN, 1 paratype KBIN, Brussels, Belgium, 1 paratype AMNH, 4 paratypes in collection of G. Poppe, Berchem, Belgium, 1 paratype in collection P. Martin, Brussels, Belgium, and 4 paratypes in the collection of J. Deprez, Belgium.
Remarks: Junior synonym of *P. bistrinotata* Schilder & Schilder, 1937.

ketyana [*Cypraea (Zoila) marginata*] Raybaudi, 1978.
Remarks: A valid subspecies of *Z. marginata* (Gaskoin, 1849) (see *albanyensis*, [*Z. marginata*]). See Groves (1994a) for type material, type locality and original citation.

Kurodadusta Shikama, 1971:103. Type species: *Erronea (Zoila?) teramachii* Kuroda, 1938.
Remarks: Subjective synonym of *Nesiocypraea* Azuma & Kuroda, 1967.

levissima [*Crossia iutsui*] Raybaudi Massilia 1995a:29, fig. 15. In 300-380 m depth, off Hondeklipbaai, Cape Province, South Africa. Type material presumably in the collection of L. Raybaudi Massilia, Rome, Italy.
Remarks: Regarded as a junior synonym of *Cypraeovula (Crossia) iutsui* (Shikama, 1974).

lobettiana [*Zoila (Zoila)*] Raybaudi, 1995b:15-17, 10 unnumbered figs. on p. 16-17. From 200 m, Great Australian Bight, South Australia. Holotype in the collection of F. Lobetti Bodoni, Italy, 1 paratype in the collection of L. Raybaudi Massilia, Rome, Italy.
Remarks: Regarded as a deep-water junior synonym of *Z. rosselli* Cotton, 1948.

merguina [*Mauritia arabica*] Lorenz & Huber, 1993:47-50, pl. 9, figs. 1-8. Mergui Archipelago, Myanmar (= Burma). Holotype HNC 31642, 1 paratype HNC, 3 paratypes in the collection of F. Lorenz, Gießen, Germany, 3 paratypes in the collection of F. Huber, Schwanestadt, Germany.

omii [*Notadusta*] Ikeda, 1998:263-266, fig. 2 [radula], pl. 1, figs. 1a-1c. In 100-120 m depth, off Tosashimizu, Kochi Prefecture, Shikoku, Japan (32°46'N, 132°57'E). Holotype NSMT Mo-71297, paratype NSMT Mo-71298.

oryzaeformis [*Purpuradusta*] Lorenz & Sterba, 1999:3-6, figs. 5 (radula), 8, pl. 1, figs. 1-3. Raroia, Tuamotu, French Polynesia. Holotype HNC 44694, 1 paratype HNC 44695, 8 paratypes in the collection of F. Lorenz, Gießen, Germany, 1 paratype in the collection of G. Sterba, Markkleeberg, Germany.

pellisserpentis [*Cribrarula*] Lorenz, 1999b:37-38, pl. 7, figs. 1-3. 15 to 35 m from an area south of Tuléar to Fort Dauphin, southern, Madagascar. Holotype HNC 52874, 1 paratype in the collection of M. Chiapponi, Lecco, Italy, 1 paratype in the collection of M. Blöcher, Duisberg, Germany, 1 paratype in the collection of J. van Heesvelde, Gent, Belgium, 1 paratype in the collection of L. Gabrielli, Neuss, Germany.

perdentata [*Cypraeovula-Luponia amphithales*] Raybaudi, 1995c:68-70, figs. 5-8. Presumably from deep water off Algoa Bay/Port Alfred, Cape Prov., South Africa. Holotype in the collection of Dr. Stimpson, USA.
Remarks: Apparent hybrid of *Cypraeovula fuscodentata* (Gray, 1825) and *C. capensis* (Gray, 1828). This taxon is considered a junior synonym of *C. fuscodentata* (Gray, 1825) (see ICZN note on p. 117).

pseudolutea [*Palmadusta (Palmadusta)*] Ma, 1997:96, 261, pl. 6, fig. 5. Sanya, Hainan Province, China. Holotype IO M36886.
Remarks: Junior synonym of *P. (P.) saulae* (Gaskoin,

1843).

raybaudii [*Zoila marginata*] Lorenz, 1992.
Remarks: A valid subspecies of *Z. marginata* (Gaskoin, 1849) (see *albanyensis* [*Zoila marginata*]). See Groves (1994a) for type material, type locality and original citation.

sanfrancisca [*Cypraeovula algoensis*] Chiapponi, 1999:41-42, figs. 1-2. Near Cape St. Francis, Cape Prov., South Africa. Holotype HNC 52875, 3 paratypes in collection of M. Chiapponi, Malgrate, Italy, 2 paratypes in collection of F. Lorenz, Gießen, Germany.
Remarks: Possibly a junior synonym of *C. algoensis*.

sharmiensis [*Lyncina camelopardalis*] Heiman & Mienis, 1999:41-42, figs. 3-8. Ras Nasrani, near Sharm-el Sheikh, northeastern Red Sea, Egypt. Holotype HUJ 31867, paratype HUJ 39164, 3 paratypes in the collection of E. Heiman, Rehovot, Israel.
Remarks: Junior synonym of *L. camelopardalis* (Perry, 1811).

sinensis [*Erosaria (Erosaria)*] Ma, 1997:44-45, 259-260, pl. 6, fig. 1. Chaoyang Guangdong Prov., China. Holotype IO M37222.
Remarks: Junior synonym of *E. (E.) erosa* (Linné, 1758).

sublitorea [*Erosaria*] Lorenz, 1997:11-13, fig. 2, pl. 5, figs. 5, 10. Viasala, Savai'i, Western Samoa. Holotype HNC 44663, 33 paratypes in collection of F. Lorenz, Gießen, Germany.
Remarks: Junior synonym of *E. annulus* (Linné, 1758).

tenuidon [*Lyncina leucodon*] Lorenz, 1999a:16-17, pl. 4, figs. 1-2. 200 m, southern Andaman Sea. Holotype HNC 52871, 1 paratype in collection of M. Chiapponi, Lecco, Italy, 1 paratype in collection of L. Gabrielli, Neuss, Germany.
Remarks: Junior synonym of *L. leucodon* (Broderip, 1832).

FOSSIL TAXA

Family Cypraeidae

Akleistostoma Gardner, 1948:213-214. Type species: *Cypraea carolinensis* Conrad, 1841.
Remarks: Proposed by Gardner (1948) as a section within the genus and subgenus *Cypraea (Cypraeorbis)* and elevated to subgeneric status by Petuch (1998).

alligator [*Siphocypraea*] Petuch, 1994:266, pl. 30, figs. A-B. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 8), Tamiami Formation. APAC pit, Sarasota, Sarasota County, Florida. Holotype UF 66225.
Remarks: Assigned to the subgenus *Akleistostoma* by Petuch (1998).

briani [*Calusacypraea*] Petuch, 1996:18-20, figs. 1-2. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 7), Tamiami Formation. Phase 7 pit, Quality Aggregates, Inc., Sarasota, Sarasota County, Florida. Holotype UF 68248, 2 paratypes in GMANH, 3 paratypes in collection of E. Petuch (FAU).
Remarks: Assigned to the genus/subgenus *Siphocypraea (Calusacypraea)* by Petuch (1998).

bulbus [*Cypraeorbis*] Garvie, 1996:56-57, pl. 13, figs. 5-6. Early Eocene [lower Claibornian (= early Ypresian)], Marquez Member, Reklaw Formation. Joe Taylor Branch of Two Mile Creek Creek, NE of Gause, Milam County, Texas. Holotype PRI 30371, 1 paratype PRI 30372.

Calusacypraea Petuch, 1996:17-18. Type species: *Calusacypraea duerri* Petuch, 1996.
Remarks: Originally proposed as full genus and later redesignated by Petuch (1998) to subgenus of *Siphocypraea*.

cannoni [*Siphocypraea*] Petuch, 1994:266-267, pl. 27, figs. A-B, I. Late Pliocene (Piacenzian), uppermost Pinecrest beds (Petuch unit 3), Tamiami Formation. Phase 6 pit, Quality Aggregates, Inc., Sarasota, Sarasota County, Florida. Holotype UF 66221.

cathyae [*Zonaria (Pseudozonaria)*] Groves, 1997:154, pl. 1, figs. 9-10. Early Pliocene, Esmeraldas beds, Onzole Formation. Quebrada Camarones, Esmeraldas Province, Ecuador [LACMIP loc. 16944]. Holotype LACMIP 12433.

chathamensis [*Bernaya*] Cernohorsky, 1971.
Remarks: Cernohorsky (1994) reported that the original label accompanying the holotype of *Bernaya chathamensis* incorrectly dated the specimen as from early Pliocene deposits. It was not realized until recently

that most of the marine Tertiary sequence of the Chatham Islands was of Paleocene to early Eocene age. The aperture of the holotype of *B. chathamensis* is filled with Red Bluff Tuff matrix which is of early Eocene (Waipawan) age (Beu & Maxwell, 1990). See Groves (1994a) for type material, type locality and original citation.

cowlitziana [*Nucleolaria*] Groves, 1994b:247-248, figs. 6-7. Middle to upper Eocene ("Tejon Stage") Cowlitz Formation. East of Vader, Lewis County, Washington [UCMP loc. D-8040]. Holotype UCMP 39837.

crocodila [*Siphocypraea*] Petuch, 1994:267, pl. 30, figs. J-K. Late Pliocene (Piacenzian), lowermost Pinecrest beds fauna (Petuch unit 10), Tamiami Formation. Phase 6 pit, Quality Aggregates, Inc., Sarasota, Sarasota County, Florida. Holotype UF 66228.
Remarks: Assigned to the subgenus *Akleistostoma* by Petuch (1998).

diegelae [*Siphocypraea*] Petuch, 1994:267-268, pl. 32, figs. J-K. Pliocene, Kissimmee beds Tamiami Formation. Kissimmee River dredgings at Okeetantie, Okeechobee, Okeechobee County, Florida. Holotype UF 66232.
Remarks: Assigned to the subgenus *Akleistostoma* by Petuch (1998).

dimasi [*Siphocypraea (Siphocypraea)*] Petuch, 1998:33-34, figs. 19-20. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 3), Tamiami Formation. Florida Rock Industries, Inc., Naples Quarry (= Mule Pen Quarry), Naples, Collier County, Florida. Holotype UF 84987, 1 paratype GMANH, 2 paratypes in collection of E. Petuch (FAU).

duerri [*Calusacypraea*] Petuch, 1996:20, figs. 3-4, 10. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 10), Tamiami Formation. Phase 6 pit, Quality Aggregates Inc., Sarasota, Sarasota County, Florida. Holotype UF 68249, 3 paratypes in GMANH, 3 paratypes in collection of E. Petuch (FAU), 1 paratype in collection of R. Duerr, Hollywood, Florida.
Remarks: Assigned to the genus/subgenus *Siphocypraea (Calusacypraea)* by Petuch (1998).

emmakingae [*Zonaria (Zonaria)*] Groves, 1994b:246, figs. 2-3. Lower to middle Miocene, Topanga Canyon Formation. South side of Old Topanga Road, central Santa Monica Mountains, Los Angeles County, California [LACMIP loc. 5136]. Holotype LACMIP 12277.

eniwetokensis [*Jenneria (Projenneria)*] Dolin, 1996 [1997]:22, 24, figs. 3a-c. Early Miocene (Aquitanian-Burdigalian). Drill hole E-1, Parry Id., Eniwetok Atoll, Ralik Chain, Marshall Ids. Holotype USNM 174971.

erici [*Siphocypraea (Akleistostoma)*] Petuch, 1998:28-29, figs. 1-3. Late Pliocene (Piacenzian) Pinecrest beds (Petuch unit 10), Tamiami Formation. Phase 6 pit, Quality Aggregates, Inc., Sarasota, Sarasota County, Florida. Holotype UF 84981, 3 paratypes in GMANH, 3 paratypes in collection of E. Petuch (FAU).
Remarks: Possible subspecies of *S. (A.) carolinensis* (Conrad, 1841).

furoni [*Cypraea (Umbilia)*] Tessier, 1952:380, pl. 35, figs. 1-3, 7. Paleocene. Margot de Balling, Senegal. Type material presumably in the Centre de Documentation du Laboratoire de Paléontologie du Muséum, Marseille, France.
Remarks: This taxon was probably overlooked and/or ignored because it was described in a published doctoral dissertation. Not listed in Schilder & Schilder (1971). Currently in the genus *Bernaya*.

goedertorum [*Proadusta*] Groves & Squires, 1995:114-115, figs. 2-5. Middle lower Eocene ("Capay Stage"), upper part of the Crescent Formation. Larch Mountain area, Black Hills, Thurston County, Washington [LACMIP loc. 16655]. Holotype LACMIP 12375, 1 paratype LACMIP 12376.

goettingi [*Mauritia*] Lorenz, 1999c:57-58, pl. 11. Pliocene. Waso Hills, Tanzania. Holotype HNC53152, 1 paratype in the collection of F. Lorenz, Gießen, Germany, 1 paratype in the collection of K. Götting, Gießen, Germany.

grovesi [*Siphocypraea (Siphocypraea)*] Petuch, 1998:34, figs. 15-17. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 4), Tamiami Formation. Florida Rock Industries, Inc., Naples Quarry (= Mule Pen Quarry), Naples, Collier County, Florida. Holotype UF 84988, 2 paratypes GMANH, 2 paratypes in collection of E. Petuch (FAU).

hemmenorum [*Zonaria*]. Lorenz & Groh, 1998:112, fig. 6 [holotype (left figs.), paratype (right figs)]. Middle Miocene ("Vindobonian"). Northwest of Porto de Cais, near Portinha, Ilheu de Cima, Porto Santo, Madeira Archipelago. Holotype SMF 310 772, 1 paratype in the collection of J. Hemmen, Wiesbaden, Germany, 1 paratype in the collection of F. Lorenz, Gießen, Germany.

