

# **Groote Eylandt Bush Blitz**

## ***Molluscs***

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Nomenclature and taxonomy used in this report is consistent with:

The Australian Faunal Directory (AFD)

<http://www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/home>

and the World Register of Marine Species (WoRMS)

<https://www.marinespecies.org/>

except for the few occasions where recent and justifiable changes have not yet been incorporated into either of these databases

## Contents

Contents.....	2
List of contributors.....	2
Abstract.....	3
1. Introduction.....	3
2. Methods.....	4
2.1 Site selection.....	4
2.2 Survey techniques.....	4
2.2.1 Methods used at standard survey sites.....	4
2.3 Identifying the collections.....	4
3. Results and Discussion.....	5
3.1 Un-named or not formalised taxa.....	6
3.2 Putative new species (new to science).....	6
3.3 Exotic and pest species.....	7
3.4 Threatened species.....	7
3.6 Genetic information.....	8
4. Information on species list.....	8
5. Information for land managers.....	8
6. Other significant findings.....	10
7. Conclusions.....	10
Acknowledgements.....	11
References.....	12
Appendix 1. List of molluscs recorded live during the Groote Eylandt Bush Blitz.....	13

## List of contributors

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## Abstract

Like those living in coastal Arnhem Land, the molluscs of Groote Eylandt constitute a diverse (approx. 8000 species) assemblage of gastropods, bivalves, chitons, tusk snails and cephalopods. On the Groote Eylandt Bush Blitz of 2021 we were targeting three groups of significant but previously neglected molluscs for study – land snails, micromolluscs and mangrove-associated molluscs. A large species of land snail, *Xanthomelon* sp. 'North East Isles', that we found is potentially a new species. Should this species be undescribed, then there are issues concerning its conservation. The relatively short duration of the Groote Eylandt Bush Blitz, logistical constraints, and limitation to the intertidal zone only permitted a fraction (about 10%) of the predicted total of molluscan species to be collected. The rocky and sandy intertidal habitats on Groote Eylandt have greater diversity compared to Darwin Harbour, whereas the mangrove habitats have lower diversity.

## 1. Introduction

Molluscs have long been harvested on Groote Eylandt as part of the Aboriginal annual cycle of food gathering (Specht & Specht 1999: Fig. 8.7; Specht 2012). The traditional people exploit and recognise the edible, large and showy species (about 50 species) but they have little knowledge of the micromolluscs (i.e., those species less than 5 mm in greatest size when fully adult).

Members of the American-Australian Scientific Expedition to Arnhem Land in 1948 (whose activities were reported by Mountford in 1956, and whose legacy was summarised by Specht in 2012) "casually" collected sea shells wherever they went but molluscs themselves were never specifically targeted for collection or study by any member of the scientific team. In fact, Umbakumba was the first base for the Expedition's and the only base on Groote Eylandt. A support person on the Expedition, Mrs L. Cordon, made the largest collection of sea shells from Groote Eylandt and that material was included in Cotton's (1964) report of the molluscs collected during the entire expedition. Cotton's report was supplemented (and thereby somewhat confounded) by the inclusion of other species from Broome, Port Keats, Murray Island, Darnley Island, Thursday Island, and Manus Island in Papua New Guinea. That report included 40 larger species of molluscs from Groote Eylandt, of which there was a preponderance of cowries (a group of showy marine snails). Only a single species of land snail, *Xanthomelon jannellei*, was collected. The authors of the present report recollected 38 of the 40 species reported by Cotton, with the exceptions being (what are now called) *Gyrineum pulchellum* and *Ficus ficus*, both subtidal species. The specimens that were collected on the American-Australian Scientific Expedition to Arnhem Land are now mostly dispersed (if they ever made it into an institution), but several are housed in the South Australian Museum.

