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Trituba dexia (Verco, 1909) – rediscovery and range extension

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In 2012, as part of an attempt to better understand the Victorian Cerithiopsidae fauna, I examined a large number of unidentified lots held within Museum Victoria. Exercises such this are often interesting, since there is sometimes that 1-in-100 vial which contains something striking and utterly unexpected. Such was the case with the specimen figured here, now registered as MV F183560. The 4.49 mm shell was retrieved from a coarse sand grab taken at 48 m in Bass Strait, about 29 km SW of Cape Otway, Victoria (39°4'48"S, 143° 18'36"E) on 8 Oct 1980 by the HMAS Kimbla. After consulting the literature, and examining some paratypes, I was soon able to identify the shell as *Trituba dexia* (Verco, 1909). Verco's original figure shows much flatter whorls; however, comparison with the paratype specimens reveal that the sketch is rather inaccurate. With the co-operation of Museum Victoria Collection Manager Chris Rowley I was permitted to borrow the specimen for study using SEM at the BIO21 Institute in Melbourne.

The type material was dredged west of Cape Borda, Kangaroo Island, in South Australia, where it was quite common. Verco (1909) also had specimens from a few other SA localities, as far east as Cape Jaffa, however, the Cape Otway specimen is a new record for the Victoria / Bass Strait area. Strangely, this distinctive shell has rarely if ever been identified since its original description; no other non-type specimens are registered with MV, AM or TMAG to my knowledge.

There are very few described species of this kind in Australian waters, indeed the only other is *Trituba epallaxa* (Verco, 1909) from SA, Tasmania and possibly New Zealand. Some additional New Zealand species were named by Marshall (1977) and a radiation of shells from seamounts near the Azores were treated by Gofas (2002). Although *T. dexia* was described in Triphoridae, it was shown by Marshall (1980) that this genus is not correctly placed there. For some time they were classified in the family Triforidae (not the same as Triphoridae), however, this is now considered a synonym of Newtoniellidae, see Bouchet & Rocroi (2005: 277).

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Trituba dexia. *Left to right: SEM image showing shell whorls; photographs of shell laberal side lateral, apertural, and shell columellar side lateral views; SEM, apertural view; SEM protoconch. Photos L. Stephens.*

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This publication is not deemed to be valid for taxonomic purposes (See article 8.2 in the International Code of Zoological Nomenclature 4th Edition.)

Austrocypraea reevei *(Sowerby, 1832), Thorny Passage, South Australia. Shell length 35 mm. Photo: L. Stephens.*

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Deadline for articles for the next issue of the Newsletter: 13th July 2015.

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Wetland Discovery Teaching Kit

WETLANDCARE Australia and Ocean Shores Public School launched an exciting new Wetland Discovery teaching kit for primary schools in April.

The teaching kit is a culmination of three years work between WetlandCare Australia and the local school and provides a series of lessons that have been developed around the school's very own wetland discovery learning trail. Containing important lessons in all aspects of the wetland ecosystem, such as water quality, plants and animals and cultural importance, as well threats to wetland health and how they can be addressed, the curriculum is now available for primary schools Australia wide to adapt to their particular needs, Regional Manager at WetlandCare Australia's Ballina office, Cassie Price revealed.

'We are really excited to be launching this important wetland teaching resource', Ms Price said.

'This will enable teachers to equip their students with the skills they need to become the future custodians of our precious environment'.

Principal at Ocean Shores, Chris Hauritz, said it was terrific that the long-awaited teaching resource was now in their grasp, and said it was happily available to any schools who wanted to come to Ocean Shores and learn about their wetlands. Senior Project Officer at WetlandCare Australia, Simone Haigh, said it had been wonderful to see the 'feel-good' community project in action. 'It's been such a good collaborative project — there's been so much input [from different sources] it's a great example of working together to achieve a fantastic outcome', she said.

The teaching kit at Ocean Shores contains a lesson on the critically endangered Mitchell's Rainforest Snail, a live specimen of which was found last year by WetlandCare Australia staff while undertaking invasive weed control at the school's wetland, Mr Hauritz said. This large, air-breathing land snail used to be common in the rainforests and swamps of northern coastal lowlands, but is now only known in a few remnant rainforest fragments in the Tweed, Byron and Ballina Shires.