itoigawai [*Cypraea (Zoila)*] Tomida, 1989:93,95, pl. 11, figs. 3a-c, 4a-b. Miocene/Pliocene, Senhata Formation. East side of Okumotona Quarry, Kyonan-chô, Awa-gun, Chiba Prefecture, Japan (35°9′20″N, 139°51′20″E). Holotype MFM 110104, paratype MFM 110105.
Remarks: Represented by poorly preserved internal molds and should possibly be considered a *nomen dubium*. It is unlikely that *Zoila* existed outside of Australia and southeast Asia (T. Darragh, pers. commun., 1999).

jacqueti [*Gisortia*] Tessier, 1952:378, pl. 34, figs. 2-3. Lower middle Eocene (Lutetian). Daffé, Senegal. Type material presumably in the Centre de Documentation du Laboratoire de Paléontologie du Muséum, Marseille, France.
Remarks: This taxon was probably overlooked and/or ignored because it was described in a published doctoral dissertation. Not listed in Schilder & Schilder (1971).

jenniferae [*Siphocypraea (Akleistostoma)*] Petuch, 1998:29, figs. 4-6. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 4), Tamiami Formation. APAC pit, Sarasota, Sarasota County, Florida. Holotype UF 84982, 1 paratype in GMANH, 2 paratypes in collection of E. Petuch (FAU).

josiai [*Siphocypraea*] Fehse, 1997:39, pl. 13, figs. 4a-5. Lower Pliocene, Pinecrest beds. Clewiston, Hendry County, Florida. Holotype HNC 44659, 1 paratype HNC 44660, 6 paratypes in the collection of D. Fehse, Berlin, Germany.
Remarks: Petuch (1998) states that this species is actually from early Pleistocene (Calabrian), Caloosahatche biozone (Petuch unit 1), Okeechoee Formation.

kalafuti [*Siphocypraea*] Petuch, 1994:268, pl. 31, figs. G-H, J. Late Pliocene (Piacenzian), upper Pinecrest beds (Petuch unit 4), Tamiami Formation. Phase 7 pit, Quality Aggregates, Inc., Sarasota, Sarasota County, Florida. Holotype UF 66231.

kelleyi [*Siphocypraea (Calusacypraea)*] Petuch, 1998:33, figs. 13-14. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 3), Tamiami Formation. Phase 6 pit, Quality Aggregates, Inc., Sarasota, Sarasota County, Florida. Holotype UF 84986, 3 paratypes GMANH, 3 paratypes in collection E. Petuch (FAU).
Remarks: Possible subspecies of *S. (C.) briani* Petuch, 1996.

kendrewi [*Cypraeorbis*] Petuch, 1997:129, figs. 22-23. Early Oligocene (Latdorfian), Suwannee Formation. Terramar Pit, Polk County, Florida. Holotype UF 75981, 1 paratype in the collection of E. Petuch (FAU).

ketteri [*Siphocypraea*] Petuch, 1994:268-269, pl. 31, figs. C-D, I. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 8), Tamiami Formation. APAC pit, Sarasota, Sarasota County, Florida. Holotype UF 66229.
Remarks: Assigned to the subgenus *Akleistostoma* by Petuch (1998).

kissimmeensis [*Siphocypraea*] Petuch, 1994:269, pl. 29, figs. G-H, L. Late Pliocene (Piacenzian), Pinecrest beds, Tamiami Formation. Kissimmee River dredgings, Fort Basinger, Highlands County, Florida. Holotype UF 66224.
Remarks: Possible subspecies of *S. transitoria* Olsson & Petit, 1964.

macbrideae [*Siphocypraea (Akleistostoma)*] Petuch, 1998:29, 32, figs. 9-10. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 4), Tamiami Formation. APAC pit, Sarasota, Sarasota County, Florida. Holotype UF 84983, 2 paratypes in GMANH, 1 paratype in collection of E. Petuch (FAU).

mansfieldi [*Siphocypraea (Akleistostoma)*] Petuch, 1998:32, figs. 7-8. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 7), Tamiami Formation. Phase 6 pit, Quality Aggregates, Inc., Sarasota, Sarasota County, Florida. Holotype UF 84984, 1 paratype in GMANH, 1 paratype in collection of E. Petuch (FAU).

marilynae [*Siphocypraea*] Petuch, 1994:269, pl. 30,

figs. H-I. Late Pliocene (Piacenzian), uppermost Pinecrest beds (Petuch unit 2), Tamiami Formation. Phase 7 pit, Quality Aggregates, Inc., Sarasota, Sarasota County, Florida. Holotype UF 66227.
Remarks: Figured by Falconieri (1994) as *Siphocypraea robbieae* Petuch, 1993, a manuscript name.

metae [*Siphocypraea*] Petuch, 1994:269-270, pl. 32, figs. E-F. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 4, = "Black layer"), Tamiami Formation. APAC pit, Sarasota, Sarasota County, Florida. Holotype UF 66230.

ohiroi [*Cypraea*] Masuda, 1967:6, pl. 1, figs. 28a-b, 29. Miocene, Higashi-Innai Formation. Noto Peninsula, Ishikawa Prefecture, Honshu, Japan [loc 30]. Holotype MUG 4598, 1 paratype MUG 4599.
Remarks: Currently in the genus *Lyncina*. Not listed in Schilder & Schilder (1971).

palmula [*Luria*]. Lorenz & Groh, 1998:110-111, fig. 4 [holotype]. Middle Miocene ("Helvetian"). "Pico de Juliana auf Porto Santo b. Madeira." Holotype NHB 17548.

parodizi [*Siphocypraea*] Petuch, 1994:270, pl. 28, figs. G-H, L. Late Pliocene (Piacenzian), uppermost Pinecrest beds (Petuch unit 3), Tamiami Formation. Phase 6 pit, Quality Aggregates Inc., Sarasota, Sarasota County, Florida. Holotype UF 66223.
Remarks: Possible subspecies of *S. cannoni* Petuch, 1994.

penningtonorum [*Siphocypraea*] Petuch, 1994:270, pl. 28, figs. E-F, J. Late Pliocene (Piacenzian), Pinecrest beds, Tamiami Formation. Kissimmee River dredgings, Fort Basinger, Highlands County, Florida. Holotype UF 66222.

philemoni [*Siphocypraea*] Fehse, 1997:38, pl. 12, figs. 1a-c, pl. 13, figs. 3, 6. Lower Pliocene, Pinecrest beds, Tamiami Formation. Clewiston, Hendry County, Florida. Holotype HNC 44657, 1 paratype NHC 44658, 9 paratypes in collection of D. Fehse, Berlin, Germany.
Remarks: Petuch (1998) states that this species is actually from early Pleistocene (Calabrian), Upper Caloosahatche biozone, Okeechoee Formation.

pittorum [*Zonaria (Zonaria)*] Groves, 1997:153-154, pl. 1, figs. 7-8. Lower Pliocene, Esmeraldas beds, Onzole Formation. Camarones, Esmeraldas Province, Ecuador [LACMIP loc. 16882]. Holotype LACMIP 12432.

Projenneria Dolin, 1996 [1997]:22. Type species: *Cypraea ludoviciana* Johnson, 1899.

pygodentata [*Proadusta*]. Lorenz & Groh, 1998:112-113, fig. 7. Middle Miocene ("Helvetian"). Southeast coast N Portinho, Ilheu de Baixo, Porto Santo, Madeira Archipelago. Holotype SMF 310 774, 1 paratype NHB 17547.
Remarks: Currently in the genus *Propustularia*.

rilkoi [*Siphocypraea (Akleistostoma)*] Petuch, 1998:32-33, figs. 11-12. Late Pliocene (Piacenzian), Pinecrest beds (Petuch Unit 3), Tamiami Formation. Phase 6 pit, Quality Aggregates, Inc., Sarasota, Sarasota County, Florida. Holotype UF 84985, 3 paratypes GMANH, 2 paratypes in collection of E. Petuch (FAU).

santoensis [*Luria*]. Lorenz & Groh, 1998:110, fig. 3. Middle Miocene. Northwest of Porto do Cais, southwest coast of Porto Santo, Ilheu de Cima, Madeira Archipelago. Holotype SMF 310 773.

sarasotaensis [*Siphocypraea*] Petuch, 1994:271, pl. 30, figs. C-D. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 6), Tamiami Formation. APAC pit, Sarasota, Sarasota County, Florida. Holotype UF 66226.
Remarks: Assigned to the subgenus *Calusacypraea* by Petuch (1998).

sorrira [*Zonaria*]. Lorenz & Groh, 1998:111, fig. 5. Middle Miocene. Southeast coast No. Portinho, Ilheu de Baixo, Porto Santo, Madeira Archipelago. Holotype SMF 310 771, 1 paratype in collection of J. Hemmen, Wiesbaden, Germany.

tequesta [*Calusacypraea*] Petuch, 1996: 20-21, figs. 7-8. Late Pliocene (Piacenzian), Pinecrest beds (Petuch unit 4), Tamiami Formation. APAC pit, Sarasota, Sarasota County, Florida. Holotype UF 68250, 1 paratype in GMANH, 2 paratypes in collection of E. Petuch, (FAU).
Remarks: Assigned to the genus/subgenus *Siphocypraea (Calusacypraea)* by Petuch (1998).

Family Ovulidae, Subfamily Eocypraeinae

elongata [*Eocypraea bartlettiana* Maury var.] Tessier, 1952:379, pl. 32, figs. 25-26. Paleocene. Margiot de Balling, Senegal. Type material presumably in the Centre de Documentation du Laboratoire de Paléontologie du Muséum, Marseille, France.

Remarks: This taxon was probably overlooked and/or ignored because it was described in a published doctoral dissertation. Not listed in Schilder & Schilder (1971).

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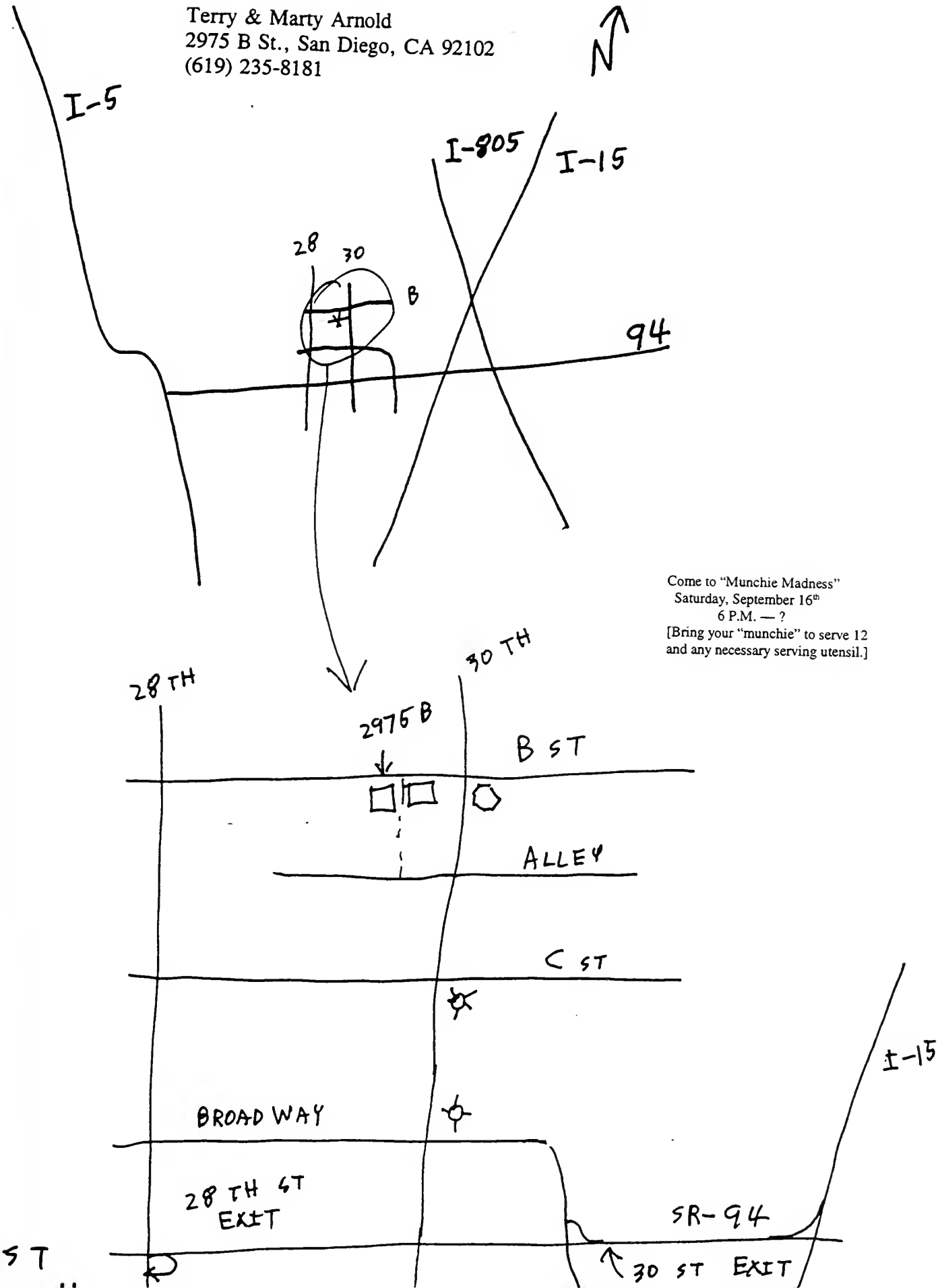

Come to "Munchie Madness"
Saturday, September 16th
6 P.M. — ?
[Bring your "munchie" to serve 12
and any necessary serving utensil.]