Darwin-based shell collector, Lady Helen Blackburn, picked up some sea shells on Groote Eylandt in 1968 and this collection is now housed in the Museum and Art Gallery of the Northern Territory (MAGNT). Ethnobiologist and linguist, Dr Julie Waddy, of the Anglican Church Missionary Society worked with the Aboriginal people on Groote Eylandt for 30 years and in 1976 she made a collection of some 50 sea shells from there, including recording their traditional names (Waddy 1988), and this collection is also in MAGNT. Dr Phil Alderslade, a staff member of MAGNT specialising in octocorals, collected molluscs that were taken whilst trawling in 46–47 m east of Groote Eylandt whilst on board the Russian Research vessel M.V. "AKADEMIK OPARIN" in December 1990, and these specimens are also in MAGNT. None of the specimens collected by these people is a micromollusc. Neither Lady Blackburn, nor Ms Waddy, nor Dr Alderslade collected any of the groups that we targeted.

As part of the preparations for the Groote Eylandt Bush Blitz, RCW contacted two of Australia's experts in land snails to enquire which species were already recorded from Groote Eylandt. Dr Frank Koehler provided a list of nine species in the Australian Museum's mollusc

collection and Mr Vince Kessner provided the list of the 15 species he had collected during “a couple of hours” at Angurugu Settlement and Bartalumba Bay in February 1987.

## **2. Methods**

### **2.1 Site selection**

For land snails, two sites were selected in advance where there are limestone outcrops as these habitats provide a rich source of calcium for construction of their shells and so they were expected to be commonest and most diverse at these sites. Both sites were sampled – North East Isles and Milyangkwardaakba on the northern coast. Arnarrma Creek also on the northern coast was sampled opportunistically.

For marine molluscs, multiple sites were selected in advance to cover as much of Groote Eylandt as possible. However, once there, it was logistically only possible for us to collect molluscs at 17 stations on the northern and western coasts, as well as one site at South Point.

For mangrove-associated molluscs, we had selected four sites in advance on the northern, eastern and western coasts. Logistics dictated that we sampled at only three of them – near the mouth of Tamarind Creek on the northern coast, and at Angurugu River and Emerald River on the eastern coast.

### **2.2 Survey techniques**

Most specimens were collected by hand. Mangrove-associated molluscs were sampled from trees, stems and leaves, or removed from within large woody-debris, or picked from the surface of the mud. The site south of Emerald River mouth (BB2021-2/RCW 4) with seagrass was sampled for micromolluscs using a hand sieve.

#### **2.2.1 Methods used at standard survey sites**

Most specimens of molluscs were collected by hand at the standard survey sites with multiple (i.e., greater than six) people searching specifically for them, not just RCW and AJB. This is because we knew the land snails (which would be the majority of species given these sites were largely terrestrial) would be hard to find at this time of year as they would be aestivating underground. We searched suitable habitats on the ground, on tree trunks, stems and leaves, and inside decaying tree trunks lying on the ground. Despite such intensive surveys, only dead shells of one species of land snail (*Xanthomelon jannelle*) were collected at Standard Survey Site 1.

A full survey for molluscs at Standard Survey Site 2 (the estuary at the mouth of the Emerald River) was impossible because of the presence of crocodiles, and so, for molluscs, the survey was confined to the mangrove forest and the high-tidal drift line on the southern shore of the estuary.

### **2.3 Identifying the collections**

There are no guide books, or published, or on-line literature summarising the marine molluscs of the Gulf of Carpentaria region. The specimens collected during the Groote Eylandt Bush Blitz have been identified by RCW based on comparisons of specimens housed in the Mollusc Collection in MAGNT. The book by Staniscic et al. (2017) was consulted for identification of

land snails, with the understanding that it is now out of date for the Camaenidae, the largest family.

We mentioned above that Dr Julie Waddy had made a collection of some sea shells on Groote Eylandt in 1976, including recording the traditional names that her Aboriginal informants had given her. Her study was published a decade later (Waddy 1988). Soon thereafter, a somewhat eclectic 'pictorial dictionary' for post-primary school children was prepared by a company called Groote Eylandt Linguistics and published in 1993 (reprinted in 2010). That book gives the Anindilyakwa name plus a 'common' English name' for the (ecological, not necessarily biological taxa) of animals and plants (including 30 molluscs). We note that the Introduction to the book states: "For the plants and animals, the order is the same order that Peter Nangurama Wurrawilya told Julie waddy when she was working with him in 1982" so there had been at least some communication with Dr Waddy in the preparation of this book. However, there is a low congruence between the Aboriginal names on the tickets that accompany Dr Waddy's molluscan specimens deposited in MAGNT and those in the Groote Eylandt Linguistics book (i.e., only 5 of the 30 names are identical or closely similar).