An expert on the snail from Southern Cross University, Dr Jonathan Parkyn, gave a presentation on its ecology, conservation and habitat requirements as part of the curriculum launch.

More recently, Channel 10's Totally Wild program, was filmed at Ocean Shores Public School and looked at how the students are using the Wetland Discovery program, developed by WetlandCare Australia.

http://www.northernstar.com.au/news/school-launches-wetland-discovery-kit/2221421/

PhD Research
Role of Muricidae in ancient traditional medicine and perfumery

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The Muricidae, commonly known as whelks, murex or rock snails, are predatory marine gastropod molluscs. Muricidae are also highly valued for their purple secretion, which contains the well-known ancient dye Tyrian purple and a number of anticancer precursors. This family of whelks is under-represented in fisheries and aquaculture, although worldwide commercial whelk fisheries production is slowly increasing. Whelks are highly valuable from human health perspective. Early records of natural medicine stated that the operculum, flesh and shell of Muricidae were used in therapeutics and perfumery. The operculum and shell from different muricid whelks were used for curing illness such as swollen spleen, depression, rheumatism or arthritis, stomach ulcers, skin diseases, teeth problems, eye disease, hearing loss, tumors, healing boils or warts, epilepsy and paralysis. The opercula were also reported to be useful as purgatives and laxatives. Further, the opercula were also used for the treatment of women's problems such as uterus diseases, menstrual cycle abnormalities and for placenta removal after labor. The burnt flesh and ashes of muricid shell were found to have anti-inflammatory properties and the hypobranchial gland found use as a laxative and a diuretic, and for increasing salivary secretions and perspiration. In ancient perfumery, it was recorded that the opercula acts as a scent fixative for the ingredients used in perfume. The uses of perfumes containing opercula continue to have strong connection with marriages in Sudan. The ancient uses of whelk opercula for incense and curing illnesses highlights the need to further investigate the volatile components in the smoke after burning the opercula. Future chemical analysis and sensory analysis on the volatile components that contribute to the already established bioactive properties of whelk would facilitate further application in western perfumery and modern alternative medicine.

The living animal of *Turbo (Carswellena) gruneri* Philippi, 1846 (Turbinidae)

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Turbo gruneri is a medium-sized, uncommon snail with a wide temperate Australian distribution, ranging from Waratah Bay, Victoria (PV pers. obs.) westwards to the Abrolhos Islands, Western Australia (Wilson 1993) and also northern Tasmania, including King and Flinders Islands (Grove 2014). We know of no commentary on the living animal, and only one published live image (by N. Holmes in Shepherd & Thomas 1989 pl. 37.1). Observations by LS, GM and diving companions Simon Wilson and Michael Lyons note that the typical habitat of *T. gruneri* is in sand among red algae, often close to reef edges. Here the shell pigmentation offers a surprising degree of camouflage. They are sometimes found on open sand or on rocky substrate. A specimen collected by GM during a night SCUBA dive in southern Port Phillip Bay, Victoria (crawling on sand among seagrass at 14 m, shell length 39 mm) has prompted this report. Animals were photographed in a Perspex tank. After preservation, the radula and jaws were extracted and studied via scanning electron microscopy at the BIO21 Institute, University of Melbourne. Descriptions of the animal, radula and jaws follow to accompany the images on the facing page.

Turbo gruneri is the type of *Euninella* Cotton, 1939, which is considered a synonym of the subgenus *Carswellena* Iredale, 1931 (see Bouchet 2014). The type of *Carswellena* is the rare east-Australian *Turbo exquisitus* Angas, 1877, for which we cannot find data on the living animal. The type of *Turbo (Turbo)* Linnaeus, 1758 is *Turbo petholatus* Linnaeus, 1758 (see Wilson 1993), which has a smooth shell, calcareous operculum and prominent cephalic lappets (see internet image cited in references). *Turbo gruneri* and *T. exquisitus* were not tested in a molecular phylogeny of the Turbinidae (Williams 2007). Such data, as well as an overall correlation between various morphological characters and the molecular phylogeny within Turbinidae, would be interesting.

