



editorial

This month we welcome Julie Marshall co-author of Nudibranchs of Heron Island as a new contributor. Thanks Julie.

We continue the Lady Musgrave column by Dave Harasti. Richard Willan explains how to relax nudibranchs. Akos shares an unusual find from Sydney Australia. In fact the aussie readers have increases their contributions remarkably. Thanks you.

Dave Behrens' is in Honduras so I'm warming his Book Reviewers chair this month and updating what is happening with Neville Coleman's new book.

This issue is a little late, finding the time is becoming an interesting challenge these days.

Jim (Braveheart) Anderson has added some new images to his site following an extraordinary 2 days diving on the MV Gemini Storm off Coll and Mull, see <http://www.R4454.freeserve.co.uk/scotnud1.html>

Check it out and let him know what you think

feedback

Chromodoris splendida

In the March issue of *Nudibranch News* .(3.07) Akos Lumnitzer illustrated some examples of *Chromodoris splendida* and noted that they can be found from southern Queensland to southern New South Wales only. The range of this species actually extends up to the southern Great Barrier Reef as I have found it at Heron Island. The animals here have a number of small red spots, unlike those from southern Queensland which generally have few and large spots.

Reference: Marshall, J.G. and Willan, R.C. *Nudibranchs of Heron Island, Great Barrier Reef*. Leiden, Backhuys publishers, 1999.



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**akos
lumnitzer**

***Verconia verconis*
(Basedow & Hedley, 1905)**

Generally thought to be only present in Australia's southern states (Victoria, Tasmania, South Australia, southwest Western Australia) *Verconia verconis* is an unusually shaped nudibranch and one of only few species of chromodorids, which can perfectly imitate its host sponge upon which it is usually found. There are a number of similar-looking sponges, such as *Dendrilla rosea* and *Darwinella sp.*, of which the latter is very common along the coastline of New South Wales. The colour of *V. verconis* is variable from dark pink through to orange and even yellow. As the juveniles grow, the pointed mantle flaps begin to push outward from the body and as the individual matures, these flaps become similar in appearance to their sponge's fibrous skeletal structure. The very tip of these pointed flaps is white and has a mantle gland, probably to secrete a fluid as a form of chemical defense.

Now if you wonder why on earth I mentioned NSW while talking about this particular species, since I just previously stated its distribution range and it definitely didn't include NSW? That is because very recently I photographed a specimen down the road from where I live in the southern suburbs of Sydney. The truth is a photographer friend of mine told me about the nudibranch's presence at Kurnell and gave me a rough guide to the rock upon which the beast lay, waiting for me!!! I went at the earliest opportunity with a friend and somehow managed to find the rock and the beast. Funnily, the true colour of the animal was only apparent once I developed the film. Without a light source, it happily blended in with the dark brownish shade of the sponge, but the light produced by my flash was enough to bring the real colours out in both sponge and nudibranch.

The sudden appearance of this specimen at Kurnell is a mystery waiting to be solved. Dr. Bill Rudman of the Australian Museum in Sydney claims there is a distinct boundary at Green Cape, on the border of New South Wales and Victoria limiting the northernmost distribution of the southern species and likewise for the northern species to the south. The possibilities are that the north-flowing cold current brought some eggs and/ or larvae up from cooler waters (much in the same way as the East Australian Current brings expatriate tropical organisms to our Sydney dive sites). Another option could have been that our little visitor ended up in the ballast tank of a ship that came from one of the southern states.

No matter which way the nudibranch's travel eventuated, it certainly added a little bit of extra spice into our Sydney diving, if even only for a couple of weeks.....just when we thought we saw most of our nudibranchs!



nudibranchs



**dave
harasti**



Lady Musgrave Island is a coral cay and forms part of the Southern Great Barrier Reef off the North Eastern Australian coast.

With over 80 dives around Lady Musgrave Island I have covered many sites and found many different nudibranchs. The best nudibranch site is a location known as Battery Bombie (a simple shore dive straight out from the campsite), 13 different species were found at this one location. Pictured below are some of the species that were found on a recent visit in January 2001:

Risbecia tryoni

These two animals we found on the dusk dive at Battery Bombie, they were playing the follow the leader game. This 'trailing' behaviour is when one animal appears to follow the mucous trail of the other until they actually make contact. Then the following animal keeps contact by touching the 'tail' of the leader. More information on 'trailing' can be found on Bill Rudman's site.



