

THE BOTTOM BUNCH

An Independent Dive Club

Newsletter Date
March 2003

Meeting every first Wednesday. Next meeting Wednesday, March 5th, 2003
At La Bella's Pizza Gardens, 373 Third Ave, Chula Vista

This Months Meeting

6 PM Dinner and Social Hour

Join us for a great evening.

7 PM Guest Speaker

For our March meeting, our guest speaker will be Sergio Angelini Ph.D., the chief engineer at Scuba Pro. He will be talking to us about tests he has conducted on the breathing capabilities of regulators, using divers at depths of one-hundred and eighty feet. Sergio's colorful and animated personality is sure to make this an educational as well as entertaining presentation.

7:50 PM Blackbeard's Locker

This months Blackbeards will be a well equipped save-a-dive kit, to save your dive and those around you.

8 PM General Meeting

Meeting followed by door prizes.



Door prizes generously donated
By **Aqua Tech Dive Center**
619-237-1800
And the **Hydrodiver**
1-800-493-7634

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Last Months Meeting and Announcements

Last Months Meeting

For our February meeting, we had Dr. Cynthia Taylor, speaking to us about her studies on rock fish. With over 70 different kinds of rock fish inhabiting the waters from San Diego to Alaska's Aleutian Islands, 60 species can be found in the waters off San Diego. Most are found in deep water, but 12 exist in shallow water accessible to divers. Rock fish tend to stay in the same location throughout their lives once they become adults. Movement to new locations takes place while they are in the tiny larval stage of infancy, where the ocean's current carries them to their new home. Like other fish, rock fish control their buoyancy by the use of an air ladder, but unlike other fish that have their air bladders vented through their mouths, rock fish air bladders are sealed.

Equalization of this sealed system is a slow process. Increasing or decreasing the pressure is accomplished by gas exchange through the blood stream. The same process of compression and decompression of gases a diver goes through throughout and after a dive. Bringing a deep water rock fish to the surface, causes the air bladder to inflate and bloat the fish. Scorpion and Tree fish are found in the same family as rock fish.

Announcements

During our June meeting we will be having our annual dive auction. So begin checking through your unwanted dive gear to turn it into cash.

For those interested in going on either of the Bottom Bunches annual trips to Catalina and San

Clemente Islands [June 7th, 8th 2003](#) and San Nicholas, Santa Barbara and San Clemente Islands [September 26,27,28 2003](#) available space is filling fast. If your interested in any of these wonderful trips a \$100 deposit is necessary to hold your spot. Contact our Dive Coordinator, [Wayne Austin](#), for further information. [619-524-5323](#).

Bottom Bunch dive trip to Avalon, Catalina Island. [March 7, 8, 9th, 2003](#). \$206 to \$269. Price includes round trip transportation from the mainland. Two nights of hotel accommodations. One day of boat diving aboard the King Neptune and gear transportation between dive boat and hotel. For more information contact [David Anton](#) at [619-434-5626](#), dmanton@cox.net

Dates To Remember

Northern Channel Islands
[May 24, 25, 26th, 2003.](#)

Annual Bottom Bunch Dive Gear Auction.
[June 4th, 2003, 7 PM](#)

Catalina and San Clemente Islands
[June 7th and 8th, 2003.](#)

Santa Barbara, San Nicholas and San Clemente Islands.
[September 26,27,28 2003](#)

Reminder

Please check your mailing label for your Bottom Bunch membership renewal date.

[The Bottom Bunch Website](#)
www.bottombunchdiveclub.com

Histiomena convolvula:
**A Gorgonian Eater in Mexico's Sea of Cortez
(and a Sneaky Taxonomy Lesson!)**

by Dr. Hans Bertsch

I felt the pull of the current. Holding onto the rock reef, I could feel my body swinging away from my hands. I was a boat in anchorage facing into the wind. Like a snapping whip, the colorful orange-salmon branches of the gorgonian bent over with the tidal flow. Their polyps were mostly extended, forming a fuzzy white apparition around the curving stalks. But in one region all the polyps were retracted. I focused carefully on this anomalous pattern, knowing what I would see. *Histiomena convolvula*, a Gulf of California nudibranch that preys on gorgonians. What a beautiful animal: brown convoluted ridges are on its back, interspersed with white maculations. There is an orange outer marginal band, surrounding a thin, inner opalescent blue-white line (see Figures 2 and 3).

However, today it was not positioned normally; the nudibranch's foot was not slimily wrapped around the stalk. Rather, *Histiomena* was extended horizontally away from the gorgonian, a flag in the wind, attached only by its jaws and teeth. Later, when I passed the animal again at slack tide, it had settled back down into a normal feeding position. The *Histiomena* was now unflappable, relaxed on the upright branches of the gorgonian.