Turbo (Carswellena) gruneri Philippi, 1846

Cephalic tentacles orange, smooth, long, gently tapering. Eyes black, on prominent eye-stalks. Snout well developed, smooth, head lacking cephalic lappets. Four short orange epipodial tentacles on each side: first pair longest, others diminutive. Neck-lobes prominent, smooth, able to be partially rolled, continuing posteriorly to form a weak epipodial skirt on either side. Animal creamy-white with intricate, reddish, mesh-like reticulations on snout, dorsal head, eye-stalk bases, dorsal foot and ventral aspects of both epipodial skirt and neck-lobes. Sole light cream-yellow, able to be folded longitudinally. Operculum (see Anonymous 1947 for illustration) calcareous, white, thick, externally irregularly convex, internally flat and paucispiral.

Radula 16 mm long with 74 rows, each half-row with a central tooth, 5 lateral teeth and about 27 marginal teeth. Central tooth with bluntly pointed, flatly expanded head. Lateral teeth snugly interlock with central tooth and each other, heads becoming progressively stronger in successive teeth. Distal shafts of lateral teeth angled medially. Second marginal the largest, in front of and mostly obscuring 1st marginal. Second marginal head with strong central denticle and smaller denticle fused on either side, outer one stronger. Third marginal smaller than 1st, resembling the second but narrower. Subsequent marginals progressively smaller and narrower; heads after the 7th finely serrated. Jaws corneous, concave medially, pliable, translucent brown with dark brown anterior margin, applied closely to anterior odontophore. Antero-inferior margin bears translucent brown corneous 'bristles'.

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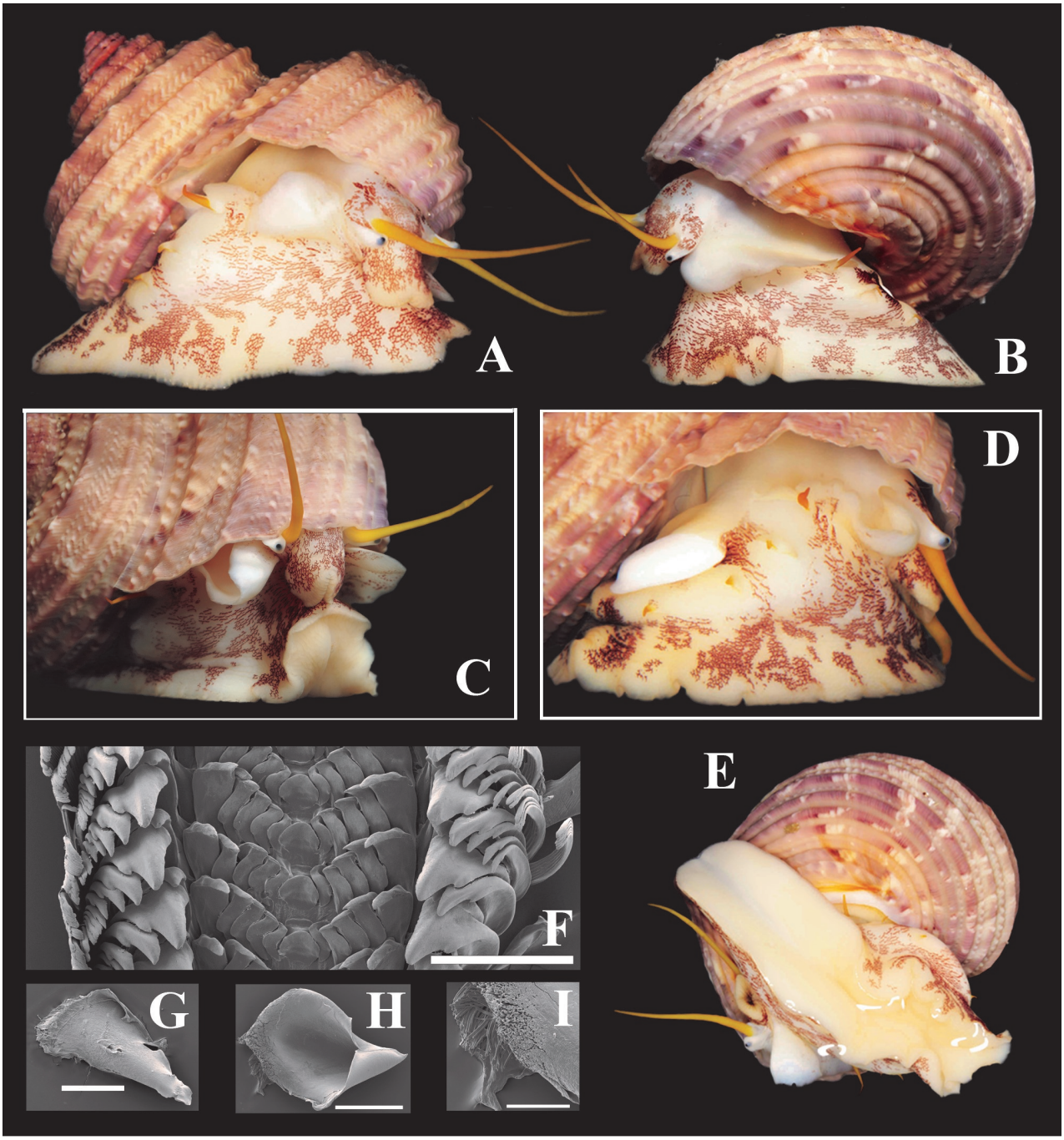
Acknowledgement: We thank Dr. Robin Wilson of Museum Victoria for providing the Williams (2007) reference.



