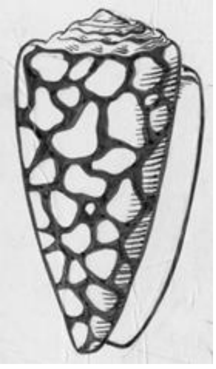

Conus marmoreus *Linne*

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VIC. BR. BULL. NO. 303 FEBRUARY/MARCH 2021

NOTICE OF MEETING

The next meeting will be held on Tuesday 16th of February at the Melbourne Camera Club Building, cnr. Dorcas & Ferrars Sts South Melbourne at 8pm.

This will be our first meeting since February last year and will be a members night.

Proposed meeting dates for the rest of the year.

April 20th

June 15th

August 17th

October 19th

November 16th

Currently Branch Bulletin issues from VBB169- 288 can be accessed via the Society's website which includes an index 1-276 . http://www.malsocaus.org/?page_id=91

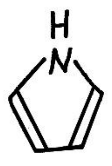
Bulletins prior to 169 and after 289 can be obtained from the editors in PDF form on request.

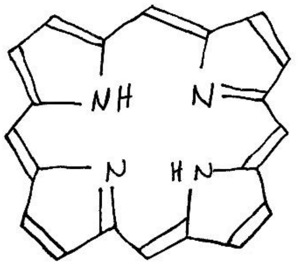
Secretary / Treasurer Michael Lyons Tel. No. 0428 600 615

Testing shell fluorescence in basal gastropods

Amongst molecules causing colouration in molluscan shells are the porphyrins (rings of four pyrrole subunits) and tetrapyrroles (open chains of four pyrrole sub-units) – these are commonly present in basal gastropods and fluoresce under ultraviolet light (see discussion in Vafiadis and Burn, 2020, and references therein). Fluorescence refers to the emission of light by a mineral or compound once it is excited by ultraviolet (UV) or higher energy radiation such as x-rays; phosphorescence is similar to fluorescence but where the emission of light persists for variable periods of time after the exposure to the excitatory radiation ceases (Read, 1949; Krause, 1996).

The rapid return of excited molecules back to their less energised ground state emits the energy originally absorbed as light and heat, with the wavelength of emitted light being longer (ie. lower frequency and thus less energy) than the exciting wavelength (Lehninger, 1975: 594-595). The other possible fate of an excited molecule is that it undergoes a chemical reaction and thus becomes chemically transformed (Lehninger, 1975: 594-595). This is the basis of photochemical reactions and the likely basis for the gradual fading of shell pigments after prolonged exposure to sunlight.

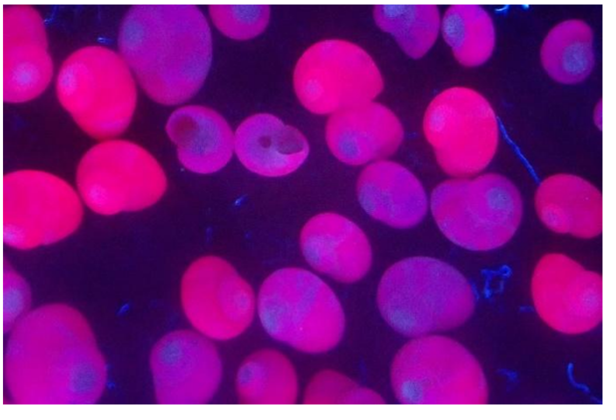




Far left: diagram of pyrrole molecule.
Left: diagram of the simplest porphyrin ring
(Both re-drawn from Allinger, Cava, De Jongh, Johnson, Lebel & Stevens (1976: 739-741).

I recently decided to test the fluorescence of three different but predominantly red-pigmented vetigastropods under ultraviolet light using a Wood's lamp, and here report the results. The precise frequency range of the UV light produced by the lamp was not specified. All specimens tested were collected from beach drift lines on Cowes Beach, Phillip Island, Victoria, on 29 June 2019. Photographs were taken using an Olympus TG4 compact camera, of course without flash for the UV light images!

