

NEWSLETTER

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Cape Melville surprise

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The discovery of a new species of land snail in eastern Australia should hardly raise a headline given the results of surveys conducted over the past 30 years by staff of the Queensland Museum. Some 900 new species have been discovered of which almost 300 have been documented in the Whitley award winning *'Australian Land Snails Volume 1. A field guide to eastern Australian species.'* by Stanisic *et al.* (2010). This has left more than 600 species known in collections that are yet to be formally documented. And still the list is increasing, with the discovery of new species of tiny litter-dwelling snails of the family Charopidae being found on a regular basis, particularly in the scattered vine thickets of southern Queensland. This is not an unexpected event given the cryptic nature and highly localised distribution of charopids. However, the recent finding of a previously unknown,

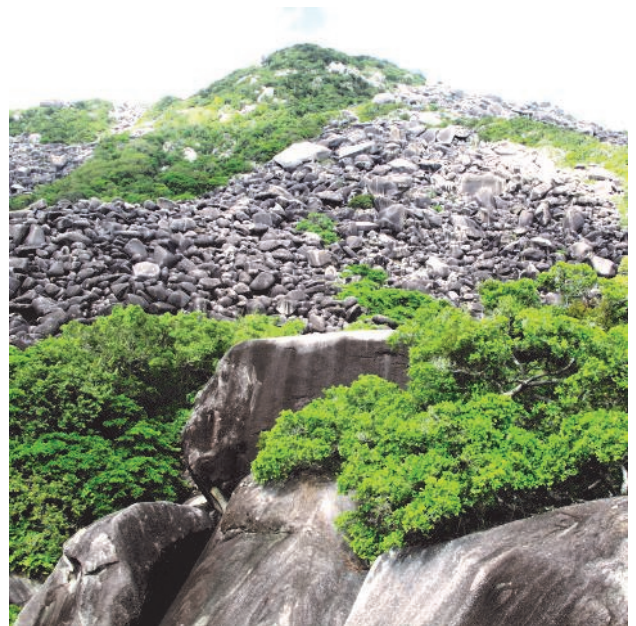
reasonably large and 'showy' species of Camaenidae (pictured) from Cape Melville, on the eastern side of Cape York Peninsula, deserves special mention on several counts.

First, the find reinforces the ongoing lack of knowledge about our invertebrate fauna that comprises 99% of animal diversity. Considering the efforts that have been put into surveying the land snail component of this fauna in eastern Australia (approximately 2500 collecting sites), to still find a species of this size (shell diameter, 15 mm) and status in this region is quite remarkable. And what makes this find even more remarkable is that in 1988 more than 100 sites were included in a targeted survey of the Cape. In spite of this effort much of Cape York still remains a 'black hole' for land snails.

(Continued on page 3)



*Surprise snail collected by Keiran Aland and Conrad Hoskins while searching for rare amphibians.
Photo: J. Stanisic.*



*Boulders at Cape Melville, one of the many unique land snail habitats found on Cape York Peninsula.
Photo: K. Aland.*



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The Society's Newsletter and the journal *Molluscan Research*, published four times a year, are sent to all members.

Membership fees 2013

Includes *Molluscan Research*, the MSA Newsletter and discounted registration at Molluscs 2015.

Ordinary members (Aust., Asia, w. Pacific)	\$A70
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Victorian Branch

Secretary Michael Lyons, 19 Banksia Street, Blackburn, VIC 3130. Phone (03) 9894 1526 or Email: Michael_lyons1@bigpond.com. Meetings at the Melbourne Camera Club, cnr Dorcas and Farrars Streets, South Melbourne, on the third Monday of each month. No meeting in January, July or December.

Newsletter

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Deadline for articles for the next issue of the Newsletter: 16th August 2013.

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This publication is not deemed to be valid for taxonomic purposes (See article 8b in International Code of Zoological Nomenclature)



(Continued from page 1)

Second, it emphasises the status of habitats on their unique endemic invertebrate faunas as highlighted by the land snails. This has special connotation in light of efforts to have much of Cape York declared a World Heritage site.

The lithorefugia of Cape Melville (pictured on page 1) and the Altonmoui Range, the rainforests of the Iron McIlwraith Ranges, the spring environments of the Steve Irwin Reserve and the vine thickets of the tip of the Cape are all examples of the Cape's special habitats. These areas range from small

to large in area, but are all places identified by their unique land snail faunas that often include highly localised endemic species.

Third, it once again underscores the part that land snails (and other invertebrates) can play in identifying places of environmental significance. Invertebrates are too often ignored in environmental surveys and assessments. Yet, they have the innate ability to identify special habitats in their roles as both environmental indicators and biodiversity predictors. Ignore them at your peril!

Mollusc research grants

Applications for the MSA Mollusc Research Grants are currently being accepted. The deadline for this year has been extended to 29th July, 2013. Applications are encouraged from postgraduate research students and early career researchers. Up to \$2000 is available to assist with costs associated with field trips or research consumables.

To apply, candidates should email the following to Dr Kirsten Benkendorff at info@malsocaus.org:

- A research proposal, including: 1) the project title, 2) brief background to place the study in context, 3) aims and objectives, 4) approach and methodology, 5) expected outcomes, 6) references, and 7) itemised project budget with brief justification. (Four page limit.)

