

President's Message

Welcome everyone to a new year! Can I say that since it's already February? I can't wait to see what the PCC has in store for all of the members in 2008. First of all we've got some wonderful presentations this year. We'll be hearing from our very own Lindsey Groves, Collections Manager NHMLA presenting on Silverado Canyon Fossil formations. Phil Liff-Grief will be talking about Jamaican landsnails, I'll be presenting on variability of local species and Paul Scott will present on Bivalves I'm sure. We are working diligently on securing some 'prized' specimen for the Shell Auction in the summer. We will hopefully plan a Field Trip in the upcoming months to observe our local fauna first hand, and possibly a dredging field trip.

I would like to once again remind everyone that there are several ways they can share their discoveries with the club members. First of all, members are able to share their stories or discoveries in this publication, the "Los Conchas". Writing articles for the PCC newsletter is fun and easy. Secondly, members can present a presentation to the club members at a monthly meeting. This is also fun and easy but takes a little more time and preparation. With today's technology, getting quality images is not nearly as time consuming and difficult as photographing all of the shells with film and developing them. Digital images can be edited and manipulated without the expense of having someone else

do all the work. If this seems overwhelming or you have difficulty photographing shells, please, feel free to talk to myself or Phil about getting some assistance.

On January 19th, 2008 the Natural History Museum of Los Angeles County sponsored the meeting for the Southern California United Malacologists XII. SCUM is an informal association of professional, student, and amateur Malacologists and Molluscan Paleontologists who are active or interested in mol-

usk research. The purpose of the annual gatherings is to facilitate contact and keep one another informed of research activities and opportunities. There are no dues, no officers, and no publications. Some speakers this year included Jim McLean (NHMLA), Hans Bertsch (Senior Marine Biologist), Doug

Eernisse (CSU Fullerton, Dept. of Biological Science) and Dr. Benjamin Pister (Marine Ecologist, National Parks Service). It's a great experience meeting new people and scientist's who are interested in the same thing you are. Next year, SCUM will be held at Cal Poly Pomona, see you there!

I'd like to conclude by thanking Club member Judy Kirkup for making her home available for last year's PCC Christmas Party. Her beautiful home in the hills of northern Palos Verdes was the perfect setting for laughter, drinks and good shell conversation. I am also very happy to report that no one was injured in the annual gift exchange.

Happy Shelling,
Shawn Wiedrick



Haliotis cracherodii on San Nicholas Island
Photo: David Witting, NOAA Restoration Center

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Las Conchas is a publication of the Pacific Conchological Club

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The Pacific Conchological Club was organized in 2003 as a result of the merger between the Pacific Shell Club and the Conchological Club of Southern California. Its mission is to further the interest in shell collecting and malacology and to provide a forum for individuals who love shells and other marine life. The Club meets on the second Sunday of each month from October through June at the Los Angeles County Museum of Natural History (900 Exposition Blvd., Los Angeles).

Annual dues are \$10 for an individual and \$12 for a family membership. Checks can be mailed to Treasurer, Kathy Kalohi (13901 Wilkie Avenue, Gardena, CA 90249).

California Abalone Revisited - Being Put on "the List"

by Phil Liff-Grieff

A recent article in the Los Angeles Times (January 12, 2008) reported that the black abalone (*Haliotis cracherodii*) is being considered for placement on the endangered species list. While shell collectors sometimes get disturbed by such news, this potential change has little impact on collectors, as hunting abalone has been illegal locally since the early 1990's. In fact, this status change may be quite welcome as it will provide federal dollars for species restoration.

Haliotis cracherodii had been the most common of the abalone species in Southern California. Ranging from Coos Bay, Oregon south to Cabo San Lucas in Baja California, it once reached densities of 120 specimens per square meter in some areas. It lives primarily in the rocky intertidal in areas with moderate to heavy surf. It was once common in crevices or on the underside of large rocks in the Southern California tidal zones.

The past abundance of this species in intertidal areas

of Southern California is clear in the description of its habitat in the 1962 Fish and Game Bulletin on California abalone,

"Usually found in great numbers crowded close together and at times stacked two or three on top of each other".

