

Vol. 39, No. 4, December 2011

thomas@nerite.com www.conchologistsofamerica.org

American
CONCHOLOGIST



Quarterly Journal of the Conchologists of America, Inc.

CONCHOLOGISTS



OF AMERICA, INC.

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world. In 1995, COA adopted a conservation resolution: Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.

OFFICERS

President: Alice Monroe
2468 Timbercrest Circle West
Clearwater, FL 33763-1626
(727) 796-5115
monroea@spcollege.edu
Treasurer: Steven Coker
332 Banyan St.
Lake Jackson, TX 77566
(979) 297-0852
shellman7000@sbcglobal.net
Membership: Doris Underwood
7529 Ensemble Lane
Melbourne, FL 32940-2603
dunderwood13@cfl.rr.com
(321) 622-4372
Trustee: Fabio Moretzsohn
Harte Research Institute
6300 Ocean Drive, Unit 5869
Corpus Christi, TX 78412-5869
(361) 876-8910
mollusca@gmail.com
Web Page Coordinator:
José Coltro
CX.P. 15011
Sao Paulo, SP 01599-970
Brasil
55-11-5081-7261
jose@femorale.com
Director-at-Large:
Harry G. Lee
4132 Ortega Forest Dr.
Jacksonville, FL 32210
Convention Coordinator:
Anne Joffe
1163 Kittiwake Circle
Sanibel, FL 33957-3605

Vice President: José Leal
3075 Sanibel-Captiva Road
Sanibel, FL 33957-1580
(239) 395-2233
jleal@shellmuseum.org
Secretary: Phyllis Gray
1212 S. Eola Drive
Orlando, FL 32806-2218
(407) 422-0253
psgray@mactec.com
COA Awards Chairman:
Donald Dan
6704 Overlook Drive
Ft. Myers, FL 33919
(239) 481-6704
donaldan@aol.com
Historian: Mary Ruth Foglino
4 Trent Court
Smithtown, NY 11787-1266
(631) 265-7811
foglinh@sunysuffolk.edu
Past President: Henry W. Chaney
Santa Barbara Mus of Nat History
2559 Puesta del Sol Road
Santa Barbara, CA 93105
hchaney@sbnature2.org
Academic Grants Director:
Daniel Geiger
Santa Barbara Mus of Nat History
Invertebrate Zoology
2559 Puesta del Sol Road
Santa Barbara, CA 93105 - USA
(805) 682 4711 x152
geiger@vetigastropoda.com

AMERICAN CONCHOLOGIST, the official publication of the Conchologists of America, Inc., and issued as part of membership dues, is published quarterly in March, June, September, and December, printed by Cardinal Printing, 341 Vincennes Street, New Albany, IN 47150. All correspondence should go to the Editor. ISSN 1072-2440.

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Editor:
Tom Eichhorst
4528 Quartz Dr. N.E.
Rio Rancho, NM 87124-4908
(505) 896-0904
thomas@nerite.com

Advertising Director:
Betty Lipe
11771 96th Place
Seminole, FL 33772-2235
blipe@tampabay.rr.com

Staff: Lynn & Richard Scheu

COA Webmaster:
Carlos Henckes

EDITORIAL BOARD

Donald Dan	José H. Leal	Bruce Neville
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Editor's comments:

As we begin the year 2012 I must remind all COA members to please let the COA Membership Director, Doris Underwood (dunderwood13@cfl.rr.com) know if you change your mailing address. For U.S. members, please note that the U.S. Postal Service does not forward bulk mail. If you pay annual dues of \$25, then you get your magazine via bulk mail - no forwarding service. If you pay \$30 per year (U.S. members), then your magazine is mailed first class and will be forwarded. In any case, Doris has to be notified so she can change the mailing label.

Next a word about the COA annual conventions. I realize we are talking about a fair amount of money for plane tickets, hotel, and meals. Seems like this might just as well be spent on shells, but if you can afford it, the convention offers quite a bit - as well as shells if you are so inclined (and still have any money left). I have a number of "shell" friends I would never have met if I had not attended COA conventions. I have also had some great experiences: an evening listening to Jack Lightbourn talk about his experiences in WW II, a day on a river with COA freshwater mussel experts, an evening talking with Tom Rice about the early days of *Of Sea And Shore*, countless informal discussions about different molluscan families, and on and on. One evening I met a person I had traded shells with almost two decades before. I have had wonderful dinners with Dr. Thach from Vietnam, and neither of us speaks the other's language. These are a bunch of friendly people and **they share your interest in shells!** The 2012 convention in Philadelphia (see page 8) promises to be a special event at a venue unlike any other in the nation. Start thinking now about COA Philadelphia and start setting aside a few bucks. You will see something new, learn something new, and have a chance to talk to folks who really know their stuff. If you attend and don't enjoy yourself, see me about a refund. You won't get one, but I might enjoy the conversation.

And last, a couple *mea culpas* (I never seem to escape without at least one). The Sanibel Shell Show report in the September issue was in error as I reported that the 2011 show was the 75th for the club. I have been corrected. The 2011 show was the 74th and 2012, not too surprisingly, will be the 75th -- called "SHELLABration" and scheduled for 1-3 March 2012. Also in the September issue (p. 30) I credited Dr. Harry Lee with the display of the two *Semele rupicola* in a bottle. I would not be surprised if Harry had a similar specimen, but this one was exhibited by Paul Kanner who says it is back in its rightful place on his desk.

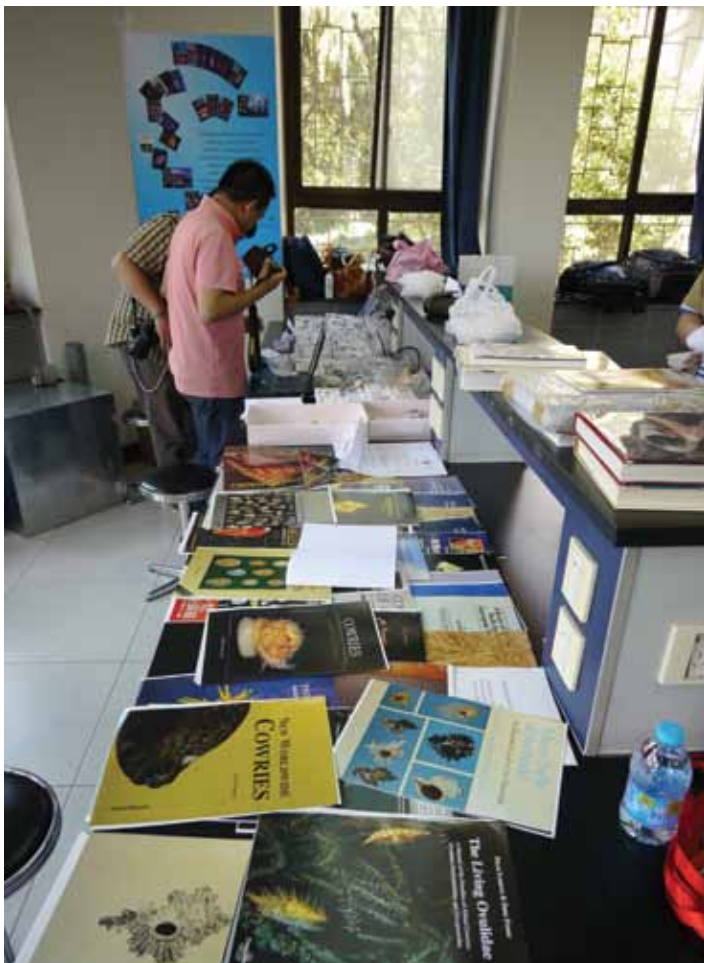
Thomas E. Eichhorst

Front Cover: *Pteropurpura plorator* (A. Adams & Reeve, 1845) 80mm, from the East China Sea. This attractive specimen is illustrated and described by Roland Houart in his article on Ocenebrinae starting on page 12.

Back Cover: *Conus harlandi* Petuch, 1987, photographed by Charles Rawlings in Trujillo Bay, Honduras, 2011. More photographs by Charles are available in his new book, reviewed on page 29.

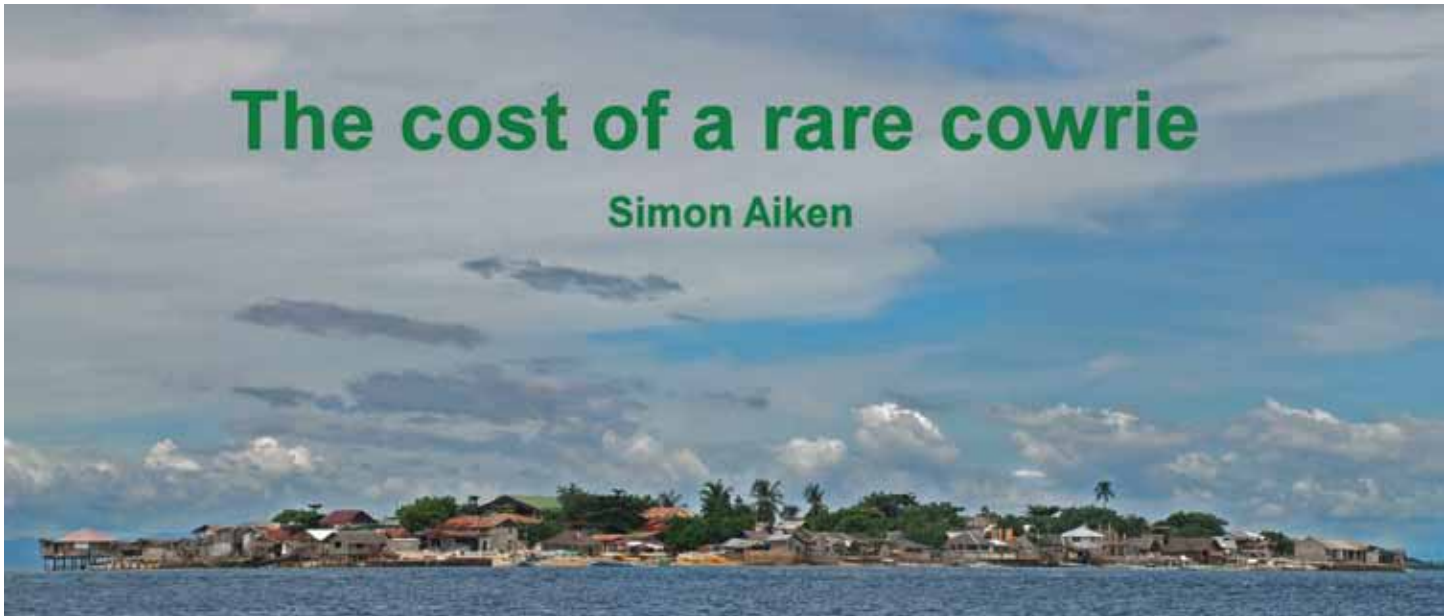


The 2011 Chinese Shell Show was held 21-22 May at Tsinghua University, Beijing, China. Tsinghua University was founded in 1911 on the site known as of “Qing Hua Yuan,” the royal gardens of the Qing Dynasty. The campus is famous for its beautiful surroundings embraced by thousands of shade trees and beautiful water gardens. It is listed in 2010 as one of the 14 most beautiful college campuses in the world by Forbes Magazine, the only such listing from Asia. I (editor) was not provided with details of the event, but the accompanying images pretty much tell the story.



The cost of a rare cowrie

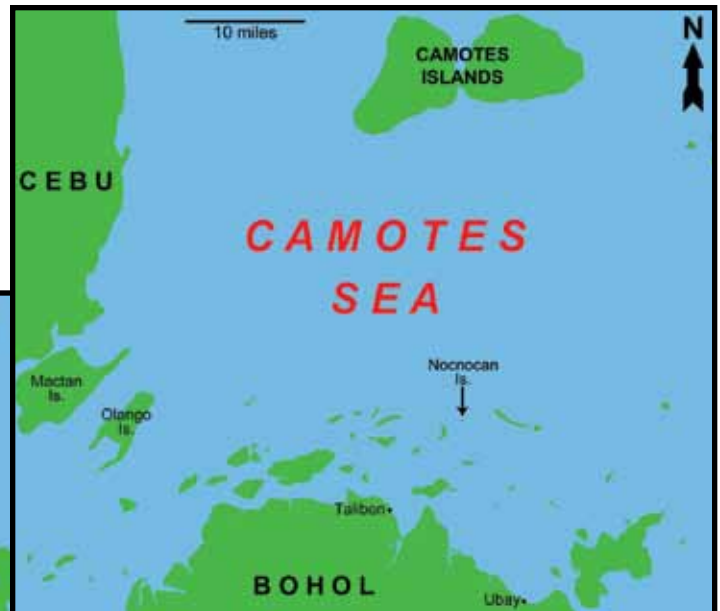
Simon Aiken



“No photo before the dive!” Such is the mystique surrounding the collecting of *Leporicypraea valentia* (Perry, 1811) that I was forbidden from photographing the divers in their houses and warned not to point a camera at their boat. The residents of tiny Nocnocan Island (see map right and image above) explained that a photograph is a ‘dead image,’ and could bring bad luck to the divers. Of the five men a year ago who could call themselves “the *valentia* divers,” two of them lost their lives in 2010. Their loss has compounded the superstitions that cloak the night-time plunges into the Camotes Sea.

I journeyed to the Philippine island of Nocnocan (nok-NOH-kan) to meet the remarkable men who risk their lives each full moon – for the sake of a seashell. Too many collectors think of the ‘value’ of a shell in monetary terms and forget the human cost of collecting certain species. Geographically, Nocnocan is a speck of an island, sitting north of Bohol yet culturally quite separate from it. Like the other inhabitable islands in this area, it is overcrowded, so that the houses literally spill out over the sea. There is no room for crops, so the people owe their livelihoods to the sea. No tourists come here and there are no provisions for visitors. So few outsiders visit this area that I was constantly trailed by a crowd of children who kept touching my skin and shouting “White! White!” Of the many men who support families by hookah diving for fish, a handful from Nocnocan have chosen to search for *L. valentia* in a deep-water channel north of their island.