ISSN 0738-9388

THE FESTIVUS

A publication of the San Diego Shell Club

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MEMBERSHIP AND SUBSCRIPTION
Annual dues are payable to San Diego Shell Club.
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Meeting date: third Thursday, 7:30 PM,
Room 104, Casa Del Prado, Balboa Park, San Diego

COME TO "MUNCHIE MADNESS"

The Club's annual September party — "Munchie Madness" — will again be held at the home and garden of Marty and Terry Arnold on Saturday evening September 16th with festivities beginning at 6:00 p.m.

There will be no regular meeting this month.

CONTENTS

CLUB NEWS

Minutes of the San Diego Shell Club Meeting - August 17, 2000

In President Mike Mason's absence, Vice President Kim Hutsell called the meeting to order. The minutes of the July meeting were approved as written in the Festivus. Kim reminded everyone that the September Party will be on September 16 at the Arnold's house. [See map in August issue.]

Librarian Linda Hutsell had various flyers and newsletters for members to look at. She also announced that the new Chiton and Bivalve books are available to be checked out.

Carole Hertz mentioned that the Club has received a donation from the collection of Gladys Weber. Items from the collection will be in the next Auction.

Kim introduced Hans Bertsch as the speaker for the evening. Hans spoke about the marine research grant he received from México and his recent trips to Guerrero Negro, Bahía Tortugas and Isla Cedros to collect the data. His work focused on nudibranchs but there are many other types of organisms found in the area. He discovered many range extensions, most of which were found in Bahía Tortugas.

There is a biosphere reserve as well as a salt processing plant in this area. The area is about one-half way down the coast and much of it is dirt road. He commented that the abalone cooperatives there are doing very well.

The winner of the shell drawing was John Bishop. The meeting was adjourned at 8:40 p.m. with a motion by Carole and second by Kim. Thank you to Mike Mason, Dave and Peg Mulliner, and John Bishop for the delicious refreshments.

Silvana Vollero

A Change in Some Subscription Rates

As a result of postal increases for overseas surface mail, *The Festivus* is forced to increase the membership/subscription rate for overseas surface mail subscribers from $18 to $20 beginning in 2001. All other membership rates will remain the same. See front page for other membership information.

Molluscs 2000 Meeting in Sydney, Australia

The Molluscs 2000 meeting in Sydney, Australia " Understanding Molluscan Biodiversity in our Region into the 21st Century" will be held on the 4th - 8th December, 2000.

Three main symposia are planned: 1) Describing Molluscan Biodiversity - taxonomy and phylogeny and their role in biodiversity studies 2) Assessing Molluscan Biodiversity - ecology, life history and genetics 3) Humans and Molluscan Biodiversity - impacts, commercial utilization, pests and diseases.

Information is now available on the Malacological Society of Australasia's website (http://www.austmus.gov.au/malsoc/)including registration forms and abstract formatting details.

Payment can be made by credit card. Abstracts are due by the 30th October. A late fee for registrations of $Aust 22.00 will be imposed after the 15th of October.

Hard copy or e-mail versions of the registration forms and other details will be sent on request.

International Shellfish Conference

The Fourth International Shellfish Conference will be held from November 15-19, 2000 at the Crown Plaza Resort, Hilton Head Island, South Carolina. The focus will be the restoration of molluscan shellfish and their habitat

For further information see the website at: <http://www.scseagrant.org>.

The Club's Annual Christmas Dinner Party

The Club Christmas Party will be held on Saturday evening December 2nd with festivities beginning at 6:00 p.m. This year the event will be held at the Admiral Kidd Club. Details, menus etc. will be in the October issue with a map to the Club in the November issue.

Save the date. This is always a very special event.

Membership Renewal

Lindahl, Marge and Ken, 202 Grand Canal, Balboa Island, CA 92662. Phone: 714-675-5858.

KATHERINE "KATE" STEPHENS (c. 1853-1954)

GINGER DETHLOFF[1]

San Diego Natural History Museum, Research Library,
P.O. Box 1390, San Diego, California 92112, USA
blueginger@home.com

Katherine "Kate" Stephens (née Brown) (Figure 1) was a nationally recognized naturalist and amateur paleontologist who served as Curator of Collections for the San Diego Society of Natural History and in 1920 became the first paid curator of the Department of Mollusks & Marine Invertebrates at the San Diego Natural History Museum (SDNHM Collection Management Handbook, 1994).

Born in England, Kate's interest in natural history was cultivated by frequent visits to the museums of London. She worked for a time at the British Museum of Natural History, and in 1890 she left England to live with her cousin in San Diego County. She settled in the small town of Witch Creek (between Ramona and Julian) where she began teaching school. It was also at this time that her interest was sparked in the shells of San Diego. She collected and studied both terrestrial and marine mollusks of the San Diego region and was regarded as a resident authority on the subject. In 1907 she took part in a University of California expedition to Alaska. Many lots of Alaskan mollusks in the Museum collection resulted from Kate's work there.

In August 1898, Kate married Frank Stephens with whom she shared a great interest in natural history. In the early 1900s, Frank was an active member of the San Diego Society of Natural History, an ornithologist and an accomplished Pacific Coast mammalogist. In 1910, the Society hired Kate as curator for its collections, wherein she assumed responsibility for the care and conservation of specimens including those from her husband's mammal collection. She remained diligent in her duties and in October 1923 she completed a comprehensive overhaul of the Museum's large collection of shells. For eleven years, Kate and Frank

Figure 1. Mrs. Kathryn "Kate" Brown Stephens in her later years. Photograph from the SDNHM Research Library Archives.

[1]Intern at SDNHM Research Library (while a graduate student at the University of San Diego).

collaborated to create original museum exhibits and together they did much of the work expanding and caring for the collections.

From 1924-1928 Kate worked to identify the fossil shells of San Diego County in connection with the paleontological study conducted by the Society with U.S. Grant IV and Frank Stephens. [See Frank Stephens, (1929) Notes on the Marine Pleistocene Deposits of San Diego County, California. Transactions of the San Diego Society of Natural History 5(16): 245-256 (5 August).] In May of 1925, she prepared an exhibit of the Chaney collection of very small shells collected near San Diego; in June she prepared a sponge exhibit with local specimens and in December, rearranged the gorgonian "Sea Fan" exhibit. In 1927 and 1928 Kate updated the Museum's collections by re-labeling specimens to correspond with the new nomenclature in addition to preparing "an exhibit on ammonites or fossil shells of the Chambered Nautilus group."

Excerpts from Kate's contributions to the Annual Reports of San Diego Society of Natural History from 1923 to 1926 give a view of collection curation at the time, the work and growth of the collections in her care, and a glimpse of Kate Stephens as an environmentally forward looking individual.

> "1923 has been a year of steady progress, both in material and interest. Several donations have been received, of which one is a small collection of shells from Brazil, gathered in 1865 by the late Orestes St. John, one of the early Government Paleontologists. Mrs. Carrie L. Simons, a member of the San Diego Society of Natural History, has increased her donations of beautifully mounted microscopic shells from Lower California, including one new species, *Amphathalamus* [*sic*] *stephensae* [Figure 2].
>
> We also received a very valuable collection of 120 specimens of the interesting genus *Oreohelix* from Mr. Junius Henderson of the University of Colorado. These shells are particularly desirable, as they complement the already large collection of *Oreohelix* given to us by Mr. Hemphill, the original student of these peculiar snails. Mr. Henderson's specimens were in exchange for Eocene fossils from Rose Canyon, San Diego ....
>
> The most pressing need at the present time is cabinets for the card catalogues of this department. The catalogues, numbering many thousand cards, are at present contained in temporary boxes, where they are in danger of being lost or destroyed.
>
> I would recommend that, during the coming year, more attention be given to other branches of invertebrates, particularly to fish parasites and lower crustaceans generally. Owing to the enthusiastic co-operation of Mr. Gillette, the Museum's Preparator, who is preserving such specimens of these orders as are received in his department, this branch can now be profitably studied and would provide results of great economic value. It is also desirable that the littoral fauna of Lower California should receive more intense collecting than heretofore. Much valuable work can be done in this field."

Figure 2. *Amphithalamus stephensae* Bartsch, 1927. Holotype, 1.1 mm. Type locality: Bahía Magdalena, Baja California, Sur, México. Illustration from the Proceedings of the United States National Museum 70(11): pl. 4, fig. 5. Paratypes are in the San Diego Natural History Museum mollusk type collection.

1924 "has on the whole been progressive. Much time has been given to routine work. Some cases in the exhibition hall have been renovated, some rebuilt, and one new case of corals has been installed. The public has shown an increasing interest in the exhibits and in the study of sea life, as compared with past years. About 300 shells were identified for one visitor from the east, and about 200 for another; and a number of other persons have had shells identified and instruction given them.

The Society has received several donations—two or three of considerable interest. One of them, a donation from C.A. Pinkham, of Los Angeles, is a collection of remarkably fine fossils from Coyote Mountain,

including several specimens that are new to our collection, in addition to those not yet identified. A few shells were received from the estate of the late Orestes St. John, and a collection of interesting shells, chiefly foreign and new to the Society, from the late Dr. J.P. Iddings. Mr. and Mrs. F.D. Cleveland, of Altadena, through whose kindness these shells were given, also donated a collection of corals. These are not yet installed.

The chief work of this department, however, has been the commencement of a systematic study of the paleontology of San Diego County. This promises to be very instructive, but has not as yet progressed far enough to give definite results. Hitherto little work has been done in this field since the early days of Cooper, Stanton, Fairbanks and others. If possible, this work should be extended into Lower California in the coming year."

1925 "has been one of steady growth in the department of Mollusks and Marine Invertebrates, although no great or particularly valuable gifts have been received. A new exhibit of sponges has been installed, of which the central feature is a large sponge from Lower California waters donated by Mrs. B. Rashin. An additional case of corals has also been installed, and the case of gorgonias has been rearranged and card-catalogued. Through Mrs. Clara C. Seaver a collection of shells from the estate of the late Mrs. E.M. Chaney of La Jolla was received by the Museum. This accession made possible the installation of a case of very small shells which were arranged on 140 small black disks and provide a rather striking exhibit. There is material on hand for an additional case of crustacea.

After the routine work of identifying specimens for students and bringing the catalogues up-to-date, the chief work of the year has been with fossil shells. A considerable number of local fossils has been collected by Mr. Stephens, many of which have been identified and a number of species new to the collection listed. A great many specimens have also been named for Mr. Charles H. Sternberg. So much study and preliminary cataloguing of fossils has been done that I feel I am now familiar enough with our local fossils to speak with some confidence about them.

I wish to speak very earnestly on the subject of imported mollusks. Four species of imported mollusks have been allowed to enter California. One, *Vivipara annulata*, has been acclimated several years. Nevertheless, in Japan and China this species is a great pest in the rice fields. If it should get started in the rice fields in Sacramento Valley, it probably would be as great a pest there. Another shell, *Planorbis corneus*, a European species, has been imported for the purpose of cleaning moss that grows on the glass inside aquariums. We have a native species that will do the work just as well, which can be picked up in almost any pond or stream. Another species, *Helix lacta* [*Otala lactea*], a European species, was through the promptness of the Horticultural Commissioner immediately destroyed. I cannot speak too strongly as to the possible danger of these importations. Surely the loss, annoyance and expense to which the Country has been subjected in the introduction of *Helix pisana* at La Jolla should be sufficient reason for caution."

1926 "The Department of Mollusks and Marine Invertebrates is in satisfactory condition. Much work has been done in identifying, mounting and labeling the Eocene and other fossils. Several hundred sets of these fossils have been placed in order and catalogued and are now available for study.

An earnest class of students of shells meets every Friday in my room, and another class meets at intervals. Many visitors bring shells for identification.

Dr. Fred Baker has given to the Society about 150 species of Hawaiian shells, most of which are new to the Society's collections. Several small donations from others have been received from time to time. As heretofore I would urge the collecting of Lower California marine fauna. This would coordinate with the Society's already large collections from California and would make our collections compare with the best on the east coast. A small collection of shells picked up last spring on the Gulf of California at San Felipe by Mr.

Abbott and Mrs. May Canfield gives an indication of the rich field that can be worked there.

A rare crab (*Uca monolifera*) from the Gulf of California, donated by Griffing Bancroft, was new to the Society's collection. A.W. Galloway has taken up the task of collecting isopods for the Society and we have hopes of great help from him.

A noteworthy happening this year is the finding for the first time of fresh water crawfish in San Diego County. A specimen taken August 13 in a pool in the Escondido River at Escondido was given to the Society by Frank Gander, of the O'Rourke Zoological Institute. Another specimen of the same species, donated by Philip C. Barney, was found by him on September 26 in the head of Spooks Canyon, about five miles from Rancho Santa Fe. I have not yet identified the specimens, but Dr. Myrtle Johnson, of the San Diego State College, and Samuel Harter, of our own Society, have donated material for comparison toward that end."

Kate traveled with her husband Frank on many, if not all, of his collecting trips after they were married. Due to Frank's poor hearing and reputation as a careless driver, Kate forbade her husband to make collecting trips alone. During the trips she would assist as his secretary recording their travels and specimen collections (Figure 3).

Excerpts quoted from Kate's diary in May 1902 tell a bit of what is was like to go on a scientific collecting trip [starting in Witch Creek in San Diego County] in those early days.