- Curriculum vitae, including current position, educational qualifications, research track record and the names and addresses of two referees to whom the committee may refer.

Please note that these MSA grants are highly competitive and preference will be given to well-designed projects that will significantly advance our knowledge of Australasian molluscs. The scope of the proposal should be commensurate with the budget and/or other sources of available funds. Successful applicants will be required to accept the award within 2 months and should provide an article for the MSA Newsletter within 12 months.

Further details including eligibility criteria can be found at:

www.malsocaus.org/research_support.htm

Future events

- Australian Marine Science Association (AMSA) Golden Jubilee Conference, Gold Coast, 7–11 July 2013 <http://amsaconference.com.au>
- Genetics Society of AustralAsia Inc. conference 'Genetics in the Harbour City' 14–17th July 2013 <http://conference2013.genetics.org.au>
- Unitas Malacologica Conference, World Congress of Malacology, Azores, Portugal 21–28 July 2013 <http://www.wcm2013.com>
- International Marine Biotechnology Conference, Brisbane, 11–15 November 2013 <http://www.cvent.com/events/imbc-2013/event-summary-8cb1743401444d0ba439d46d73bd22d9.aspx>
- Mollusca 2014: The meeting of the Americas, Mexico City, 23–27 June 2014 http://www.mollusca2014.unam.mx/index_ing.html
- 23rd Cephalopod International Advisory Council Conference, Hakodate, Japan 2015 <http://www.abdn.ac.uk/CIAC>



Heavy metals in Blacklip and Milky tropical rock oysters: implications for placement into the Australian seafood market and Indigenous enterprise development in the NT

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A Fisheries Research and Development Corporation funded project led by NT Government, Fisheries with partners from the Yagbani Aboriginal Corporation, Charles Darwin University and Darwin Fish Markets Pty Ltd will investigate previous reports of elevated heavy metals in oysters. This study is part of an effort to develop an Indigenous tropical edible oyster enterprise in the Northern Territory (both wild harvest and farmed). The issue of food quality needs to be addressed as part of a plan to develop a niche market in Indigenous-produced fair-trade seafood, to be flown in weekly from remote communities when seasonally available.

The first field trip was completed in September 2012 and tropical oysters (Blacklip and Milky) were collected from three locations in the West Arnhem region. Heavy metals were measured in both pooled and individual oysters and compared against ANZFA MPC food standards. Metals were also measured in the seawater, and bioavailable metals will be measured in plankton and fine particulate filtrate. This latter analysis is a rough approximation of what an oyster might take in during feeding and may implicate possible sources of elevated metals.

Results from the first of three planned field trips showed that while the seawater at all sites was of extremely high quality with most heavy metals below detectable levels, cadmium and arsenic were elevated in oyster tissue from two of the three sites. At the third site near the town centre, zinc and copper were elevated but cadmium was low, suggesting zinc and cadmium might be acting antagonistically. There was no clear association between oyster shell size and metal levels in tissue.

Results from this first trip are still being evaluated but the seasonal component of the study will certainly be very important, particularly if metal



Oyster in hand.



Oyster grow-out rack, Warruwi members and advisors.

levels in oyster tissue vary seasonally. This is a very clean environment so it appears these oysters bioaccumulate metals through an as yet unknown mechanism. We hope the data obtained from phytoplankton and fine particulates in filtered seawater samples will provide some leads.

The results have also raised questions regarding our interest in placing farmed oysters in the natural environment to 'finish off' prior to harvest. It is possible that there will be a trade-off between the time allowed for finishing off and metal bioaccumulation and this will need to be determined as one aspect of management for this promising enterprise.

Acknowledgements. We thank the West Arnhem Shire Council and the CDEP team on Goulburn Island for facilitating this study.

Photos: NT Government



Black-lip oyster in situ. South Goulburn Island.



First live record of *Gabrielona nepeanensis* (Gatliff & Gabriel, 1908) (Phasianellidae: Gabrieloninae) from the Victorian intertidal zone

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Gabrielona nepeanensis (Gatliff & Gabriel, 1908) is an attractive little phasianellid, ranging up to 2.1 mm in length. In 2008 we reviewed this species and reported on its external morphology and radula. It has an extensive range, occurring along the southern Australian coastline from approximately San Remo in Westernport Bay, Victoria through to just north of Rottnest Island, Western Australia. Until now there were no records of live specimens from the Victorian intertidal zone.

The single specimen, shell length 1.8 mm (to be deposited in Museum Victoria) was sieved off the green alga *Caulerpa brownii* in a large lower littoral rock pool, just west of Port Fairy, western Victoria, by Robert Burn on Thursday 6 March, 2013. Normally the shell is red-pink with pink axial or oblique streaks and a characteristic white sub-sutural band, but this specimen is rather drably coloured, with some mottled pink pigmentation and a faint sub-sutural white band.