Nocnocan (often written ‘Nucnucan’) seems a happy island, bustling with people anxious to make friends. The *valentia* divers are different though – very serious men, bonded by an acute awareness of the perils of their chosen profession. I was fortunate enough to interview all three surviving divers. The youngest of



them is ‘taking a break’ from *valentia* diving, having collected 270 specimens in 10 years. No doubt the loss of his two friends last year has influenced his decision. Several other *valentia* divers have also perished in the last decade.

The rainy season, August through December, is best for collecting *L. valentia*, despite the typhoons.

A full moon tempts the *L. valentia* out of their crevices. At the August 2011 full moon I was able to accompany the *valentia* boat (the *Windy Marie*) onto the Camotes Sea, travelling in a separate boat. The crew of six includes two *valentia* divers, a ‘safety diver,’ and an operator for the air compressor. There is a proper ‘send-off’ from Nocnocan, with the obvious anxiety of the divers’ families contrasting with the excitement of many of the island children. Once out on the open sea, the crew’s routine includes catching their own fish before dark and preparing a hearty meal – fish and rice, cooked over coals on the boat itself.

After dark, the divers prepare their rather basic equipment. Their ‘fins’ are made from pieces of wood, cut into

shape and then strapped to their feet using plastic bags. They have no access to dive computers, dive tables, or even depth gauges. Since the boat is not anchored, they have no reference line of any kind to assist with their descent and ascent. On a night dive, the sense of disorientation must be extreme. The divers' stress is magnified by the coldness of the water at those depths. As experienced SCUBA divers know, stress contributes to the risk of decompression sickness.

To try to get some small insight into how the divers feel, I stayed in the water myself above their dive site, using a mask, snorkel, and fins. My overwhelming feeling was that "There's an awful lot of *black* down there..." Despite very clear water, the divers' lights were invisible from the surface. I couldn't possibly imagine how it felt for the divers 250ft below me, relying on primitive diving equipment and an inherently unreliable air supply. Sometimes they see sharks coming out of this blackness.

The *L. valentia* live on an undersea wall, often in small caves. They tend to be found on algae-covered rocks. On a very good night a pair of divers might find four *L. valentia*; the best ever 'haul' was seven specimens. Many times though, the divers must return to Nocnocan empty-handed. Very occasionally these divers will find a *Lyncina leucodon* (Broderip, 1828), which lives at the same depth as *Leporicypraea valentia*.

After 30 minutes of diving, I heard the compressor operator signal that the divers were starting to ascend. A slow ascent is essential to prevent pressurized gases forming bubbles in the bloodstream, causing decompression sickness – 'the bends.' After 30 minutes of ascending, the divers' lights were just visible to me, hovering on the surface. Then their lights went together and shone directly upwards. This is the signal for "*We have valentia!*" The mood of the crew remained somber, however – an ascent from that depth is always dangerous. A third diver entered the water using hookah, and swam down to check on the deep divers. The whole ascent took an hour. This particular night was a triumph for the divers and their crew: two beautiful live *L. valentia*.

Since I had lent the divers my own depth gauge, we knew the exact depth for these shells: 230ft (70m). Their maximum depth that night, though, was 250ft (76m). At these depths the slightest mishap or malfunction will likely be fatal. The same could be said for SCUBA diving at that depth, even when using several different tanks with exotic gas mixes (such as nitrogen-oxygen-helium 'trimix'). The nearest recompression chamber is a day's journey away. What went wrong last year, when two *valentia* divers died? I heard many rumors and fast-changing stories; they simply "passed out," I was told. Operating without depth gauges, did they exceed their depth limit? Was it a fault in the air compressor, or carbon monoxide poisoning? There were sinister rumors that alcohol played a role – either because the divers were drinking "to warm themselves up" before the dive,



In 15ft of water, a hookah diver searches for *Atrina vexillum* (von Born, 1778) close to Nocnocan Island. The hookah hose is strapped to his mask and then wrapped round his waist, to lessen the chance of the diver losing it. One of his home-made wooden fins has been lost. The diver behind carries a make-shift spear gun, to catch fish.

"Tasting the hookah"

Surface-supplied diving ('hookah') is used in the Philippines because of the expense of SCUBA. The diver has a simple hose that provides a steady air supply from a compressor on a boat above. No regulator or mouthpiece is used, and no auxiliary air source is carried. Apart from economy, hookah has the advantage that the supply of air is inexhaustible. The inherent danger, of course, is that any fault in the surface equipment means an immediate out-of-air emergency. Since two (or more) divers share one compressor, there is no help from the 'buddy.' Philippine compressors are powered by gasoline, which produces carbon monoxide as it burns; many hookah divers have succumbed to carbon monoxide in their air supply.

or because the compressor operator became drowsy. Perhaps the divers simply came up too fast.

Understandably, this was a difficult topic for the Nocnocan community to discuss. What is certain is that for a while after the tragedy there were no *L. valentia* collected. Now, once again, this cowrie is one of the hardest to obtain from the Philippines, after a brief period in the early 2000s when there seemed a reliable supply. It is undeniably one of the most beautiful of all the cowries, but visiting Nocnocan Island and working with the *valentia* divers makes me regard the shell quite differently. We should never think of these wonderful objects as mere 'commodities,' to be bought, sold, and traded. Each *L. valentia* comes at a human cost.



Valentia divers Wilson (left) and Enrique (right) proudly display the results of their 250ft night-time dive.



A pair of living *L. valentia*, just brought up from 230ft. The 'asking price' for these two shells was equivalent to several months' typical income in Bohol; this reflects the risks involved in hookah at such depths. These divers also collected one *L. mappa* (L., 1758), a large *Spondylus gloriosus visayensis* Poppe & Tagaro, 2010, and a *Conus circumcissus* von Born, 1778.



(1) A very fine 90.7mm *Leporicypraea valentia* (dorsum and anterior views) from north of Nocnocan Island, compared with (2) an 83.1mm specimen (dorsum and posterior views) collected off Sogod, Cebu, using a net. Few specimens can be graded F+++ or gem, and many imperfect ones are 'doctored' (repaired) in Cebu. Fake *valentia* are laboriously created from specimens of the only other member of the genus, *L. mappa*, by building up the dorsum with resin to imitate the very distinctive shape. The

Acknowledgements

I extend my gratitude and respect to Wilbert 'Wilson' Dungog, Enrique Paquibot, and Noel Belleza of Nocnocan Island. I thank Johan Cabilao for interpreting between Cebuano and English, and my friends on Calituban Island for providing all-night transportation. The photographs in this article appear courtesy of Simon's Specimen Shells Ltd.

AMS-COA: celebrating 200 years of shelling in America

American Malacological Society Annual Meeting

June 16-21, 2012

Conchologists of America Convention

June 19-24, 2012

Paul Callomon



You are invited to join us for a historic event – the first back-to-back annual meetings of the country’s two premier shell societies, including joint sessions, major speakers, and fabulous social events!

The venue is the **Crowne Plaza Philadelphia Hotel** in Cherry Hill, New Jersey, a superb modern facility in Cooper River Park that offers unparalleled access and amenities. Just over the nearby Ben Franklin Bridge lies Philadelphia, where the formal study of mollusks in the United States began 200 years ago with the founding of the Academy of Natural Sciences in 1812.

Over a packed eight days we will celebrate the bicentennial of Conchology and Malacology in the Americas, starting with the annual meeting of the AMS, taking in the first-ever joint session with the COA on Wednesday June 20th, and finishing up with the COA Bourse on Saturday and Sunday, 23rd and 24th. A banquet for both societies will be held at the hotel on the evening of the 20th, with a keynote address by the renowned cone venom specialist **Dr. Baldomero “Toto” Olivera**. Throughout the week there will be presentations and workshops featuring major names from here and abroad, from expedition leader extraordinaire **Dr. Philippe Bouchet** to renowned author **S. Peter Dance**.

COA guests will enjoy oral and silent auctions and the usual interesting, informative programs. Of particular interest to society members will be the special session hosted by the Smithsonian’s **Dr. Ellen Strong** and featuring presentations by past winners of COA student grants. Many of these have gone on to become professional malacologists, including such household names as **Dr. Rüdiger Bieler** and **Dr. Jose Leal**.

There will be a reception for both societies on Tuesday evening at the Academy of Natural Sciences in Philadelphia, offering a great opportunity to meet and talk shells with some of the world’s leading scientists and collectors within the hallowed walls of the oldest operating natural history museum in the Americas. The Academy’s panoply of conchological immortals will be present in ghost form, including Thomas Say, Isaac Lea, Timothy Conrad, George Tryon, and Henry Pilsbry.

Guests who sign up for one of the conventions will be offered a significant discount for the other, and day rates will be

available for both.

For more details of the venue and events, see the application form included with this issue.

Leisure

Philadelphia is a premier tourist destination, with national treasures such as the Liberty Bell and Constitution Hall alongside some of America’s finest museums. The Center City area is a short cab or bus ride away. In the other direction, regular trains for Atlantic City leave from close by the hotel, with free shuttles from Atlantic City Station to the major casinos.

On the morning of Saturday June 23, several excursions are planned for attendees, including:

The Adventure Aquarium

Formerly the New Jersey State Aquarium, this state-of-the-art venue features approximately eight thousand animals living in varied semi-aquatic, freshwater, and marine habitats. The facility has a total tank volume of over 2 million US gallons (7,600 m³), and public floor space that covers nearly 200,000 square feet. Highlights include touchable sharks and the famous hippos! www.adventureaquarium.com

Philadelphia Museum of Art

Academy of Natural Sciences staff will conduct a special tour of one of America’s largest and most famous art museums, focusing on shell-related themes and artifacts. A unique opportunity to see one of the world’s great art collections in a conchological light!

Wagner Free Institute, Philadelphia

A museum of a museum, the Wagner’s current exhibits and building date back to 1885. The main hall, one of America’s architectural treasures, houses a Victorian natural history museum in its original state. Step back in time and see how things were done before electricity!

Deadline for registration at the regular rate is May 1st, 2012



The meeting venue: Crowne Plaza Philadelphia at Cherry Hill



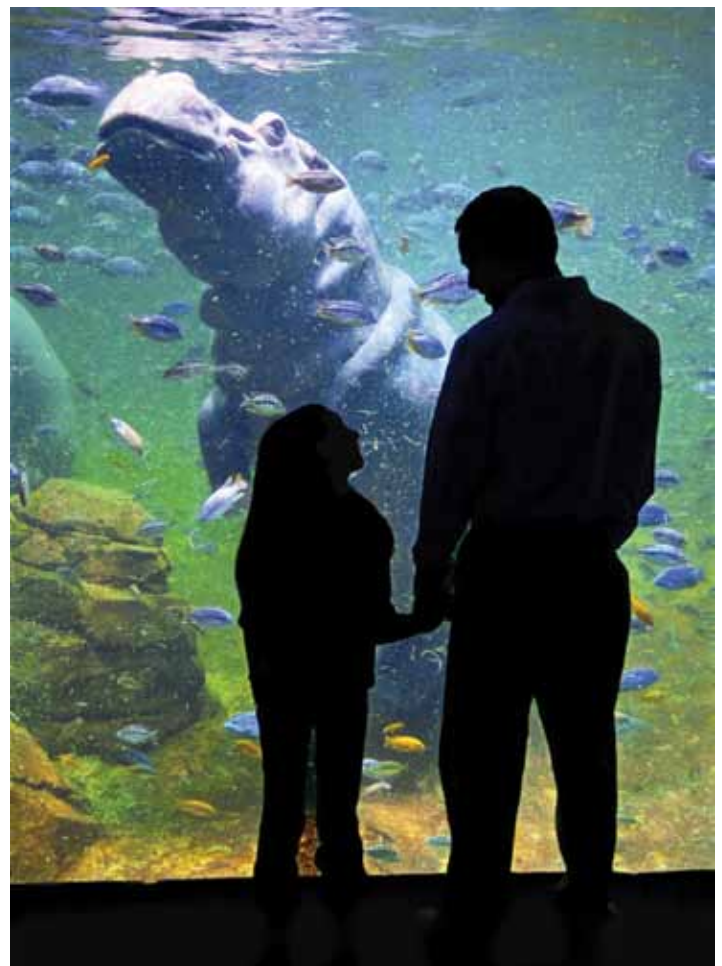
Wagner Free Institute of Science Lecture Hall (Photograph by Tom Crane, courtesy of the Wagner Free Institute of Science)



Wagner Free Institute of Science Exhibit Hall (Photo by David Graham, courtesy of the Wagner Free Institute of Science)



The Philadelphia Museum of Art



Hippos at the Adventure Aquarium

Report of the 5th Annual Ohio River Valley Unified Malacologist Meeting (OVUM), 2011, Thomas More College Center for Ohio River Research and Education, California, Kentucky, October 01

Contributed by Meghann Vincie King and Dr. Timothy Pearce

In attendance: Charles Acosta, Francisco Borrero, Mariah Clements, Zsuzsanna Cooke, Joe Darpel, John Ferner, Clara Folb, John Hageman, Nick King, Meghann Vincie King, Ronald Lange, Olivia Lantry, Steve Lilly, Christopher Lorentz, Christopher Owen, Megan Paustian, Timothy Pearce, Warren Pryor, Lori Schroeder, Jeff Schroeder, Amsula Stone, Alexandria Wright.