Abalone eat marine algae and they rely on the surge or current to provide them with floating fronds of kelp to feed on. Divers have reported finding it enjoyable to hand feed abalone by waving a kelp frond near the anterior of the animal to induce a feeding response. Black abs also graze on algae growth as their intertidal habitat sometimes provides only limited access to drifting bits of sea weeds.

Black abalone compete with purple sea urchins for food when it is scarce. Both feed on kelp but the urchins forage actively while the abalone simply wait for something tasty to drift by.

(Continued on page 3)



Haliotis cracherodii Leach 1814 (This Black Abalone was collected by Alberta Jones, Whites Point, 1969)

(Continued from page 2)

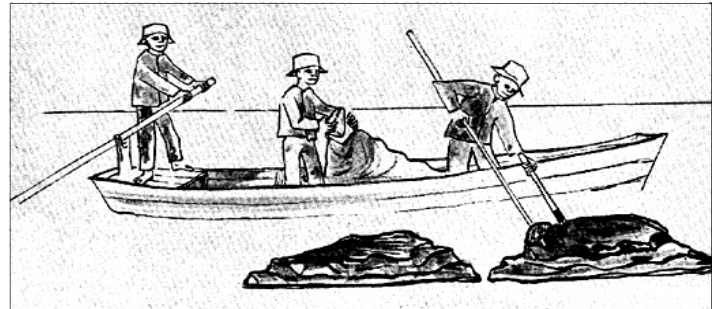
Depletion of Abalone Populations

Being a common intertidal species, the black abalone was heavily fished by native Americans and regularly harvested by immigrants in the mid-nineteenth century. In that period, the virtual decimation of the population of sea otters by Russian fur hunters eliminated one of the major predators of black abs and their populations flourished. By 1879, commercial harvest reached the level of 2,000 metric tons of black abalone per year.

In 1900, abalone fishing shifted to the larger and more desirable subtidal species (*sorenseni*, *fulgens*, *assimilis*, *corrugata* and *rufescens*). By 1969, those species had been essentially depleted and blacks began to be fished commercially and recreationally once again. In 1970, the reported annual take was nearly 900 metric tons of black abalone.

The recovery of sea otter populations, over fishing, pollution and development all contributed to the rapid decline of the abalone population in the ensuing years. In 1993, a moratorium was declared on harvesting abalone. Only recreational fishing of red abalone was allowed in Northern California under strict limitations.

Disease played a critical role in the decimation of abalone populations in Southern California. Withering



Chinese fishermen harvesting abalone off the coast of California in the early 1800's.
from Cox (1962)

syndrome (also known as RLP or rickettsia-like pathogen) is a bacterial infection that results in tissue atrophy and withering. An abalone with withering syndrome is unable to hold onto the substrate and is weak and emaciated. In this state, they are unable to feed and easy prey.

Beginning in the mid-1980's, this disease spread rapidly though most of the remaining Southern California populations of black abalone. Channel Islands populations have declined 99% since 1986 as a result of this devastating disease. Only small colonies remain on San Miguel Island and San Nicholas Island (see article on page 6 for details on one such population).

Water temperature plays a role in the impact of wither-

(Continued on page 6)

Minus low tides provide great conditions for observing mollusks and other marine life on Southern California shores. Listed below are some minus low tides that occur during daylight hours in the coming months:

February, 2008

<u>Date</u>	<u>Time</u>	<u>Height</u>
Saturday, February 2	1:23 pm	-0.2
Sunday, February 3	1:54 pm	-0.6
Monday, February 4	2:22 pm	-0.8
Tuesday, February 5	2:50 pm	-1.0
Wednesday, February 6	3:17 pm	-1.1
Thursday, February 7	3:44 pm	-1.0
Friday, February 08	4:11 pm	-0.7
Saturday, February 9	4:39 pm	-0.3
Friday, February 15	11:46 am	-0.3
Saturday, February 16	12:40 pm	-0.8
Sunday, February 17	1:24 pm	-1.2
Monday, February 18	2:02 pm	-1.3
Tuesday, February 19	2:36 pm	-1.3
Wednesday, February 20	3:07 pm	-1.1
Thursday, February 21	3:35 pm	-0.7
Friday, February 22	4:01 pm	-0.3