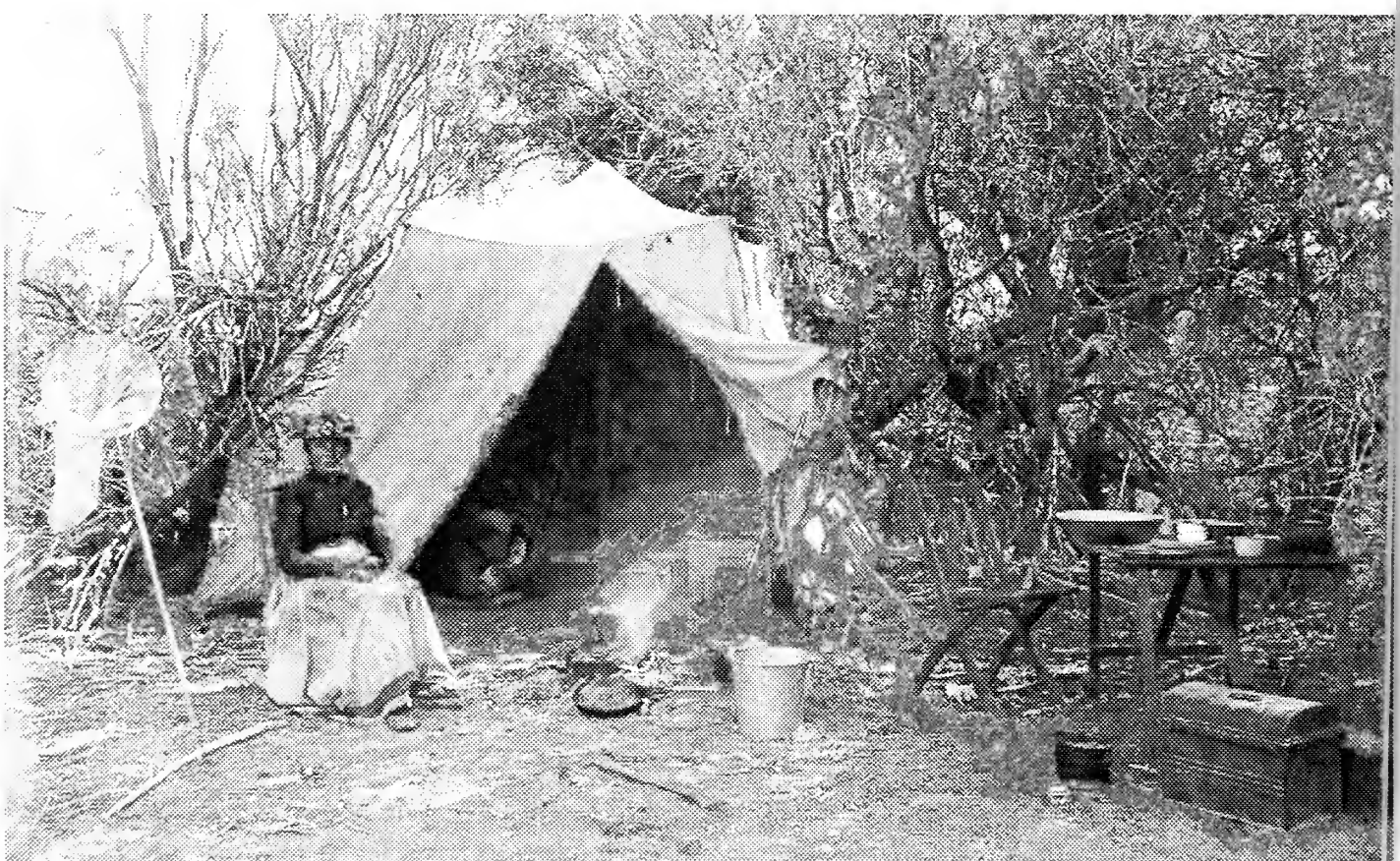


Figure 3. Kate at the campsite on a collecting trip. Photograph from the SDNHM Research Library Archives.

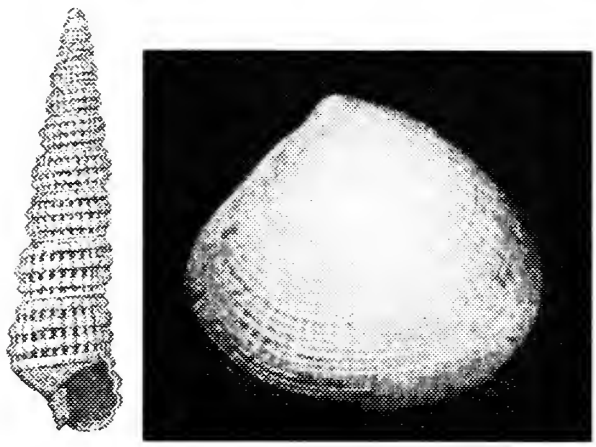
"May 5—Started this morning for a four months collecting trip for the Biological Survey Department of Agriculture. A fine day, got off without mishap about half past nine. Our party consisting of myself, three horses—George, Dick and Flora, the little dog Bobs, Carl Field the cook and teamster, and Mr. Stephens our head, called in the official papers "Field Specialist", but to us our leader and our sole dependence for we are as helpless as sheep in everything pertaining to camping out and hunting. Our [turn out] looked uncommonly fine our wagon with its new coat of black and yellow paint and brand new white duck cover. While Carl came gaily behind draging poor little Bobs with a string tied round his neck. A short visit to the courthouse and many good byes and good luck as we are really off our faces headed north we travel the main road. Dick our new horse has lived in a pasture for several months and is trying now to out travel all and everything. Mr. Stephens has to try to hold him in all the time tho the horse does not act bad at all, only very eager to go. And Flora who is in the wagon with him is an old horse whom we only expect to play third fiddle anyway. In the afternoon we twice see a kangaroo rat dead in the road. A man stoped and gave us a paper in which I see that Queen Willemina is likely to die and a bad battle with the Moros in Mindano. We did not go to Delmar [Del Mar] thinking the main road north might be the best road. There is just a few Torrey Pines to be seen on the top of the blufs after leaving Soronta [Sorrento] on the left-hand side of the road. (The Torrey Pine grows on one of the Pacific Coast Islands and from La Jolla is about 20 miles north of Delmar. Being one of the most restricted species of trees known.) I may as well say here that these Torrey Pines are a species found nowhere but on the California Coast. They are not a handsome tree as most pines, as living on the top of blufs close to the ocean the wind beats against them and contorts their branches and head till they look skruby trees. They are also very difficult to raise from seed so that it is quite likely that in a few years they will be extinct. Late in the afternoon we were caught in a great swarm of starving mosquitos. They made a great meal off us and the horses. These mosquitos are very large; they must be twice as large as the ordinary kind that come in the houses. They flew around till we went to bed. Set out a few traps. Traveled 22 miles."

"May 7—All day driving through Santa Margarita Ranch we were told there is 10,000 cattle on the Ranch and we are not yet out of San Diego County tho I believe very nearly. We still see many black birds. The grasshoppers will be bad this year for there is a great number of half-grown ones now and we saw many hawks feeding on them. This morning we passed San Onofre. Here there is a large walnut orchard. The trees are apparently only lately set out there must be several acres, a somewhat sandy place. At noon we came to the ocean a nice sandy beach with round boulders at near low tide had a few minutes collecting. I think it would have been profitable to have had a good hunt there. I have collected nothing but a few beetles which I saw eating the wild convulvus [convolvulus, a genus of morning glories]. Cockchaffers [any kind of scarab beetle] seem to be plentiful, there is four or five on and around my book as I write. After camping we were turned off our place by the caretaker as we had camped near to where the cattle come to drink and we have to camp now at a regular camp ground, which is never quite so nice as being alone. There is one wagon and two bicyclers here tonight. Here we have our bed clothes filled with stickers and we see a goffer come to the surface of his hole. It seems quite unheed the light of the lanthorns and we try to trap it but it filled the trap with dirt and after awhile something frightened it and it went down not to come up again. This place is called San Mateo Creek. We can hear Sea Lions roaring and hope to catch a glimpse of them tomorrow. We also hear that there is deer to be found in the mountains round. Frank has set traps tonight for mice and shrews. Traveled 16 miles."

In addition to cataloguing numerous collections and preparing many exhibits, Kate also taught natural history to the local children of San Diego. Students who were given their first taste of natural history by

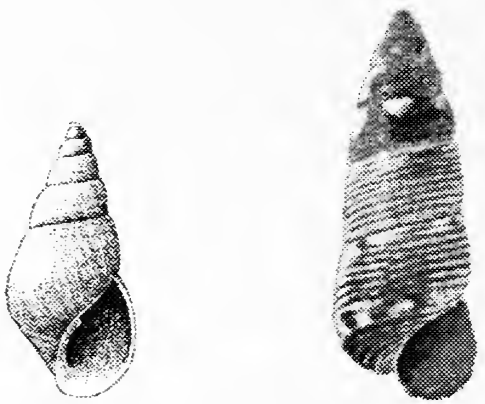
Kate Stephens included Laurence M. Huey, who later became the Museum's Curator of Birds and Mammals, as well as Carl L. Hubbs. Dr. Hubbs became a world-class ichthyologist and biology professor at Scripps Institution of Oceanography, in addition to a Trustee for the San Diego Society of Natural History.

In honor of Kate's contributions, five molluscan species were named for her — *Amphithalamus stephensae* Bartsch, 1927 (Figure 2); *Cerithiopsis stephensae* Bartsch, 1909 (Figure 4); *Gafrarium stephensae* Jordan, 1936 (Figure 5); *Odostomia stephensi* Dall & Bartsch, 1907 (Figure 6) and *Rissoina stephensae* Baker, Hanna & Strong, 1930 (Figure 7).



Figures 4, 5. (4) *Cerithiopsis stephensae* Bartsch, 1909. Holotype, 9 mm. Type locality: Port Frederick, Chichagoff Is., Alaska. Photo from Proceedings of the United States National Museum 37(1711):399. Paratypes are in the San Diego Natural History Museum mollusk type collection. Originally the species name was *stephensi*, but since it was named for Kate, the species was later emended to *stephensae*. (5) *Gafrarium stephensae* Jordan, 1936. Holotype, 5.8 mm. Type locality: Bahía Magdalena, Baja California Sur, México. Photo from Contributions from the Department of Geology of Stanford University 1(4): pl. 19, fig. ll. Now considered a synonym of *Gouldia californica* Dall, 1917.

In 1936, after 30 years of service to the museum, Kate retired from her curatorial position. In all, she served as the Society's Curator of Collections, Assistant Director, Secretary, Librarian, and as Curator of Mollusks and Marine Invertebrates. The Natural History Museum Bulletin, No. 111 (February 1936) claimed that "In fact, it can be truly said that were it not for the devotion of Mrs. Stephens and her husband, Frank Stephens, there may be no Natural History Museum in San Diego today."



Figures 6, 7. (6) *Odostomia stephensi* Dall & Bartsch, 1909. Holotype, 5.3 mm. Type locality: Bear Bay, Baranoff Island, Alaska. Illustration from Bulletin of the United States National Museum 68, pl. 24, fig. 5. The species was named for Kate even though the species is *stephensi*. It is now considered a synonym of *O. tenuisculpta* Carpenter, 1864. (7) *Rissoina stephensae* Baker, Hanna & Strong, 1930. Holotype, 4 mm. Type locality: Cabo San Lucas, Baja California Sur, México. Illustration from Proceedings of the California Academy of Sciences, 4th ser., 19(4): pl. 1, fig. 4. Paratypes are in the San Diego Natural History Museum mollusk type collection.

Kate once claimed that "Frank taught me all I know of Natural History as a science." In her own right, she possessed a considerable knowledge of general natural history with a focus on marine invertebrates. Kate was fully acquainted with living mollusks, both marine and non-marine and developed an expertise in the fossil field, not only of mollusks but also of invertebrate paleontology in general. Although retired, Kate remained active in her conchology research well into her 90th year. Over 100 years old at the time of her death, she was the Society's oldest living member both in years and length of membership. The personal collections of Kate and Frank Stephens were donated to the museum posthumously in 1955.

ACKNOWLEDGMENTS

I would like to thank Margaret Dykens, Scientific Librarian at the Museum's Research Library and Archives, for her assistance on this project. This article originated as a biography of Kate Stephens for the San Diego Natural History Museum's website and was modified for publication in *The Festivus* by Carole M. Hertz, Associate in the Department of Marine Invertebrates.

REPORT OF THE COMBINED AMS/WSM MEETING

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The 66th American Malacological Society (AMS) and 33rd Western Society of Malacologists (WSM) Joint Congress entitled "Crawling Towards the New Millennium" was held July 7-12 at San Francisco State University, San Francisco, California. There were approximately 100 people in attendance. There were social events and field trips in addition to two symposia, general sessions, and a poster session. The meeting opened with registration and a Welcoming Reception. on the 7th.

The symposium, "The Place of Malacology in Comparative Biology," was convened by Michael Ghiselin on the 8th and its papers filled the entire day. Many of them were historical reviews by noted experts in their fields and were philosophical in nature. The one I found outstanding was "Chemical Defense in Opisthobranchs: From Comparative Chemistry to Comparative Biology" by Guido Cimino *et al.* He summarized 20 years of work including current projects being conducted worldwide. He stated that, "Now it is possible, knowing the chemical structure of a compound present in the extract of an unknown opisthobranch, to suggest the order, and sometimes even the family or the genus of the mollusc .... Chemical compounds present in molluscs can be derived from their habitual diet. The chemistry of opisthobranchs is very often the chemistry of sponges, algae, soft corals, tunicates and so on. However, not all secondary metabolites from opisthobranchs have a dietary origin. In fact, some species are able to modify dietary metabolites whereas others are able to biosynthetize de novo their chemical arsenal."

On the following day, Ángel Valdés convened the second symposium, "Systematics and Ecology of Opisthobranch Gastropods." A very interesting paper in the Symposium by Cynthia Trowbridge was entitled

Figure 1. David R. Lindberg presenting his paper.

"Changes in Host-plant Use of Ascoglossan (= Sacoglossan) Sea Slugs on Introduced Macroalgae." She found that the sea slug *Elysia viridis* on Scottish shores preferred to associate with and consume the introduced green macroalgae *Codium fragile* rather than the native alga. Recently metamorphosed juvenile *E. viridis* (from *Codium fragile*-feeding parents) were generally not able to feed or grow on the native alga.