The Ohio River Valley Unified Malacologists met for their fifth year at the Thomas More College Center for Ohio River Research and Education (TMC CORRE), also known as the TMC Biological Field Station, located on the Ohio River in California, Kentucky, across the river from Cincinnati. There were 22 total in attendance and nine mollusk presentations given. The meeting began with a welcome and background talk of the field station by Dr. Chris Lorentz, a Thomas More College biology professor and director of the TMC CORRE. Dr. Timothy Pearce then described OVUM and its origins. Several talks regarding snails or slugs included the following: Dr. Pearce talked about whether wetlands are good habitat for land snails, Dr. Francisco Borrero spoke about the ecology of two common species of snails in tropical forest understory habitat in southern Costa Rica, Dr. Megan Paustian discussed invasive terrestrial slugs and their worldwide spread, specifically how it related to her Encyclopedia of Life project, and Jeff and Lori Schroeder presented a video of snail research completed in the Bernheim Research Forest in Clermont, Kentucky. Dr. Charles Acosta brought marine experience to the meeting with his talk on

modeling population dynamics of the queen conch *Strombus gigas* Linnaeus, 1758, under heavy fishing pressure in Belize. The remaining talks related to freshwater mussels, including the following: Dr. Warren Pryor presented his studies on temperatures in a mussel habitat located in Crooked Lake, Indiana, Mariah Clements discussed her masters research on the projected effect of photoperiod on the metabolic rate in *Pyganodon grandis*, Meghann Vincie King presented her masters research on development of a suitable diet for rearing captive endangered juvenile oyster mussels *Epioblasma capsaeformis* (Lea, 1834), and Nick King displayed and described his photo documentation of a natural fish host infestation by *Epioblasma capsaeformis*. After the meeting, five participants took a tour of the mollusk collections at the Cincinnati Museum Center led by Dr. Borrero.

Dr. Warren Pryor expressed his interest in hosting OVUM 2012, hence the meeting will be held next fall at the University of St. Francis in Fort Wayne, Indiana.



Megan Paustian presents a talk on invasive terrestrial slugs and their spread worldwide.



Some meeting attendees, left to right: Dr. Francisco Borrero, Dr. Megan Paustian, Ronald Lange, and Dr. Charles Acosta.

TREASURES REVEALED SHELLS OF THE AMERICAS

The 29th Philadelphia Shell Show

At the Academy of Natural Sciences of Drexel University Philadelphia

October 20 and 21, 2012

2012 SHELL SHOWS & RELATED EVENTS (Jan. – Jul.)

- Following information is subject to change. Please verify with individual organization -

- Jan. 14-15 **SPACE COAST SEASHELL FESTIVAL**
2012 Melbourne, FL
The Melbourne Auditorium, 625 E. Hibiscus Blvd.
Alan Gettleman, 2225 Tanglewood Lane, Merritt Is.,
FL 32953-4287
E-mail: lychee@cfl.rr.com (321) 454-3239
- Jan. 21-22 **47th ANNUAL BROWARD SHELL SHOW**
2012 Pompano Beach, FL
Pompano Beach Rec Center, NE, 18th Av. & NE 6th St.
Nancy Galdo, 4266 Chase Ave., Miami Beach, FL
33140-3008
E-mail: nancygaldo@gmail.com (305) 531-0036
- Feb. 17-19 **SARASOTA SHELL SHOW**, Palmetto, FL
2012 Manatee Convention Center, 1 Haben Blvd.
Donna Cassin, 3432 Highlands Bridge Rd., Sarasota,
FL 34235
E-mail: dcassin941@gmail.com (941) 362-3302
- Feb. 25-26 **ST. PETERSBURG SEA SHELL SHOW**, Seminole, FL
2012 Seminole Rec Center, 9100 113th St. N., Seminole, FL
Bob & Betty Lipe, 348 Corey Avenue, St. Pete Beach, FL
33706
E-mail: blipe@tampabay.rr.com (727) 391-2197
Exhibit form at web site: <http://www.stpeteshellclub.org>
- Mar. 1-3 **SANIBEL SHELL SHOW**, Sanibel, FL
2012 - **Grand 75th Anniversary Shellabration** -
Sanibel Community Center, Periwinkle Way
Anne Joffe, 1163 Kittiwake Circle, Sanibel, FL 33957
E-mail: sanibelchiton@aol.com (239) 472-3151
- Mar. 3 - 4 **PARIS INTERNATIONAL SHELL SHOW**, Paris, France
2012 **New Location:** Espace Charenton, 327 rue de Charenton,
75012 Paris
Perrine Dardart, 8, Rue des Tilleuls, 02190 Pignicourt,
France
E-mail: perrine.dardart@gmail.com 33 (3) 23-22-46-41
- Mar. 8-10 **MARCO ISLAND SHELL CLUB SHOW XXXII**
2012 Marco Is., FL
United Church of Marco Island, 320 North Barfield
Jae Kellog, 1402 N. Collier Blvd., Slip D-6, Marco Island,
FL 34145
E-mail: pjsailkw@gmail.com (239) 253-8483
- Apr. 14-15 **9th NATIONAL SEA SHELL SHOW**, Adelaide, S. Aust.
2012 Goodwood Community Center, 32 Rosa Street, Goodwood
Wayne Rumball, 53 Huihui Dr., Happy Valley, SA 5159
E-mail: nadwayr@ottusnet.com.au 61 (8) 8381-3987
- Apr. 28 **BRITISH SHELL COLLECTOR'S CLUB**
2012 **CONVENTION**, Essex, England
Theydon Bois Community Centre, Essex
John Whicher, Higher Marsh Farm, Henstridge, Somerset
BA8 0TQ, UK
Email: john@whicher.plus.com 4 (196) 336-3715
- May 19-20 **XXII BELGIUM INTERNATIONAL SHELL SHOW**
2012 Antwerp, Belgium
"Extra Time" Sports Hall, Louisalei 24, Hoboken
Charles Krijnen, Burgemeester Jansenstraat 10, NL-037 NC
Tilburg, Nederland
E-mail: bvc.shellshow@planet.nl 31 (13) 463-0607
Web site: www.bvc-gloriamaris.be/beurs_e.htm
- May 21 - **OREGON SHELL SHOW**, Portland, OR
June 2 Oregon Museum of Science & Industry, 1945 SE Water Ave.
2012 John Mellott, 1310 Crowley Avenue SE, Salem, OR 97302
E-mail: retheresa@comcast.net (503) 363-5017
- May 26-27 **SUNCOAST CONCHOLOGISTS SHELLERS**
2012 **JAMBOREE**, Largo, FL
MINNREG Building, 6340 126th Ave. North
Carolyn Petrikin, 2550 Sweetgum Way West, Clearwater, FL
33761
Email: jamoboree2012@aol.com (727) 796-4117
- CELEBRATING 200 YEARS OF MOLLUSCAN STUDIES IN AMERICA**
Dual events hosted by The Academy of Natural Sciences & The Philadelphia Shell Club:
- Jun. 16-21 **AMERICAN MALACOLOGICAL SOCIETY ANNUAL MEETING**
2012 Website: <http://www.malacological.org/meetings/next.html>
- Jun. 19-24 **CONCHOLOGISTS OF AMERICA ANNUAL CONVENTION**
2012 Web site: www.conchologistsofamerica.org
Crowne Plaza Hotel, 2349 W. Marlton Pike, Cherry Hill, NJ
08002
Contacts: Gary Rosenberg
E-mail: rosenberg@ansp.org (215) 299-1033
Amanda Lawless
E-mail: lawless@ansp.org (215) 299-1174
- Jun. 23-24 **TOWNSVILLE SHELL SHOW**
2012 Townsville, Queensland, Australia
Orchid Society Hall, Charles Street, Kirwan
Glenda Rowse, 19 Farrell Street, Kirwan 4814, Qld, Aust.
61 (7) 4773-2817
- Jul. 7 - 8 **KEPPEL BAY SHELL SHOW**
2012 Yeppoon, Queensland, Australia
Gus Moore Pavilion at the Yeppoon Show Ground
Jean M. Offord, 277 McDougall St., N. Rockhampton, Qld.
4701, Australia 61 (7) 4928-3509
- NORTHERN FLORIDA SUMMER CELEBRATION co-sponsored by two shell clubs:**
Back-to-back shell shows with in-between shelling excursions
- Jul. 13-15 **GULF COAST SHELL SHOW**, Panama City Beach, FL
2012 City of Panama City Beach Senior Center, 423 Lyndell Lane
Jim Brunner, 2511 Parkwood Drive
Panama City, FL 32405 (850) 215-2086
Email: jili@knology.net
- Jul. 20-22 **JACKSONVILLE SHELL SHOW**, Jacksonville, FL
2012 Morocco Shrine Auditorium, 3800 S. St. Johns Bluff Road
Charlotte Thorpe, 1010 N. 24th St.
Jacksonville Beach, FL 32250 (904) 246-0874
E-mail: challoyd@bellsouth.net
- Information Source:**
DONALD DAN, COA Awards Chairman
6704 Overlook Drive
Ft. Myers, FL 33919
U.S.A.
Tel. Voice & Fax (239) 481-6704
E-mail: donaldan@aol.com
SH-DATE1.2011 Revision 2011-11-30

Ocenebra, *Pteropurpura*, and *Ocinebrellus* (Gastropoda: Muricidae: Ocenebrinae) in the northwestern Pacific

Roland Houart

Research Associate

Institut Royal des Sciences Naturelles de Belgique

Introduction

Since the release of “Review of the Recent species of *Ocenebra* Gray, 1847 and *Ocinebrellus* Jousseaume, 1880 in the Northwestern Pacific” by Houart & Sirenko (2003), many specimens of *Ocenebra*, *Pteropurpura*, and *Ocinebrellus* from the China Sea and neighboring localities have been offered on shell auctions. I will here describe and illustrate these species, trying to illustrate as many forms as possible. The following species are included: *Ocenebra acanthophora* (A. Adams, 1863), *O. inornata* (Récluz, 1851), *O. lumaria* (Yokoyama, 1926), *Pteropurpura* (*Pteropurpura*) *esycha* (Dall, 1925), *P. (P.) modesta* (Fulton, 1936), *P. (P.) plorator* (Adams & Reeve, 1845), and *P. (Ocinebrellus) falcata* (Sowerby, 1834).

The high intraspecific variation in shell morphology in Ocenebrinae has led to an impressive number of synonyms and also to a number of misidentifications, not only in this part of the world but also in other regions like Europe and the northeastern Pacific. On the other hand, some of these names now considered synonyms may turn out to be valid species thanks to DNA research. It should be kept in mind, however, that species separated out as a result of DNA research usually form groups with similar shell characters and with well-defined and/or restricted geographical distribution.

The species studied here originate from the North Pacific, more precisely from the Sea of Okhotsk (1), the Sea of Japan (2), the Yellow Sea (3), and the East China Sea (4) (Fig. 1). The subfamily Ocenebrinae does not occur in the Tropical Indo-West Pacific.

The most useful shell characters for precise identification are found in the morphology of the protoconch, the early teleoconch whorls, the varical wings, the spiral sculpture, and the length and form of the siphonal canal. To a lesser extent, the number of varices or varical wings of the last teleoconch whorl can be used, but this number is highly variable in a few species and thus of little real use. The size of the aperture is another useful tool in some instances.

Abbreviations

NHMUK: The Natural History Museum, London, U.K.

MNHN: Muséum national d'Histoire naturelle, Paris, France.

SMF: Forschungsinstitut Senckenberg, Frankfurt, Germany.

USNM: National Museum of Natural History, Washington, D.C., U.S.A.

UMUT: The University Museum, The University of Tokyo, Japan.

RH: collection of Roland Houart.

Figures 2-19 (scans of black and white photographs)

2-3. *Ocenebra acanthophora* (A. Adams, 1863). Syntype NHMUK 2002062, Tsusaki, Japan, 38.5 mm.

4-12. *Ocenebra inornata* (Récluz, 1851).

4-5. Syntypes MNHN, Korean Sea, 31 mm; **6.** Syntype of *Murex talienwhanensis* Crosse, 1862, MNHN, 36.5 mm; **7.** Lectotype of *Trophon incomptus* Gould, 1860, USNM 1689, Hokkaido, Japan, 15 mm, photo courtesy A.J. Baldinger and R. Johnson; **8-9.** Syntypes of *Murex crassus* A. Adams, 1853, NHMUK 20020263, China. **8:** 31 mm, **9:** 22.2 mm; **11-12.** Syntypes of *Murex endermonis* E.A. Smith, 1875, NHMUK 73.8.6.29, Japan. **11:** 30 mm, **12:** 31.5 mm.

13. *Pteropurpura (Pteropurpura) modesta* (Fulton, 1936). Syntype NHMUK, Kii, Japan, 31.5 mm.

14-15. *Pteropurpura (Pteropurpura) plorator* (A. Adams & Reeve, 1845)

14. Syntype NHMUK 79.2.26.100, Korean Archipelago, 38 mm; **15.** Syntype of *Murex expansus* Sowerby, 1860, BMNH 1971005, China, 41.5 mm.