***Argalista rosea* (Tenison Woods, 1876), Colloniidae:**
Images below show the same *A. rosea* specimens under normal light (left) and under UV light (right).

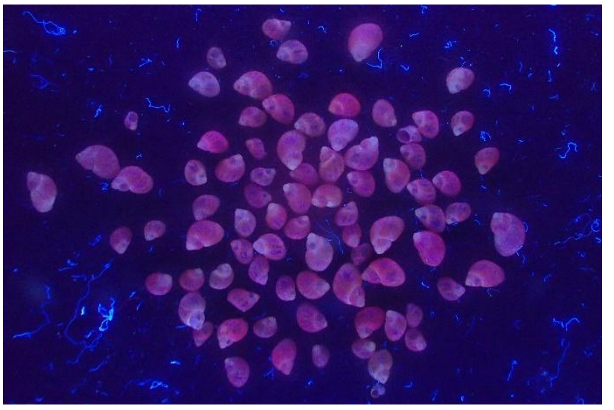


Of all three of the tested species herein, *A. rosea* shells showed the most intense fluorescence (showing as bright pink) under UV light, but the photos show that there was variation in the strength of the fluorescence between specimens that, under normal light, looked equally vibrant in colour (compare shells seen as brighter pink compared to bluish purple under UV light).

This suggests some potential denaturation of the porphyrin/tetrapyrrole pigments in the less fluorescent shells, perhaps as a result of ageing or increased cumulative exposure to natural sunlight. Shells that were more brightly fluorescent showed patchiness in their fluorescent response, with the less fluorescent areas within them correlating to those parts of the shell lacking red pigment. These effects can be seen in the photos above.

***Tricolia rosea* (Angas, 1867), Phasianellidae:**

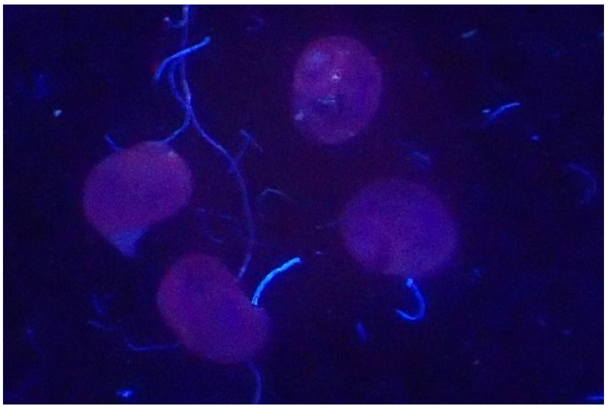
Images below show the same *T. rosea* specimens under normal light (left) and under UV light (right).



The specimens were all chosen because they displayed vivid red pigmentation under normal light. Exposure to UV light does show some pinkish fluorescence but this seemed less intense compared to the response by *A. rosea*. Again, as with *A. rosea*, non-pigmented areas of the shells did not fluoresce pink.

***Gabrielona nepeanensis* (Galiff & Gabriel, 1908), Phasianellidae:**

Images below show the same *G. nepeanensis* specimens under normal light (left) and under UV light (right).



There were not many choices for specimens given the relative scarcity of this species so close to its eastern-most range limit, so I tested the only shells that I managed to find. The fluorescence response under UV light was quite weak, again with some suggestion of reduced reaction in non-pigmented areas of the shells (it is interesting that some of the fibres on the material that the shells were resting on fluoresced far more strongly than the shells themselves!).

In the future, I'd like to check for evidence of phosphorescence (even if only transient) in these species, although I doubt it would be present; this task was unfortunately not undertaken (because it was not thought of!) during the observations made above. It would also be interesting to test the shell fluorescence of other species of different colours.

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Vafiadis P, Burn R (2020). Internal embryonic brooding and development in the southern Australian micro-snail *Tricolia rosea* (Angas, 1867) (Vetigastropoda: Phasianellidae: Tricoliinae). *Molluscan Research* 40 (1): 60-76.