Phyllidia ocellata

This species was found in various depths with the deepest recording being 27 metres.



Risbecia godeffroyana

Only one specimen was found and this was at Battery Bombie in 18 metres of water.



Chromodoris elisabethina

This animal was relatively common. It was observed at several sites and in various sizes. The smallest specimen was less than 1 cm with the most common size around 3cms.



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mediterranean nudibranchs



**miquel
pontes**

***Tritonia striata* (Haefelfinger, 1963)**

Synonym: *Duvaucelia striata*

Nudibranchs of the family *Tritoniidae* (Lamarck, 1809) prey on soft corals, gorgonians and other anthozoans, so they can be classified as carnivores.

They have a distinctive digitate frontal veil that is used to locate expanded polyps that consist on its food. Attacks to polyps have to be done rapidly because the polyps quickly retract into the colony for protection at the least disturbance, so positioning before the surprise attack is essential.

Another characteristic common to the *Tritoniidae* are the dorsilateral branched cerata, used as gills and located in the edges of the dorsum. The "pulpit sheathed" rhinophores that allow these nudibranchs to "view" its environment are also a common trait of the family.

The body of the *Tritonia striata* is colored white, with a black dorsal line and three well defined lateral lines that can be observed quite clearly. The section of the body is quadrangular and the total length usually reaches 15-20 mm, being occasionally larger, up to 35 mm (Ros).

According to the authors, the *Tritonia striata* can be found in the algae meadows close to the surface, and it has been described in the Mediterranean Sea.

The specific diet of this nudibranch is not yet clearly known, however, it is speculated that it feeds on *Alcyonaea* or *Paralcyonum elegans*.

Ethimology suggests that the genus name "*Tritonia*" is devoted to Triton, an ancient Greek lesser marine god, son of Poseidon and Anphitrite, whose most common representation was a human head and torso and a fish tail. Triton was related to marine shells as he used them as a trumpet to calm rough seas. The species name "*striata*" comes from Latin word for "lined".

Readers can get more information and pictures from the Internet:

- Medslugs: http://www.medslugs.de/E/Mediterranean/Tritonia_striata.htm
- M@re Nostrum: <http://marenostrum.org/opistobranquios/tstriata>





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**richard
willan**

Part 2: Relaxation

Why, you might ask, should nudibranchs require kinesiology? With respect to Wayne, whose profession it is and who will tell you kinesiology is about more than just relaxation, relaxation of nudibranchs prior to preserving them is essential for later scientific study. To continue the analogy, a nudibranch dropped into a preservative fluid is anatomically just as "screwed up" as we feel mentally after we have had a week in which nothing has gone right. Relaxing nudibranchs is the key to successful dissections. Because nudibranchs have evolved from spirally-twisted, shelled ancestors, their body systems are very complicated internally, particularly their digestive and reproductive systems, so there is enough trouble tracing out the organs in these systems without having to cope with an animal so contorted that its gills are scrunched up next to its rhinophores and there are no anatomical landmarks to work out which organs are which. Such deformations are entirely possible because nudibranchs have hardly any muscles securing organ systems to the body wall (**extrinsic muscles**) and these get torn when an animal is in its death-throws.

Therefore it is essential to relax an animal properly. If you prefer it, then more socially acceptable euphemism, **euthanasia** could be used instead of relaxation because the specimens need to be put to death gently. The proper technical term for this process is **narcotization**. It can be quite difficult to judge exactly when an animal is dead because the time interval between death and onset of tissue disintegration (**histolysis**) can be very short, especially in very fragile nudibranchs and sacoglossans. The time taken for successful narcotization varies enormously with different species and different techniques - from half an hour to half a day. But no matter what technique you use, you need to check the animal regularly during the process. The best way to test for a response that would indicate the animal is still alive, is to touch it with a pin, especially on the gills or cerata. If there is no contraction response, you can be fairly sure the narcotization has been adequate. If you see some contraction, then continue the narcotization for a little longer.

This process of narcotization can be time consuming, but remember if you are going to remove it from its natural habitat, you owe it to the animal to preserve it in the best possible condition for future study.

