

# australasian nudibranch NEWS

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*Glossodoris angasi*  
Rudman, 1986



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*Glossodoris angasi* which does indeed look like *Glossodoris atromarginata* and has been mistaken for it since 1864 when George Angas published his account on nudibranchs from Sydney Harbour. Dr Bill Rudman named this species in honour of George Angas.

The internal anatomy of these species is quite different but externally their colour is very similar. *Glossodoris angasi* has a much softer body than *G. atromarginata*, resembling more a chromodorid. The edge of the mantle is less folded, and the colour band ranges from reddish brown to a light pink and in the image above blackish. The gills and rhinophores are black.

Personal observation indicate *G. angasi* is smaller than *G. atromarginata*.

At present this species is known only from intertidal and sublittoral waters of New South Wales, Australia.

## References

Rudman, W.B., 1998 *Sea Slug Forum*.  
Rudman, W.B. 1990. *pers comm*

## Editor's Notes

This completes Volume One. Twelve months of learning on my part and hopefully information that you found interesting. Thanks to the many people who directly or indirectly contribute to the ongoing sharing of information.

Some small changes will commence with Volume Two, thanks mainly to suggestions made by Steve Long.

To remain on the mailing list please email us. This assists to keep the list current. Your comments on content, etc, would be appreciated.

## Updates

Sorry it took so long for me to reply. Unfortunately, I don't have any photos, but I can tell you about some of my recent nudibranch sightings. I've been seeing a lot of *Chromodoris elisabethina*, as well as a few *Phyllidia varicosa* at Flinders Reef. Found a 2 cm long *Hypselodoris obscura* on the Pt. Lookout wreck at Curtin Artificial Reef on the 25th. The most common nudibranch I've been seeing is what I believe to be *Ceratosoma trilobatum* - several at the Curtin wrecks (10, 11, 25 Jul), as well as on the Bulwer bus (16 Jul). I've never actually seen a photograph where I could say "yes, that's it" - the photo in 'Indo-Pacific Coral Reef Field Guide' (Allen & Steene, 1996) looks nothing like it, and the photo in the 'Wild Guide to Moreton Bay' (Qld Museum, 1998) is similar, but the colouring is off - I would say that it has a darker purple/blue edging, as well as dark purple around the bases of the rhinophores and more orange rhinophores with bluish tips. I suppose it is just that the photo was taken with a flash. I don't know if that helps you at all, but I'd be happy to relay any more sightings if you wish. Any other info you'd like with that (sizes, depths, substrate found on, etc)? Best wishes, Christine. (Australia)

Erwin Kohler's Mediterranean Slug Site has moved to  
<http://medslugs.de/E/mssmain.htm>

Neil Miller has included some new images, see <http://www.diveoz.com.au>



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*Hypselodoris obscura*



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*Chromodoris elisabethina*



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*Phyllidia varicosa*



## Reviews

### *Glossodoris atromarginata* (Cuvier, 1804)

#### Synonymy

*Doris atromarginata*  
*Doriprismatica atromarginata*  
*Cassella atromarginata*

#### Description

The firm body is high sided and elongate. The mantle border has permanent primary and semi permanent secondary folds and can be black or brown, bright blue or red, edged with white above and below the border. The mantle ranges in colour from lemon-yellow, dirty white, milk white or buff brown. The foot lacks a coloured margin.

The rhinophores are black. The 14-22 simple gills are large, long and pale cream with darker tips and are arranged in an arc around the anus. The two ends form an inwardly coiled spiral and the gills are shorter than those anteriorly. The gills wave rhythmically as the animal crawls.

This species grows to a maximum 50mm.

#### Behaviour

This species is commonly seen during the day crawling around or curled up in small. Subtidally it is one of the more common species on the eastern Australian coast (personal observation). On the southern end of the Sunshine coast it is commonly sighted while snorkelling or can turn up in rock pools.

#### Distribution

Throughout the tropical Indo-Pacific, extending into New South Wales in Eastern Australia (including Lord Howe Island) and along the West Australian coast.

#### Remarks

*G. atromarginata* is possibly one of the most common nudibranchs along the Australian East Coast. It can be mistaken for *G. angasi* (page 1) or *G. averni* (red margin border).

#### References

Rudman, W.B. (1983c) *Glossodoris* Ehrenberg, 1831, *Hypselodoris* Stimpson, 1855 and *Chromodoris* Alder & Hancock, 1855 (*Gastropoda*, *Opisthobranchia*): Proposed clarification and conservation. *Z.N. (S.)* 2432. *Bulletin of Zoological Nomenclature* 40(4): 211-220.

Rudman, W.B. (1984d) *The Chromodorididae (Opisthobranchia: Mollusca) of the Indo-West Pacific: a review of the genera*. *Zoological Journal of the Linnean Society* 81: 115-273.

Rudman, W.B., Darvell, B.W. (1990) *Opisthobranch Molluscs of Hong Kong: Part 1 Nudibranch Families; Goniodorididae, Onchidorididae, Triophidae, Gymnodorididae, Chromodorididae*. *Asian Marine Biology*, 7: 31-79.

Willan & Coleman. (1984) *Nudibranchs of Australasia*.

## All readers please note

This issue completes Vol.1.

Some small changes will be introduced in the next volume.  
To assist us in updating our mailing list please send an email to  
[glaskin@ozemail.com.au](mailto:glaskin@ozemail.com.au)

Those not responding will be removed from the mailing list.

**Please email NOW.**

# Bacteria in Nudibranchs.

Annette Klussmann-Kolb and Gilianne D. Brodie present a summary of their recent paper.

*Dendrodoris nigra* (Stimpson, 1855) is a widespread Indo-West Pacific nudibranch mollusc of the family *Dendrodorididae*. The genus is notable because of its highly glandular anterior digestive system and lack of radula. The species feeds on non-reticulated sponges of the genera *Halichondria* and *Tedania*.