Platon Vafiadis

Some Diving in Southern New South Wales.

Situated in Ben Boyd National Park on the far south coast of New South Wales, Bittangabee Bay is a small, sheltered inlet at the mouth of Bittangabee creek. I had camped there back in the 1980s and had good success shelling in the low tide rock pools that face the open ocean, situated below the campground, and snorkelling in the bay itself. On one low tide I was able to collect several *Mitra carbonaria*, *Conus papilliferus*, *Semicassis labiatum*, and *Sassia parkinsonia* from the intertidal reef. Snorkelling in the bay I was able to collect large *Cymatium parthenopeum*, *Charonia lampas rubicunda*, *Astralium tentoriiformis*, and *Turbo torquatus*.

I was keen to get back there and try scuba diving to see what else I could find. Early in January, whilst holidaying with my family further up the coast at Tathra, I took the opportunity to head down and get in the water.The day was beautiful, clear and sunny as I made my way down the coast. I arrived at the Bittangabee Bay campsite and despite the 30-year interval, was amazed by how little had changed. I drove as close as I could to the one small sandy beach and geared up. It was a short walk down to the water and conditions were perfect.

I entered the water and surface swam a short distance before descending into about 2 metres of water and swimming along the edge where the rocky reef met the sand, headed towards the mouth of the bay. I spied an interesting looking overhang and moved in close to investigate but found it to be occupied by a large numbfish so gave it a wide berth! (According to Last and Stevens in Sharks and Rays of Australia, these rays "are capable of delivering a strong electric shock, while not fatal, will not be forgotten quickly")
There were not many rocks to turn and most that could be turned were devoid of shells (other than large numbers of *Agnewia tritoniformis*); however, they usually sheltered several different types of chitons beneath them. There were many attractively patterned *Chiton jugosus*. *Turbo torquatus* were in reasonable numbers, with the largest being found in very shallow water. The largest examples all had the outer layer of shell missing from around their spires, revealing the pearly nacre beneath. *Astralium tentoriiformis* were common. *Granata imbricata,* a single *Charonia lampas rubicunda*, several *Cymatium parthenopeum* and some heavily encrusted *Sassia parkinsonia,* and the introduced pest, *Maoricolpus roseus* were the only other shells seen.

I encountered a couple of wobbegong sharks, both quite large, resting with their heads beneath crevices in the reef. Other fish of note were Senator Wrasse, which appeared to have more yellow in their colouration when compared with the examples seen here in Victoria.
After searching the reef unsuccessfully, I swam out towards the sand reaching a maximum depth of around 5.5 metres. This area was covered with strapweed, *Posidonia australis*, with the occasional areas of patchy sand. Numerous small stingarees, *Urolophus kapalensis*, were buried in the sand along the reef/sand border, and it was often disconcerting when settling on the bottom to have one of these rays erupt from the sand beneath you. Unfortunately, the only shells to be found here were dead *Bulla quoyii*.
Returning to the reef area I collected a nice large but dead *Codakia rugifera* from the front of an octopus's den. In 3-4 metres I collected a couple of *Conus anemone*. I also collected an attractively patterned Naticid (likely *Eunaticina umbilicata*) in possession of a hermit crab.

Figure 1 A stingaree, *Urolophus kapalendis*, disturbed from its resting place

Getting low on air I began my swim back to my entry point, exploring as I went. In water about 1.5 metres depth, in an area which was not subject to wave action, the rocks were covered in a grey-green bristly marine alga which resembled sun dried cooch grass. It was here that I found a nice example of *Cymatium exaratum*. I examined the area closely but could not find any others. The only nudibranch of note was *Aphelodoris varia.*

Dive 2 – Merimbula Wharf

Over the previous couple of days there had been a moderate swell and quite strong winds. Looking at Tathra, the waves were too big and the sea too green to contemplate a dive. I decided to try my luck at Merimbula. Fortunately, the seas were flatter here, but the water had a green tinge. Three divers who had just exited the water said that the vis was average, but they had been able to see and film a Grey Nurse Shark. I was keen to see a Grey Nurse, so I suited up and headed down to the entry point, a small gutter to the left of the wharf. Thankfully, a rope that could help with the entry and exit was in situ and I made good use of it.