### 3. Results and Discussion

RCW estimates that about 10,500 specimens comprising 800 species of molluscs were collected on the Groote Eylandt Bush Blitz expedition in 2021. Appendix 1 lists all the living marine molluscs and land snails that were collected during and processed. Many more dead shells (including micromolluscs that take a lot of time to identify) were collected, but these are not included in the species list as their animals would not necessarily have been living where they were collected (i.e., currents could have carried them ashore).

Our collections of land snails were supplemented by donations from other participants in the Groote Eylandt Bush Blitz. The following list is comprehensive in that it includes the two species (marked with an asterisk) that were collected by others serendipitously and given to us (both as single specimens) during the expedition. These land snails are listed alphabetically by family below. Most of them were found only as dead shells because the live animals would have been few in number and well-hidden during the dry season when the expedition was conducted.

CAMAENIDAE	<i>Arnhemelassa creedi</i> *
	<i>Torresitrachia</i> sp. 1
	<i>Xanthomelon jannellei</i>
	<i>Xanthomelon</i> sp. 'North East Isles'
CERASTIDAE	<i>Amimopina macleayi</i> *
HELICODISCIDAE	<i>Stenopylis coarctata</i>
PUPILLIDAE	<i>Gastrocopta pediculus</i>
	<i>Pupoides pacificus</i>
ACHATINIDAE	<i>Eremopeas interioris</i>

All the 35 species of mangrove-associated molluscs that were collected by RCW and AJB (i.e., 'Team Mollusc') on the Groote Eylandt Bush Blitz are listed alphabetically by family below. Most of them were found alive.

CERITHIIDAE	<i>Cerithium coralium</i>
	<i>Clypeomorus bifasciata</i>
CORBULIDAE	<i>Serracorbula coxi</i>
CYRENIDAE	<i>Geloina oviformis</i>
ELLOBIIDAE	<i>Cassidula angulifera</i>
	<i>Cassidula nucleus</i>
	<i>Melampus</i> sp. 1

	<i>Ellobium</i> cf. <i>semisulcatum</i>
HAMINOEIDAE	<i>Bakawan rotunda</i>
ISOGNOMONIDAE	<i>Isognomon ephippium</i>
GLAUCONOMIDAE	<i>Glaucanome plankta</i>
NERITIDAE	<i>Clithon oualaniense</i>
	<i>Nerita balteata</i>
	<i>Nerita squamulata</i>
	<i>Neripteron violaceum</i>
LITTORINIDAE	<i>Littoraria articulata</i>
	<i>Littoraria filosa</i>
	<i>Littoraria intermedia</i>
	<i>Littoraria pallescens</i>
LUCINIDAE	<i>Anodontia</i> sp. 1
	<i>Wallucina</i> sp. 1
POTAMIDIDAE	<i>Cerithidea anticipata</i>
	<i>Cerithideopsis australiensis</i>
	<i>Pirenella austrocingulata</i>
	<i>Pirenella delicatula</i>
	<i>Telescopium telescopium</i>
	<i>Terebralia palustris</i>
	<i>Terebralia semistriata</i>
	<i>Terebralia sulcata</i>
TELLINIDAE	<i>Iridona iridescens</i>
	<i>Macoma</i> sp. 1
	<i>Serratina capsoides</i>
TROCHIDAE	<i>Calthalotia</i> cf. <i>aruensis</i>
VENERIDAE	<i>Gafrarium australe</i>
	<i>Gafrarium tumidum</i>

Although some opportunistic searching in swamps and streams was conducted by us, no freshwater molluscs were found. However, dedicated sampling of freshwaters in the future might discover a previously unknown freshwater malacofauna, particularly in the lakes at the southern end of Groote Eylandt.

### 3.1 Un-named or not formalised taxa

The majority of micromolluscan shells await identification.