In a General Session that afternoon, I was fascinated by a paper by Erika Iyengar entitled "Kleptoparasitism by the Marine Snail *Trichotropis cancellata* on Tubiferous Marine Polychaete Worms." She showed slides of the snails astride the tube-dwelling

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polychaete worms using their proboscis to steal food from the worms while the worms were in the act of suspension feeding. She concluded that *Trichotropis cancellata* is a facultative kleptoparasite and her field work indicates that this is the dominant feeding mode of this snail. A second paper I found controversial and thought-provoking was David Lindberg's "An Introduction to the Patellogastropoda of the Northeastern Pacific, or Forget (almost) Every Binomial Name You Ever Learned for This Group." Lindberg (Figure 1) was one of the most prolific authors at the meeting, either authoring or co-authoring four papers. He has disowned his previous work in favor of a cladistic approach based on DNA.

The auction, the second of the three social events for the meeting, was held that evening. The auction material consisted of books, papers and shell-related items. The auctioneers were Hans Bertsch and Pablo Penchaszadeh and they were very entertaining in their attempts to get the most money for a rather meager supply of auction material. Wine and soft drinks were available and the audience got into the mood of reckless bidding and some of the items went for outrageous prices. The money raised goes to support student grants and everyone had a very enjoyable evening.

The following day consisted of General Sessions of contributed papers, many of them presented by the large number of students attending the meeting. Eugene V. Coan presented the first paper of the meeting on taxonomy discussing the "Eastern Pacific Species of the Venerid Genus *Cyclinella* (Bivalvia)." His research based on morphology concluded that despite the number of available names, there are only three eastern Pacific species of *Cyclinella*. Other papers of the General Session which were of interest to me were Steven Lonhart's "The Changing Ranges of Eastern Pacific Marine Invertebrates: The Influence of Oceanographic and Anthropogenic Mechanisms" and Audrey Aronowsky's paper, "Phylogenetic Relationships of Moon Snails (Gastropoda: Naticidae)." She used 55 extant taxa (45 naticid, 10 outgroup) and 106 characters to reconstruct a hypothesis of relationship within the family and examine the family's position within the Gastropoda. Results support the placement of *Eunaticina* in Polinicinae rather than in Sininae. Sister group relationships support a pre-Cretaceous origin for Naticidae.

The afternoon of the 11th was devoted to a Poster Session. The quality of the posters was excellent. I was particularly impressed by Daniel Geiger's "ABMAP: Abalone Distribution on the Web." You could sit in front of the computer screen and select any part of the world, find out which species occur there, and then get information about them and look at large photographs of those species. An interesting future project was one by José Leal (Figure 2) entitled, Morphological Systematics of the Mactridae (Bivalvia: Mactroidea): a Research Proposal."

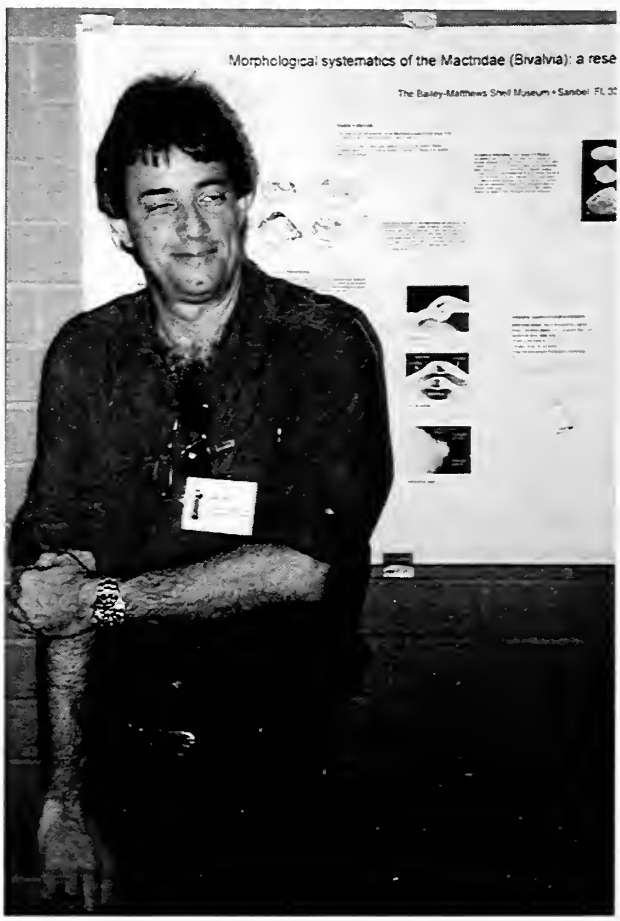

Figure 2. José H. Leal in front of his poster.

The Banquet was held on the evening of the 11th at the California Academy of Sciences. It was an outstanding event in a magnificent setting. It started with an hour of hors d'oeuvre and an open bar, and was followed by a marvelous gourmet dinner. The only thing missing was a keynote speaker.

On the last morning, there were field trips to the Monterey Bay Aquarium and to San Bruno Mt. and Pt. Reyes National Seashore.

The next annual meeting of WSM will be held in San Diego, California from 27-30 June 2001.

BOOK NEWS

Bivalve Seashells of Western North America
Marine Bivalve Mollusks from Arctic Alaska to Baja California
by Eugene V. Coan, Paul Valentich Scott and Frank R. Bernard. 2000.
Santa Barbara Museum of Natural History Monographs Number 2.
Studies in Biodiversity Number 2
viii + 754 pages, 124 plates, numerous text figures.
Price: $99 plus tax and handling [$12 US; $17 international]
Order form available at: http://www.sbnature.org.atlas/bivbook.htm

A comprehensive monograph on the Pacific coast bivalve fauna has been needed for a long time, and so it is a real pleasure to have Bivalve Seashells... in hand. This massive volume has been in the works since 1965, begun by Frank R. Bernard, and completed by Eugene V. Coan and Paul Valentich Scott. I have been privileged to see and comment on draft sections, starting in the mid-1980s (as I am sure have many of the readers of *The Festivus*). The authors have incorporated contributions from well-known worldwide experts, for example, R.G.B. Reid for Solemyoidea, A.I. Kafanov, J-M Poutiers, and J.A. Schneider for Cardiidae.

The authors' purposes, stated in the introduction, are "(1) to aid in the identification of northeastern Pacific bivalves, (2) to provide access to the published information about these species, and (3) to pose questions we feel require additional study." The book succeeds superbly in all three.

A brief history of the scientific study of Pacific coast mollusks puts this work into historical perspective. "It is difficult to understand why a region so long studied by numerous prominent workers, and which attracted so many students, and collectors, should lack a comprehensive monograph of the marine molluscan fauna." The introduction continues with a laundry list of problems awaiting further research. Well-written sections on biogeography, nomenclature, origin, and techniques for the study of Bivalvia follow. The thorough and well illustrated presentation of bivalve anatomy leads logically to sections on life habits and classification. All these sections are highly recommended reading. Glen Jameson, of the Pacific Biological Station in Nanaimo, contributed an interesting section on clam fisheries, toxicity, and habitat disturbance, all clam-human interactions.

The heart of the book, a comprehensive scholarly identification guide to northwestern Pacific bivalves, begins with an artificial key to bivalve superfamilies. While I haven't had occasion to use the key, it is designed to present novice users with clear choices, and the hinges, muscle scars, ribs, and striae of bivalve shells are illustrated within the key, where they're needed.

In the systematic section that follows, subclasses and superfamilies higher taxa are arranged in a familiar order, reflecting the current state of inferred phylogenetic relationships. Dichotomous keys lead the user to family or genus. Character tables present a comparison of species within a subfamily, and (with my limited testing) work well. Characteristics that delineate class, superfamily, family, and genus are described succinctly. A list of the relevant literature concludes the description of each taxon. For most genera, there is an illustration of "soft part" anatomy: placement of muscles, gills and siphons. Each species merits a superb photograph. I was very pleased with the clarity of these illustrations. Texture, hinge structure, and muscle scars are well-lighted, so that the pictures are quite unambiguous.

The book is comprehensive, Beaufort Sea Atlantic-Arctic species that barely make it into the northeastern Pacific fauna, (*Bathyarca glacialis; Boreacola maltzani*) as well as west Pacific species whose North American distribution extends only as far as the eastern Aleutians (*Chlamys albida; Astarte vernicosa*) are included. My colleagues working at the other extreme should surely find similar examples. Intriguing deep water species are also given their due -- delicate pristiglomids, glass scallops, verticordiids and poromyids. Three new species, *Adontorhina lynnae, Tellina cadieni,* and *Tresus allomyax* are described here. The authors have been thorough in their scholarship to find more appropriate names for

some familiar species: *Macoma golikovi, Mendicula ferruginosa*, for example.

The volume concludes with a thorough Guide to Literature: well-selected regional works, the relevant publications on bivalve anatomy, classification, growth and form, genetics, reproduction and larval growth, ecology and biogeography. The Literature Cited section is massive.

There is much to be learned about these fascinating animals. In the introduction and throughout the text, questions are posed to malacologists. Unmentioned, but also deserving our attention are the several species designated "sp. A" and a number of genera for which an illustration of internal anatomy is lacking.

The book's format is most attractive. Marie Murphy and Patricia Sadeghian deserve praise for the book's design and images. In a work this massive some errors are probably inevitable: there are a few seeming inconsistencies in the format (that for the descriptions of the three new species, for example, and errors in geographic place names). This is a large, heavy book, designed to be used. The thick glossy pages will lie flat and open on your work table. The wide margins invite annotation, perhaps to begin to answer the questions the authors pose.

Nora Foster
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In Memoriam

Bertram (Bert) C. Draper
April 30, 1904 - August 7, 2000

It is with sadness that we report the passing, at 96 years, of Bert Draper. Bert was active in malacology for many years and a longtime member of the San Diego Shell Club among other malacological societies. Those of us who knew him remember his beautiful, labeled displays of micro-mollusks, his wonderful micro-photography and his presentations on different groups of tiny mollusks at national malacological meetings. His papers appeared in publications such as *The Veliger* and *The Tabulata*. *The Festivus* was the fortunate recipient of seven of his articles on minute shells [see below]. Bert had an enthusiastic and friendly nature and will be missed by all who knew him.

1971. Minute shells. 2(5): 1-4.
1972. Check list of shells found in scrapings from *Spondylus princeps* taken at a depth of 40 feet, southeast of Santa Rosalia, Baja California, 1969. 3(4): 5-7.
1975. Checklist of shells collected at Cholla Bay, Sonora, Mexico. 6(11): 67.
1982a. Observations of living *Caecum crebricinctum*. 14(2): 29-32, figs. 1-8.
1982b. Notes on *Turveria encopendema*, a parasite on sand dollars. 14(11): 129-131, figs. 1-7.
1985. Mollusks which truncate their shells and how they plug the openings. 17(1): 3-9, figs. 1-19.
1986. The family Barleeidae in the eastern Pacific according to the "Review of the Genera of the Barleeidae..." by W. F. Ponder (1983). 18(2): 16-18.

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Meeting date: third Thursday, 7:30 PM,
Room 104, Casa Del Prado, Balboa Park, San Diego

PROGRAM

WRITING AND PUBLISHING YOUR OWN SHELL BOOK?

Paul Valentich Scott, of the Santa Barbara Museum of Natural History and coauthor of the new bivalve book, will give the program. It will be in a workshop format with folks thinking about shell books THEY have dreamed of publishing, and bringing the ideas to the meeting. Paul adds, "Also, of course, anyone is welcome to bring NE Pacific bivalves and I will be happy to help with identification. This would include going through the superfamily key and family character tables for those that want to learn." He is also very willing to sign any of his books which members have purchased.

Meeting date: October 19, 2000

CONTENTS

CLUB NEWS

The Club's Annual Christmas Dinner Party

The Club Christmas Party will be held on Saturday evening December 2nd in the Crystal Room of the Admiral Kidd Club with festivities beginning at 6:00 p.m. A map to the Club will be in the November issue.

On the menu there are three choices of entree: Prime Rib of Beef (English Cut au jus), Chicken Kiev (boneless breast of chicken filled with herb-flavored butter) or Broiled Halibut (steak basted with lemon butter sauce). These are all served with tossed green salad, bread and butter, vegetable, and coffee and/or tea. Dessert choices are: Old fashioned Cherry Cobbler or New York Style Cheescake.

The cost of the dinner including gratuity is $21.00. Further details including information on the shell gift exchange and map will be in the November issue.

Save the date. This is always a very special event!

Changes to the Roster

New Member

Forner, Monika M., 575 Otay Lakes #32, Chula Vista, CA 91913. 619-397-0970.

Changes of Address

Underwood, Doris K, 698 Sheridan Woods Dr., West Melbourne, FL 32904.

King, Robert L., 2635 2nd Ave., #205, San Diego, CA 92103-6555.

The September Party

"Munchie Madness," held at the home of Marty and Terry Arnold on Saturday evening the 16th, was a lovely affair. The Arnold's garden was pleasantly cool and the friendships decidedly warm. The munchies were delicious and plentiful as always, and the conversations most enjoyable. All who attended had a very good time.

Our thanks to Marty and Terry for hosting this event once again.

A Change in Some Subscription Rates

As a result of postal increases for overseas surface mail, *The Festivus* is forced to increase the membership/subscription rate for overseas surface mail subscribers from $18 to $20 beginning in 2001. All other membership rates will remain the same. See front page for other membership information.

All memberships received after October 1 will be applied to the year 2001.

REPORT OF COA 2000

Without question, the COA Convention for the year 2000 held in Houston Texas at the Green's Point Wyndham Hotel was a resounding success. Hosting the annual convention is no small matter, but the volunteers who organized and ran the show this year made it look easy. They not only put on a great convention, they proved that Texas hospitality is no myth. Along with a full slate of programs, field trips and silent auctions (which ran continuously throughout the week), there still seemed to be plenty of time for shell talk with friends old and new. If that wasn't enough, the voice auction alone brought in the greatest dollar amount for any single event in COA history, an astounding $22,000.