The water was quite green and turbid as I swam offshore, exploring as I went. I encountered an *Octopus tetricus* that was looking slightly worse for wear, with the ends of several arms missing. When I reached 10 metres depth, I began turning rocks, largely without success. I managed to find a small *Conus papilliferus* and a lone *Astele scitulum*. I ended up spending a lot of time taking pictures of fish, as the variety was quite good. There were White Ear, Hawkfish, Morwong, Mado, Yellowtail, Sweep, Maori Wrasse, Scarlet Banded wrasse and Blue Groper. The groper would approach when I turned over a rock and with an audible thump would simultaneously "inhale and bite" whatever it chose to feed on. It seemed keen on abalone and brittle stars.

I eventually reached a depth of 13.5 metres before the gloomy vis had me heading back to shallower water. I did collect a nice large but dead *Tawera lagopus* on silty sand. Heading back up the reef the only shell I collected was a large clean looking *Sassia parkinsonia*. Dead *Maoricolpus roseus* were seen. In the shallower water there were numerous *Aphelodoris varia*. I also got a nice photograph of a *Hypselodoris bennetti*. I exited the water disappointed I had not seen the Nurse Shark.

Figure 2 *Octupus tetricus* warily eyes me as I pass.

Figure 3 *Aphelodoris varia*

Dive 3 "Cannery" Wharf Eden.

I have dived here twice before and on the previous dive I had found some interesting Turrids in shallow water so was hoping to find some more. Surface conditions looked good but underwater the vis was pretty ordinary. I swam out under the jetty, checking the shallow sand for turrids, but no luck. The first shell of interest I found was a nice, clean, but small *Cabestana spengleri*. The dive was very silty, and whenever I looked back to see where I had been a pall of silt hung in the water.

The most common molluscs were live bivalves *Ostrea angasi* and *Mytilus edulis* and dead, small *Fulvia tenuicostata*.

I followed the jetty out to the end, passing numerous *Octopus tetricus* dens on the way. I tried to get some photos, but the silt made things difficult. One small *O. tetricus* put its arms out and had a feel of the front of my camera! I also found a pair that may have been mating, with one octopus remaining in its den, the other enveloping it in its mantle with one of its arms extending down into the tangle of arms belonging to the other. The octopus dens all seemed to have large *Scaeochlamys livida* valves strewn around their entrances, but most were long dead, and I did not find one set of paired valves.

The dive proved to be an interesting one for fish; White Ear, Yellowtail, Bream, small Snapper, Red Mullet, Red Morwong, Pygmy Leatherjackets, a Port Jackson Shark, Porcupine Fish, Mados, Roach, Silver Sweep, Luderick, Pike, Australian Salmon and hawkfish were amongst the fish sighted. Also seen was one of the largest Senator Wrasse I have ever seen, but as is typically the case it proved impossible to photograph. I also saw easily the largest ray I have ever encountered; it was at least 2 metres wide and likely 3 metres long; unnervingly it altered course once it saw me and I had to quickly and clumsily manoeuvre behind a pylon to avoid a close encounter of the unwanted kind!

I managed to collect some nice *Sassia parkinsonia* but despite intensive searching found nothing more of interest. Out in the open away from jetty I found a beautifully sculptured *Atrina tasmanica*, but it was firmly anchored to the substrate and could not be removed without dislodging some of its delicate fluted sculpture, so was left. Amongst some rubble at the very end of the pier I found an anemone, *Phlyctenanthus australis,* nestled amongst the rubble.