### 3.2 Putative new species (new to science)

None of the larger marine taxa found during the expedition is a new species. However, one of the larger species of land snails, *Xanthomelon* sp. 'North East Isles', is potentially new to science. This species, which appeared to RCW to be undescribed when it was discovered, was confirmed as a putative new species by land snail expert Vince Kessner. This species seems to have a micro-endemic distribution, being solely restricted to the (small) North East Isles in the north of the Groote Eylandt archipelago. Specimens of this species are presently being investigated by another expert in Australian land snails, Dr Frank Koehler.



Figure 1. Photograph of a live individual of *Xanthomelon* sp. 'North East Isles' collected during the Bush Blitz survey.

It is too soon to know if any of the micromolluscs might be a new species. Indeed, some of the families of marine micromolluscs that were collected on the Bush Blitz expedition have never been monographed in Australia (e.g., Scaliolidae, Liotiidae, Tornidae, Rissoidae, Rissoinidae, Granulinidae, Retusidae, Haminoeidae, Carditidae, Lasaeidae, Galeommatidae, Mactomyidae). Similarly, some families of larger molluscs have never been monographed in tropical northern Australia either (e.g., Trochidae, Eucyclidae, Neritidae, Vanikoridae, Planaxidae, Eulimidae, Pyramidellidae, Epitoniidae, Ficidae, Olividae, Columbidae, Drillidae, Mangeliidae, Clathurellidae, Pseudomelatomidae, Siphonariidae, Ellobiidae, Stiggeridae, Goniobranchidae, Polyceridae, Gymnodorididae, Dorididae, Discodorididae, Flabellinidae, Eubranchidae, Facelinidae, Trinchysiidae, Nuculanidae, Arcidae, Noetiidae, Glycymerididae, Mytilidae, Ostreidae, Pinnidae, Plicatulidae, Chamidae, Ungulinidae, Donacidae, Tellinidae, Semelidae, Mactridae, Veneridae, Corbulidae, Cyrenidae).

As species of *Melampus* have been over-named in the tropical Indo-Pacific Ocean, it is unlikely *Melampus* sp. 1 would be a new species.

### 3.3 Exotic and pest species

All the molluscs, both marine and terrestrial, collected on this expedition are native to this part of Australia.

One locality that was selected in advance for surveying because it might have harboured exotic/pest species of biosecurity concern was the GEMCO Wharf at Alyangula, but it proved impossible to visit/sample there because of logistics.

### 3.4 Threatened species

One of the larger species of land snails, *Xanthomelon* sp. 'North East Isles', is potentially new to science. From the Groote Eylandt Bush Blitz surveys, it appears endemic to the North East Isles (i.e., North East Island & Hawk Island) with live animals being rare and restricted to small pockets of residual vegetation. Although this species was collected on both North East Island and Hawk Island, live specimens were only collected from the former island. Should this *Xanthomelon* be undescribed, there will be issues with the population of feral Rusa Deer (*Cervus timorensis*) that is living on the largest island and devouring/removing the native vegetation. See section 5 (Information for land managers) below for further discussion on this issue.

### 3.6 Genetic information

Specimens of *Xanthomelon* sp. 'North East Isles' have been provided to Dr Koehler for genetic examination.

## 4. Information on species list

As stated above, the species list only contains (marine and terrestrial) species that were discovered live at a particular locality. Many more dead shells were collected, but they do not necessarily live in these habitats.

## 5. Information for land managers

Rusa Deer (*Cervus timorensis*) were probably introduced to the Groote Eylandt archipelago over 100 years ago, with the species being first liberated in the Torres Strait in 1912 (Queensland Government, 2021). Presently in the archipelago, Rusa Deer only persist on North East Islet where they browse the vegetation extensively and thus cause considerable habitat damage.