There are two different forms of narcotization – physical and chemical. Physical techniques involve altering the temperature or the salinity of the seawater. Probably the simplest method of all is chilling the animal. Put the animal in a bowl of seawater with a large surface area and place it in a refrigerator. As it cools down, the animal will stretch out as though it were crawling, and the rhinophores and gills will emerge and spread out. Although this technique is simple, it has two drawbacks; the animal may be just slowed down metabolically by the cold but not dead, so it will still contract when it is preserved and, worse, some tropical opisthobranchs react violently to chilling below their usual water temperature. Kerry Clark gave the example of certain ceratal-bearing sacoglossans that drop all their cerata with perhaps a 10° C reduction over an hour period. This chilling process should never be taken to freezing because the ice crystals thus formed tear apart the organs inside the body. I have found that warming the water of tropical nudibranchs by about 10° C induces torpor that is as effective as narcotization. The problem with heating is that the time between death and histolysis is shortened significantly. Adding fresh water to the seawater in which the animal is crawling in can sometimes bring about gradual death, but if this method is left for too long the animals swell up like little balloons from the process of osmosis.

Chemical techniques for narcotization take longer but they are usually more successful for a greater range of nudibranchs. Kerry Clark (he must have been desperate poor fellow) used ethanol, in the form of Vodka and white rum, a few drops at a time. I have tried menthol (also known as peppermint camphor) flakes, and know of others that have naphthalene (Tar camphor) and nicotine flakes, sprinkled on the surface of the bowl. However these days I use an 8% solution of magnesium chloride in fresh water myself when I am narcotizing animals. The chemical, which is available from chemists, acts on the animal's nervous system and the fresh water has an added effect in that it induces an added mild osmotic stress. Instead of adding freshwater, some scientists place the bowl containing the animal with magnesium chloride solution in seawater into the refrigerator and let it cool gradually.

In using any chemicals, make yourself aware of the possible side effects on humans. We all know the effects of ethanol. Magnesium chloride and menthol are harmless (unless taken in large doses) but they can cause mild irritation of skin and eyes in some people and menthol should be used where there is good ventilation. Naphthalene, if inhaled as a dust, can cause irritation of the nose and throat and headaches, so it too should only be used where there is good ventilation.

My final piece of advice on narcotization is to try it with some common species first. Remember that the Egyptian practised their mummification techniques on hundreds of ibis and cats before they graduated to humans.

References:

Clark, K. 1995. Message posted on Mollusc List Server.

Material Safety Data Sheets (MSDS's) specific for magnesium chloride (10149 - issued May 1996), menthol (AJIXK - issued January 1996) and naphthalene (AJI91 - issued May 1995) issued by Merck Pty Ltd, Kilsyth, Victoria and AJAX Chemicals, Auburn, New South Wales.

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Flatworms: *Pseudobiceros splendidus* (below left and centre) and *Pseudoceros bifurcus* (below right)



These flatworms were quite common around the Island and were found at several different sites. *Pseudobiceros splendidus* was observed mating at Battery Bombie, note the picture below with the animal 'primed' for mating.

Some of the other animals found around the Island but not included above were *Hypselodoris bullocki*, *Phyllidiopsis striata*, *Phyllidiopsis fissuratus* and *Phyllidiopsis burni*. *Hexabanchus sanguineus* (Spanish Dancer) eggs were observed but no animals were found. *Aplysiadactylomela*, (Sea Hare) were very common in the tidal zone and one had to be careful when walking to the boats not to step on any.

More photo's of nudibranchs from Lady Musgrave Island can be found at the 'Underwater Photo Gallery' www2.dynamite.com.au/davidh



**julie
marshall**

Heron Island is a coral cay situated in the Capricorn Bunker Group of the Great Barrier Reef about 64 km offshore from the Queensland port city of Gladstone. I have been visiting Heron Island for over 20 years and over the next few months I shall be describing some of the animals found in the different habitats on this coral reef. Generally I will be illustrating animals that have not so far been featured in *Nudibranch News*.



Inner Sandy Zone

This is a broad zone with extensive uninterrupted sandy areas, which occurs on both the north and south side of the island. Between these sandy areas are isolated patches of dead coral covered with algal growth near the shore, whilst clumps of living coral occur further out towards the reef crest.