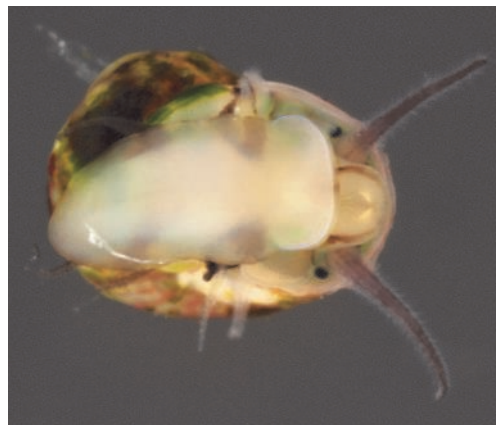
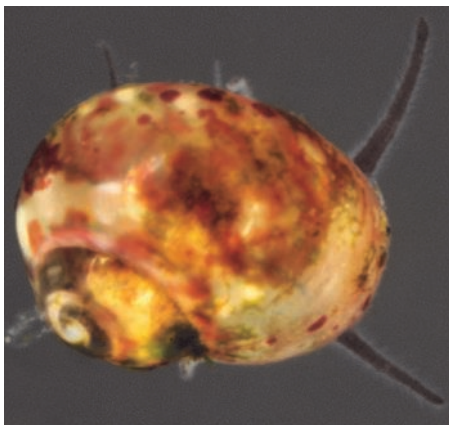
Live *G. nepeanensis* have been found from the intertidal zone to a depth of 18 metres, usually on algae or algal films covering rocks. Given there have been no previous intertidal records of living animals despite consistent sampling in Victoria, it

seems safe to conclude that here it is rare intertidally. This is not the case in South Australia and Western Australia, where there are many records of live specimens in this zone. Robert Burn thinks that he might have collected living *G. nepeanensis* from the Point Lonsdale region many years ago, but until that can be verified, this is the first definitive record of this species living in the Victorian littoral zone. It is pictured here with comparative images of a more typically coloured animal found at Popes Eye, Port Phillip Bay at 6–10 m depth.

Because Port Fairy is the only Victorian locality for the closely allied *Gabrielona pisinna* Robertson, 1973 (based on two empty shells collected in 1918 from the Roy Bell Collection), there was an initially tantalising hope that this live animal might have been that species. Although not to be, it was, nonetheless, a notable find.

Reference

Vafiadis, P. and Cram, D. (2008). The external morphology, radula and distribution of *Gabrielona nepeanensis* (Gatliff & Gabriel, 1908) (Vetigastropoda: Phasianellidae: Gabrieloninae), with comparative data on *Gabrielona pisinna* Robertson, 1973. *Molluscan Research* 28(3): 179–194.



Top: *Gabrielona nepeanensis*, intertidal, off the alga *Caulerpa brownii*, just west of Port Fairy, Victoria, 6 March, 2013. Shell length 1.8 mm. Collected: R. Burn.



Bottom: *Gabrielona nepeanensis* (a more typically coloured specimen), subtidal (6–10 m), on mixed benthic samples (algae, sponge, hydroids, bryozoans), Popes Eye, southern Port Phillip Bay, Victoria, 19 October, 2008. Shell length 1.7 mm. Collected: J. Watson & R. Burn.

MSA member profile: Robert Burn

“The father of systematic ‘nudibranchology’ in Australia”

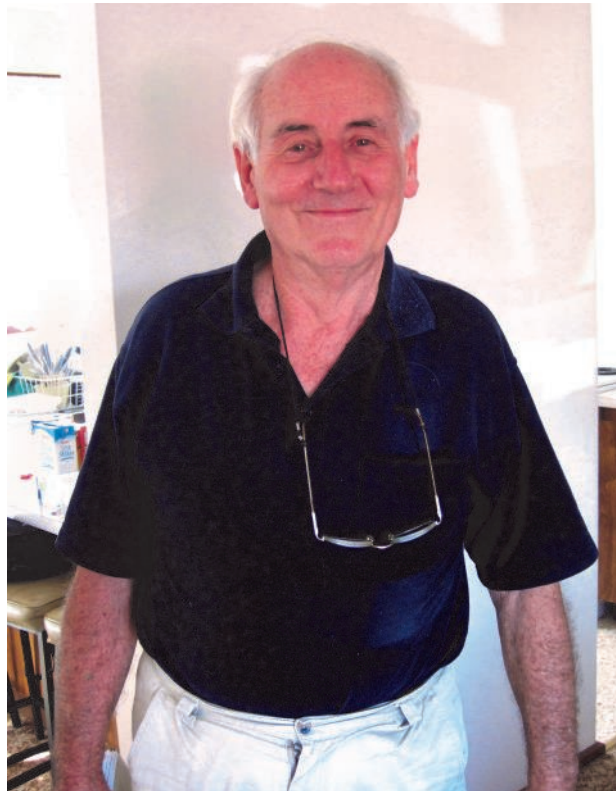
Platon Vafiadis, Melbourne
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Robert Burn (henceforth ‘Bob’) was born in Geelong, Victoria in 1937. The son of a builder, he followed in his father’s footsteps and to this day continues to work in the family building business that his paternal grandfather established in 1909. Building, however, is only one aspect of his life — another is malacology.