On-ground assessment of the vegetation on this islet on (two visits during) the Bush Blitz survey revealed extensive, heavy browsing damage, with almost all the native flora (including even large trees) having been eaten by the deer. Broad-scale soil erosion caused through overgrazing and trampling of ground cover plants was also evident. In many places, the understory consisted only of an unpalatable legume *Indigofera* sp. Exploration of the island's interior revealed thousands of old dead shells of *Xanthomelon* sp. 'North east Isles' lying exposed along the dunes and the (now) open bare areas devoid of vegetation (see Figure 2). The noticeable abundance of these dead shells in extensive conspicuously denuded areas suggests large-scale losses in vegetative cover some time in the past. *Xanthomelon* snails have a preference for vine thickets and dry woodland habitats, requiring logs, leaf litter and rubble to survive (pers. obs.). This implies that the bare open areas on North East Islet now littered with dead shells were once covered in vegetation.



**Figure 2.** One example of dead shells of *Xanthomelon* sp. ‘North East Isles’ littering a high dune crest above a remnant patch of vine forest on North East Isle. These dead shells represent numerous generations of snails as shells can persist in the environment many years after death. The presence of thousands of dead shells in denuded areas suggests a deleterious change in vegetation has occurred and continues to occur.

Our examination of potential habitat for *Xanthomelon* snails on the North East Isles shows that the snails are potentially limited in suitable woody vegetation that can provide adequate foraging (camaenid snails are fungivorous) and shelter from desiccation. Visual identification of habitat from current satellite imagery shows that the amount of woody vegetation that could provide adequate tree canopy shade and logs and leaf litter for shelter and foraging is potentially limited to 67.6 ha on North East Island and 15.6 ha on Hawk Island (Table 1; Figure 3). Based on this cursory assessment, only 17.3% of the land area on North East Island and 6.7% of the land area on Hawk Island and is potentially suitable as habitat for *Xanthomelon* snails (Table 1).

The presence of thousands of old dead *Xanthomelon* shells on the surface across the North East Isles suggests deleterious changes in vegetation have occurred sometime in the last 100 years. Current inspection of North East Island shows that it is heavily damaged through over-browsing by feral deer. However, a quick perusal of freely-available online geospatial data websites managed by Geoscience Australia (GA) and CSIRO (e.g., National Map, GEOGLAM RAPP, etc.) shows that the vegetation on this island has remained relatively unchanged for the last 20 years. This suggests that the feral deer population on the island has reached a carrying capacity and the remnant native vegetation that remains continues to persist.

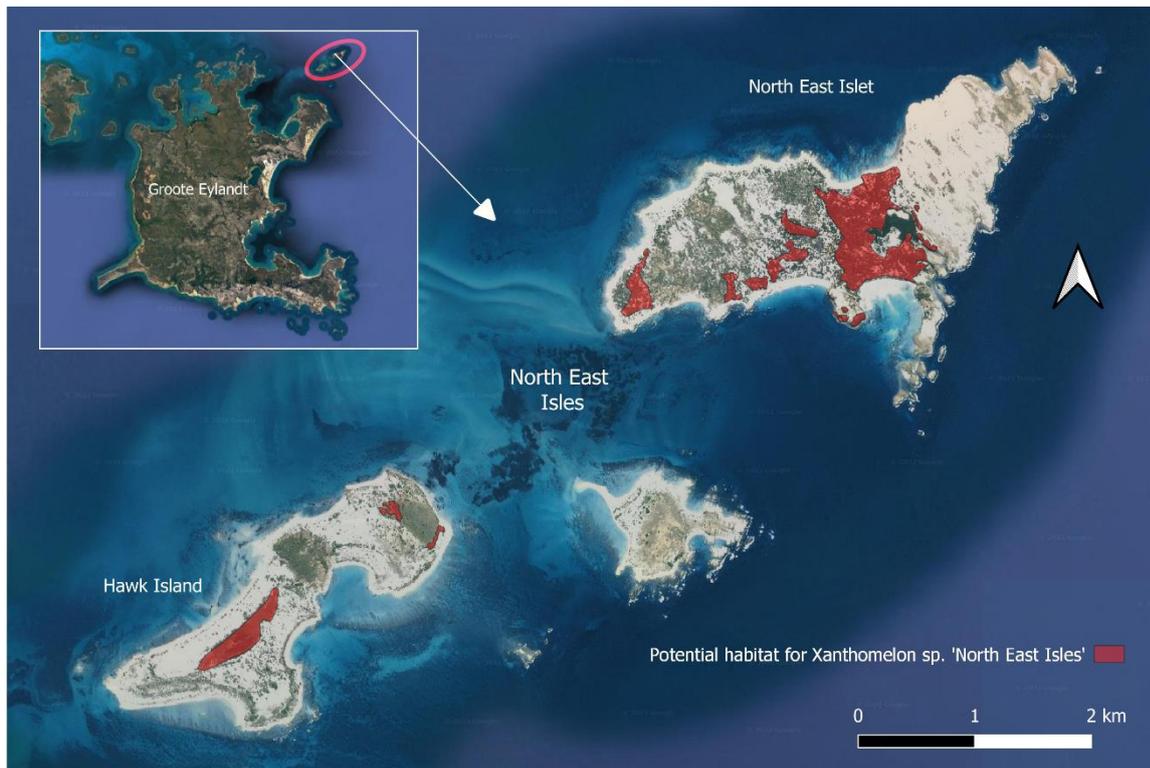
Regardless; due to the likely micro-endemism of *Xanthomelon* sp. ‘North East Isles’ the continued pressure of over-browsing and habitat destruction by feral deer put the species at potential risk of extinction.