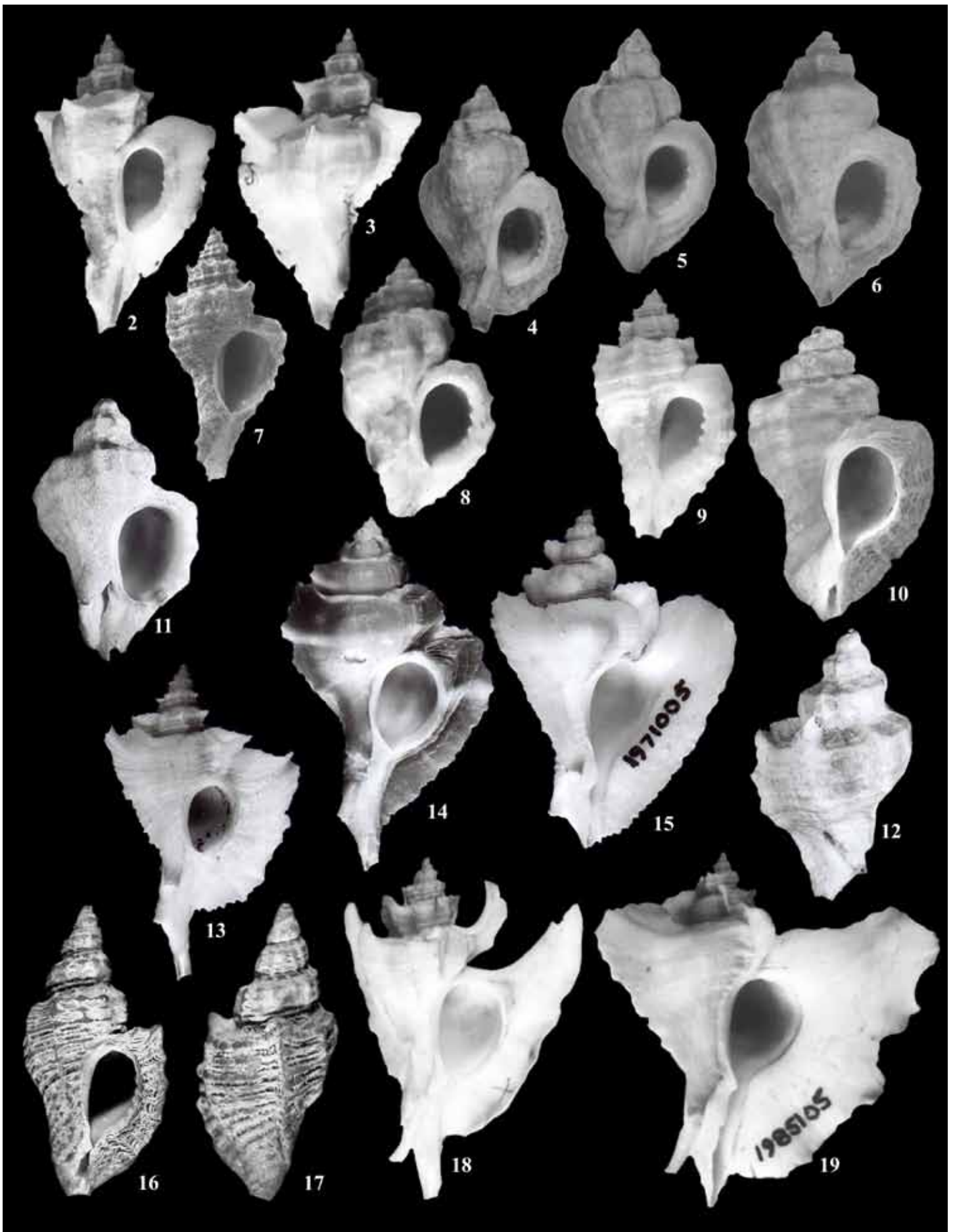
16-17. *Ocenebra lumaria* (Yokoyama, 1926). Holotype, Sawane Formation, UMUT CM no. 23118, 19 mm, photo courtesy Dr. Sasaki.

18-19. *Pteropurpura (Ocinebrellus) falcata* (Sowerby, 1834)

18. Syntype NHMUK 1974126, Japan, 39 mm; **19.** Syntype of *Murex eurypteron* Reeve, 1845, BMNH 1985105, Japan, 44.9 mm.



Fig. 1 Study area map.



Genus *Ocenebra* Gray, 1847

Type species by monotypy: *Murex erinaceus* Linnaeus, 1758

***Ocenebra acanthophora* (A. Adams, 1863)**

Figs. 2-3, 37-41, 75, Table 1

Phyllonotus acanthophorus A. Adams, 1863: 372; Sowerby, 1879, fig. 151.

Murex endermonensis Sowerby, 1879 (*Murex*), as *acanthophorus* var.

Distribution. Western and Northeastern Taiwan, East China Sea and Yellow Sea, depth unknown, and Tsusaki, Japan (type locality), in 50-200 m.

Description. Shell up to 60 mm in height at maturity, with 1.5-1.75 protoconch whorls and up to 6 teleoconch whorls. Protoconch large, high, smooth, shouldered (Fig. 75). Axial sculpture of last teleoconch whorl with 3-5 broad high varices with moderately long or long, broadly open spine at shoulder. Spiral sculpture of numerous, low rounded primary, secondary, and tertiary cords. Last whorl with 7 spiral cords on subsutural ramp and 32 to 40 cords or more (primary, secondary and tertiary cords) on convex part of whorl occasionally of same strength. The fifth primary cord (P5) occasionally ending as short labral tooth. Aperture large, ovate. Outer lip crenulate, weakly erect, with very weak denticles within. Columellar lip narrow, smooth, adherent. Siphonal canal moderately long, broad, straight, sealed. White, light brown, or dark brown, occasionally with darker spiral bands.

Remarks. *Ocenebra acanthophora* differs from *O. inornata* by having a shell with a comparatively more triangular outline, a more strongly shouldered last whorl, and a longer, obviously narrower, siphonal canal. It differs from *O. lumaria* by the same characters and by having more numerous, narrower, and lower spiral cords. Some specimens of *O. acanthophora* may have only 3 varical wings on the last teleoconch whorl and could be confused with *Pteropurpura* species. It differs from *P. plorator* and *P. esycha* in having a different protoconch morphology, comparatively narrower spire whorls, and usually in having heavier, narrower, and more numerous spiral cords. It differs from *P. falcata* and *P. modesta* in having a narrower, more triangular shell with less expanded varical wings and by having more obvious, narrower spiral cords. The name *endermonensis* has been applied to small and undeveloped specimens.

***Ocenebra inornata* (Récluz, 1851)**

Figs. 4-12, 20-36, 72-73, Table 1

Murex inornatus Récluz, 1851: 207, pl. 6, fig. 8.

Murex crassus A. Adams, 1853.

Murex japonicus Dunker, 1860.

Trophon incompta Gould, 1860.

Murex talienwhanensis Crosse, 1862.

? *Murex* (*Cerastoma*) *endermonis* E.A. Smith, 1875.

Distribution. South Taiwan to South Sakhalin Island, intertidal to 12 m. Accidentally introduced with oysters in the USA: coasts of

Oregon, Washington, and British Columbia, particularly in Puget Sound, and more recently in the Bay of Oléron, France, since 1995 and in the Netherlands since 2007.

Description. Shell up to 60 mm in height, with 1.5-2 protoconch whorls. Protoconch large, smooth, weakly shouldered (Figs. 72-73). Axial sculpture of last teleoconch whorl with 4-6 narrow or broad, rounded or bladelike varices. Spiral sculpture of usually moderately high primary cords and low secondary and tertiary cords. P5 occasionally ending as short labral tooth. Aperture large, broad, roundly-ovate. Columellar lip narrow, smooth. Outer lip weakly crenulate, with low, weak denticles within. Siphonal canal short or moderately long, straight, sealed. Shell white, beige, light tan, tan, brown, or dark brown. Uniformly colored or with one or more darker spiral bands or blotches or with lighter colored varices.

Remarks. *Ocenebra inornata* has a highly variable shell morphology, as is usual in many ocenebrine species. Some specimens of *O. inornata* have strong rounded varices, other shells have varices with thin lamellae, while some intermediate forms have rounded varices on early whorls and bladelike varices on the last whorl. A careful examination of the shell structure, however, does allow us to consider all these various forms to be conspecific. Only one form remains doubtful and could be worth a name on its own: *O. endermonis* (E.A. Smith, 1875). It is therefore doubtfully included in the synonymy. The syntypes of *O. endermonis* and a few other studied shells have a moderately strong labral tooth formed by the extension of the fifth primary spiral cord. Such a labral tooth is rarely observed in the other forms of *O. inornata*, and if so, it is very short and does not alter the form of the spiral cord (Sirenko & Houart, 2003). A beautiful form from Japan and the South China Sea with 4-7 lamellate varices, occasionally with adapically bent shoulder spines, wrongly identified as "*Pteropurpura adunca*," was illustrated by Radwin & D'Attilio (1976: pl. 22, fig. 10) and Tsuchiya (2000: pl. 193, fig. 124) and is recently seen in auctions on websites (Figs. 32-33, 36) [see also under *Pteropurpura* (*Ocenebrellus*) *falcata*].

***Ocenebra lumaria* Yokoyama, 1926**

Figs. 16-17, 42-46, 74, Table 1

Ocenebra lumaria Yokoyama, 1926: 270, pl. 32, fig. 21.

Distribution. South Korea, northern Japan Sea, Honshu and northeastern Hokkaido, and south Sakhalin Island, intertidal to 8 m, on rocks.

Figures 20-36 - *Ocenebra inornata* (Récluz, 1851)

20-21. Posjet Bay, near Korea, RH, 44.1 mm; **22-23.** Hokkaido, Japan, RH, 51.8 mm; **24.** Hokkaido, Japan, RH, 41.4 mm; **25.** Paengnyongdo Island, S Korea, RH, 41.6 mm; **26-27.** Pomsom Island, S Korea, RH, 40.2 mm; **28.** Puget Sound, Washington, USA, RH, 41 mm.

29. Oleron Island, France, RH, 50.7 mm; **30-31.** Oleron Island, France, RH, 45.6 mm; **32-33.** Huanghai Sea, RH, 52 mm; **34-35.** Hokkaido, Japan, RH, 26 mm; **36.** Tokyo Bay, Japan, RH, 35.4 mm.



Description. Shell up to 35 mm in height at maturity, with 1.5 protoconch whorls. Protoconch small, smooth, rounded (Fig. 74). Axial sculpture of last teleoconch whorl with 4-6 broad, moderately high, adaperturally squamose, bladeliike varices. Spiral sculpture of high primary, secondary, and tertiary cords. Aperture large, ovate. Outer lip weakly crenulate, low or weakly erect, with low, occasionally indistinguishable denticles within. Siphonal canal short, straight, weakly abaperturally bent at tip. Grayish-white or light tan, occasionally with darker, light-brown spiral band.

Remarks. *Ocenebra lumaria* was described from the Pliocene of Sado Island, Niigata Prefecture, Japan, but live specimens are collected as well. This species differs from the most similar *O. inornata* in having a small, rounded protoconch (Fig. 74), while *O. inornata* has a broad, occasionally shouldered, protoconch (Figs. 72-73). *O. lumaria* also has high, more apparent primary, secondary, and tertiary spiral cords and spiral sculpture on the subsutural ramp.

Genus *Pteropurpura* Jousseau, 1880

Type species by original designation: *Murex macropterus*
Deshayes, 1839

Pteropurpura (Pteropurpura) esycha (Dall, 1925) Figs. 47-48, 76, Table 1

Murex esychus Dall, 1925: 21, pl.32, fig.9; pl.33, fig.6.

Distribution. Southeastern Japan, Kyushu to Kii Peninsula, in 150-200 m.

Description. Shell up to 37 mm in height (holotype), with small, rounded, weakly flattened protoconch of 1.3-1.5 whorls (Fig. 76) and weakly shouldered, broadly convex, finely rugose teleoconch whorls. Axial sculpture of last teleoconch whorl of 3 wing-like varices. Spiral sculpture of weak to moderately high primary and low secondary cords. Aperture large, broadly-ovate, with smooth columellar lip. Outer lip smooth within. Siphonal canal short, broad, strongly dorsally bent, sealed. White or light tan with irregular light brown markings.

Remarks. This is a very handsome and apparently very rare species. The holotype was illustrated by Kaicher (1978: 1624), while other specimens were figured by Radwin & D'Attilio (1976: 130, pl. 22, fig. 5) and by Tsuchiya (2000: 388, pl. 193, fig. 119). Most of the shells seen on websites and in recent auctions and identified as *P. esycha*, are actually specimens of *P. plorator* (form *expansa*). *Pteropurpura esycha* differs from *P. plorator* in having a lower and more broadly convex spire, broader, more rounded teleoconch whorls, and a short, strongly backwards-bent siphonal canal (longer and almost straight in *P. plorator*). The protoconch of *P. esycha* is also comparatively broader, low, and weakly flattened.

Pteropurpura (Pteropurpura) modesta (Fulton, 1936) Figs. 13, 66-71, 77, Table 1

Ocenebra (Ocinebrellus) modesta Fulton, 1936: 10, pl.2, fig.3.

Distribution. Japan, Kyushu to Wakasa Bay and Boso Peninsula, in 30-200 m (Tsuchiya, 2000).

Description. Shell up to 35 mm in height, with a small, strongly adapically shouldered protoconch of 1.5 whorls and 6 strongly shouldered teleoconch whorls. Protoconch with a narrow keel adapically (Fig. 77). Axial sculpture consists of 3 webbed varices extending to midway of the siphonal canal. Other axial sculpture of a single, small, low, broad knob at shoulder. Spiral sculpture of fairly strong, low primary, secondary, and tertiary cords. Aperture ovate, columellar lip smooth, outer lip smooth within. Siphonal canal moderately long, narrow, sealed, weakly abaxially bent. White, cream, tan, or light brown, occasionally with brown blotches below the suture and on some primary spiral cords.