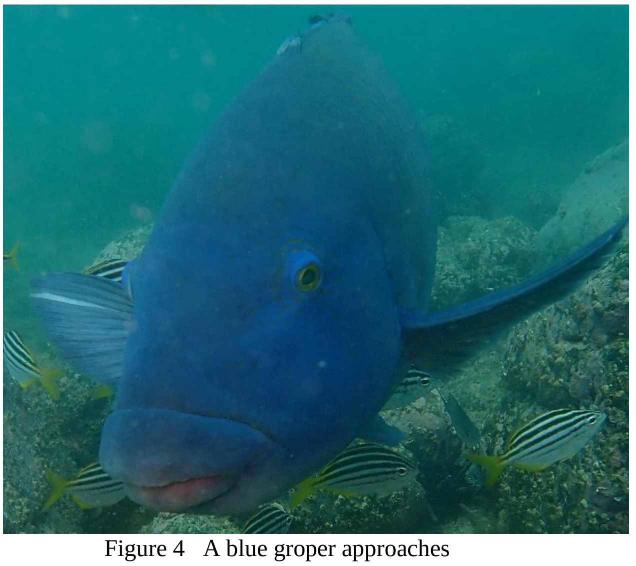
Figure 4 A blue groper approaches

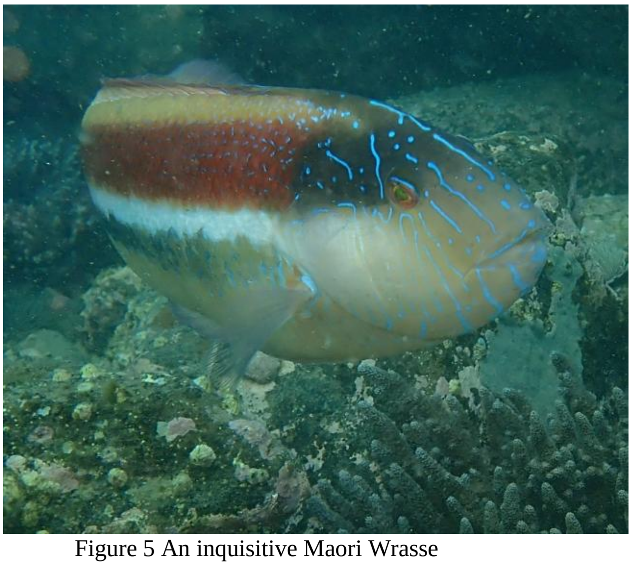
Figure 5 An inquisitive Maori Wrasse


Figure 6 *Hypselodoris bennetti*


Figure 7 *Octopus tetricus* in its den surrounded by dead *Mytilus* valves


Figure 8 Port Jackson Shark with *Ostrea angasi* in the forground.

Once I had done a complete circuit out and back, I then did a grid search of the shallow sand area, making my way back out to deeper water, still no turrids. I did find a smallish *S. livida* in about in about three metres and also observed a *Pecten fumatus*. I also collected a dead turrid.

Other shells seen included *Agnewia tritoniformis* (abundant), *Tugali parmophoidea*, *Herpetopoma aspersum*, *Astralium tentoriiformis, Cymatium parthenopeum, Ranella Australasia, Mimachlamys asperrima and dead Maoricolpus roseus.*

Clocking in at over 150 minutes, this proved to be one of my longest ever dives.

Michael Lyons

Another land snail import recognized from Victoria

Xerolenta obvia (Menke, 1828) is an invasive land snail (family Geomitridae) with an extensive eastern European and Balkan distribution. Spanish worker Alberto Martinez-Ortí (2020) reports a new, but well-established population in northern Spain. He comments that, by hitch-hiking, it has spread far and wide. At present it is known from Canada (1969) and the northern USA and as early as 1933 from Australia and New Zealand. He writes “Its arrival at a port in Australia has recently been detected, through car shipping containers, although there is no record of their dispersion or of their current presence in the country.” He also figures a Port of Melbourne specimen, the identification of which has been confirmed by morphological examination.

Xerolenta obvia comes with considerable baggage. It is a known intermediate host of at least four rhabditid nematodes that cause broncho-pulmonary strongylosis in small mammals. It is also an intermediate host for cestodes and fluke digenea, and a vector for fungal pathogens.