Turbo gruneri, shell length 39 mm, southern Port Phillip Bay, Victoria (Geoff Macaulay Collection). **A–E**, Living animal. **F**, Radula – several rows. **G**, Jaw, lateral aspect. **H**, **I**, Jaw, medial aspect (curling an artefact of drying). Scale bars: **F**, 0.5 mm, **G**, **H**, 1.0 mm **I**, 0.3 mm.

Achievement Awards

Since moving to Taylor & Francis, *Molluscan Research* has been able to offer an award of $1000 for the best paper published in *Molluscan Research* each year. We are restricting the award to early career researchers (5 yrs or less since their highest degree) or to amateurs and calling it the 'Achievement Award'. The award is allocated by an independent selection committee.

Dr Jonathan Parkyn and Dr David Newell's paper 'Australian land snails: a review of ecological research and conservation approaches' (http://doi.org/10.1080/13235818.2013.782793) recently received the 2013 award. Both authors are early career researchers from the School of Environment, Science and Engineering, Southern Cross University, Lismore, NSW.

The choice of the best paper for 2014 will be made soon.

Notes on *Spondylus microlepos* Lamarck, 1819

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Spondylus microlepos Lamarck, 1819 is currently considered a 'nomen dubium'. It's well known that the only way to determine the validity of a species is to examine the holotype or specimens from the type locality. Unfortunately, the holotype, housed in the Geneva Museum, is questionable and the type locality, 'Indian Ocean?', is very general. In his *Histoire naturelle des animaux sans vertèbres* 1819, vol. 6, Lamarck described this species but didn't figure it, nor is there any picture of *Spondylus microlepos* in *Illustrations Conchyliologiques* (Chenu 1845). There's only a specimen in the Lamarck collection, housed in the Museum d'Histoire Naturelle of Geneva, but this shell is difficult to reconcile with Lamarck's description, which could apply to other species of Spondylidae. The description translated from Lamarck (1819) follows: the left valve has radial ribs and striae (*longitudinaliter striata et costata*) 5/6 principal ribs with few very short spines (*costis 5/6 squamiferis*); towards the margins the short and obtuse spines are shaped like small tongues (*squamis ligulatis truncates exiguis* [ligula=small tongue]). As for the colour, Lamarck described a red shell on both valves (*testa utrinque rubra*). Moreover, according to Lamarck, although harsh and sharp to the touch, this *Spondylus* looks muticous. This word comes from the Latin phrase *spica mutica* that, in botany, refers to a body, such as an ear, that doesn't end with an awn or any other narrow tip.

In his *Thesaurus Conchyliorum* vol. 1, 1848 (*Monograph of the Genus Spondylus*) Sowerby figured a shell from China. According to Sowerby, this shell has 5/6 principal ribs, notched by imbricated rudimentary scales, which near the margin show the typical narrow ligulate character. Sowerby also describes a yellow shell in Mr. Cuming's collection, presenting the same characteristics.

In his *Conchologia Iconica* vol. 9, 1856 Reeve described and figured *Spondylus microlepos*: 'shell ovate, irregular, radiately ridged and striated, ridges and striae beaded, bluntly short scaled towards the margin; bright-red in colour'.