A potentially feasible option to manage *Xanthomelon* snails on North East Islet is to fence off remnant pockets of vine thicket on the island, as isolating these prime habitats from deer provide the most efficient and cost-effective method of preserving existing populations of snails. A practical, but potentially controversial, method of conserving *Xanthomelon* sp. ‘North East Isles’ would be translocating a population of snails to the mainland of Groote Eylandt.

**Table 1.** Assessment of total island areas of Hawk Island and North East Isle, potentially suitable habitat, and total habitat (%) potentially available to *Xanthomelon* sp. ‘North East Isles’ snails.

	Approximate area of island (ha)	Potentially suitable habitat (ha)*	Percentage of total island area suitable as habitat (%)
Hawk Island	233.8	15.6	6.7
North East Isle	391.4	67.6	17.3

\* Habitat areas are estimated from a desktop vegetation survey using current Google Earth imagery



**Figure 3.** Map of North East Isles showing potentially suitable habitat for *Xanthomelon* sp. 'North East Isles' (red polygons) on Hawk Island and North East Isle.

## 6. Other significant findings

We found one species of marine mollusc that is a new record for Groote Eylandt. This is the recently-named *Peronia willani* that was hitherto only known from Darwin Harbour (Dayrat et al. 2020).

The rocky and sandy intertidal habitats on Groote Eylandt have greater diversity of molluscan species in general than Darwin Harbour, whereas the mangrove habitats have lower diversity.

Some marine molluscs are consistently larger in size when adult on Groote Eylandt than their mainland counterparts elsewhere in the Northern Territory (e.g., *Acanthopleura gemmata*), but in contrast others are consistently smaller (e.g., *Diodora jukesii*). One mangrove-associated species of gastropod mollusc, *Terebralia sulcata*, displayed a notably greater range of shell sizes when adult than its counterparts on the mainland. Furthermore, this phenomenon was seemingly only restricted to populations of this species on the western coast of Groote Eylandt (which was an analogous situation to that of the Northern Dwarf Tree Frog, *Litoria bicolor* (pers. comm. J. Rowley)).

Short-range mainland endemic marine molluscs that are restricted to the north-western most section of the Gulf of Carpentaria (such as *Clanculus multipunctatus*) are apparently absent from Groote Eylandt.

## 7. Conclusions

The Groote Eylandt Bush Blitz of 2021 did not allow adequate sampling of intertidal or subtidal habitats. A future survey should coincide with spring tides and include a subtidal component (as in SCUBA diving and benthic trawling).

Should the *Xanthomelon* sp. land snail on North East Isles be a species new to science, then steps to conserve it should be taken immediately.

## **Acknowledgements**

Many of the participants and locals enthusiastically collected land snails for us during the Groote Eylandt Bush Blitz. We particularly thank all the teachers for helping us search specifically for land snails at Standard Survey Site 1. Katie Oxenham kindly gave us some large, showy shells from her collection for our display at the public information session at Umbakumba School. Vince Kessner and Frank Koehler supplied us with their lists of land snails from Groote Eylandt.