Remarks. This species was illustrated as *Pteropurpura stimpsoni* (A. Adams) by Kira (1969: 24, fig. 11) and Tsuchiya (2000: pl. 193, fig. 120). *Murex stimpsoni* A. Adams, 1863, was succinctly described and not illustrated and can also be the three-varical form of what previously was described as *M. falcatus* Sowerby, 1834. *M. stimpsoni* was subsequently illustrated by Sowerby (1879: fig. 196), but he illustrated a narrow shell with short and broad siphonal canal and with a broadly winged apertural varix (Fig. 84). No type was located in NHMUK, so that its real identity is still currently doubtful, and Fulton's name is preferred to designate this small, beautiful, and apparently rare Japanese muricid. For comparison with *P. falcata*, see notes under that species.

Pteropurpura (Pteropurpura) plorator (Adams & Reeve, 1845) Figs. 14-15, 49-53, 54-57, 78-79, Table 1

Murex plorator A. Adams & Reeve, 1845: pl.1, fig. 191.

Murex expansus Sowerby, 1860.

Pteronotus brachypteron A. Adams, 1863.

Distribution. Taiwan, South and East China Sea, Yellow Sea to Kyushu (Japan), in 50-200 m.

Figures 37-53

37-41. *Ocenebra acanthophora* (A. Adams, 1863)

37-38. South Taiwan Strait, RH, 44 mm; 39-40. East China Sea, RH, 46.8 mm; 41. Yellow Sea, RH, 51.3 mm.

42-46. *Ocenebra lumaria* (Yokoyama, 1926)

42-43. South Honshu, Japan, RH, 35.3 mm; 44. Vostok Bay, Japan Sea, RH, 27 mm; 45-46. Nemuro, Japan, RH, 21.8 mm.

47-48. *Pteropurpura (P.) esycha* (Dall, 1925). Ashizuki-Zuki, Japan, RH, 27.8 mm.

49-53. *Pteropurpura (P.) plorator* (A. Adams, & Reeve, 1845)

49-50. East China Sea, RH, 38.3 mm; 51. NW Taiwan, RH, 39.1 mm; 52-53. East China Sea, RH, 58.3 mm.



Description. Shell up to 80 mm in height, with small, rounded, low protoconch of 1.5 whorls (Figs. 78-79) and broadly convex teleoconch whorls. Axial sculpture of last teleoconch whorl of 3 wing-like varices. Intervarical area smooth, usually with a low, single, broad node. Spiral sculpture of weak, low primary, secondary, and tertiary cords, but occasionally almost smooth. Aperture broadly-ovate, columellar lip narrow, smooth. Outer lip smooth within. Siphonal canal moderately long or long, straight or weak abaxially, and backwards-bent. Ochre, light tan, or brown, usually with darker colored spiral band, occasionally with dark brown broad spots below suture and on periphery of whorls. Aperture white within.

Remarks. *Pteropurpura plorator* is an apparently common species, which always has 3 wing-like varices on the last whorl, as in all the other *Pteropurpura s.s.* species. The shell morphology is not very variable, although the wings may be more or less expanded and the siphonal canal moderately long or long. The spiral sculpture is almost always missing, although it can be present in some specimens (Fig. 51). There are only two synonyms: *P. brachypteron* which was described but not illustrated and for which no type was located in NHMUK, but the description is assimilated to that of *P. plorator*. *Murex expansus* is smaller than the typical form, however always with one teleoconch whorl less. The siphonal canal is also relatively shorter, but this feature is also observed in some typical forms of *P. plorator* (Figs. 52-53), so I consider *M. expansus* as a junior synonym of *P. plorator*.

***Pteropurpura (Pteropurpura) stimpsoni* (A. Adams, 1863)
Fig. 84**

Pteronotus stimpsoni A. Adams, 1863: 371; Sowerby, 1879, fig. 196

Remarks. See under *P. modesta*.

Subgenus: *Ocinebrellus* Jousseaume, 1880

Type species by original designation: *Murex eurypteron* Reeve, 1845 (= *Murex falcatus* Sowerby, 1834)

Ocinebrellus was named by Jousseaume (1880: 335). Two years later (1882: 333), he included what he thought was a different species: *Ocinebrellus falcatus* (Sowerby). He also included *O. aduncus* (Sowerby), and *O. acanthophorus* (A. Adams), both here considered as *Ocenebra* species. He described *Ocinebrellus* as follows (translation): "Shell with low spire with very depressed whorls near the suture; whorls with 4 winged varices, extending to the middle of the siphonal canal; aperture ovate with erect and continuous edges; siphonal canal closed, quite long and tapered anteriorly". The shell of *Ocinebrellus* is thin and light with 4 (rarely 3 or 5) thin, large, and broad bladelike lamellae, a narrow, long, sealed siphonal canal (longer than the height of the aperture), and a strongly erect outer apertural margin (From Houart & Sirenko, 2003).

***Pteropurpura (Ocinebrellus) falcata* (Sowerby, 1834)
Figs. 18-19, 58-65, 80-81, 82-83, Table 1**

Murex falcatus Sowerby, 1834: pt.62, fig. 31; Sowerby 1841: 145
Murex aduncus Sowerby, 1834.
Murex eurypteron Reeve, 1845.

Distribution. Taiwan, South and East China Sea, Yellow Sea to South Hokkaido, Japan, in 20-220 m.

Description. Shell up to 70 mm in height, with large, strongly shouldered, irregularly shaped protoconch of 1.5 whorls (Figs. 80-81) and 6 or 7 strongly shouldered, broad teleoconch whorls. Axial sculpture of last teleoconch whorl consisting of 3-5 broadly winged varices. Overall axial sculpture of irregular weak growth striae. Spiral sculpture of low primary, secondary, and tertiary cords, almost or completely obsolete on the last teleoconch whorl in most of the examined specimens. Spiral cords always present on first to third teleoconch whorls, occasionally present on fourth to sixth whorls. Aperture large, broadly-ovate. Columellar lip smooth. Outer lip smooth within. Siphonal canal moderately long, broad, sealed, tapered abapically, abaxially bent. White, cream, or tan, occasionally with brown blotches or light brown band at periphery.

Remarks. In a short note, Fulton (1917: 238) gave precedence to *Murex aduncus* Sowerby over *Murex falcatus* Sowerby. To explain his decision, Fulton wrote that *M. aduncus* was named in 1834 while *M. falcatus* was described in 1840, giving the first name a priority of about six years over *M. falcatus*. He overlooks the fact that *M. falcatus* was perfectly illustrated by Sowerby (1834: pl. 62, fig. 31). *M. falcatus* was described in 1841 (and not in 1840), but the illustration in 1834 is available and was given precedence over *M. aduncus* by Houart & Sirenko (2003: 71). The shell is quite variable in size and shape and number of varices, but it is easily identified thanks to its broad, irregularly-shaped and shouldered protoconch, its strongly shouldered whorls, its broad wing-like varices, its almost smooth last teleoconch whorl, and its quite long, broad, and tapered siphonal canal. The three-varical form (Figs. 19, 59-60) can be occasionally confused with *P. plorator*, however this species has broadly convex whorls (not shouldered) and a rounded protoconch. It can also be confused with *P. modesta* (see Figs. 58 and 66), but *P. modesta* is always smaller with the same number of teleoconch whorls and a narrower siphonal canal, as well as a smaller, regularly-shaped protoconch with a narrow keel adapically. A shell recently seen on websites and auctions is often identified as *P. adunca* (Figs. 32-33, 36). The type material of *Murex aduncus*

Figures 54-65

54-57. *Pteropurpura (P.) plorator* (A. Adams & Reeve, 1845)

54-55. East China Sea, RH, 80.4 mm; **56-57.** Taiwan, RH, 35.1 mm.

58-65. *Pteropurpura (Ocinebrellus) falcata* (Sowerby, 1834)

58. East China Sea, RH, 43.5 mm; **59-60.** South of Cape Nomo-Zaki, Japan, RH, 49.5 mm; **61-62.** Minabe, Japan, RH, 64.6 mm; **63.** Taiwan, RH, 57.3 mm; **64.** Uruga Strait, Japan, RH, 52 mm; **65.** Japan, RH, 35.9 mm.



was not located, however the original illustration (Fig. 82) leaves no doubt about its synonymy with *P. falcata* (compare Fig. 82 and 83) [see also under *Ocenebra inornata*].

DISCUSSION

No type material was located in NHMUK for *Murex caliginosus* Reeve, 1845 (Fig. 85), a species described without any locality data. The species was synonymised with *Ocenebra lugubris* (Broderip, 1833) by Vokes (1971: 27) and with *Pteropurpura falcata* by Houart (2010). The species was only illustrated dorsally (Reeve, 1845: pl.30, fig. 141). New material allowed me to compare this figure more carefully to some specimens of *O. erinaceus* (Linnaeus, 1758) from the Mediterranean (Fig. 86). I think there is little doubt that *M. caliginosus* is a junior synonym of the latter. No original material was ever illustrated for *Phyllonotus coronatus* A. Adams, 1863, or for *Phyllonotus unifasciatus* A. Adams, 1863, and the type material was not located in BMNH. Both names are probably junior synonyms of *Ocenebra inornata*, however a doubt remains because both were originally described as having an open siphonal canal.

Acknowledgements

I am very grateful to the staff of the Muséum National d'Histoire Naturelle, Paris, France, and of the Natural History Museum, London, United Kingdom, for their constant collaboration. Also thanks to A. Baldinger and P. Johnson, Museum of Comparative Zoology, Cambridge, Massachusetts, USA, for the photograph of the holotype of *Trophon incomptus*; to R. Janssen, Forschungsinstitut Senckenberg, Frankfurt, Germany, for the photographs of the holotype of *Murex japonicus*; and to T. Sasaki, The University Museum, the University of Tokyo, Japan, for the photographs of the holotype of *O. lumaria*. I also Gary Rosenberg of the Academy of Natural Sciences, Philadelphia for his advice on a nomenclatural issue.

Literature cited

Adams A. 1863. On the species of Muricinae found in Japan. *Proceedings of the Zoological Society of London*, 31: 370-376.

Adams, A. & Reeve, L. A. 1845. in Reeve, L.A. *Conchologia iconica, or illustrations of the shells of molluscous animals*, L. Reeve, London: suppl. 1.

Dall, W. H. 1925. Illustrations of unfigured types of shells in the collection of the U.S. National Museum. *Proceedings of the U.S. National Museum* 66(2554): 1-41, pls. 1-36.

Fulton H.C. 1917. Mollusca notes. III. 10: on the priority of *Murex aduncus* Sow. over *Murex falcatus* Sow. *Proceedings of the Malacological Society of London*, 12: 238.

Fulton, H.C. 1936. Descriptions of five new species and varieties. *Proceedings of the Malacological Society of London* 22: 9-10, pl.2

Houart, R. 2010. *Murex caliginosus* Reeve, 1845. Accessed through: World Register of Marine Species at <http://www.marinespecies.org/aphia.php?p=taxdetails&id=404239> on 2011-03-06.

Houart, R. & Sirenko, B. I. 2003. Review of the Recent species of *Ocenebra* Gray, 1847 and *Ocenebrellus* Jousseaume, 1880 in the Northwestern Pacific. *Ruthenica* 13 (1): 53-74.

Jousseaume F. 1880. Division méthodique de la famille des purpuridés. *Le Naturaliste*, 2 (442): 335-336.

Jousseaume F. 1882. Etude des Purpuridae et description d'espèces nouvelles. *Revue et Magasin de Zoologie*, 3 (7): 314-348.

Kaicher S.D. 1978. *Card catalogue of world-wide shells, Muricidae III, IV, V.* Privately publ. St. Petersburg, Florida.

Kira T. 1969. *Coloured illustrations of the shells of Japan, enlarged and revised edition.* Hoikusha, Osaka, 240 pp.

Radwin G. & D'Attilio, D. 1976. *Murex shells of the world: An illustrated guide to the Muricidae.* Stanford University Press, Stanford, 284 pp.

Reeve L.A. 1845-46. *Conchologia iconica, or illustrations of the shells of molluscous animals. Monograph of the genus Murex.* L. Reeve, London, 3: pls. 1-14.

Récluz M.C. 1851. Description de quelques coquilles nouvelles. *Journal de Conchyliologie*, 2:194-216.

Sowerby G.B. II. 1834-1841. *The Conchological Illustrations, Murex.* Sowerby, London: pts. 58-67, figs. 1-58 (1834); pts. 187-199 (latter incl. catalogue: 1-9 + index [i]-[ii]), pls. 57-121 (1841).

Sowerby G.B. II. 1879. Monograph of the genus *Murex*. *Thesaurus conchylorum.* Sowerby, London, 4 (22-34), 1-55, pls. 380-402.

Tsuchiya K. 2000. Muricidae, in: Okutani T. (ed). *Marine Mollusks in Japan*, pp 364-421, Tokai University Press, Tokyo, Japan, 1173 pp.

Vokes, E.H. 1971. Catalogue of the genus *Murex* Linné (Mollusca: Gastropoda). Muricinae, Ocenebrinae. *Bulletin of American Paleontology*, 61 (268): 1-141.

Yokoyama M. 1926. Fossil shells from Sado. *Journal of the Faculty of Science, Imperial University, Tokyo*, ser. 2, 1 (8): 249-312.