At the COA club rep. meeting, the main topic of discussion once again was the problem of shrinking membership numbers among the various clubs. The number one reason returned on surveys about this problem was that members (past and present) felt too much time was devoted to "official club business." In short, they wanted less time devoted to organizational matters during regular meetings and more time to simply discuss their favorite subject - shells - with other members, which is why most members join shell clubs. Failure to respond to this is resulting in the continuing decline in membership of many clubs nationwide.

Kim C. Hutsell

ALGAE IN SHELLS OF *PODODESMUS MACROCHISMA* (DESHAYES, 1839)

ROLAND C. ANDERSON

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The green false-jingle, *Pododesmus macrochisma* (Deshayes, 1839), is one of what I feel are neglected mollusks, animals that are common but have been little studied in recent years, especially as to their natural history. I like to look at things that are uncommon, or that few other people are working with. Since we have numerous *P. macrochisma* growing in the tanks, pipes and filters of the Seattle Aquarium, and since they are also common in my local waters of Puget Sound, Washington State, USA, I took a look at what had previously been done with the jingle shell to see if there was something interesting about it that hadn't been investigated yet.

There are only a couple of major works in the literature on *Pododesmus macrochisma*. Numerous authors have discussed the nomenclature of these shells, and a good summary is found in Chace (1972). He presents a compelling argument for considering all West Coast animals to be one genus and species - *Pododesmus* Philippi 1839, type species *Monia macrochisma* Deshayes 1839. Carpenter (1872) mistakenly changed the spelling to *macroschisma*. Modern taxonomists (e.g. Coan, *et al.*, 2000) have gone back to the original spelling.

Kellogg (1915) published a work on the ciliary mechanisms of bivalves. He found the distortion of the soft body parts of *P. macrochisma* interesting. He ascribed said asymmetry to the arrangement of the byssus in the lower (right) shell, the animal's habit of conforming to the surface it adheres to, and its severe left-right compression. The lower shell grows around the byssus and meets to form a teardrop-shaped hole through which the byssus attaches to a firm surface. He said of its ciliary mechanism "in no case has a more furious ciliary action been observed." I know from personal experience that *P. macrochisma* must have an efficient feeding system, since it is able to survive and thrive handily in the filtered sea water systems at the Seattle Aquarium which strain out particles as small as 10 micrometers (Anderson, 1987). Its "furious ciliary" action may contribute to its feeding under such conditions.

The comprehensive monograph by Yonge (1977) delineated form and evolution in the superfamily Anomiacea. He posited that *Pododesmus* were the most primitive of the superfamily and further described in great detail the shells, their structure, and their probable evolution and internal organs. Carter (1990) summarized the shell microstructure of the family.

Essentially, all other references about *Pododesmus macrochisma* are from shell identification manuals (e.g., Quayle, 1960; Rice, 1973; Abbott, 1974; White, 1976; Foster, 1991; Coan *et al.*, 2000) and such natural history guides as Ricketts & Calvin (1968), MacGinitie & MacGinitie (1968) and Kozloff (1983). Little else of substance has been published on *P. macrochisma*, with the possible exception of Haderlie & Abbott (1980). In addition to a general description of the animal, they state "the green color inside the upper (and sometimes lower) valve is due, at least in part, to minute algae living within the shell." None of the other references mention this alga in the shell nor do the references they cite, so this referral to the algae may be original material. I haven't been able to find any other references to algae in the shells of *P. macrochisma*, nor in any other shells.

Now, aside from its asymmetry and "furious ciliary action," I found this aspect interesting. The idea of algae living in the shell titillated me. What good could come from the alga from living in the shell matrix? Is this an example of symbiosis, commensalism, parasitism, or none of the above? In

other cases, algae live in the tissues of corals, *Tridacna* clams and sea anemones (Zann, 1980). There are even parasitic marine algae, e.g., those that grow in the tissues of sea pens of the Pacific Northwest and eventually kill them (Birkeland, 1968).

I started my investigations by trying to confirm that algae live in the shells. I collected live jingle shells (Figure 1) from two depths (3 m and 30 m) by scuba diving near the Hamma Hamma River on Hood Canal, a branch of Puget Sound, and from the raw sea water filters of the Seattle Aquarium. The jingles

Figure 1. Green false-jingles, *Pododesmus macrochisma,* growing on a rock from 3 m deep water in Hood Canal (Washington State).

from within the filters had lived totally in the dark. The inlet for the filters is 10 m deep at the Aquarium. They have obviously been thriving in the filters (Figure 2). The upper shells were pried off the rocks or filter surface with a knife. Any epibiota was scraped off the shells and they were scrubbed thoroughly with a stiff brush in running sea water, dried and examined. Compared subjectively, I couldn't tell that there was much difference in the color (Plate 1, figure 1).

I then took a shell from the 3 m depth, pulverized it in a mortar and pestle, added the powder to sea water in a beaker, shook and stirred the liquid and looked at a drop of the slurry under a compound microscope. At 1000 power I saw clumped cells along with shards of shell material on the slide. The presumptive algal cells were light green with an

Figure 2. Green false-jingles, sea anemones and barnacles growing in the sea water filters of the Seattle Aquarium.

orange-red dot in the center. They superficially resembled the *Chlorella* that Cooke (1975) found in the tissues of the heart cockle *Clinocardium nuttallii* (Conrad, 1837). I also used a vital stain (rose bengal, which stains living tissue) on the condensate. It caused various other bits and pieces to be stained red but which could not be determined as algal cells.

Harkening back to my high school biology classes, I recalled that green chlorophyll is soluble in alcohol, so I decided to see if there was a comparative difference spectrophotometrically that I could detect between the shell samples from the three depths. The shells (N = 10 each) were individually pulverized, and 1 g of the shell material was added to 25 ml of a 70% solution of ethyl alcohol. The samples were stirred and allowed to sit overnight. The green color was not all leached out by the alcohol; this corroborates that the green may be partly due to color in the nacre. The next day, the absorbance of each sample was read with a spectrophotometer at 500 and 600 nanometers (nm); "green" as we see it is 550 nm.

There was a considerable difference between the 3 m samples and the others (Table 1). The difference was significant at the 500 nm frequency ($F_{1,18}=4.49$, $p<0.046$), but not at the 600 nm level ($F_{1,18}=3.30$, $p<0.083$), using multivariate analysis of the variance (Sigma Soft^{R} software, version 3.5, 1995).

What does this tell us? First of all, it tells us that algae in the shell are growing in the shallow water

layers and not the deeper. This may seem rather obvious, but there are algae that can live in deeper waters. Many filter feeders can live on phytoplankton well below the photic zone, including *P. macrochisma* itself. We don't know precisely what *P. macrochisma* eats, but presumably it eats plankton and suspended matter like other bivalves (Morton, 1967).

It also tells us that algae once in the shell probably continue to grow rather than constantly being added to the shell. We can know this because of the difference between the shallow-water shells and the shells from the filters. The filter jingles were growing in the dark, but still were exposed to the unfiltered, well-mixed surface waters of Puget Sound, presumably containing algal cells. Therefore, there was an opportunity for the alga to be added to the shell, but presumably they were not surviving due to the dark conditions.

The fact that *P. macrochisma* lives down to at least 35 m deep (Quayle, 1960) means it is eating something other than surface plankton. This is corroborated by the jingles that are growing in the tanks supplied by the filtered sea water at the Seattle Aquarium. Our sand filters are designed to filter particulate matter as small as 10 micrometers. There are certainly nanoplankton smaller than this (Smith, 1977), and these may be what *P. macrochisma* collects and eats with its "furious ciliary action."

I'm afraid these elementary observations raise more questions than they answer. If *Pododesmus* are the most primitive of the Anomiidae as Yonge (1977) suggests, does that mean they have been around the longest unchanged, and hence would have the greatest possibility of evolution working on it or its commensals? What does *P. macrochisma* actually eat? What is the identity of the alga living in the shell? Does the jingle actively or passively incorporate the alga into its shell, is it accidental, or does the alga actively seek out the shell to settle in? How is the alga incorporated into the shell matrix? How does the alga reproduce? Who benefits from this relationship? I don't know - maybe the alga benefits by not being eaten by the jingle or other filter feeders. I hope these questions might stimulate further research on this "neglected mollusk."

ACKNOWLEDGMENTS

Paul Valentich Scott, Alan Kohn, and Eugene Coan provided thoughtful comments on this project. Shawn Larson performed the statistical analyses, Katherine A. Krogslund completed the spectrophotometric analyses and Leo Shaw took the photographs. I thank the Seattle Aquarium for allowing me to carry out these investigations.

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TABLE 1

MEAN ABSORBANCE (+/- 0.005 absorbance units) OF THE SHELL/ALCOHOL SOLUTION (N = 10 each)

Depth	500 nm	600 nm
3 m	0.0484	0.0305
30 m	0.0269	0.0196
Aquarium filters	0.0263	0.0198

Note: the color "green" as we see it is 550 nm

THE HABITAT OF *PLESIOTHYREUS OSCULANS* (C. B. ADAMS, 1852) (GASTROPODA: PHENACOLEPADIDAE)

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C. B. Adams named *Crepidula osculans* from a single specimen from an unknown habitat in Panamá. The limpet-like shell was placed in the new genus *Phenacolepas* by Pilsbry, 1891, who noted that the term *Phenacolepas* means "a deceptive limpet". Synonyms are *Plesiothyreus cancellata* (Pease, 1860), and *P. tenuisculpta* (Thiele, 1909) (Christiaens, 1988).

In his monograph on the Phenacolepadidae, Christiaens (1989), synonomized the genus *Phenacolepas* with *Plesiothyreus* Cossmann, 1888, and figured the radula. He comments that phenacolepid specimens are rarely found alive, and that he does not know if some Phenacolepadidae are parasites as are some Capulidae.

Little has been written on the habitat of *Plesiothyreus osculans* (C. B. Adams, 1852). The pinkish-red animals, which can be seen through the shells have tentacles almost as long as their shells (Plate 1, figure 2). They live in small colonies attached to the undersides of smooth, clean appearing rocks. These rocks are deeply bedded in a mixture of gravel and sand in the intertidal areas where the receding tide leaves a small stream of water as it ebbs. Animals from Bahía la Cholla and Puerto Lobos, Sonora, and San Felipe, Baja California, México, all seem to prefer this habitat. The fragile shell is clear and almost transparent. The largest shell in my collection is from Bahía la Cholla, Sonora, México, and measures 7.4 mm in length.

Keen (1971) gives the distribution of *P. osculans* as from the northern end of the Golfo de California, México, to Panamá. This distribution was extended south to Manabí Province, Ecuador (Shasky, 1984), and includes Hawaii, Fiji, Hong Kong, Cook Islands, Réunion, and the Red Sea (Christiaens, 1988). Live animals were taken in the Islas Las Perlas, Panamá (Skoglund & Koch, 1993).

The photo was taken by the late Paul Skoglund.

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TWO JUVENILE *SPONDYLUS* SPECIES IN THE GOLFO DE CALIFORNIA, MÉXICO

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Two of the most aesthetically pleasing species of *Spondylus* in the Golfo de California are *Spondylus princeps* (Broderip, 1833) and *S. calcifer* (Carpenter, 1857). Unfortunately, even the meticulously cleaned adult specimens of these two species show the scars of predation and erosion from encrusting organisms. Normally, spines and surface sculpture on the early portions of the valves are completely absent on adult specimens. Longer spines, too, suffer damage from attempted predation by fish, octopus and rays, or as a result of careless handling during and after collection. Few specimens of either species make it into the collector's cabinet in pristine condition. The most spectacular display of *S. princeps* and *S. calcifer* can be seen only in carefully collected juvenile specimens such as the specimens shown here in Plate 1, figures 3-6.

Spondylus princeps is found from Isla Cedros, on the Pacific coast of Baja California, Bahía de Los Angeles on the Baja side of the Golfo de California and at Isla San Pedro Nolasco, on the mainland side of the Golfo de California south to Isla La Plata, Ecuador. *Spondylus calcifer* ranges from the upper Golfo de California at Puerto Lobos to Perú.

For further information on these remarkable bivalves, see "The genus *Spondylus* (Bivalvia: Spondylidae) of the Panamic Province" by Skoglund & Mulliner (1996) [*The Festivus* 28(9): 93-107, 4 color plates].

