



LET'S GET **NAKED!**

NO, ED BROWN ISN'T TALKING ABOUT THOSE OF YOU WHO GOT YOUR UNDERWATER NATURIST AND NATURALIST MIXED UP. HE'S TALKING ABOUT NUDIBRANCHS...



In an undersea world full of big impressive fish and mammals, it's all too easy to overlook the small

critters. Who, in their right mind, would spend a dive with their face in the coral when there's a chance of seeing a shark or a Manta ray? Answer: me. Don't get me wrong, I love everything in the sea, and it's great to be two feet away from a manta, but it's even better to be two inches from a slug. They're slow and colourful, but they're also evil little monsters that practise cannibalism and fight using chemical warfare.

I've been interested in nudibranchs pretty much for as long as I have been diving, ever since I saw my first one in Hurghada in the Red Sea. They are also my favourite to photograph. A good macro picture to me has much more impact than any wide angle shot could ever capture. This is probably due to the vibrant colours, but it's also the detail you get with a life size, or even half-life size picture. Some things you just don't notice until you get your slides back, or view them on a PC. The nudibranch laying eggs for instance, I never saw those eggs during the dive, and I took perhaps eight to 10 pictures. I was literally inches away and didn't see them.

Nudibranchs

The word nudibranch is derived from two Latin words: 'nudi', meaning naked, and 'branch', meaning gills. The 'ch' in 'branch' is said as a hard 'k'. Nudibranchs can be found all over the world, in any sea or ocean, in any temperature water, but the most prolific area for them is the Indo-pacific. On my first trip to the Bunaken Marine Park in Indonesia I counted at least 25 species that I hadn't seen before.

They were everywhere, and I can't wait to go back and photograph them all. Except next time I'll have a macro lens with me!

A nudibranch is basically an underwater slug, although obviously it needs gills to breathe. On many nudibranchs these gills can clearly be seen, and look like a cluster of small feathers. Some can even retract them into a cavity in their body. Not all slugs have visible gills; aeolids for instance, have many appendages on their body, called cerata. As they breathe through their skin, these appendages help to increase surface area, whilst keeping the nudibranch relatively small. At the other end of the body, on its head, a nudibranch has two sensory organs. They look similar to those on a garden slug or snail, and are known as rhinophores. As a nudibranch moves around, these rhinophores are constantly on the move, tasting and smelling the water ahead. They are the closest things a slug has to our own eyes. Like their gills, most nudibranchs are able to retract their rhinophores into protective compartments in their head. Scent receptors, as rhinophores are, work best when there is a large surface area, and as the sea water dilutes the scent, nudibranchs have many different kinds of rhinophore. They are generally pointed rods, which in themselves help to increase surface area. But some have extra growths, such as flaps or spots, to make them even bigger and more effective.

Feeding

Nudibranchs are known as grazing carnivores. Each individual species feeds on a specific kind of animal. Some eat sponges, some coral, while others eat tunicates, hydroids or even anemones. Underneath the

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rhinophores is the slug's mouth.

Their teeth are known as radula, and have been adapted over time to be more suitable to the kind of food the slug eats. All species have different amounts of rows of teeth and different amounts of teeth in each row, dependant of their particular food. Aeolids have adapted to be able to eat anemones and other cnidarians without being stung, and also use the sting for their own defence. They eat the parts of the anemone then pass the stinging cells, or nematocysts, into the small growths on their back. These cerata are generally seen as thin pointed tubes dotted along the body of the nudibranch. If you look close enough you may be able to see that the part of the cerata nearest the body are brownish in colour. This is part of the nudibranch's gut content. Nice huh?

Breeding

When it comes to breeding, nudibranchs have got it made. They are simultaneous hermaphrodites. This means they have both male and female sex organs. Whilst self-fertilisation is a possibility, it is very rare, and of course undesirable, as this would lead to genetic mutations in future generations. Both sets of organs are located on the right hand side of the body, so when two nudibranchs mate they need to be side-by-side and facing opposite directions. After mating, a nudibranch will lay a series of eggs on, or near, its particular foodstuff. These are quite often seen on dives as pinkish or yellow ribbons arranged in a circle. The eggs may take between five and 50 days to develop, after which they hatch, and it's up to the currents and predators to

determine whether they make it to adult life or not.

Survival of the fittest

As nudibranchs have evolved, they have done away with the shells that other opisthobranchs use as houses or protection. This means nudibranchs have had to adopt different defence mechanisms to stay alive for longer than five minutes. This is fairly obvious in their colourings. As in most of the animal kingdom, bright colours serve as a warning to others that you are not to be messed with. Whilst this is not always true, it is the case for many nudibranchs. Even if a passing fish decided that a nudibranch would make a quick and easy meal, then the foul taste of the slug would ensure that the fish goes hungry, and the slug lives on to fight another day. Their colourings are also

Did you know?
There are around 3,000 known species of nudibranch with many, many more un-named or undiscovered. Their life-span is from as little as a few months to a year or so.

an excellent means of camouflage. If both predator and prey are nearly identical in colour then the predator has the upper hand. Have you ever seen a red nudibranch on a red sponge? No? Then the chances are that your average fish hasn't either.

Naming

Although lots of nudibranchs have common names, most of them do not, or have different names in different countries. I am sure a lot of you have been to the Red Sea and have more than likely seen a Pyjama

Classification

Mollusca – Clams, mussels
Gastropoda – Cowries, limpets
Opisthobranchia – Slugs and sea hares
Nudibranchia

Nudibranch Sub-orders

Doridoidea
Aeolidoidea
Dendronotoidea
Arminoidea

Recommended reading

Nudibranchs and Sea Snails: Indo-Pacific Field Guide - Helmut Debelius
Field Guide to the Nudibranchs of the British Isles - Bernard E. Picton
What On Earth Is A Nudibranch? - Jenny Tesar

nudibranch. The Latin name for this slug is *Chromodoris Quadricolor*, although there are many different kinds of *Chromodoris*, and many people seem to call them all pyjamas if they have stripy bits on them. It's a lot easier to describe nudibranchs than to actually find out what their real Latin name is. I always call them stripy ones, bobbly ones or warty ones. Doridacea are always called Doris because it's easier to remember. Nembrothas are big brutes of slugs that will eat anything they like, including other nudibranchs. They're big, fat, and ugly, and look like they have warts. They're also my favourite, which probably says more about me than anything else. In fact, my absolute favourite would be *Nembrotha Kubaryana*. As you can see in the picture, they have dark green lumps on their backs and bright red rhinophores. They just look like a big fat blob, the underwater version of Jabba the Hut. As they're bigger than a lot of the others, it's also easier to photograph them because you don't need to get so close. The *Nembrotha* here was taken in North Sulawesi, Indonesia. As I've just mentioned it's often difficult to identify a nudibranch as lots of them look similar. Some can even look completely different, but are in fact the same species.

If you're looking at recognising and identifying different species then the Indo-Pacific Field Guide to Nudibranchs and Sea Snails is an invaluable resource. My copy goes everywhere with me, and it's the book I've used to identify the nudibranchs on these pages. There are also many websites dedicated to slugs, so hopefully this article will have given you an insight into the little critters, and you'll take some time to investigate them further, even if it does mean missing the odd shark or manta. **SW**



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