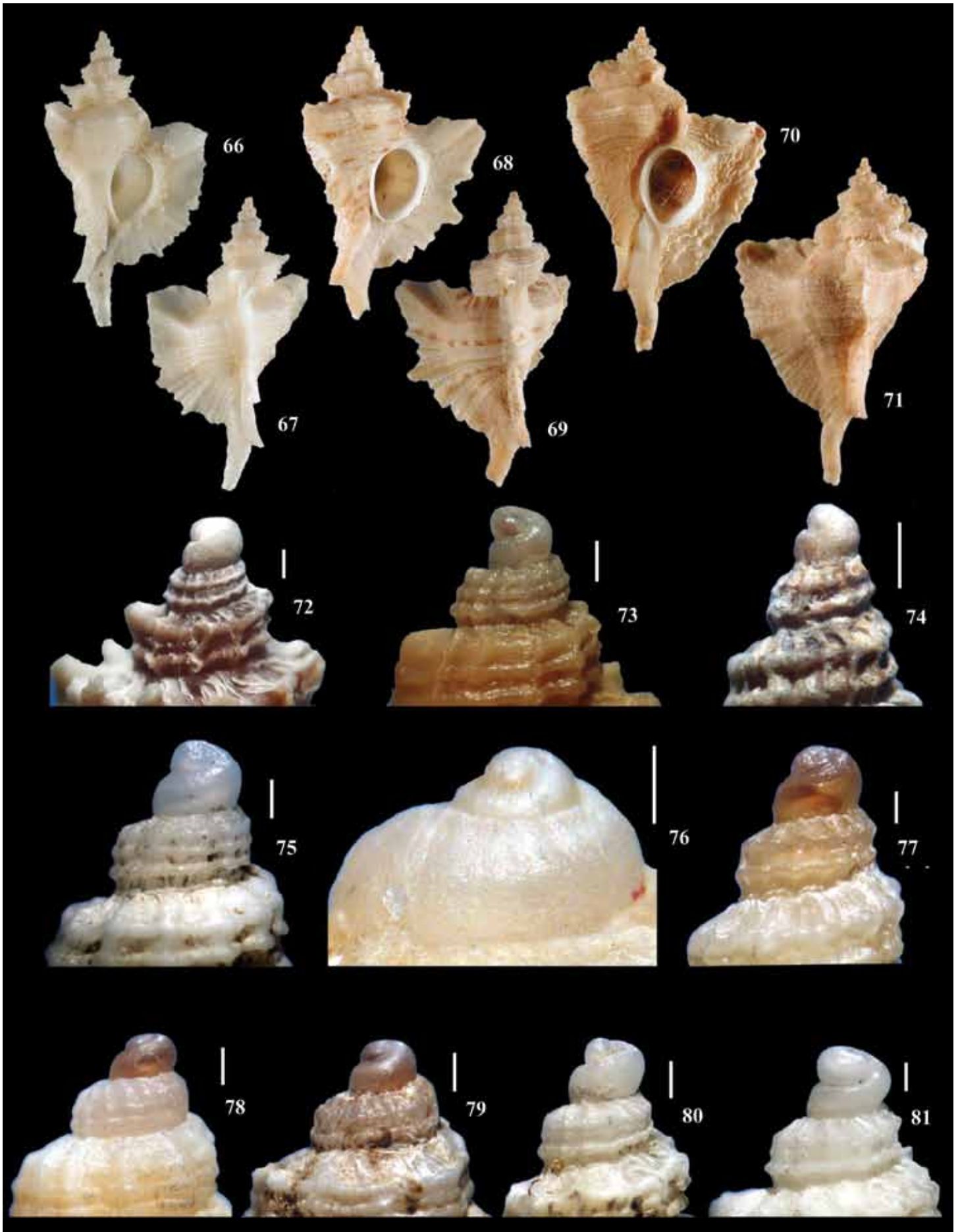
Figures 66-81

66-71. *Pteropurpura (P.) modesta* (Fulton, 1936)

66-67. Minabe, Japan, RH, 27.5 mm; **68-69.** Kumamoto, Japan, RH, 26.7 mm; **70-71.** Kusui, Nada-Cho, Wakayama Pref., Japan, RH, 34.9 mm.

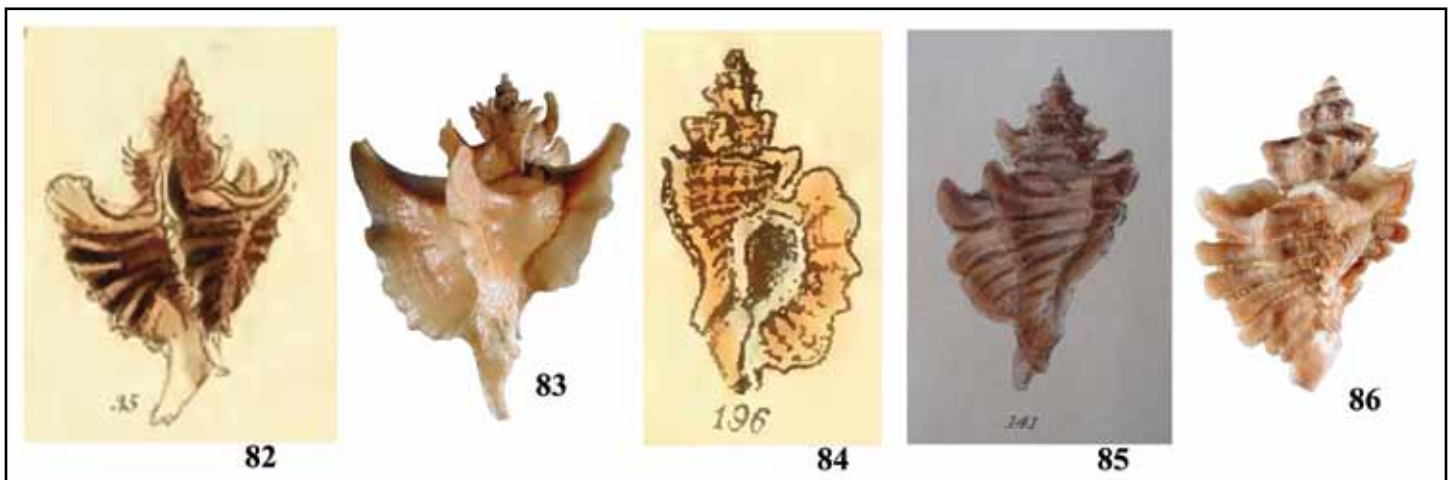
72-81. Protoconchs (scale bar 500 µm) (all RH)

72-73. *Ocenebra inornata* (Récluz, 1851). **72:** Chino, Korea; **73:** Yellow Sea; **74.** *Ocenebra lumaria* (Yokoyama, 1926), Hokkaido, Japan; **75.** *Ocenebra acanthophora* (A. Adams, 1863), South Taiwan; **76.** *Pteropurpura (P.) esycha* (Dall, 1925), Ashizuki-Zuki, Japan; **77.** *Pteropurpura (P.) modesta* (Fulton, 1936), Kumamoto, Japan; **78-79.** *Pteropurpura (P.) plorator* (A. Adams, & Reeve, 1845), East China Sea; **80-81.** *Pteropurpura (Ocenebrellus) falcata* (Sowerby, 1834). **80:** East Taiwan; **81:** Waita, Japan.



Character	Name	<i>O. acanthophora</i>	<i>O. inornata</i>	<i>O. lumaria</i>	<i>P. esycha</i>	<i>P. modesta</i>	<i>P. plorator</i>	<i>P. falcata</i>
	↓ →							
Maximum size		60 mm	60 mm	35 mm	37 mm	35 mm	80 mm	70 mm
General outline		Triangular	Rounded	Triangular	Broadly triangular	Triangular	Broadly triangular	Broadly triangular
Protoconch		Large, 1.5-1.75 shouldered, high whorls	Large, 1.5-2 weakly shouldered whorls	Small, 1.5 rounded whorls	Small, 1.3-1.5 weakly flattened, low, rounded whorls	Small, 1.5 strongly adapically shouldered, with narrow keel adapically	Small, 1.5 rounded, low protoconch whorls	Large, 1.5 strongly shouldered, irregularly shaped protoconch whorls
Number of varical wings on last teleoconch whorl		3-5	4-6	4-6	3	3	3	3-5
Spiral sculpture		Numerous, low, rounded cords	Moderately high primary cords, low secondary & tertiary cords	High, rounded cords	Weak to moderately high primary & low secondary cords	Fairly strong, low cords	Weak, low primary, secondary, & tertiary cords; occasionally smooth	Weak, low primary, secondary, & tertiary cords; occasionally smooth
Siphonal canal		Long, broad	Short to moderately long	Short	Short	Long, narrow	Long, narrow or moderately broad	Long, broad

Table 1. Quick reference chart for Ocenebrinae in the northwestern Pacific.



Figures 82-86.

82. *Murex aduncus* Sowerby, 1834 (from Sowerby, 1834); 83. *Pteropurpura (P.) falcata* (Sowerby, 1834), Uruga Strait, Japan, RH, 52 mm; 84. *Murex stimpsoni* (A. Adams, 1863) (From Sowerby, 1879); 85. *Murex caliginosus* Reeve, 1845 (from Reeve, 1845); 86. *Ocenebra erinaceus* (Linnaeus, 1758), Malaga, Spain, RH, 32 mm.

Roland Houart
 St. Jobsstraat, 8
 B-3400 Landen (Ezemaal) - Belgium
 e-mail: roland.houart@skynet.be
 roland.houart@gmail.com

Conchologists of America

2012 *Neptunea* Award

The *Neptunea Award* (Brunner, 2000; Lipe, 2000) was established at the midyear (1999-2000) meeting of the COA Board in order to recognize outstanding and distinguished service to conchologists and malacologists in recognition of:

1. Service to the Conchologists of America.
AND/OR
2. Service to the scientific interests of Conchologists of America.
AND/OR
3. Service to the science of Malacology as it applies to conchologists anywhere.

Although exceptions have been made, the COA Board, which serves as the jury for the *Neptunea Award*, has traditionally weighted its consideration for award recipients toward (1) **amateurs**: those not currently pursuing a principal career involving collection, study, or commerce involving mollusks, and (2) **active members** of the COA. The nomination will close on May 1, 2012 to give the Board time for discussion and balloting. We currently have five nominees under consideration but expect more by the deadline. Up to three awards have been made at annual conventions beginning with the Houston event in 2000 (see below). Nomination(s) for the *Neptunea Award* may be made by any COA member, and the format is simple:

Name of nominee:

This person deserves this award because (Here a somewhat detailed paragraph will suffice.) Signed

and either snailmail or email that nomination to the COA *Neptunea* Award Coordinator.

Harry. G. Lee

4132 Ortega Forest Drive
Jacksonville, FL 32210
shells@hglee.com

Previous *Neptunea Award* winners:

- 2000 (Houston, TX):** Ross Gunderson, Ben and Josy Wiener, Debbie Wills
- 2001 (Port Canaveral, FL):** Emilio Garcia, Harry Lee, Lynn Scheu
- 2002 (Sarasota, FL):** Richard Petit, Bernard and Phyllis Pipher
- 2003 (Tacoma, WA)** Jim and Linda Brunner, Kevin Lamprell, Doris Underwood
- 2004 (Tampa, FL):** Bobbi Houchin
- 2005 (Punta Rassa, FL):** Richard Forbush, Anne Joffe, William Lyons
- 2006 (Mobile, AL):** Jack Lightbourn, Betty Lipe
- 2007 (Portland, OR):** none given
- 2008 (San Antonio, TX):** Bill Frank, Archie Jones
- 2009 (Clearwater, FL)** none given
- 2010 (Boston, MA):** none given

2011 (Port Canaveral, FL): Alan Gettleman

Brunner, L., 2000. The Neptunea Award. *American Conchologist* 28(3): 3. Sept.
Lipe, B[etty], 2000. Presidents Message. *American Conchologist* 28(4): 2. Dec.


Submitted 7 November, 2011 by Harry G. Lee

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 Founded in 1966

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 B-4680 Oupeye – Belgium

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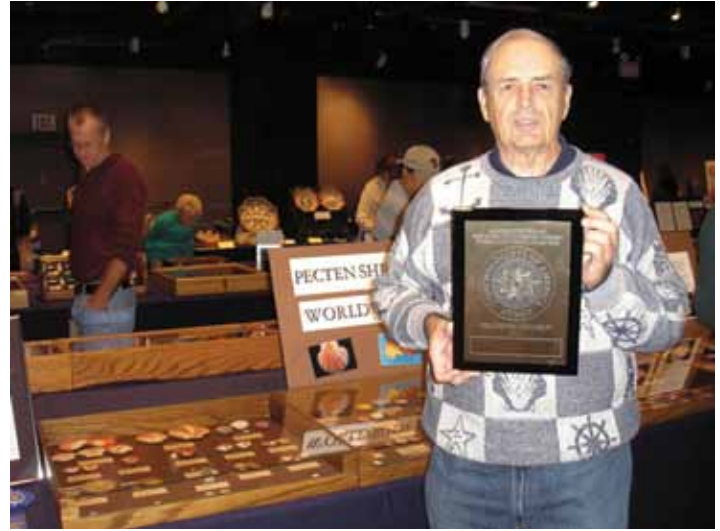
An autobiography by Ed T. Hanley
 As told to Rhys G. Llewellyn

Philadelphia COA Award

The annual Philadelphia Shell Show was held on 1-2 Oct 2011. This show is the largest of its kind in the Northeast and as in previous years it was held at the Academy of Natural Sciences in Philadelphia. Longtime shell show participant and winner of numerous shell show awards, Gene Everson, was awarded the COA trophy for his display of "Pecten Shells Worldwide." Gene's display totaled 30 feet with 13 cases. That is a lot of scallops.

Events at this year's show included:

- **Behind-the-Scenes Tour:** Guided tours of the Academy's Malacology collection of over 10 million specimens.
- **Meet Real Malacologists:** Talks with scientists from the Academy's Malacology Department and shell experts from the Philadelphia Shell Club.
- **International Shell Market**
- **Competitive Shell Displays**
- **Fine Shell Crafts:** A showcase of sailor's valentines and other fine shell crafts competing for prizes.




Above: Gene Everson, an experienced diver and expert shell collector, holds his COA Award for the 2011 Philadelphia Shell Show. Gene adds this award to the many he has won in the past, with exhibits of a myriad of different molluscan families in almost every category of shell show display.