All divers have seen and swam among gorgonians. These are members of the scientifically named group Alcyonaria, what are commonly known as sea fans, gorgonians, soft corals (not true corals), sea pens, and sea pansies. They are members of the cnidarian (coelenterate) Class Anthozoa.

STOP!

A quick taxonomy lesson about these creatures and classifying organisms in general is needed.

The scientific naming of animals is based upon a hierarchical classification, that is, a series of categories that range from more inclusive and less specific to the least inclusive and most specific. These categories are (from more inclusive to least inclusive, etc.):

- Kingdom
- Phylum (plural: phyla)
- Class
- Order
- Family
- Genus (plural: genera)
- Species (both singular and plural)

By keeping animals in their proper place, one figuratively and literally understands the evolutionary relationships within a group. The more specific and least inclusive the category, the more closely related are the members.

It is sort of like geography. Apply the same concepts of inclusivity and specificity to the geographic categories continent, country, state, county, city, and street. This will give you a much better understanding of hierarchical relationships. Certainly those living on the same street as you, are closer (although not related in this comparison) than those living in the same country.

Taxa are the actual names of a group of organisms at any particular categorical rank. Hence, the USA and California are geographic taxa at the country and state level, just as Gorgoniidae and *Muricea* are taxa at the family and genus category levels.

The largest divisions of the Kingdom Animalia are called Phyla. This represents a large group of animals that have evolved from a common ancestor. Obvious evidence supporting this statement (and therefore their classification placement) are the fossil record, and morphological similarity within the group. Differences in shape help establish the different groups within the phylum.

Animals have a scientific name, used by all scientists around the world, regardless of the language they speak. Common names vary from country to country, place to place, and language to language, and are usually imprecise and ambiguous. In contrast, scientific names refer only to one group of organisms, the species, which are capable of breed-

ing only among themselves. Binomial nomenclature refers to the scientific name: a species (this reproductively isolated group of organisms) has two technical names. These are the genus and species, both italicized, the genus is capitalized but the

species is not, and the species name can never stand without its genus name. If the genus name alone is used, that refers to all species within that genus. Kingdom Animalia refers to all animals and Class Reptilia includes all reptiles but not all animals (an example of the principle of inclusivity).



Figure 1.

Knowing this you can better appreciate the importance of scientific names. They actually convey a lot of information and show evolutionary relationships, in addition to being universal and helping to prevent confusion. Common names are certainly easier to pronounce, but can be fraught with errors and dangers. For instance, you send specimens of a gray sponge you collected on a recent dive trip to a chemist. After tests, she determines the gray sponge contains a drug that kills antibiotic resistant strains of *Staphylococcus*. Not bad. You could get rich. So you tell your dive buddies in New Jersey to collect more gray sponges, set up a company to sell ground-up gray sponge at a local nontraditional herbal market—and in the first week 30 people die of acute poisoning. Whoops. The moral: there are lots of different gray sponges, but only one species (with its proper scientific name) produces the pharmacologically active chemical against *Staphylococ-*

cus. Preciseness matters.

Let's look now at gorgonians and their relatives. The Phylum Cnidaria contains three major groups: the anthozoans, jellyfish and hydroids (each graced with a technical name). I will not comment on the latter 2 groups. Class Anthozoa is unique among Cnidaria because all members completely lack the medusoid (or jellyfish) stage in their life cycle.

The body shape of all of them is like a bag (called a polyp) that is attached at one end, with the free end surrounded by tentacles and bearing an opening into the central gastrovascular cavity (gut-circulation space).

One can quickly and easily distinguish the two subclasses of the Class Anthozoa by the shape and numbers of tentacles. Polyps of members of the Subclass Zoantharia have numerous smooth tentacles. These are the typical sea anemones, solitary corals, and true reef



Figure 2.

building corals (the latter two secrete external calcium carbonate skeletons). Members of the Subclass Alcyonaria (or Octocorallia) have only 8 pinnate tentacles on each polyp and internal skeletons. Pinnate signifies that each tentacle has lateral protrusions along its length. **Figure 1** of this article is a close-up of *Muricea* showing the feather-like (= pinnate) structure of the tentacles.

Now we can return to the biology of our alcyonarian-eating nudibranch from the Gulf of California. Figures 2-4 are various views of *Histiomena convolvula* munching gorgonians at Bahía de los Ángeles, Baja California. Note both **Figures 2 and 3** illustrate this *Histiomena* on the gorgonian genus *Psammogorgia*. You can see in **Figure 3** the extended polyps (the whitish haze surrounding the stalks), except in the region where *Histiomena* has crawled they are retracted.