That this species, after almost 70 years, has again been recognized in Australia and its identity confirmed is worrying. Where has it been in the meantime, or is this really a new re-introduction. Martinez-Ortí says that *X. obvia* can be confused with several other European geomitrid snails. These include *Cernuella neglecta* (Draparnaud, 1805), a species listed among the introduced land snails known from Australia. Smith and Kershaw (1979) state that *C. neglecta* “appears to be confined to Yorke Peninsula, South Australia”. Perhaps a wider Australian distribution of *X.obvia* has been hidden in misidentifications of other invasive geomitrid land snails. For example, most local “shell” people know ”our common introduced Mediterranean snail” as *Theba pisana*. Very few try to identify it further among the other introduced Mediterranean snails known to occur in south-eastern Australia (Smith & Kershaw, 1979).

Tis a pity that the Australian Department of Agriculture, Water & Environment did not advise our Branch or Society, or the Field Naturalists Club of Victoria of their recent find. We too could keep a watch for its possible spread from this newly reported Port Melbourne point of introduction.

References

Martinez-Ortí,A. 2020. First location of the invasive snail *Xerolenta obvia* (Menke, 1828) (Stylommatophora, Geomitridae) in the Iberian Peninsula. *Journal of Conchology* 43 (6): 613-620

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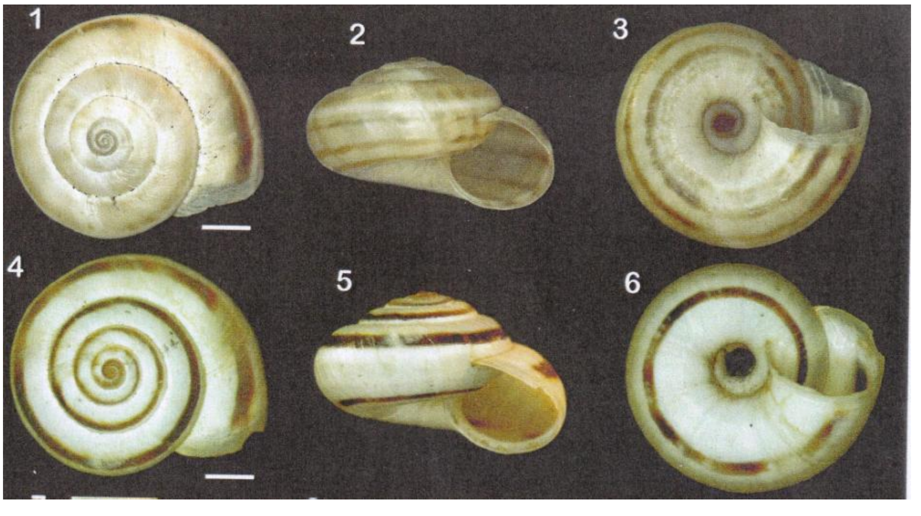
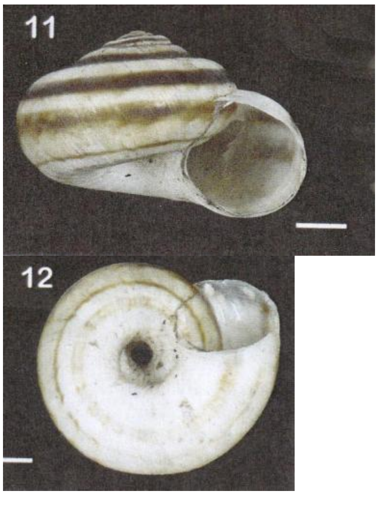
Robert Burn





Figures 1-6 Shells of two specimens of *Xerolenta obvia* from Linares de Mora (Teruel,Spain) (NVHN-060320UY04).

Figures 11-12 Shell of *Xerolenta obvia* Port Melbourne Australia, (photos by Mr Adam Broadley, Department of Agriculture Water and Environment of Melbourne). Scales:= 2mm.

All photos taken from Martinez-Ortí, A. 2020. *Journal of Conchology* 43 (6): 613-620