Some of the most regularly found animals on the sand are the Cephalaspideans of the family Aglajidae. The name Cephalaspidean means "head-shield" and all members of this group have a well-developed head-shield which they use to burrow into the sand where their food is found. They are carnivorous with some members eating other opisthobranchs. The Aglajids are often referred to as tailed slugs as their posterior shield ends in a pair of lobes. The four most prominent species found on the sand are *Philinopsis gardineri*, *P. lineolata*, *P. cyanea* and *P. pilsbryi*. They are usually most active in the late afternoon.

Philinopsis cyanea

The members of the genus, *Philinopsis*, at present fall into two groups. In *Philinopsis cyanea* the head shield is very broad and blunt and its posterior end tapers into a crest which is held erect. It feeds on other bubble shells such as *Bulla*, *Alys* and *Haminoea* using its large buccal bulb, which it partially everts, to catch its prey. It is the most variable in colour of the species and the background colour of animals can vary from black to pale brown. On this can be dull orange or yellow stripes or spots, or pale brown and cream blotches. There are also some blue markings on the parapodia and front of the foot. These can be a distinct royal blue line or just faint traces of blue.



Philinopsis gardineri

P. gardineri, as well as *P. lineolata* and *P. pilsbryi*, belong to the other group of *Philinopsis*. In this group the front of the head shield is tapered to give a more torpedo shape to the body and there is a distinct hump on top of the head. Its food is thought to be polychaete worms. *P. gardineri* is the commonest species found on the sand. It is jet black all over except for the margins which have distinctive royal blue lines. The white markings on the animal in the photo are specks of sand.



Philinopsis pilsbryi

This is a variable species although most of the animals I have found on Heron Reef have been creamish-white with strong black markings arranged in circles. It has been found subtidally on sand as well as on the intertidal sand flats.



Philinopsis lineolata

The torpedo shape of the body is most obvious in this species. It is a very distinctive species with a creamish body banded with narrow dark brown disrupted transverse lines. The edges of the parapodia and tail are tinged with blue.



For more information about these species see

Marshall, J.G. & Willan, R.C. 1999. *Nudibranchs of Heron Island, Great Barrier Reef: a survey of the Opisthobranchia (Sea Slugs) of Heron and Wistari Reefs*. Leiden, Backhuys Publishers.

Rudman, W.B., 1972. A comparative study of the genus *Philinopsis* Pease, 1860 (Aglajidae, Opisthobranchia). *Pacific Science* 26: 381-399.

Rudman, W.B., 1998 (October 14) *Philinopsis gardineri* (Eliot, 1903). [In] *Sea Slug Forum*. <http://seaslugforum.net/philtgard.htm>.



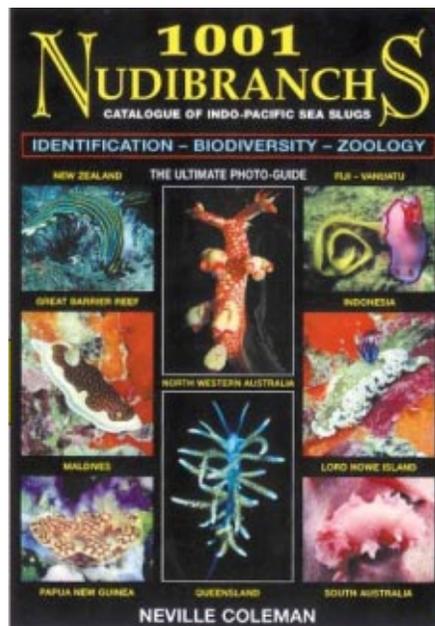
Dave is in Honduras so I'm filling in for him this month.

1001 Nudibranch update

Neville Coleman have been keeping me up to speed with his upcoming book. The release date has been moved back until June due to a major reworking of the publication. Neville explained during a phone conversation recently he has added hundreds more photographs. The total is now close to 1700 nudibranch images, covering approximately 700 species. The *Hexabranchnus sanguineus* page for example has 14 images of the animal and eggs.

The pre-release offer is now closed. The new price will be released soon. To date this is one of the largest projects Neville has taken on and from what I have seen so far we will not be disappointed when it is released. A wide variety of new and known species are included.

Contributions from around the world have been pouring in and Neville mentioned he actually has more images than he can fit into the book.



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