The *Histiomena* eating a species of *Muricea* in **Figure 4** is especially revealing.



Figure 3.

The nudibranch has chewed away the outer fleshy tissue mass and epidermis, revealing the supporting underlying internal skeleton. You and I would not eat gor-

gonians, even if we were stranded on a deserted oceanic island with a FedEx delivery person. They smell weird! Remember the odor on your gloves or hands

when you had surfaced from a dive during which you had been touching them? (Naughty, naughty—one mustn't play with mother nature. You can re-

move protective mucous coatings or otherwise disturb them from their marine slumber. Be careful, gentle, and selective what you touch.) But to this group of nudibranchs—wow—gorgonians are like Black Angus® prime rib to a carnivore like me. Eating gorgonians is a form of carnivory. One could even call it gorgonivory.

So here is this soft, delicate slug, gnawing the flesh off various gorgonians, like so many hyenas on a still-kicking zebra.

How does the nudibranch eat? It uses a structure called the radula (see **Figure 5**), which is a tongue-

like ribbon on which are rows of many hooked teeth. It thrusts the radula out onto its prey, rasping and scraping food back into its mouth. Arched, lip-

like jaws in front of the radula help hold the gorgonian in place for the gouging, filing feeding action of the toothed tongue. A close-up of the gouging teeth in **Figure 6** reveals minute denticles on the side of the hook. I'm still trying to figure out how these incredibly small accessories help the scraping action.

Histiomena convolvula is not a member of the “typical,” more common groups of nudibranchs. It is not a dorid, lacking the

circlet of gills protruding posteriorly on its back. It is not an eolid, since it is not thin and narrow, and

lack cerata (think of the orange processes on the back of the Spanish shawl, *Flabellina iodinea*). Rather it belongs to the family Arminidae. Members of this genus (and a relative *Armina* that I'll write about next month—with more pictures and less words) are flat,

with a distinct frontal veil which helps them root



Figure 4.



Figure 5.

and burrow while they travel through or across sandy substrates in search of their next gorgonian colony to attack. Moreover, the gills are hidden along the sides of their body, underneath an overhanging flap of skin that extends laterally from the animal's back.

James Lance, formerly an associate researcher for Scripps Institute of Oceanography, named this species in 1962. It was not until 20 years later that I discovered and reported its prey item. The food items of many nudibranchs are still unknown. For many species it is because they have only been collected rarely. For others, the research has not been conducted in the proper habitat. For the original description only 6 specimens of *Histiomena convolvula* had been found at Punta Diggs, in the northernmost portion of the Gulf of California, 24 km south of San Felipe. They were all found in a rocky region at the lower edge of the intertidal zone. This species and its prey are not intertidal organisms. These creatures are subtidal, and only my subtidal scuba diving research was able to determine the predator-prey relationship of *Histiomena convolvula* and gorgonians. I photographed the nudibranch in situ, that is, on the site where I found it. I did not move the animal to get a better angle nor better background. It is difficult to do this type of photography successfully, but the rewards are great. Consider the immediate application. You as an underwater photographer actually record

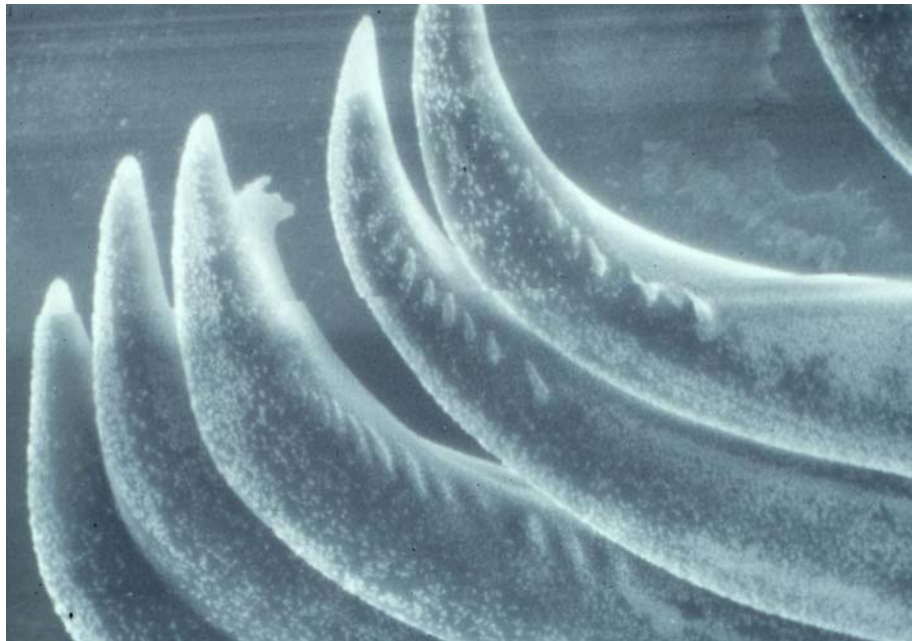


Figure 6.