As a young boy, Bob often went to Apollo Bay (then a sleepy coastal village) to spend time with his grandparents during school holidays. With his father and grandfather both keen fishermen, Bob and his brother Ian discovered the fascinating realm of the shoreline, much preferring to explore it instead of catching fish. He soon looked beyond the cowries that his grandparents collected and admired to other molluscan shells. The publication of Joyce Allen’s book *Australian Shells* in 1950 provided Bob with the means of identifying his finds and broadening his knowledge. In a sign of what was to come, he recalls obtaining permission from his schoolteacher to write names for a tray of unlabelled molluscs sitting in the classroom. In addition to shells, Bob was a general collector, interested in everything ranging from stamps, coins, and cigarette packages to matchboxes. The mollusca, however, held a special fascination for him, and this interest received special impetus with the formation of the Malacological Society of Australia in Melbourne in 1953.

Bob went to Melbourne in 1953 to attend the third MSA meeting, and there became an official member. There he met the leading figures of Victorian conchology: Charles Gabriel and J. Hope Macpherson of the National Museum of Victoria, and other enthusiastic malacologists including the Reverend John Arnold. Their formative influence, particularly that of Hope Macpherson, saw a blossoming of Bob’s knowledge and expertise. The first nudibranch he found was the distinctive *Ceratosoma brevicaudatum* on a museum excursion to San Remo. Asking Hope what it was, he recalls the pleasant sound of its name, almost matching the beauty of the animal itself. His second nudibranch find was a spotted *Jorunna* from Torquay that Hope couldn’t name, making Bob wonder what else lay undiscovered in Victoria. So his obsession with sea slugs and their relatives took root. (Bob still has that *Jorunna*, and it still remains undescribed.)

Having links to MalSoc and the museum, Bob gained access to molluscan literature and his field work began to take on considerable importance,



Bob Burn. A gentleman malacologist. Photo: P. Vafiadis

with many of his discoveries unknown to science. Thelma Hartley, the first Secretary and Treasurer of the Society, suggested that it was in need of an official journal and looked for patrons. Issue 1 of Volume 1 of the *Journal of the Malacological Society of Australia* was published in 1957. Bob’s paper, ‘On some Opisthobranchia from Victoria’ was the third in the issue and the first in the journal to describe new taxa (one genus, 10 species and one subspecies). He served on the journal’s editorial board (1957–1978) and as editor (1969–1978), and recalls a meeting organised in the Melbourne home of the late sisters Florence and Marjory Murray to discuss the journal’s transition to a larger format (which occurred with issue 1, volume 2, 1970). Don and Val Cram, other prominent Victorian members, had joined the society by this time.

From his early work in the 1950s, the ensuing twenty or so years, in particular, saw a prolific output of papers. Bob currently has more than 50 species to his name, several valid genera including: *Austraeolis* Burn, 1962; *Austrocylichna* Burn, 1974; *Caldukia* Burn & Miller, 1969; *Ilbia* Burn, 1963; *Midorigai* Burn, 1960; *Paliolla* Burn, 1958; *Tambja* Burn, 1962; *Tularia*

Burn, 1966, and one family, Ilbiidae Burn, 1963. His last described species to date, *Melanochlamys handrecki* Burn, 2010, appeared 53 years after his first species descriptions. Apart from publishing in journals, Bob has supplied the list of 'opisthobranchs' in Macpherson and Gabriel's *Marine Mollusca of Victoria* (1962), wrote the 'Opisthobranchs' chapter in volume 2 of *Marine Invertebrates of Southern Australia* (1989), and contributed to the landmark 1998 work *Mollusca the Southern Synthesis* (on the Cephalaspidea, Acochlidea, Rhodopemomorpha and Sacoglossa). As seen in his described taxa, Bob's expertise ranges across the breadth of the opisthobranchia, now more accurately known as the higher heterobranchs and nudibranchs. Some of his early papers, however, also dealt with caenogastropods, pulmonates, cephalopods, and, with Ken Bell in the 1970s, the molluscan fauna found among *Galeolaria* tubes. Much of his extensive literature is referenced in Burn (2006), which forms a good starting point for exploring his bibliography. This is apart from regular contributions of treasures to the *Victorian Branch Bulletin* and *Australian Shell News* over many years. The genera *Roburnella* Ev. Marcus, 1982 and *Burnia* Miller, 2001, as well as the species *Julia burni* Sarma, 1975; *Hancockia burni* Thompson, 1972; *Chromodoris burni* Rudman, 1982; *Phyllidiopsis burni* Brunckhorst, 1993; *Calopia burni* Ponder, 1989 (a caenogastropod), and *Prototrochus burni* O'Loughlin in O'Loughlin & Vanden Spiegel, 2007 (a holothuroid) are named in his honour. An Honorary Associate of the Invertebrate Department of Museum Victoria since 1962, Bob still regularly attends monthly workdays.