Please be sure that you are familiar with the California Dept. of Fish and Game regulations regarding the collecting of live mollusks— for details see [Las Conchas](#), vol. 33, no. 3)

March, 2008

<u>Date</u>	<u>Time</u>	<u>Height</u>
Sunday, March 2	12:50 pm	-0.1
Monday, March 3	1:19 pm	-0.4
Tuesday, March 4	1:46 pm	-0.7
Wednesday, March 5	2:12 pm	-0.8
Thursday, March 6	2:38 pm	-0.7
Friday, March 7	3:04 pm	-0.5
Saturday, March 8	3:31 pm	-0.2
Friday, March 14	11:10 am	-0.1
Saturday, March 15	12:24 pm	-0.4
Sunday, March 16	1:17 pm	-0.7
Monday, March 17	1:59 pm	-0.8
Tuesday, March 18	2:33 pm	-0.7
Wednesday, March 19	3:03 pm	-0.6
Thursday, March 20	3:30 pm	-0.3

(Continued from page 3)

ing syndrome on abalone populations. Research studies and observations in the wild have proven that warmer water greatly increases the rate of mortality. Massive die-off near warm water outflows from the Diablo Cove nuclear power plant in San Luis Obispo County provided ample evidence of this relationship. With water temperatures on the rise due to global warming, it is likely that the disease will spread aggressively into the cooler northern parts of the black ab's range.

Prospects for Recovery

The possible listing of the black abalone follows the listing of the white abalone (*Haliotis sorenseni*) as an endangered species in 2001. In fact, the white abalone was the first marine invertebrate to be placed on the endangered species list. It was determined that, without some form of human intervention, the approximately 1,600 remaining specimens of white abalone in the wild would disappear by the year



Haliotis sorenseni Bartsch, 1940
White Abalone collected by Alberta Jones off of Catalina Island, 1969

2010.

Restoration work on white abalone has been focused on captive breeding and reestablishment of self-sustaining brood stocks in the wild. Already in 2001, white ab's were being spawned and cultivated.

While there have been many advances in the arena of abalone cultivation (see the article on the Abalone Farm in Las Conchas 39:1), it still remains difficult to outplant cultivated specimens to appropriate habitats.

And what about withering syndrome? Work is being done on cultivating colonies of black abs that may be genetically immune to the bacteria's impact (see page 6). Additionally, there is initial progress in using a common oral antibiotic to cure the disease among farmed abalone. Current applications of oxytetracycline through abalone feed pellets result, however, in the antibiotic staying in the animals system for over nine months. This creates a problem for abalone being raised for market but has real benefit to those released into the ocean. It should only be a matter of time before other lessons learned with cultured animals can be applied to populations in the wild.

Hopefully, we will see again a time when black abalones stack on top of each other in great abundance along our rocky shores.

References

- Keith Cox, California Abalones, Family Haliotidae, California Department of Fish and Game, Fish Bulletin #118, 1962
- Center for Biological Diversity, Petition to List the Black Abalone (*Haliotis cracherodii*) as Threatened or Endangered under the Endangered Species Act, December 21, 2006
- James McLean, Marine shells of Southern California, NHMLAC Science Series 24, 1978
- NOAA National Marine Fisheries Service, Black Abalone At Risk Of Extinction, Endangered Species Act Protection, January 16, 2008
- Sea Grant, California: Aquaculture Research and Development, Pharmacokinetics and Efficacy of Oxytetracycline in RLP-infected Abalone, July 200-6
- Western Ecological Research Center, USGS, Team Spawns Rare White Abalone: It's a Girl! It's a Boy! It's 6 Million Baby Mollusks!, April, 2001

In
this
is-

California Keyhole Limpets– Part 1 (the Common Species)

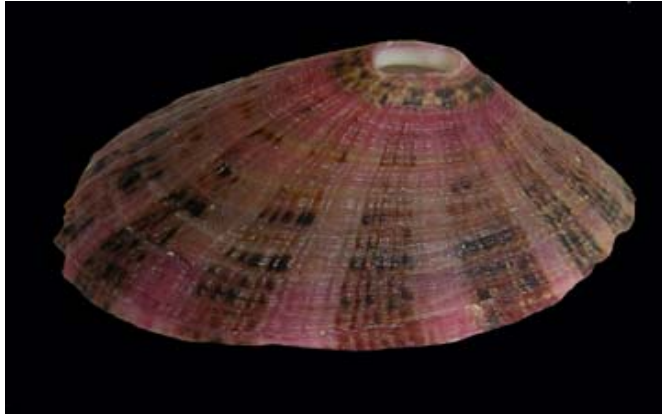
sue, we will return to focusing on individual species that can be found in Southern California.