Below: The 13 cases and 30 feet of Gene's spectacular display.



Above & below: Some of Gene's colorful scallops in the winning display.





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North Carolina COA Award

The 2011 North Carolina Shell Show was held at the Cape Fear Museum in Wilmington, NC, Sept. 23-24 2011. As in years past, this was a well-attended and popular event. The Cape Fear Museum provides an excellent venue, accommodating all of the various displays with plenty of room for spectators. This year's winners of the COA Award were Ed Shuller and Jeannette Tysor for their superb display: "The Family Cassidae."



Above: The Cape Fear Museum.

Below: COA Award winners Ed Schuller and Jeannette Tysor.

Show award categories and winners included:

- **Best Photography:** Jeannette Tysor, *Cymatium nicobaricum*
- **Best Sailor's Valentine:** Jane Santini
- **Best Novice Award:** Lyle Therriault, North Carolina Bivalves
- **Best Self Collected Exhibit:** Vicky Wall, Hawaii Five-O
- **Best North Carolina Exhibit:** Lyle Therriault, North Carolina Bivalves
- **Best Arts and Crafts:** Jane Santini, Double Sailor's Valentine
- **Best Junior Award:** Megan Ward, The Tusk Shell
- **Best Self Collected Shell:** Vicky Wall, *Triplofusus giganteus* (albino)
- **Best Shell of the Show:** Dr. Ron Hill, *Bayerotrochus midas*
- **Janet Durand Award:** Susan Roche, Sculpture using Shell Fragments
- **Dean and Dottie Weber Environmental Awareness Award:** Sheila Nugent, Shells from Sanibel and Captive Islands
- **Hugh Porter Award:** Sheila Nugent, In Search of the Acadian Subprovince
- **DuPont Trophy:** John Timmerman, Limitless Variety
- **COA Award:** Ed Schuller and Jeannette Tysor, The Family Cassidae





Philippine Marine Mollusks Vols 1-4

by Guido T. Poppe (with additional subject matter expert authors)

2008-2011, Conchbooks Publishing, Hackenheim, Germany
pp. 759 (vol. 1), 849 (vol. 2), 665 (vol. 3), & 676 (vol. 4), a total of 1,315 color plates

ISBN Vols. 14: 978-3-939767-19-0, approx. \$130 for each volume

If you want great color images of Philippine mollusks (many you have probably never seen), multiple images of each species (with many *in situ*), then these books are a must. Be prepared though. If you order all four volumes at the same time, your mailman may quit speaking to you. The four volumes total 29.7 lbs (13.5 kilos), but if you want to identify Philippine molluscan species, then you will have to put your mailman to the test.

This is not a rewrite of the old standard, "Shells of the Philippines," by Springsteen & Leobrera (1986), but rather a complete departure with superb photographs (typically multiples of each species) and over three times the number of species covered. The original "Shells of the Philippines," illustrates over 1,600 molluscan species; the new "Philippine Marine Mollusks" (vols. 1-4) illustrates over 4,600 species in some 1,000 color plates with

over 11,000 color images. If you want to identify a Philippine marine mollusk (or even a species from somewhere else in the Indo-Pacific), there is an extremely high probability you will find it in these volumes.

Obviously, no single individual could be knowledgeable enough to correctly identify all of the various marine molluscan species in the hundreds of families and multitudes of genera found in the Philippine waters. Correct identification is, however, what these volumes are intended to accomplish. So how did Guido Poppe accomplish this? He contacted subject matter experts from around the world, amateur and professional, and invited each to review, edit, and write about the family or families with which they were familiar. There will still be errors (after all, typographical errors tend to be a given with volumes of this size and changes in systematics and taxonomy continue as our knowledge of the world around us increases), but they are kept to a minimum and the reader will find these books surprisingly accurate and helpful.

Volumes 1 & 2 cover Gastropoda, volume 3 finishes the Gastropoda (including nudibranchs) and begins the Bivalvia, and volume 4 finishes the Bivalvia and covers the Scaphopoda and Cephalopoda, as well as molluscan species (287) newly-named or discovered since the books were initially published. This was an immense undertaking and deserves a place in the reference library of anyone interested in Philippine shells. Due to the size and weight of these books I would recommend using them at a table, rather than attempting to balance them on a knee while at the computer, but recommend them, I do.

Living Shells

by Charles Rawlings,
MD, JD

2010, Ivy House Publishing,
Raleigh, North Carolina
pp. 124, the majority with
11x14 inch color plates or
11x28 inch double page color
plates
ISBN13: 978-1-57197-509-6,
approx \$37

Dr. Charles E. Rawlings has for many years provided *American Conchologist* with colorful images of living mollusks *in situ*. These images are often one-of-a-kind and depict a species never before photographed in its natural habitat. As editor, I have dozens of his photographs on file, each one waiting for the time when I need a great looking color image to illustrate an article or spark up the magazine cover.

Now you too can own many of these same images. This large, coffee table style book is full of larger-than-life images of both common and rare, shelled and shell-less mollusks. There are eight species depicted for the first time in their natural habitat, in color and with magnified detail unavailable even if you had been the one behind the camera, at night, at 100 feet.

The book is separated into 10 chapters, plus introduction, index, etc. Chapter titles are: Cowries; Cones; Volutes; Moonshells; Harps, Sundials, and Tuns; Conchs; Abalones; First Photographs; Bivalves; and Cephalopods. Individual photographs are identified in the "Photo Index." This section is broken down into the chapter headings and lists the scientific name of each species and the page number where it is presented. A 14-inch depiction of the cowrie *Blasicrura teres* (Gmelin, 1791) with its brilliant orange mantle is followed a few pages later by a close-up of a *Cypraea tigris*



Linnaeus, 1758, with its dark mantle spread over 2 pages (28 inches)! A favorite of mine is a two-page spread of *Voluta musica* Linnaeus, 1758. It is a side view of the animal foraging at night. A rather elegant view of a rather common volute going about its business. The cover, by the way, with its brilliant reds, oranges, and the rarely seen blues, is the mantle of *Tridacna squamosa* Lamarck, 1819.

This is not an identification book or a scientific treatise, but more of a celebration of the wonders of living mollusks: with colors, shapes, and textures that disappear when the shell is collected and cleaned. For all of the beauty that can accompany a dried sea shell, this book serves as a reminder that the dried shell represents much more than is visibly apparent. Thank you, Dr Rawlings.

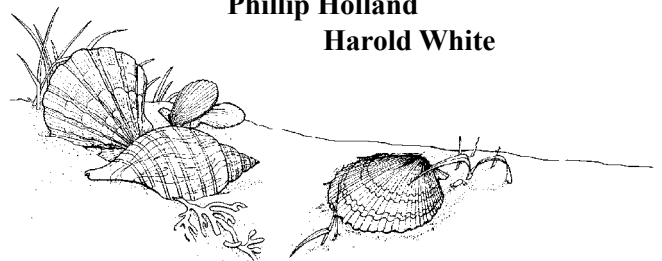
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In Memoriam:

**Nadine Athearn
Phillip Holland
Harold White**



How *The Cone Collector* began

António Monteiro and William J. Fenzan

The Cone Collector (TCC) is a free electronic magazine for shell collectors and anyone interested in cones. Articles try to interest cone collectors of all kinds – both beginners and advanced specialists. Sometimes the articles are scientific, while at other times they just illustrate beautiful specimens, depict art featuring cone shells, or cover other topics related to the subject of cones.

The magazine is sent to subscribers four times a year. To subscribe, just send an e-mail request to the editor, António Monteiro (a.j.a.monteiro@netcabo.pt). Issues are available online as portable document format (.pdf) files so they can be downloaded and read by a wide audience. Individual issues are available at www.theconecollector.com and on several other websites operated by friends. Presently, there are about 200 direct subscribers from around the world. There are also many individuals who do not subscribe, but download individual files from one of the hosting web sites.

The TCC project was born in October 2006 when a trial issue – appropriately labeled # 0 – was sent to a small number of potentially interested readers. Although I already had some experience in editing malacological publications, I was not entirely confident that a magazine only about cones would be popular. Fortunately, the reception surpassed every expectation. It was something that was simply begging to be done!

From 1982 to 1992, I acted as the editor of a serial entitled *Publicações Ocasioneis*, published by the Portuguese Malacological Society. I also edited most issues of the society's newsletter, *Halia*, during the same period. After the demise of the society, I began editing a newsletter for Portuguese shell collectors, entitled *O Búzio*. The first issue was dated May 1998. It has been an ongoing publication ever since, appearing every other month, to the present day. More recently, however, widespread use of the internet allows for more ambitious projects.

In the early years of this century I was regularly in touch with a number of shell collectors interested in, or exclusively focused on, cone shells. After 45 years of collecting a wide variety of shells, I decided to concentrate on cones. I did keep my collection of scallops though, which I collect for purely aesthetic reasons.

As I exchanged electronic messages with several friends, such as Paul Kersten, Mike Filmer, and Manuel Jimenez Tenorio, I came to realize two things: first, there was a vast amount of news and information concerning cones that was coming in quite regularly; and second, such information was scattered throughout a wide range of publications, making it hard for collectors to keep up with it all. Cones are an exciting group. There is much to be learned about them. A great deal of research is being undertaken, especially with regard to conotoxins. There are also many systematic problems yet to be solved. New species are being described on almost a monthly basis.

So far, a total of 18 issues of TCC have been published. The 19th issue is almost ready for distribution as I write. The



La Rochelle (France)
September 2012

first four issues had a rather amateurish graphics look, but it was the best I could do with the means at hand. Then, from issue #4 on, there was a huge improvement. André Poremski kindly volunteered to do the layout with professional quality! The result was truly wonderful. Now, TCC can boast of having first rate graphic quality.

As the number of contributors has increased, so too has the number of pages. Issue # 16 has a staggering 98 pages! It is the bulletin's aim to have something for everybody, from beginners to advanced collectors. All submissions are welcomed. Each issue also includes listings of recent publications on cones and recently described species. A special section called "Who's Who in Cones" includes short biographical notes on cone specialists so that eventually we all get to know each other a little better. The goal is to help everybody enjoy cone shells and cone shell collecting.

As TCC grew in popularity, a new project took form: the organization of an international meeting to discuss cones, to learn something about them, and to bring interested, and interesting, people together for a pleasant weekend. This idea was first discussed with Manuel Jimenez Tenorio and Bill Fenzan. Several possibilities were considered for its implementation. Bill's personal contacts with Hans-Jörg Niederhöfer, from the Staatliches Museum für Naturkunde, in Stuttgart, Germany, who kindly put the museum and its several facilities at our disposal to hold the meeting, finally made it all possible. An organizing committee that also included Klaus Groh was quickly brought together and we started to work on the new project.

A survey was sent to the TCC mailing list to assess the potential interest in a number of possible activities under consideration. Based on the many replies we received, a program was organized, which included several talks by well-known names in the field of cone studies: Dr. Alan J. Kohn, Dr. Baldomero Olivera, Dr. Thomas F. Duda Jr., Dr. Nicolas Puillandre, Dipl.-Geol. Hans-Jörg Niederhöfer, Dr. Dietrich Mebs, Dr. Christian Melaun, Dr. Manuel Jiménez Tenorio, and Mr. Paul H. Kersten.

The organizing committee arrived in Stuttgart on a Friday with high hopes but also a bit nervous lest the whole thing not go as planned. Personally, I relaxed about late Saturday morning, when participants began to ask when the second meeting would



The 1st International Cone Meeting was a huge success, with about 50 attendees from 15 different countries.

take place! I knew then that everybody was happy and that things were going according to plan.

Everyone's wishes being our command, the very same organizing committee has already begun work on a 2nd meeting! This time we have benefited from the kindness of Dr. Georges Richard, from the La Rochelle (France) Natural History Museum, who invited TCC to hold the meeting there. The location is quite convenient, a mere three hours from Paris by high-speed train and with much to offer participants. The Museum itself, recently reopened after a thorough renovation, has an extensive cone collection. The city of La Rochelle has many tourist attractions, including a large aquarium.

All things considered, attendees will be able to spend a thoroughly pleasant weekend at the second meeting. The date for the event is still to be settled, however those that are interested in

participating can get regular updates during the planning process by subscribing to TCC. The programs at the second International Cone Meeting will be different from those of the first, so even the participants of the first meeting can look forward to a new experience. As an extra feature of this meeting, the Paris Natural History Museum (MNHN Paris) will also support the event as a sponsor. They are planning to provide a display of cone type specimens preserved at the MNHN Paris, all of which will be available for study by participants.

I personally hope to see as many of you there as possible. If you are interested in more information about this meeting, or La Rochelle, you can also contact Bill Fenzan (bill@fenzan.com), who has visited La Rochelle from the United States and has written about it in TCC #15. He can provide travel advice and insight into the benefits of attending. Let's do it!