scientific data that can be used to further our knowledge of the biology and natural history of marine life. Club member Steve Gardiner, not one who writes scientific papers on nudibranchs, has discovered an unnamed species here in the

La Jolla Canyon. Comments such as, "But I'm an amateur and don't know what I'm looking at," are bogus. As a trained diver, you (just as I am as a scientist) are a training diver, continually enhancing your knowledge by reading, discussions and attending talks; developing your observational skills by putting your face mask

close to the substrate or carrying a plastic magnifying glass to see the small even bigger; and improving your diving skills with an increased awareness of what is around you.

Histiomena convolvula has a very restricted known distribution. It is limited to just a few locations in the northern Gulf of California: Punta Diggs and Bahía de los Ángeles, Baja California, and Bahía San Carlos, Sonora. During the Bottom Bunch trip I led to Bahía de los Ángeles in June 2002, I recorded a 75 mm long specimen of this nudibranch while diving with Steve Preddy.

Interestingly, during a three-year period of my long term subtidal research project at Punta la Gringa, Bahía de los Ángeles, it was the 3rd most common species. Out of the 3056 specimens I identified and measured, 209 were *Histiomena convolvula*. For comparison, the other 5 most common slugs were: #1, *Tridachia diomedea*,

the Mexican dancer (1275 specimens); #2, *Doriopsilla gemela*, the yellow-gilled porostome (521 specimens); #4, *Berthellina ilisima*, the apricot slug, or orange blob (126 specimens); and #5, *Doriopsilla albopunctata*, the white-spotted sea goddess (113 specimens). The rest of the specimens were very unevenly divided among 57 other species. Thirty-seven of these species were each represented by less than 10 specimens. This illustrates a rather important concept in ecosystem structure. Usually a few species are most dominant numerically, and many species are represented by only a few specimens.

Here is a simple way that you can collect scientific data while diving. Some of you are doing volunteer work on the Yukon/San Diego Oceans Foundation fish count. This is similar. If you dive in the same area with regularity, learn to identify several invertebrate bottom dwellers. On each dive, record date, depth, and size of every individual, and the egg mass if identifiable. These data can be used to determine average monthly sizes, which helps the scientist understand the animal's life cycle. Does it live for one year or many years? When does it breed?

Here are just the numbers of specimens per month of *Histiomena convolvula* that I counted at the Punta la Gringa/Cuevitas region during my 3 year study span:

January	125	
February	27	
March	4	
April	7	
May	0	
June	0	
July	0	
August	—	no data collected
September	0	
October	—	no data collected
November	15	
December	12	

You can easily see the animal is present at Bahía de los Ángeles during the winter months. So when would you plan a trip to photograph this species? See what some perseverance and continued looking can do for you? You can start to make predictions that are useful to yourself or add to our knowledge base.

If you want more information on *Histiomena convolvula*, the opisthobranch section in Alex Kerstitch's Sea of Cortez Marine Invertebrates (1989, Sea Challengers Press), and the scientific paper, "Distribution and radular morphology of various nudibranchs (Gastropoda: Opisthobranchia) from the Gulf of California, Mexico," by Hans Bertsch & Alex Kerstitch, 1984, The Veliger 26 (4): 264-273. See also the species discussion on Mike Miller's fantastic SlugSite, at: slugsite.tierranet.com or: slugsite.us (Click onto the left hand column,

I wish to thank some fellow divers who have been especially helpful to me in my work at Bahía de los Ángeles: Tom Smith, Mike Miller, and Brian Coleman. Sometimes in cold water, sometimes warm, sometimes in high visibility, sometimes low, but they were always interested in the intriguing slugs to be found.

And now, fellow Bottom Bunch members, you are ready to look more closely at the various gorgonians to see who is eating them! Tell me and your dive buddies—as we explore and discover together.

Hans Bertsch



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Membership and renewal information.
Individual – First time initial \$24 then \$15 per year for renewal there after.
Family – First time initial \$24 for the first member, then \$12 for each additional member, then \$15 for the first member and \$7.50 for each additional members for renewal there after.

DIVE HOTLINE **619-424-6445**