California is home to a number of interesting Keyhole Limpets (Fissurellidae). Two species are fairly common in the Southern Californian intertidal and they will be discussed briefly here. Some of the lesser species will be featured in future issues of *Las Conchas*.

The most distinctive local member of this family is the California Giant Keyhole Limper, *Megathura crenulata*. Living on rock reefs and under rock ledges, this species is fairly common from the middle intertidal to sublittoral depths. I was reminded recently of how common this species is on local breakwaters; walking on the top of the Cabrillo breakwater, I encountered a small pile of *Megathura* shells resulting from their use by fishermen as bait.

The animal is significantly larger than the shell, fully covering the shell and ranges in color from beige to streaked grey to black. The shell is tan in color to deep rose-grey. This species is truly a giant, with shells more than 100 mm in size.

Commercially, this species is a source of Keyhole Limpet haemocyanin, a protein that is showing promise in treating cancer, allergies and immunosuppression.



Fissurella volcano Reeve, 1849
Volcano Limpet
Palos Verdes Peninsula

28 mm



Megathura crenulata (Sowerby, 1825) 106 mm
California Giant Keyhole Limpet
Catalina Island, at 40 feet

The Volcano Limpet, *Fissurella volcano*, lives in the middle intertidal on the underside of large rocks (see photo below left, with a chiton on the bottom of an upturned rock). The shell is pink in color with rays of grey to black. Sculpture consist of axial ribs that can be coarse or relatively indistinct.

These keyhole limpets range in size from 20 to 35 mm and are found from Northern California south through Baja. The Volcano Limpet is extremely common in Southern California intertidal environments and dead shells are frequently found in tidepools.

References

James McLean, [Marine shells of Southern California](#), NHMLAC Science Series 24, 1978

Gary Martin, et al, [Structure and function of haemocytes in two marine gastropods, *Megathura crenulata* and *Aplysia californica*](#), *Journal of Molluscan Studies*, 73(4), 2007

Abalones at San Nicolas Island Offer Survival Clue

by Zeke Barlow

Reprinted from the Ventura County Star
Wednesday, January 2, 2008

Editor's note: Even when things look bleak for a species, interesting developments surface. This article details some advances that may help the black abalone to survive. It is reprinted here in its entirety and can also be found on the internet at the Ventura County Star's website.

For years, it seemed that all scientists could do was document the decline of the black abalone. Although they tried to figure out why the mollusk's population was decreasing up and down the Southern California coast, they didn't get anywhere beyond narrowing down the culprit.

Biologists figured out a pathogen was getting into the abalone's intestines, preventing it from digesting food and causing it to start absorbing its own body mass. The abalone's foot, which attaches to rocks and reefs, would waste away, and the mollusk would fall to the floor, where predators quickly dispatched it.

About all that was known was that the "withering syndrome" caused the population to crash in the 1990s, and the Channel Islands — the backbone of the population — lost most of its black abalone. What causes the pathogen is still a mystery.

But scientists think they might have found one clue that could help keep the abalone from nearing extinction. A small group of black abalone off San Nicolas Island seems to be immune to the withering syndrome.

"Certainly there is hope," said Glenn VanBlaricom, a professor with the University of Washington School of Aquatic and Fisheries Science, "but you have to be careful of getting too carried away."

VanBlaricom had been studying black abalone since the 1970s and witnessed its dramatic fall in the early 1990s, when as much as 95 percent of the population died off. Other species of abalone were also dying off because of

fishing and disease.

The white abalone was the first marine invertebrate put on the endangered species list. The black abalone is now under consideration for the list.