Seashell Poems

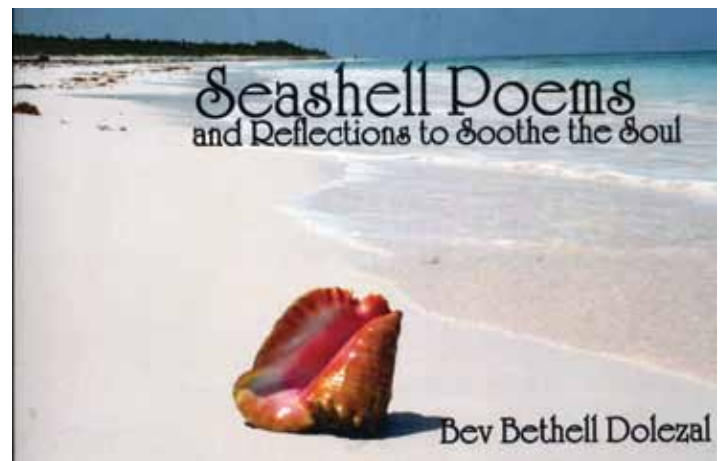
and Reflections to Sooth the Soul

by Bev Bethell Dolezal

2011, self-published, approx. 25 pages, 12 color plates, available for \$15 at www.bahamabevs.com

This little gem is a fun read and among the 12 poems is sure to be one that will strike a chord in anyone who has ever wandered a beach collecting shells. Each poem is accompanied by a color plate (the author is a professional photographer). These are often quite striking and always a nice match to the poem. I am not really a poetry aficionado, but there were several poems in this book that brought a smile and thoughts of "Oh, how true." Some were "true" of collecting, others were "true" of the characteristics of a certain shell and the feelings it elicits in collectors. Unfortunately, I cannot quote any here because I lent my copy to a friend who does like poetry, and shells, and apparently book collecting (actually, it became a gift when it seemed unlikely to return on its own). I guess that is recommendation enough.

Bev, grew up in the Bahamas but now lives in Florida.



She runs shelling trips to the Bahamas, thus she knows exactly what the Sanibel Stoop is and, in fact, has some poetry that reflects on this malady. She attends many of the shell shows in Florida. So stop by her table, say hi, and give the book a glance or two. This collection of poetry is modestly priced and certain to bring enjoyment to its readers. The pictures will draw you in, the poems will bring on a smile.



COA Academic Grants Program

Academic Grants Director's Report

May 23, 2011

The COA Grants Committee consisted of Ellen Strong, Steve Lonhart, and yours truly. The Committee received 36 complete applications in 2011. The applications came from five countries: USA (24), Argentina (6), Brazil (3), Canada (1), Australia (1), Ireland (1). The pool of applicants included 32 students at different degrees of academic standing plus four non-students.

Eleven grants were awarded (see attached spreadsheet). COA awarded a \$15,000.00 for a total of \$58,209.87 requested. Countries of origin of grantees are: United States (9), Brazil (1), and Argentina (1). All but one award were granted to students, seven are PhD candidates and three are MS candidates.

The Walter Sage Memorial Award was not given;

The Paul and Heather Johnson Award went to Rafe Sagarin, University of Arizona, Tucson, USA;

The Clench and Turner Memorial Award (Boston Malacological Society) went to Abigail Cahill of Stony Brook University, New York, USA;

The Jacksonville Shellclub Award went to Julie Zill of University of Florida, Gainesville, USA.

Respectfully submitted,

Daniel L. Geiger, Ph.D.
COA Academic Grants Director

NAME	\$=student	Institution	Project Title	Amount
**CAHILL, Abigail	\$Ph.D.	Stony Brook University, New York	The effects of larval developmental mode on local adaptation to temperature in <i>Crepidula</i>	575
***ZILL, Julie	\$Ph.D.	University of Florida, Gainesville	Host specificity and density of eulimid parasites (Gastropoda: Prosobranchia) of echinoderm hosts in Moorea, French Polynesia; an integrative study	1500
JENKINS, Kirsten	\$Ph.D.	University of Chicago	Variability in the Structure of Marine Molluscan communities over Space and Time: Testing for Natural and Anthropogenic Using Living, Death, and Fossil Assemblages	1500
PEREZ, Leandro M.	\$Ph.D.	Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata, Argentina	Neogene connections between the Caribbean and South Atlantic suggested by association of brackish bivalves from the Parana formation (Entre Rios, Argentina)	1400
MCCULLER, Megan	\$MS	University of New Hampshire, Durham	Two nudibranchs and their interactions against an invasive prey item	1375
PAULTZ, Stephanie	\$Ph.D.	Texas Tech University, Lubbock	Individual, population, and community level consequences of contaminant effects on predator-induced defenses	1500
KIMBERLY, David	\$Ph.D.	Texas Tech University, Lubbock	Multiple stressors and adaptive potential in the freshwater snail, <i>Physa pomilia</i> : insight into population persistence	1500
*SAGARIN, Rafe	Adj. Prof.	University of Arizona, Tucson	The Indelible Stain of Human Impacts on <i>Plicopurpura columellaris</i> and <i>Nerita scabricosta</i> Populations in Mexico	1500
TIEMANN, Jeremy	\$MS	Illinois Natural History Survey	Effects of lowhead dams on aquatic gastropods	1200
MIYAHIRA, Igor C.	\$Ph.D.	Universidade Federal do Estado do Rio de Janeiro, Brazil	Distribution, morphology and systematics of <i>Diplodon spix, 1827</i> (Bivalvia, Unionoida, Hyriidae) in Rio de Janeiro state, Brazil	1500
HANSON, Dieta	\$MS	Cal Poly Pomona, California	The invasion pathway of the Japanese bubble snail, <i>Haminoea japonica</i> (Opisthobranchia: Haminoeidae).	1450

* Paul & Heather Johnson Award ** Clench & Turner Memorial Award (Boston Malacological Society) *** Jacksonville Shell Club Award

Greetings and a happy New Year!

It is time to announce the 2012 round for the Conchologists of America Academic Grants competition. The instructions are the same as for previous years; details can be found under <http://www.conchologistsofamerica.org/grants/>

Re eligibility: there are no restrictions on eligibility. Specifically, all nationalities, all places of residences, and students as well as non-students can apply. The usual maximum award is US\$1500. Most grants are given to degree-seeking students, which also constitute that largest group of applicants. Applicants from previous years can re-apply, including those, who have received funding. The submission deadline remains the same even in this leap year: February 28, 2012. Students are responsible to ensure that letters of recommendations have been sent on their behalf. All applications must be sent electronically in a common readable format (Word, .pdf). Keep file sizes small (<3 MB).

Please feel free to distribute this announcement to other interested parties. If you have any questions, feel free to contact me.

Best wishes and Good Luck

Daniel Geiger (Chair COA Academic Grants)



Daniel L. Geiger, Ph.D.
Research Curator of Electron Microscopy
Santa Barbara Museum of Natural History
2559 Puesta del Sol Road
Santa Barbara CA 93105

805 682 4711 Extension 152
geiger@vetigastropoda.com - dgeiger@sbnature2.org
www.vetigastropoda.com

CONCHOLOGISTS



Mysteries of scallop eyes

Anita J. Krause

In my Conchologists of America grant, I proposed to investigate the relationship between amino acid variation in rhabdomeric opsin (r-opsin) and specific photic environments (i.e. depth) in which the scallop species resides. R-opsin is a protein found in the photoreceptor of the scallop eye and is required for vision. Molecular changes in r-opsin can have dramatic effects on function by altering the ability of the protein to absorb specific wavelengths of light. I predicted scallop species living in shallower depths will have amino acid changes that permit opsin to absorb wavelengths nearer the red range of the visible spectrum, while species living in deeper water will have amino acid sequences to absorb wavelengths in the blue range of the visible spectrum.

I collected 98 different sequences from 29 species sampled across the scallop phylogeny and collected depth information for 26 of the 29 species through a literature review. Among species, DNA sequences can vary at particular motifs, suggesting putative functional change, while other motifs are conserved, indicating the sequences maintain the capability to process visual stimuli. After completing a preliminary analysis, these data suggest there is molecular convergence of r-opsin in the scallops that display the gliding behavior.

While collecting r-opsin molecular data, I found unexpected, yet intriguing, results that indicate scallops possess a second copy of r-opsin. Currently, nine of the 29 species sampled contain two r-opsin copies, which I refer to as r-opsin1A and r-opsin1B. While r-opsin1A and r-opsin1B are only 55% identical in the ami-

no acid sequence, both contain the important motifs required for normal visual function. This is the first report of multiple copies of the r-opsin gene in the scallop eye.



Aequipecten opercularis showing its numerous eyes. Photographed off Brittany, France by D. Geiger.

There are many questions concerning the functional role of the second r-opsin copy in scallop vision that I would like to pursue. On-going work includes identifying the phylogenetic relationships of r-opsin1A and r-opsin1B gene sequences and determining the expression pattern for these genes. Finding the second r-opsin copy opens the door to additional projects to study the origin of this second copy and provide insight to how it might perform visual tasks.

The Conchologists of America grant has helped fund one project and seed another. I will continue to collect sequence data to answer the hypothesis of r-opsin variation being correlated with photic environment while also exploring the relationships of the two scallop r-opsin copies. These complimentary projects will broaden the information known about visual pigments and their evolution in scallops.

Anita J. Krause -- ajkrause@iastate.edu

Nudibranch research

Kristen Roberts

Among the species of gastropods, with their magnificently whorled shells, lie a group just as magnificent but naked, the nudibranchs. Nudibranchs are the shell-less relatives of marine snails; their name literally translates into “naked gill.” Commonly referred to as “sea slugs,” I prefer to describe them as “butterflies of the sea.” Species can be found in every color of the rainbow throughout tropical, temperate, and even Arctic oceans. Some nudibranchs camouflage themselves to match their food source, while others advertise their toxins with brightly colored stripes and polka dots. Some even give off a pleasant aroma of cedar when handled!

These amazing little mollusks attracted my attention soon after I moved to California, where they can be found in abundance along the coast. I now study the evolution of nudibranchs as a graduate student at San Francisco State University. My research takes place at the California Academy of Sciences, where I have been collecting, dissecting, and genetically analyzing nudibranchs for the past three years. The group I have studied is Tergipedidae, a family that has been driving taxonomists crazy for over a century.

Instead of choosing to study a large vibrant or aromatic group of nudibranchs, I chose tergipedids, a rather unpopular and overlooked group. Why are they so unpopular? First of all, they are tiny. It requires a hand lens just to find most of these little guys in the field. Dissecting them requires an even bigger lens (a microscope) and a steady hand. Secondly, they are found all over the world and specimens have been collected in nearly every ocean. Consequently, nudibranch experts have been confusing each other with synonymous descriptions.

All this confusion has not deterred me, but has instead sparked my interest in Tergipedidae. Not only have researchers had a difficult time identifying tergipedids, they have not reached a consensus on their classification. And no one has even attempted to study the evolutionary relationships among its species. I was determined to be the first one to resolve these taxonomic debates and to understand evolution within Tergipedidae.

While previous research focused on the taxonomy (identification and classification) of tergipedids, my research involved both taxonomy and phylogenetics. Phylogenetics is the study of evolutionary relationships between species using modern-day molecular genetics techniques. Genetic data is used in combination with morphological characters to estimate a phylogeny, or an approximation of evolutionary relationships. Basically, my research looked at both genetic sequences and the anatomy of tergipedid species to better understand how they relate to one another. This is the first study that used genetics to study Tergipedidae and it helped resolve classification issues as well as establish the first ever phylogeny for this family.

The first step to studying tergipedid species involved acquiring specimens. Since the specimens were to be used in genetic research, they needed to be recently collected and preserved in 95% ethanol to maintain their DNA quality. Working in the California Academy of Sciences, I was fortunate to have a massive



Team Nudibranch: (from left) Kristen Roberts, Larry Harris, and UNH graduate student, Megan McCullen.

collection of freshly collected nudibranchs at my fingertips. The Academy’s collection, however, lacked many species from the North Atlantic region, a diverse area for Tergipedidae in which many type species can be found. Since Tergipedidae species are found in nearly every ocean worldwide, it was essential that I adequately sample specimens from all over the world and this meant that I needed specimens from New England.

So, with the funding I received from the Conchologists of America grant, I was able to travel to New England for a week to collect all those species that the Academy’s collection was missing. I met up with Larry Harris at the University of New Hampshire and joined his lab of graduate students and post-docs on an expedition along the New England coast up to Eastport, Maine. Armed with



One of the dive sites in Maine.



A California tergipedid, *Cuthona lagunae* (O'Donoghue, 1926), approximately 10mm, photo by Terry Gosliner.

an entire nudibranch search crew, I sampled specimens from six different locations in New Hampshire and Maine, using both intertidal and SCUBA collection techniques. After one week I had collected over 42 specimens for my project including 11 species and 3 type species.

In the field I was introduced first-hand to the challenges of studying Tergipedidae. Did I already mention that Tergipedids are small? Well, in New England, they are not only small, but also very well camouflaged. While most species of snails can be identified long after the animal is dead simply by studying its shell, nudibranchs must be identified while the animal is still alive. Once the specimen is preserved, its color fades and the body often contorts into what looks like a chewed up wad of gum. After hours spent looking through hydroids and kelp with a hand lens, more hours were spent trying to identify the little beasts before they warmed up too fast in the sun.

After the tedious process of finding, identifying, and properly preserving all of my Tergipedid specimens, I began the next step of my research: the molecular analyses. Tissue samples were taken from the specimens and the DNA was extracted from each sample. I used this DNA to amplify and then sequence three genes for each sample. I aligned all of these sequences and ran various statistical analyses on them to create phylogenetic trees. With this data, I then looked for questionable specimens in these

trees and examined various anatomical characters to determine if they had been correctly identified.

Major results with my research have shown that by including genetic data our previous understanding of the family Tergipedidae was not entirely accurate. The data suggests that the family itself is not monophyletic, meaning it does not have one shared ancestor. Instead, groups within this family are more closely related to other families, such as Fionidae, Calmidae, and Eubranchidae, than to themselves. Also, in some cases, genetic data resolved questionable identities of specimens. And in a few cases, species that were confidently identified (and were used in picture identification guides!) were found to be in entirely different families altogether.

Tergipedids, as annoyingly small as they are, have proven to be an interesting group of nudibranchs to study. By incorporating genetic data into my research, this study has established a phylogeny and discovered aspects of their taxonomy that morphology alone could not have found. While it has not resolved every debate, it is a major leap forward in our understanding of Tergipedidae and ultimately, nudibranchs.

Kristen Roberts
 kroberts@calacademy.org