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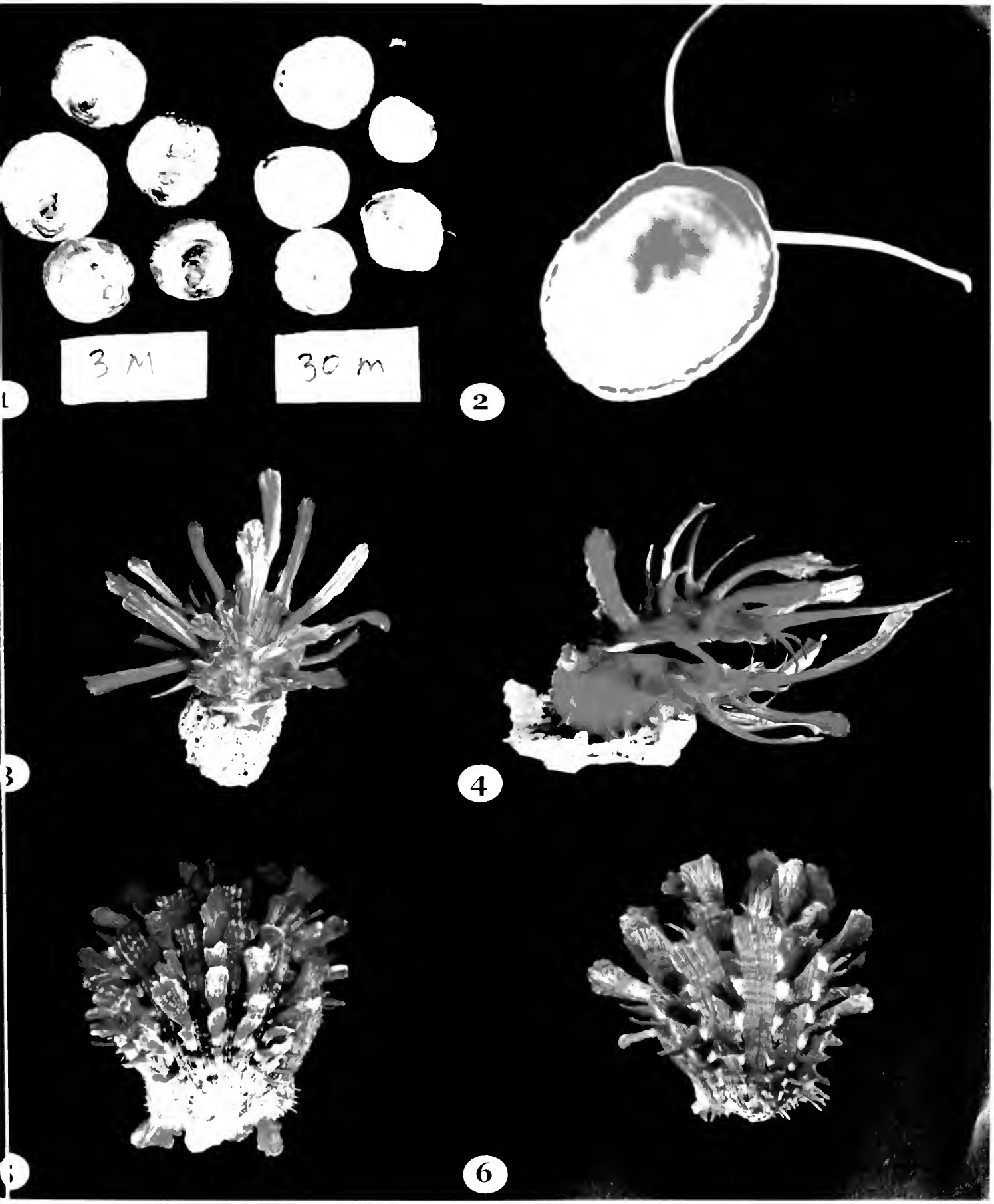
FIGURE LEGEND

Plate 1, figures 1-6. Figure 1. *Pododesmus macrochisma*, a random assortment of the top shells of the green false-jingle from 3 m deep and 30 m deep showing their green color, some of which is due to algae in the shells. Photo: Leo Shaw, Seattle Aquarium. Figure 2. *Plesiothyreus osculans*, 7 mm, Bahía la Cholla, Sonora, México. Photo: Paul Skoglund. Figures 3, 4. *Spondylus princeps*, 32.2 mm juvenile, taken in 40 m on rock rubble off Isla Danzante, Golfo de California. Figure 5. *Spondylus calcifer*, 41.5 juvenile, taken in 10 m on coralline algae rubble in Bahía Concepción, Golfo de California. Figure 6. *S. calcifer*, 37.5 mm juvenile, taken in 10 m on coralline algae rubble in Bahía Concepción. Photos 3-6: taken by Linda Hutsell with a Sony Mavica 88 digital camera.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THE FESTIVUS

A publication of the San Diego Shell Club

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MEMBERSHIP AND SUBSCRIPTION
Annual dues are payable to San Diego Shell Club.
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Website at: http://www.molluscs.net/SanDiegoShell Club/index.html Email: cmhertz@pacbell.net

Meeting date: third Thursday, 7:30 PM,
Room 104, Casa Del Prado, Balboa Park, San Diego

PROGRAM

Abalone in Time and Space

Daniel Geiger, of the Los Angeles County Museum of Natural History, will give a presentation on the biogeography, fossil record and placement of Haliotidae in Vetigastropoda. His talk will be accompanied by slides.

Election of Officers
Meeting date: November 16, 2000

CONTENTS

CLUB NEWS

Minutes of the
San Diego Shell Club Meeting - October 19, 2000

The meeting was called to order at 7:40 P.M. by Vice President Kim Hutsell. After introduction of guests there was a brief business meeting during which the slate of officers for 2001 was presented. They are as follows: President, Kim Hutsell; Vice President, Jules Hertz, Recording Secretary, Silvana Vollero; Corresponding Secretary, Monika Forner; Treasurer, Linda Hutsell. Nominations from the floor and election of officers will take place at the November meeting.

Kim then introduced the speaker for the evening, Paul Valentich Scott of the Santa Barbara Museum of Natural History. Chairs were set up in an informal discussion circle and Paul gave insights on the many kinds of books and the ins and outs of writing one based on his experiences. Members asked many questions and also contributed their ideas. John Jackson, who is a publisher, gave additional insights into the processes of preparing color plates. It was an interesting exchange of ideas.

The shell drawing was won by Joanne Romer and the delicious refreshments were provided by President Mike Mason, who had to work but dashed in to bring the goodies. Following the meeting there was time to enjoy the beautiful shell displays by Mark Scott and guest Mark Kirwin as well as the sweets.

The Club's Annual Christmas Dinner Party

The Club Christmas Party will be held on Saturday evening December 2nd in the Crystal Room of the Admiral Kidd Club with festivities beginning at 6:00 p.m. and dinner at 7:00 p.m. A map to the Club is on the last page of this issue.

There are three choices of entree: Prime Rib of Beef (English Cut au jus), Chicken Kiev (boneless breast of chicken with herb-flavored butter) or Broiled Halibut (steak with lemon butter sauce). All are served with tossed green salad, bread and butter, vegetable, coffee and/or tea. Dessert choices are: Old fashioned Cherry Cobbler or New York Style Cheesecake.

The cost of the dinner including gratuity is $21.00. Reservations with check and listing of choice of entree and dessert must be received by November 27th .

As is customary, there will be a shell gift exchange. Bring a gift-wrapped shell with only very general locality on the outside (data should be inside) to place under the tree. Only those who bring a gift can participate. Plan to come to the Christmas Party - it is always a very special event!

FIFTH ANNUAL GATHERING OF SCUM OF SOUTHERN CALIFORNIA (SOUTHERN CALIFORNIA UNIFIED MALACOLOGISTS)

Saturday January 20th , Times Mirror Room - 10 AM
Natural History Museum of Los Angeles County, 900 Exposition Blvd., Los Angeles, CA 90007
Hosts: George Davis and Lindsey Groves

SCUM, an informal association of Southern California professional, amateur, and student malacologists and paleontologists, active or interested in molluscan research, meets annually to keep one another informed of research activities and opportunities. There are no dues, no officers, and no publications.

This year's meeting will be at the Natural History Museum of Los Angeles Country. All persons interested in Recent and/or fossil mollusks are invited. Informal presentations and discussions covering current research interests are encouraged. (Attendees will have a surprise presentation.) A slide projector and/or overhead projector will be available.

Coffee, tea, and breakfast somethings will be provided. We will break for lunch at noon. The Curator's Cafe (the museum cafeteria) will be open as will other food establishments nearby.

Parking in the Museum's east Lot will be free; mention at the staff entrance that you are with SCUM.

Please phone, FAX, or e-mail your RSVP so we can have enough 'breakfast somethings' on hand. Contact either: George E. Davis, Ph.: 213-763-3450; FAX: 213-746-2999; e-mail: gdavis@nhm.org or Lindsey T. Groves, Ph.: 213-763-3376 (Malacology), 213-744-3485 (Invert. Paleontology); FAX: 213-746-2999; e-mail: lgroves@nhm.org

RAETA PLICATELLA (LAMARCK, 1818) (BIVALVIA: MACTRIDAE) A FIRST REPORT FROM THE PANAMIC PROVINCE

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The known distribution of *Raeta plicatella* (Lamarck, 1818) has been along the Atlantic coast from North Carolina to Florida, Texas, and from the West Indies to Argentina, in 3 to 6 m (Abbott, 1974). This is the first report of its occurrence within the Panamic Province.

Harry (1969) figured the shell and described the anatomy. He also listed the following species as synonyms of *R. plicatella*: *Lutraria canaliculata* Say, 1822; *Mactra campechensis* Gray, 1825; and *Raeta perspicua* Hutton, 1873.

Three lots of *Raeta plicatella* in the Skoglund Collection came from within a few miles of each other around Bahía Matenchén, Nayarit, México. I found two complete specimens and three valves in the drift at the high tide line at Playa Matenchén in December 1965 (Figure 1). The same area was collected earlier by Iva Barker in 1962. Barker collected a total of 16 valves which she later glued into mismatched pairs. My husband Paul and I dredged on the far side of the bay from Santa Cruz toward Platanitos in both 1978 and 1979. We took nine valves (Figure 2). I also found a single valve far to the north at Puerto Lobos, Cabo Tepoca, Sonora, in 1969. No live specimens were taken.

All of the above shells were in the Skoglund Collection, but some have now been placed in museums. The California Academy of Sciences, San Francisco, has a single valve from the dredged lot (CASIZ 121634) and the Bailey-Matthews Shell Museum, Florida, has two of the Barker mismatched pairs (15001).

In addition, I have seen several lots, collected by old friends, that are now at the Santa Barbara Museum

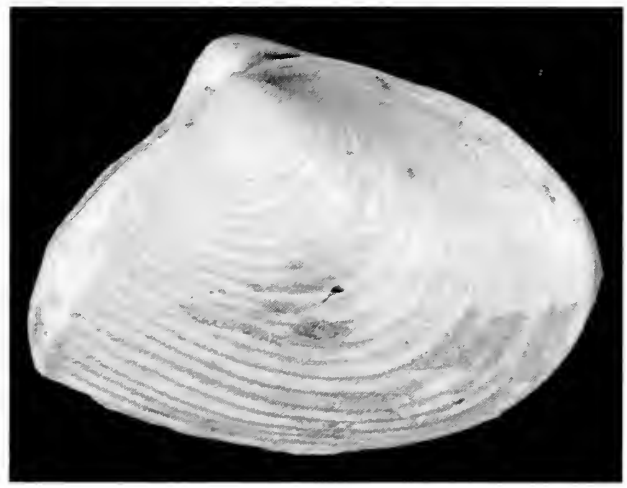

Figure 1. *Raeta plicatella*, specimen 32.5 mm maximum length, Playa Matenchén, Nayarit, México. Photo: D.K. Mulliner.

of Natural History, Santa Barbara, California: 1 pair from the Margaret Cunningham Collection trawled by shrimpers near Guaymas, Sonora, México, in 1961 (SBMNH 134765); 20 valves collected by Gertrude and Ervin Wahrenbrock at Playa Novillero, Nayarit, in 1970 (SBMNH 345471); 2 pair collected by Ervin Wahrenbrock at Teacapan, Nayarit, in February, 1967 (SBMNH 134157) and 1 pair collected by Ted Phillips at Ensenada Blanca, San Felipe, Baja California, México, in 1972 (SBMNH 345472). The Phillips specimen was the largest seen, with a length of 67 mm and a height of 50 mm.

There was no other collecting data on any of the museum lots, but from knowing the collectors, I can safely say that all except the Cunningham lot were found by beach combing. Many of us loved the more

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Figure 2. *Raeta plicatella*, interior of 2 valves, dredged in 6-18 m, mud bottom, Santa Cruz to Platanitos, Nayarit, México. Photo: D.K. Mulliner.

than 40 miles of flat beach at Playa Novillero where you could drive safely on the hard sand and find a thick windrow of shells at the high tide line. Teacapan is just across an estuary at the north end of Playa Novillero and shellers, including the Wahrenbrocks, who stayed there would get a local boatman to take them across to the far north end of Playa Novillero where they would collect.

Raeta plicatella occupies a small area in Nayarit, México, from Bahía Matenchén in the south to Playa Novillero in the north. A few scattered lots would seem to bring the species north in the Golfo de California to Puerto Lobos and San Felipe, but I would prefer to wait for more material from the Golfo de California to be certain.

Dr. José Leal of the Bailey-Matthews Shell Museum identified the shells. Paul Valentich Scott loaned material from the Santa Barbara Museum of Natural History. David K. Mulliner took the photographs. My thanks to all of them.

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Announcement of a Supplement to Volume 32 of *The Festivus*

The Festivus is pleased to announce the upcoming supplement to Volume 32 by Carol Skoglund entitled,

Panamic Province Molluscan Literature: Additions and Changes from 1971 through 2000 I. Bivalvia II. Polyplacophora

This book of over 140 pages will be released early in 2001 and will be available free of charge to all interested current (2000) member/subscribers. The supplement updates the bivalves and chitons in Keen's (1971) *Sea Shells of Tropical West America* and includes all the information in Skoglund's (1991) *Additions to the Panamic Province Bivalve (Mollusca) Literature 1971 to 1990* and her (1989) *Additions to the Panamic Province Chiton Literature - 1971 through 1988.*

RANGE EXTENSIONS AND SIZE RECORDS OF BIVALVES FROM THE PANAMIC PROVINCE IN THE NORRID COLLECTION

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For the past thirty-five years, my husband Hal and I have traveled around México. We enjoyed meeting the people and learning about their cultural background, we visited the Aztec and Mayan ruins, and most of all we enjoyed camping, swimming, snorkeling, and shelling on the beautiful beaches of the Golfo de California and Baja California.

We have retired from active shelling, so I thought it would be a good time to inventory the shells in our collection. I have completed the list of the bivalves and entered each species found into the computer. Each shell's description and its location were compared to the description found in Keen (1971) and to modifications found in Skoglund (1991). The size of the largest shell from each species was compared to the listings in the *Registry of World Record Size Shells* by Hutsell, Hutsell, & Pisor (1999).

I was delighted to find that we have three range extensions and twelve shells of record size. Several of the size records were for species not listed in the *Registry*, so I imagine if other readers submit the measurements for their shells, some of my records will not stand. The range extensions were to locations in the Golfo de California that were not mentioned in Keen (1971) nor modified by Skoglund (1991).