Prashad (*Les Lamellibranchies de l'expedition du Siboga*, 1932) describes a small, somewhat deformed shell, with a very reduced sculpture consisting of only a few radiating ridges and striae, which are irregularly beaded, and some short spines near the margins.

The shell (see photos), displays all the characteristics described and is also very similar to the drawings of Reeve and Sowerby. It is ovate, irregular, has 5 principal ribs and numerous striae on the left valve. The ribs and the striae are beaded. Towards the margin there are short and obtuse spines that show the typical ligulate form. The intermediate ribs are minutely imbricated. The right valve is foliated. Internally, radiating ribs are visible in both valves. Its colour is bright orange with some yellow with reddish spines, white at the umbo. Internally, the shell is blue-white with wide orange blotches. The crenulated margin is orange. The specimen measures 35 mm. The ligamental area is long and straight and shows a narrow resilial slit in the median portion.

The only species showing some resemblance is *Spondylus heidkeae* Lamprell & Healy, 2001. Lamprell (1986) and some other well-known shell dealers confused the two species, but the different morphological characteristics of *Spondylus heidkeae*, primarily the characteristic marginal sculpture, readily differentiate the two species. In my opinion, *Spondylus microlepos* is a valid species and a neotype should be designated.

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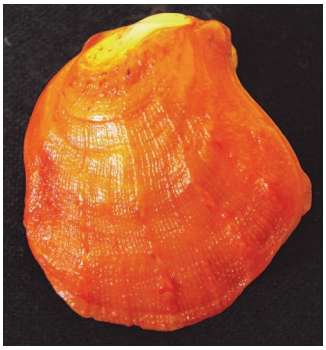

Fig. 1. Spondylus microlepos, *left valve, Indian Ocean, Madagasca. Photo: M. Dardano.*

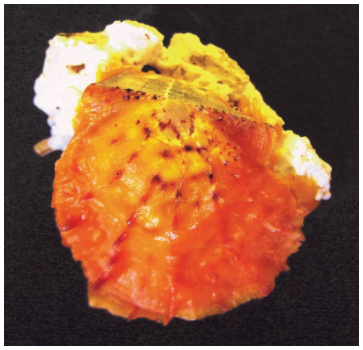

Fig. 2. Spondylus cf. microlepos, *left valve, Philippines. Photo: M. Dardano.*

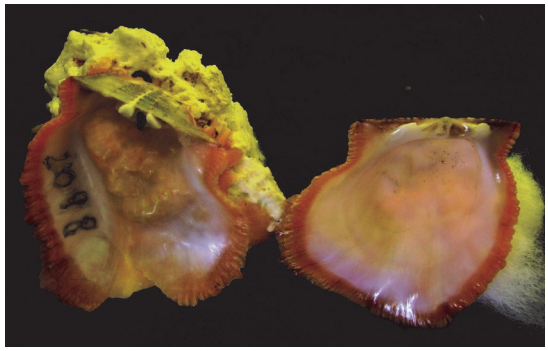

Fig. 3. Spondylus cf. microlepos, *interior of left and right valves, Philippines. Photo: M. Dardano.*

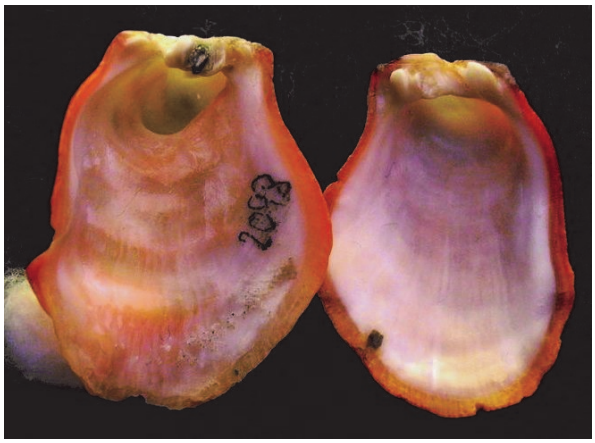

Fig. 4. Spondylus microlepos, *interior of left and right valve, Indian Ocean. Photo: M. Dardano.*

Fig. 5. Spondylus microlepos, *right valve, Indian Ocean. Photo: M. Dardano.*

Fig. 6. Spondylus microlepos, *drawing from Reeve, L. A., Conchologia Iconica vol. IX. Photo: M. Dardano.*