The vestibular gland and egg masses of *Dendrodoris nigra* were investigated histologically and ultrastructurally. The vestibular gland is attached to the distal oviduct of the sea slug and its function is currently unknown. This gland is thought to be related to reproduction, possibly to egg mass formation. Detailed investigation of the gland revealed the presence of symbiotic bacteria aligned between the microvilli of the glandular cells. Symbiotic bacteria related to reproduction has not been previously reported for gastropods.

Identical looking bacteria were also found in the mucous layers of its egg masses. The number of bacteria in the egg mass increased during development. These bacteria are not external contaminants but are actively reproducing and are stored within the nudibranch for an apparently functional purpose. We have proposed several hypotheses about their function:

1. the bacteria play a role in the breakdown of the egg mass mucous coating and the egg capsule
2. the bacteria protect the egg mass from colonization by other organisms (e.g. fungi, protozoans)
3. the bacteria may function as a nutritional source for the larvae
4. the bacteria are highly specialised and may be passed from generation to generation.

Further studies are necessary to classify the bacteria and to investigate their role in the life history of the nudibranch.

## Digital Photographic Device

A new Electronic Film System, the EFS-1 has been released. Designed to fit into a normal SLR camera the system offers

- ♦ the flexibility to rapidly switch between conventional film and digital photography in the same camera;
- ♦ fits easily into a 35mm camera's film cavity;
- ♦ produces professional quality images with 1.3 mega-pixel resolution;
- ♦ stores 24 full resolution pictures;
- ♦ maintains your creative freedom with existing equipment;
- ♦ ASA rating 100 ISO;
- ♦ industry standard file formats; including JPEG, BMP and TIFF.

The EFS-1 comes with a rugged moulded carrier, the adapter cable and the download software. The provided download software will allow the user to select the format and view the images.

To load the EFS-1, take it out of the carrier and place it into the camera body like traditional film, the imager extends over the film plane and is self seating. You then close the camera back and are ready to shoot 24 images. It takes 2 seconds for each image. A ready light on the cartridge and an audible signal will tell you when the EFS-1 is ready to shoot. A counter on the unit keeps track of the number of images taken and an audible alarm informs you when the system is full.

When you decide to download the images, remove the EFS-1 into the moulded carrier and insert the carrier into the computer adapter cable. The software onboard the PC/MAC will download the images at your command.

The product is due for release later this year in the USA initially. The estimated cost will be \$800 US.

Underwater photographers may benefit from the ease of transfer of images and the ability to use their current photographic equipment.

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### References:

Klussmann-Kolb, A. & Brodie, G. (1999) Internal storage and production of symbiotic bacteria in the reproductive system of a tropical marine gastropod. *Mar. Biol.* 133(3): 443-447.  
*The Sea Slug Forum* (July 1999).  
Klussmann-Kolb, Annette. (1999) *pers comm*



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## Egg Spirals

Recently my colleague and co-author Vladimir Grintsov from Sevastopol (Ukraine, Black Sea) performed the interesting experimental studies of the egg-laying of an alien doridacean *Doridella obscura* Verrill 1870 (= *Corambe batava* Kerbert, 1886, according to C. Swennen and R. Dekker, 1995). This small nudibranch, known as native to the Atlantic coast of North America, had been introduced accidentally to the Black Sea in the veliger stage via ships' ballast water discharge in the 1980s and 1990s.

The spiral egg masses of this unique northern hemisphere species long ago were indicated as dextral, i.e. clockwise directed (Franz, 1967; Perron and Turner, 1977; Roginskaya and Grinsov, 1995). The recent data of V. Grintsov are remarkable: all the 14 specimens of *D. obscura*, he observed in the aquarium invariably started the egg-laying from the largest coil of the spiral, moving leftward towards the centre. And though the final flat spiral egg-ribbon looked like dextral, in fact the spirals were sinistral. The same mode of the direction of coiling while attaching the egg-mass to the substratum had already observed Costello (1938) in *Hopkinsia rosacea* from Monterey Bay, USA.

I have now in my possession a lot of "pseudodextral" spawns of *D. obscura* (sent by Dr. Grintsov), preserved in alcohol, some with the substratum.

Perhaps the alien *Onchidoris depressa* arrived in the southern hemisphere (Rudman, March 5, 1998) also starts egg-laying from the outer whorl and its sinistral spirals are in fact dextral? In the Monograph of T. Gosliner Nudibranchia of Southern Africa, 1987) two spiral egg ribbons of *Corambe* sp. are dextral (fig. 11b). Maybe our *Doridella* once arrived with ships from the southern hemisphere and were forced to change their natural clockwise direction to a counterclockwise one, beginning from the largest whorl?

### References

Dr. Irina Roginskaya. (1999) pers comm.  
*The Sea Slug Forum* (1999)

## Book Reveiw

### Guide Book to Marine Life

Hajime Masuda

404 pages. Colour.

Format 5 X 7 ¼ inches.

\$34.95 (US) plus postage

A second new book in one month from Japan is out, containing over 1300 species of invertebrates and fishes. 57 pages of Opisthobranchs (with 4 colour photos per page) are included.

The text is in Japanese, but species name, location and photographer are in English. The geographic coverage is uncertain, but the photos (which are absolutely excellent), range from Japan to Indonesia, Panope, Maldives, Palau, Kenya and the Philippines.

Photos of newly described species (1998-99) including all of Terry Gosliner's *Thuridilla*'s, *Nembrotha chamberlaini*, *Chromodoris joshi*, *Chromodoris diana*e, *Hypselodoris bollandi* and *Chromodoris roboi*.

Reviwed provided by David W. Behrens

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