I want to thank Carol Skoglund for confirming the identification and measurements of the shells and my husband Hal Norrid for pulling up the sometimes very heavy dredge in sometimes very rough seas.

RANGE EXTENSIONS

Keen no. Species and Remarks

295 *Diplodonta cornea* (Reeve, 1850), six valves found at El Golfo, Sonora, in 1974, largest measuring 19.3 mm. Keen (1971) noted that the shell was not common north of San Ignacio, Baja California. Gemmell, Myers & Hertz (1987) list this species in the San Felipe, Baja California area. This brings the range across the Golfo de California from San Felipe to El Golfo.

414 *Pitar frizzelli* Hertlein & Strong, 1948, valves found off Isla Danzante, Golfo de California, dredged in 45-75 m in 1991, and dredged in 60-90 m at Isla Smith, Bahía de los Angeles, Baja California in 1993. Nine valves collected, largest 43 x 33.2 mm. Keen (1971) noted only a few specimens had been dredged off the southern end of the Golfo de California. F. and L. Poorman (1988) extended the distribution north to Bahía San Carlos, Sonora. This extends the range across the Golfo de California to Baja California.

---- *Solamen megas* (Dall, 1897), two valves, the larger 30 mm, dredged in 60-90 m off Isla Danzante, Golfo de California, in 1991. Distribution from Santa Barbara Islands, California, into the Golfo de California and south to Panamá. Size given as 26 mm. This species has long been confused with *Crenella columbianum* Dall, 1903 (Coan, Valentich Scott & Bernard, 2000). This is both a range extension and a size record.

SIZE RECORDS

9 *Ennucula columbiana* (Dall, 1908), a 9 mm valve was dredged in 100 m off Isla Danzante, Golfo de California, in 1995. Previous published

size, 4.5 mm (Keen, 1971). Bernard (1983) lists the holotype at 6 mm.

271 *Here excavata* (Carpenter, 1857), a 20.7 mm valve, dredged in 60-90 m off Isla Smith, Bahía de los Angeles, Baja California, in 1993. Keen (1971) lists an immature shell at 10 mm.

350 *Chama sordida* Broderip, 1835, cluster of valves, largest 45 mm, dredged in 60-90 m off Isla Danzante, Golfo de California, after 1980. Length listed in Keen (1971) is 37 mm.

403 *Pitar perfragilis* (Pilsbry & Lowe, 1932), 3 valves, largest 13 mm, dredged in 150 m off Isla Smith, Bahía de los Angeles, Baja California in 1992. Draper (1972) lists the size as 11.4 mm.

460 *Lirophora mariae* (Orbigny, 1846), group of valves, largest 29.5 mm, dredged in 100 m off Isla Danzante, Golfo de California, after 1980. Keen (1971) gives size as 23 mm.

503 *Mulinia coloradoensis* Dall, 1894, several valves, largest 70 x 49 mm, found in Teacapan, Sinaloa, in 1981. Size given in Draper (1987) is 63.4 mm.

509 *Tellina carpenteri* Dall, 1900, several valves, largest 27.6 mm, dredged in 125 m off Isla Danzante, Golfo de California, in 1991. Keen (1971) lists size as 25 mm. Hutsell, Hutsell & Pisor erroneously list a 49.5 mm shell. That shell was misidentified (Skoglund, pers. comm., August 2000).

517 *Tellina meropsis* Dall, 1900, several valves, largest 19.2 mm, dredged in 50 m off Isla Danzante, Golfo de California, in 1994. Draper (1987) lists size as 15.1 mm.

529 *Tellina inaequistriata* Donovan, 1802, several pairs of valves, largest 24 mm, dredged in 60-90 m off Isla Danzante, Golfo de California, after 1980. Keen (1971 lists size as 23 mm.

546 *Tellina pristiphora* Dall, 1900, many valves, largest 41 mm, dredged in 100 m off Isla Danzante, Golfo de California, in 1991. Keen (1971) lists size as 36 mm.

552 *Tellina zacae* Hertlein & Strong, 1949, largest valve 44 x 22 mm, dredged in 60-90 m off Isla Danzante, Golfo de California, in 1992. Keen (1971) lists size as 33 x 15 mm.

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A REOCCURRENCE OF *NODIPECTEN SUBNODOSUS* (SOWERBY I, 1835) IN CALIFORNIA

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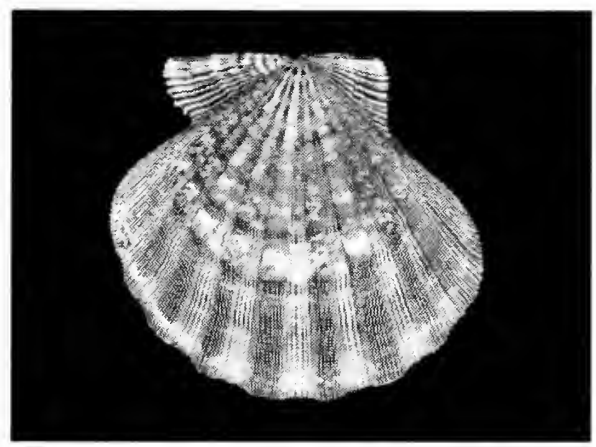
In July of 2000, Paul Kanner of Los Angeles, California contacted me with information concerning two scallops collected off the California coast. He was certain the species was *Nodipecten subnodosus* (Sowerby I, 1835). Since the northern most range for this species normally doesn't extend beyond the 28th parallel on the Pacific coast of Baja California, México, Kanner extended an invitation to examine the shells. A few weeks later, I had the opportunity to visit Paul at his home where he explained the circumstances under which the two specimens were found.

While on a dive trip to San Clemente Island, diver Shanna Holzer collected the paired valves of two dead scallops in an area known as "Little Flower" (approximately 32°50'N, 118°21.8'W). The first specimen was found on June 9th and the second on June 10th. Both specimens were on sand between rocks at a depth of 17 to 18 m (55-60 ft). Holzer noted that the first specimen was very clean while the second was heavily encrusted, indicating to her that the animals had died at different times. Kanner went on to explain that Holzer was not a shell collector, so she had given one of the specimens to another diver and brought one to him for identification. Paul was kind enough to retrieve the other specimen and make both available to me for examination and photographs. The specimen figured is the second of the two *N. subnodosus* collected by Holzer at San Clemente.

It is infrequent but not unusual that a species sometimes appears outside its normal range. *N. subnodosus*, in fact, once thrived in the coastal waters of what is now Southern Californian. Fossil specimens have been reported from the Cenozoic as far north as the Channel Islands off Los Angeles, California (J. T. Smith, 1989). Coan & Scott (2000: 242-243, pl. 45) cite a report from California Fish and Game (Strachan *et al.*, 1968) in which *N. subnodosus* occurs as far north as Santa Catalina Island during El Niño years. But the occurrence of Recent *N. subnodosus* in this area is rare. Few collectors are aware that *N. subnodosus* occurs off of Southern California and fewer still have actually seen a recently collected specimen.



Nodipecten subnodosus, 111.8 mm H, 119.4 mm W. Photo: Linda Hutsell.

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IN MEMORIAM
ROBERT KOCH
1923-2000

It is with great sadness that we report the passing on September 29th of Robert Koch, longtime Club member, supporter of *The Festivus* and good friend. Bob was an avid student of Panamic gastropods, especially enjoying micromollusks which he carefully sorted and identified under his microscope and arranged in his cabinets as gems in a jewel case. Bob and his wife Wendy took many trips to México, Panamá, Costa Rica and other areas of the Panamic Province hunting the elusive sea shell. It was on one of those trips that Bob discovered an undescribed typhid species which was later described and, at his request, named for Wendy.

One trip to Costa Rica found the Koch, Skoglund and Hertz families together in Playas del Coco in Guanacaste Province. We were in a small, lovely hotel which we had almost to ourselves. We spent the days at the beach shore collecting and dredging, the late afternoons discussing our exciting finds, and the evenings enjoying wonderful meals. It is a precious memory.

Our hearts go out to Wendy and their three sons, Robert, Richard and James.

Bob's beautiful and scientifically valuable collection has been donated to the Santa Barbara Museum of Natural History where it will be available to researchers. His short papers, many with amusing titles, made for enjoyable and informative reading in *The Festivus* during the first half of the 1990s. They are listed below.

1990. Panamic puzzles: those terrifying turbonillas. 22(5): 63-70, figs. 1-5 + illustrated key.

1991a. A new distribution for *Lepidozona (Lepidozona) skoglundi* (Ferreira, 1986) (Mollusca: Polyplacophora). 23(3): 25.

1991b. A question of size: a note on dwarfing in *Typhisopsis coronatus* and *Typhisala grandis*. 23(5): 39.

1991c. Panamic puzzles: a didymous *Terebra petiveriana*? 23(6): 42-44, figs. 1-12.

1992a. Panamic puzzles: *Terebra argosyia* and *T. robusta*. 24(1): 3-7, figs. 1-4.

1992b. Panamic puzzles: *Oliva kerstitchi* -- yes, no or maybe? 24(3): 31-33, figs. 1-5.

1992c. Panamic puzzles: those peripatetic eulimids. 24(9): 97-100, figs. 1-4.

1993a. Panamic puzzles: a singular *Cingulina*. 25(4): 39-41, figs. 1-4.

1993b. Geographic locations supplementing "Additions to the Panamic Province gastropod (Mollusca) literature - 1971-1992" by Carol Skoglund. 25(7): 60-64.

1994. Panamic puzzles; a question of assignment (*Odostomia vs. Turbonilla)*. 26(5): 53-55, figs. 1-6.

1996a. Panamic puzzles: those enigmatic *Alaba*. 27(1): 7-9, figs. 1-5, 1 table.

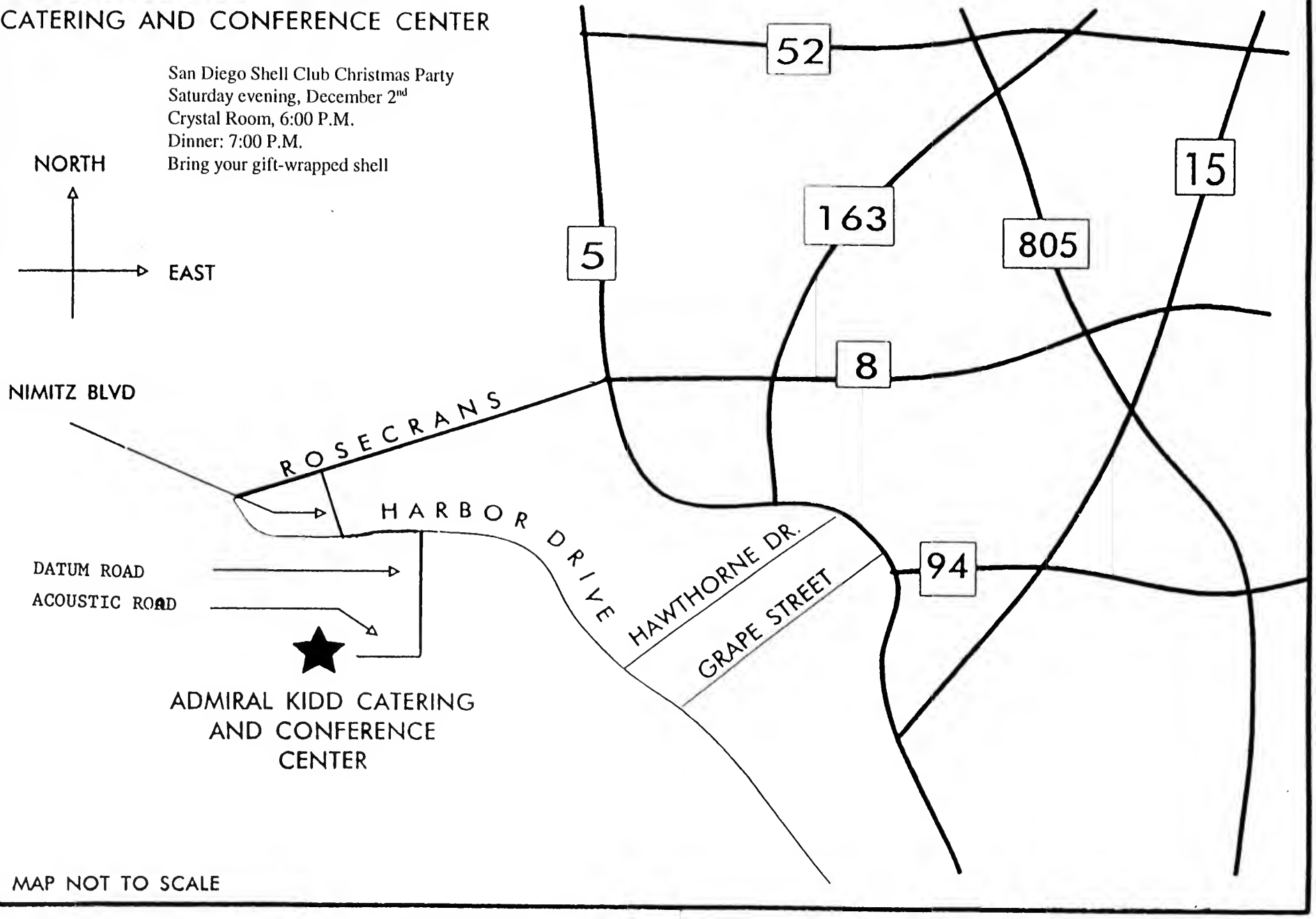
1996b. Panamic puzzles: valid or variant vitrinellids? 27(3): 30-31, figs. 1-4.

A SELECTED INDEX TO VOLUME XXXII (2000)

Admiral Kidd

CATERING AND CONFERENCE CENTER

San Diego Shell Club Christmas Party
Saturday evening, December 2nd
Crystal Room, 6:00 P.M.
Dinner: 7:00 P.M.
Bring your gift-wrapped shell



MAP NOT TO SCALE