Although his publications and editorial duties added to a busy family and work schedule, they furthered Bob's contact with eminent conchologists and malacologists. Already well known to leading contemporary authorities in Australia and New Zealand, Bob has had contact with many famous names of the past, having met Bernard Cotton, Tom Iredale, Joyce Allan, Charles Laseron, Brian Smith, R. Tucker Abbott of the USA and Vera Fretter of the UK, and corresponded with many others including Kikutaro Baba of Japan, Harold Rehder of the USA, Eveline and Ernst Marcus of Brazil, Alice Pruvot-Fol of France, Tom Thompson of the UK and William Macnae of South Africa. The latter in particular provided Bob much practical assistance and advice in the early years.

The highpoint of Bob's malacological career was without doubt his discovery of bivalved gastropods in Victoria shortly after Kawaguti and Baba astonished the world in 1959 by describing the Japanese *Tamanovalva limax* and showing it to be a gastropod with a bivalved shell. Bob recalled that Tom Iredale of the Australian Museum sent him a copy of the Kawaguti and Baba paper with an attached note that read something like:

Dear Burn,
You have a lot of Caulerpa down your way. Go and get yourself some notoriety.
Yours,
Iredale.

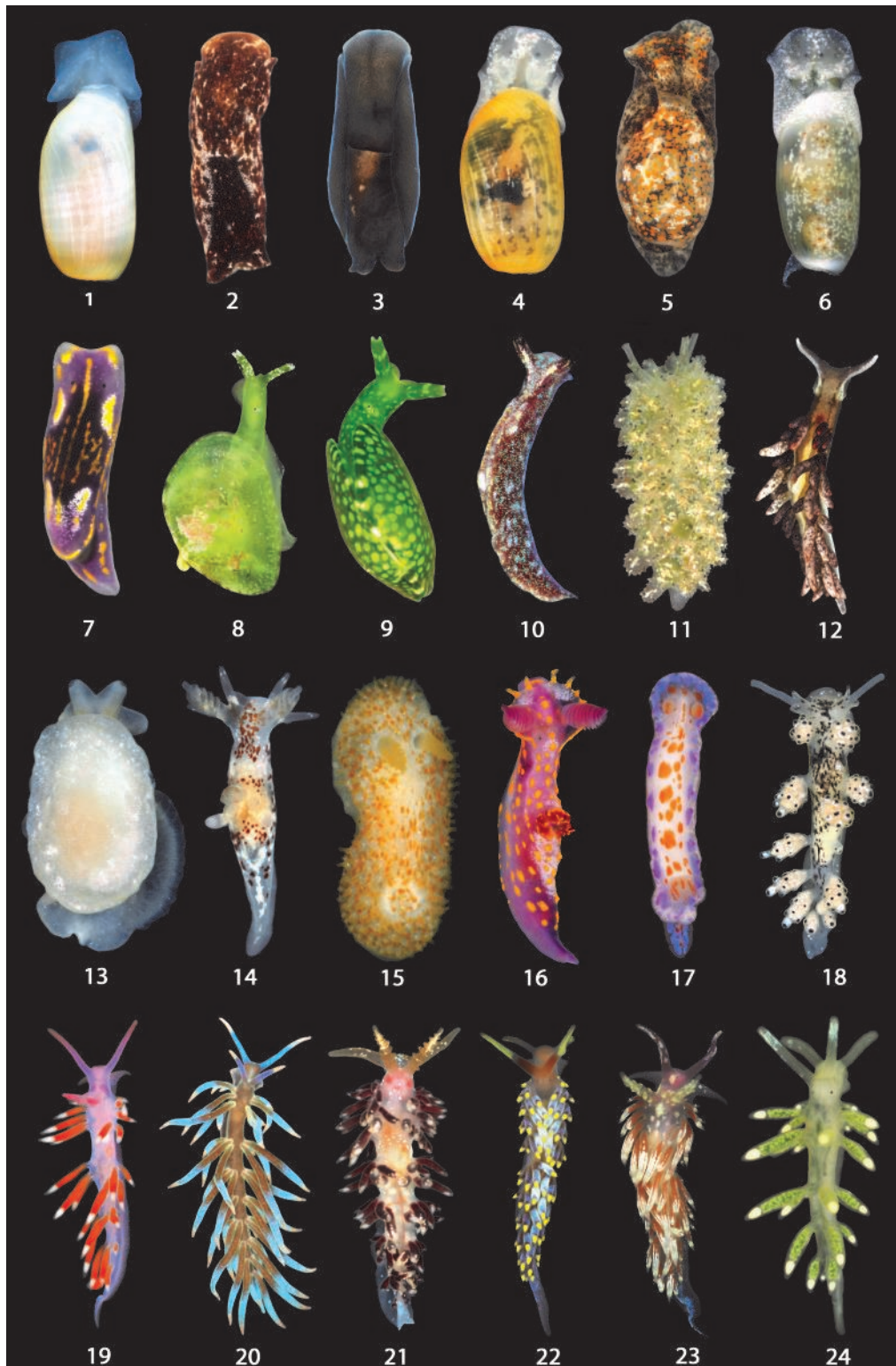
Although regretting not having kept this precious note, Bob followed Iredale's advice and looked for these molluscs by focussing on their probable algal food sources, making the spectacular find of living *Edentellina typica* (Gatliff & Gabriel, 1911) and proving it to be a bivalved gastropod, not a bivalve. He also discovered and named two additional species, *Midorigai australis* Burn, 1960 and *Tamanovalva babai* Burn, 1965. His correspondence with Baba at the time has been a privilege to personally view, with Baba's notes sprinkled with beautifully delicate watercoloured paintings of specimens and anatomical details. In 1961 (shortly before Gabriel's death in 1963) Hope Macpherson thought it appropriate to take Gabriel to Point Lonsdale to see his species *Edentellina typica* alive. It was also on this trip that Bob first met Alan Monger, another prominent Victorian MSA member. Gabriel, then around 82 years of age, finally saw his species alive, and Bob recalled the reaction, which rang true to Gabriel's conchological affinities: '*He was not really interested – it [the shell] had an animal inside it!*'.