Fig. 7. Spondylus microlepos, *drawing from Reeve, L. A., Conchologia Iconica vol. IX. Photo: Photo: M. Dardano.*

Fig. 8. Spondylus microlepos, *drawing from Sowerby, G. B. Thesaurus Conchyliorum. Photo: M. Dardano.*

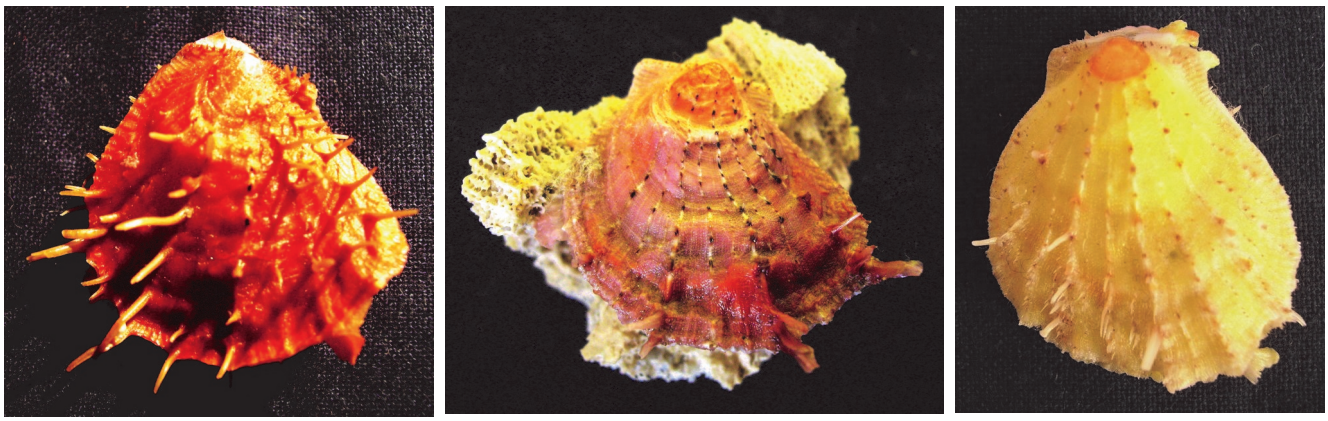

Fig. 9. Spondylus heidkeae, *Western Australia (Abrolhos Islands). Photo: M. Dardano.*

On the trail of *Conuber conicum* (Lamarck, 1822) (Naticidae)

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Sand snails of the carnivorous family Naticidae are a prominent feature of the molluscan fauna of sandy and muddy shorelines. The trails they leave as they burrow just under the surface looking for prey make them easy to find, and the distinctive gelatinous egg cases of some species are also well known to beach-goers. One of the more impressive trails I have come across is shown below, made by *Conuber conicum,* a species attaining a shell length up to 40 mm and found around Australia (Wilson 1993).

It is likely that the predatory burrowing of naticids is guided rather than random, although this particular trail looks rather haphazard! Burrowing prey may leave mucous or other chemical trails for naticids. Testing responses to such trails (or to mechanical disturbance of the sediment) poses challenges, but it would be easy enough to place a bait on or under the surface and monitor the response of the snails — perhaps something to think about at the seaside this summer!

Reference

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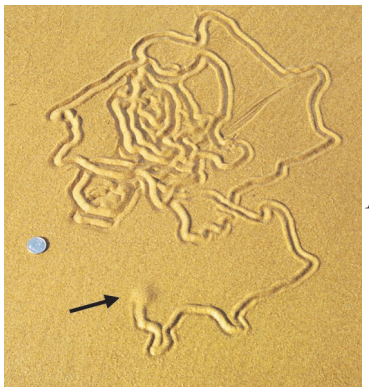

Fig. 1. Sand trail of Conuber conicum. *The arrow shows the position of the buried snail at the leading edge. A 20 cent coin provides scale. Cleeland Bight, Phillip Island Victoria, 7 March, 1997. Photo: P. Vafiadis.*

Fig. 2. Conuber conicum, *with animal retracted into the shell; note the corneous operculum. Cleeland Bight, Phillip Island, Victoria, 2 November, 1998. Photo: P. Vafiadis.*