During VanBlaricom's research, he noticed that one cluster of black abalone on the southwest side of San Nicolas Island seemed to have high numbers.

During a 2002 trip, he noticed juvenile abalones, which weren't being seen anywhere else. This, he thought, could be promising.

He and other researchers at the university collected 100 abalones from the island and another 100 from the waters near Carmel, where the withering syndrome had not yet reached.

They ran an experiment, putting the two different groups into water infected with the withering syndrome. The San Nicolas abalone had a mortality rate of about 10 percent, compared with as high as 90 percent for the Carmel abalone.

Although it is too early to be sure, VanBlaricom said he thinks there might be something in the San Nicolas abalone's DNA that makes it immune to the disease. But whether that small population holds the key to the larger issue is debatable.

If the black abalone is put on the endangered species list, it will likely free more money to study the San Nicolas population. But using the San Nicolas abalone to help shore up the overall population would be problematic.

When abalone propagate, the offspring land relatively close to the parent, so spreading populations is a slow process. And VanBlaricom is reluctant to disturb a population that inhabits only a reef about a quarter-mile long, for fear of messing up a good thing.

The logistics of raising black abalones in a lab and relocating them into nature is also problematic, he said.

"It is an enticing idea, but one of those situations where the devil is in the details," VanBlaricom said.

It's time to pay your dues!!

Annual dues for membership in the Pacific Conchological Club are \$10 for an individual and \$12 for a family.

Checks can be mailed to Treasurer, Kathy Kalohi (13901 Wilkie Avenue, Gardena, CA 90249).



Participants in the 12th meeting of SCUM (Southern California Unified Malacologists) posed in front of the Natural History Museum of LA County. It was good to see so many members of the Pacific Conchological Club in attendance

Front Row: Lindsey Groves, George Davis, Don Cadien, Kathy Kalohi, LouElla Saul, Debbie Roman, Hans Bertsch, Richard Squires

2nd Row: Constance Gramlich, Bob Moore, Lawrence Mosher, Shawn Wiedrick, Charles Powell II, Rosa Campay-Bertsch, Carol Stadum

3rd Row: Phil Liff-Grieff, Terry Rutkas, Ángel Valdés, Mike Vendrasco

4th Row: John Alderson, Bob Stanton, Doug Eernisse, Lance Gilbertson, Jim McLean, Bob Dees, James Jacobs, Christine Fernandez

Top Row: Scott Rugh, Mike Kirby, Wes Farmer, Benjamin Pister, Pat LaFollette, Bill Huber, Maggie Carrino, George Kennedy

HOLD THE DATE
Remaining Meeting dates
for 2007-2008 year

February 10

Silverado Canyon Fossils
Lindsey Groves

March 9

Shells Have Taken Me Over
World Horizons
Mike Smith

April 13

Jamaican Snailing
Phil Liff-Grieff

May 4

Bivalves
Paul Valentich Scott

June 8

Auction and party

February Meeting: SUNDAY, February 10, 1:00 pm - 3:30 pm

Lindsey Groves, Collections Manager, Department of Malacology, Natural History Museum of LA County, will speak on

Late Cretaceous Faunas of Silverado Canyon and Environs

PLEASE NOTE THE EARLIER START TIME!!!!!!

March Meeting: SUNDAY, March 9, 1:30 pm - 4:00 pm

Mike Smith will return with a presentation he has entitled,
“Shells Have Taken Me Over World Horizons”

Those who have had an opportunity to hear Mike in the past know how interesting and enjoyable his presentations can be.

Location: Natural History Museum of Los Angeles County

900 Exposition Boulevard, Los Angeles (Exposition exit from the 110 Freeway– follow the signs). Park in the west parking lot or, if it is filled, in the pay lot immediately west of the museum (the pay lot will cost \$5).

Enter at the staff entrance which is located at the bottom level of the museum, on the left side of the main Museum entrance on Exposition Boulevard. The security guard can direct you to the Times-Mirror Room.

Refreshments are potluck. Please bring a snack, drink or dessert item to the meeting.

Articles of interest to shell collectors are solicited for publication in this newsletter. Contents may be reprinted with credit being given to the Pacific Conchological Club, Inc.



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DATED MATERIAL