A specialist in higher heterobranch and nudibranch mollusca, Bob is also proficient over the entire molluscan spectrum with an uncanny ability to shed light on tricky issues and to know (and often possess!) obscure literature. His skilful fieldwork continues both alone as well as with support from Jan Watson, John Chuk, Trevor McMurrich, the Marine Research Group of the Field Naturalists Club of Victoria (of which he has been a member since 1974), and others. In addition to his home State, collecting has also taken Bob to Lizard Island, Qld, New South Wales, Tasmania, South Australia, Western Australia and Bass Strait aboard the *Kimbla*. The late Neville Coleman sent many specimens to him.

The molluscs did, however, fight back. At Torquay in 1981, Bob had the dubious honour of being attacked by a *Mitrella semiconvexa* while collecting with Richard Willan. Wanting to hold the specimen for Richard, who was some distance away, Bob placed its spire between his lips and continued to collect. A few moments later the *Mitrella* had had enough, evidenced by a sharp pain and blood issuing from Bob's lip. The famous specimen is now among the collections of the Northern Territory Art Gallery and Museum.

One could argue that the study of the shell-less mollusca is the purest form of malacology

(Continued on page 9)



KEY TO PLATE (Specimens are from Victoria unless otherwise stated.)

1. *Retusa pelyx* Burn in Burn & Bell, 1974; Shallow Inlet, shell 3.5 mm. **2.** *Melanochlamys queritor* (Burn, 1957), Inverloch; 8 mm. **3.** *Melanochlamys handrecki* Burn, 2010; Curlewis, 30 mm. **4.** *Cylichnatys campanula* Burn, 1978; Port Welshpool, shell 2–3 mm. **5.** *Haminoea maugeansis* Burn, 1966; Inverloch, 6 mm. **6.** *Austrocylichna leucampyx* Burn, 1978; Merimbula, NSW, 7 mm. **7.** *Ilbia illi* Burn, 1963; Killarney, 4.5 mm. **8.** *Tamanovalva babai* Burn, 1965; Harmers Haven, shell 4.5 mm. **9.** *Midorigai australis* Burn, 1960; Harmers Haven, shell 3 mm. **10.** *Elysia furvacauda* Burn, 1958; Cape Paterson, 9 mm. **11.** *Polybranchia pallens* Burn, 1957; Harmers Haven, 25 mm. **12.** *Ercolania margaritae* Burn, 1974; Apollo Bay, 9 mm. **13.** *Berthella medietas* Burn, 1962; Cape Conran (not measured). **14.** *Ancula mapae* (Burn, 1961); Flinders, 5 mm. **15.** *Onchiodoris maugeansis* (Burn, 1958); Cape Bridgewater (not measured). **16.** *Polycera janjuka* Burn, 1962; Pt Addis, 5 mm. **17.** *Digidentis perplexa* (Burn, 1957); Pt Lonsdale, 17 mm. **18.** *Doto ostenta* Burn, 1958; Torquay, 4 mm. **19.** *Flabellian poenicea* Burn 1957; Pt Lonsdale, 10 mm. **20.** *Phyllodesmium macphersonae* (Burn, 1962); Twin Reefs, 15–20 mm. **21.** *Faceline bartleyi* Burn, 1962; Cape Paterson, 10 mm. **22.** *Trinchesia catachroma* (Burn, 1963); Torquay, 7 mm. **23.** *Trinchesia thelmae* (Burn, 1964); Torquay, 7 mm. **24.** *Trinchesia viridiana* (Burn, 1962); Popes Eye, 4 mm.

Photos: P. Vafiadis.

(Continued from page 7)

because specimens cannot be 'owned' in the aesthetic, physical sense; preserved in fluid, most lose their colour and beautiful form and become objects of pure science and intellectual appreciation and fascination. Bob has brought this formerly neglected group to us, becoming an expert of world-standing while remaining an amateur, and without the use of a computer or the internet. He owes much to the support of his late wife Margaret (who was accustomed to seeing samples in her deep-freeze!) and to their three children Julie, David and Anne. Those who know Bob have experienced his infectious knowledge and enthusiasm. Having seen many of his species in the field, usually in his company and with his tuition, has been a special personal privilege.

The plate on page 8 is a small testimony to, and celebration of, his named discoveries. Bob still has well over 50 species awaiting formal description and new species continue to be discovered. A link to the great conchologists and malacologists of the past, Bob has been rightly called the father of systematic 'nudibranchology' in Australia (Willan & Coleman, 1984). Of greater importance, however, is that he has remained humble and approachable for all who care to tap into his vast learning and experience. Thank you Bob!

References

Burn, R (2006). A checklist and bibliography of the Opisthobranchia (Mollusca: Gastropoda) of Victoria and the Bass Strait area, south-eastern Australia. *Museum Victoria Science Reports*, 10: 1-42. (available on-line).
 Willan, R & Coleman, N (1984). *Nudibranchs of Australasia*. N. Coleman Publishing, Sydney.

LANDSNAIL SURVEY

We are looking for individuals and local interest groups around S.A. to help us rediscover our NATIVE LANDSNAIL FAUNA

Several scientists based at the SA Museum are keen to know if we still have populations of these endangered Australians in our backyards, parks and gardens.

Would you recognise a native snail if you saw one?



Bednall's Snail (*Cupedora bednalli*) (NATIVE)

If you are interested in learning more please contact us to receive more information or book a talk.



INTRODUCED
White Garden Snail
(*Theba pisana*)

Four interest groups to be studied are

INTRODUCED SNAILS	NATIVE SNAILS
<p>Common Garden Snail (<i>Cornu (Helix) aspersum</i>)</p>  <p>30mm</p>	<p><i>Glyptorhagada bordaensis</i></p>  <p>16mm</p>
INTRODUCED SLUGS	FRESHWATER
<p>Black Arion Slug (<i>Arion alter</i>)</p>  <p>Family: Arionidae 120mm</p>	<p>SWAMP SNAIL (<i>Platiopsis balonnensis</i>)</p>  <p>Has operculum 30mm</p>

SURVEY RETURN

Date: _____

Name: _____

Contact details: _____

Location: _____

Coordinates: _____

Weather Conditions: _____

Time _____ am / pm

Species 1 Specimen condition

Dead Shells / Live Dormant / Live active

Population stats.

1 to 10 / 11 to 100 / More

Estimate sample count area in square metres _____

Habitat: _____

Please include images if possible. Thankyou

Return details to

Attention Peter Hunt
Tony Robinson

C/- Marine Invertebrates.
South Australian Museum
North Terrace, Adelaide 5000

Enquiries
Phone 0410 881816
Email images or request an electronic survey form at
slugsnailsa@gmail.com

Sneaky sex in Sydney Harbour

Martin P. Garwood, Macquarie University
Email: martin.garwood@students.mq.edu.au

With a lifespan of a year or less, male Mourning Cuttlefish, *Sepia plangon*, have their priorities sorted down to food and females. Where females are concerned there is no room for honour, males will do whatever it takes to get the girl. Competition for receptive females is typically fierce and can attract multiple males. Physical encounters and mate guarding are common, with size being a determining factor of success. However, with such an intelligent species, brawn does not always beat brains.

While housing some mourning cuttlefish in holding tanks for a project on cephalopod behaviour, I had the privilege of observing a unique deceptive tactic. There were two males and one female in the tank. The male displayed typical courtship patterning of zebra stripes on the half of his body directed toward the female, while simultaneously showing mimic female colouration on the half of his body that was directed towards the rival male (see figure). This allowed courtship to proceed without interruption and ended in two copulations for the deceptive male and none for the rival.

It was an incredibly exciting observation and so, together with Dr Culum Brown and Dr Jane Williamson of Macquarie University, we broadened the observations to the natural environment of Sydney Harbour.

We found that males would only use this tactic in a social grouping consisting of one female and one rival, and 39% of males in this situation would employ the deceptive behaviour. It seems that males do not employ the tactic if there is more than one rival. Perhaps in larger groups orientation may become difficult and the deception may be discovered. Alternatively, if there are no rivals there is no need for the deception.

Cuttlefish are known to use sexual deception, such as female mimicry, as alternate mating strategies (Norman *et al.*, 1999). This research (Brown *et al.*, 2012) is the first example of a simultaneous dual gender deception. The complex nature of this behaviour provides supporting evidence that complex social lives may be a driving force in the accelerated cognitive evolution of cephalopods.

References

- Norman, M. D., Finn, J. and Tregenza, T. (1999). Female impersonation as an alternative reproductive strategy in giant cuttlefish. *Proceedings of the Royal Society London B* **266**, 1347–1349.
- Brown C., Garwood, M. P., and Williamson, J. E. (2012). It pays to cheat: tactical deception in a cephalopod social signaling system. *Biology Letters* **8**, 279–232.



A male (right) showing deceptive dual gender colouration towards a female (on the left) in the presence of a rival male (out of shot on the right). Photo: M. Garwood.



GSA
Genetics Society of AustralAsia Inc.

Annual Conference Sydney
Genetics in the Harbour City
14-17 July 2013

Mollusc mix: feeding snails and slugs

Mandy Reid and Chris Hosking, Australian Museum, Sydney

Email: gabriclona.n@bigpond.com

Land snails and slugs are routinely kept at the Australian Museum for our visitors to enjoy and learn to appreciate.

Following is a recipe for 'Mollusc mix' used to feed our captive snails. It was originally developed to feed endangered Partula Snails being kept at



*Snails enjoying their mix at the Australian Museum, Sydney.
Photo: Chris Hosking.*

the London Zoo and is also used at the Museum Victoria. This is the slightly modified Australian Museum recipe.

Mix the following ingredients together and blend into a powder:

- 1 tablespoon calcium carbonate powder
- 1 tablespoon rolled oats
- 1 tablespoon dried wheat seed
- ½ tablespoon Green Koi pellets
- ¼ teaspoon multivitamin powder

Transfer powder to a large bowl and add

- 1 ml vitamin E liquid

Add water while stirring until the mix reaches a paste-like consistency.

Divide the mix up into teaspoon-sized servings and freeze in small dishes or ice-cube trays (milk bottle lids are perfect).

Yum

Molluscs in the media

Giant African Land Snail in Brisbane

A giant exotic snail has been humanely destroyed after being found crawling across the concrete at a Brisbane container yard. Staff called Department of Agriculture Biosecurity Officers after seeing the snail, described as being, 'the size of a cricket ball'. It has been identified as a Giant African Snail, a species that can grow up to 20 centimetres long and weigh up to a kilogram.

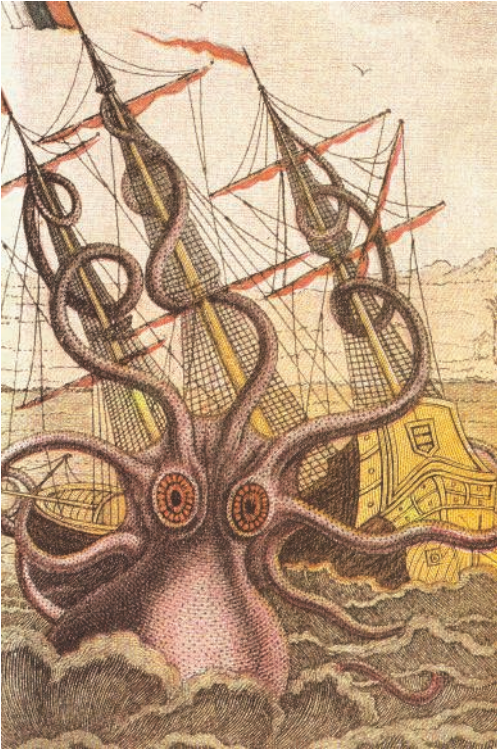
The species, found throughout Africa and Asia, is capable of destroying crops, fruit trees and native forests. It is one of the world's largest and damaging snails. An individual snail can lay up to 1200 eggs a year after a single mating and can live up to nine years. Biosecurity Officers humanely destroyed the exotic pest and have not found any other snails or eggs.

Source: <http://www.abc.net.au/news/2013-03-12/giant-snail-pest-found-at-brisbane-container-yard/4567644>



Secrets of the 'Kraken'

Although the Giant Squid, *Architeuthis*, is the second-largest invertebrate in our oceans, remarkably little is known about the animal that inspired the legend of the ship-devouring Kraken.



Pierre Denys de Montford's 1802 woodcut, possibly inspired by sailor's sightings of Giant Squid.

Growing up to 18 metres in length, Giant Squid live in all the world's oceans except in polar regions. Most of what is known about this elusive animal has been gleaned from remains that have been found in the stomachs of whales, washed ashore, or caught in fishing nets. It has only recently been glimpsed alive in its natural habitat.

Recently, an international team of researchers led by Thomas Gilbert and Master's student Inger Winkelmann from the Centre for GeoGenetics at the University of Copenhagen has analysed the mitochondrial DNA of 43 specimens collected from around the world. The team's findings, reported in the *Proceedings of the Royal Society* show that rather than the purported three species, all the specimens belong to just one species: *Architeuthis dux*.

Jan Strugnell from La Trobe University says the analysis shows the squid population went through a bottleneck followed by a rapid expansion between about 32 000 and 115 000 years ago, which coincides with the last ice age. 'The [ice age] may have changed the abundance of some predators that were competing with the squid. So, the population has increased in size, but the genetic diversity perhaps hasn't recovered from that time'.

Wednesday, 20 March 2013 Genelle Weule
ABC.

Mimic Octopus found in Australian waters

A James Cook University researcher has made the surprising discovery of a mimic octopus while walking along the beach at Lizard Island on the Great Barrier Reef during one of last year's lowest tides.

Thaumoctopus mimicus, first discovered off the coast of Indonesia in 1998, is famous for its extraordinary ability to twist its body and limbs and even change its colour to impersonate a variety of marine organisms, including sea snakes, lionfish, flatfish, stingrays, jellyfish, sea anemones and even sea shells.

Dr Darren Coker, from the Townsville-based ARC Centre of Excellence for Coral Reef Studies, has documented the find in *Marine Biodiversity Records*, suggesting the geographic range of the animal is much wider than previously understood. Dr Coker said the octopus relied upon its shapeshifting ability to evade predators.

Source: http://www.townsvillebulletin.com.au/article/2013/03/16/377473_news.html



Thaumoctopus mimicus. Photo: M. Norman.