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Appendix 1. List of molluscs recorded live during the Groote Eylandt Bush Blitz						
Family	Species	Common name	Putative new species	Threatened (EPBC Act)	Threatened (State / Territory Act)	Exotic/pest
Achatinidae	<i>Erelopeas interioris</i>	na	No	No	No	No
Arcidae	<i>Anadara antiquata</i>	na	No	No	No	No
Camaenidae	<i>Torresitrachia</i> sp. Bush Blitz Groote 1	na	No	No	No	No
Camaenidae	<i>Xanthomelon jannellei</i>	na	No	No	No	No
Camaenidae	<i>Xanthomelon</i> sp. Bush Blitz Groote 'North East Isles'	na	Yes	No	No	No
Cardiidae	<i>Vasticardium vertebratum</i>	na	No	No	No	No
Carditidae	<i>Begaina semiorbiculata</i>	na	No	No	No	No
Carditidae	<i>Cardita pica</i>	na	No	No	No	No
Cerithiidae	<i>Cerithium coralium</i>	na	No	No	No	No
Cerithiidae	<i>Cerithium columna</i>	na	No	No	No	No
Cerithiidae	<i>Clypeomorus bifasciata</i>	na	No	No	No	No
Cerithiidae	<i>Rhinoclavis sinensis</i>	na	No	No	No	No
Chitonidae	<i>Acanthopleura gemmata</i>	na	No	No	No	No
Columbellidae	<i>Euplica scripta</i>	na	No	No	No	No
Columbellidae	<i>Euplica varians</i>	na	No	No	No	No
Columbellidae	<i>Pictocolumbella ocellata</i>	na	No	No	No	No
Columbellidae	<i>Zafra pumila</i>	na	No	No	No	No
Conidae	<i>Conus coronatus</i>	na	No	No	No	No
Conidae	<i>Conus scabriusculus</i>	na	No	No	No	No
Corbulidae	<i>Notocorbula macgillivrayi</i>	na	No	No	No	No
Corbulidae	<i>Serracorbula coxi</i>	na	No	No	No	No
Cypraeidae	<i>Erronea erronea</i>	na	No	No	No	No
Cypraeidae	<i>Lyncina vitellus</i>	na	No	No	No	No
Cypraeidae	<i>Mauritia arabica</i>	na	No	No	No	No
Cypraeidae	<i>Mauritia eglantina</i>	na	No	No	No	No
Cypraeidae	<i>Melicerona listeri</i>	na	No	No	No	No
Cyrenidae	<i>Geloina oviformis</i>	na	No	No	No	No
Donacidae	<i>Donax faba</i>	na	No	No	No	No

Family	Species	Common name	Putative new species	Threatened (EPBC Act)	Threatened (State / Territory Act)	Exotic/pest
Ellobiidae	<i>Cassidula angulifera</i>	na	No	No	No	No
Ellobiidae	<i>Cassidula nucleus</i>	na	No	No	No	No
Ellobiidae	<i>Ellobium cf. semisculptum</i>	na	No	No	No	No
Ellobiidae	<i>Melampus</i> sp. Bush Blitz Groote 1	na	No	No	No	No
Facelinidae	<i>Phyllodesmium poindimiei</i>	na	No	No	No	No
Gastrocoptidae	<i>Gastrocopta pediculus</i>	na	No	No	No	No
Glauconomidae	<i>Glaucome plankta</i>	na	No	No	No	No
Gryphaeidae	<i>Hytissa inermis</i>	na	No	No	No	No
Haliotidae	<i>Haliotis squamosa</i>	na	No	No	No	No
Haminoeidae	<i>Bakawan rotundata</i>	na	No	No	No	No
Helicodiscidae	<i>Stenopylis coarctata</i>	na	No	No	No	No
Isognomonidae	<i>Isognomon ephippium</i>	na	No	No	No	No
Isognomonidae	<i>Isognomon nucleus</i>	na	No	No	No	No
Littorinidae	<i>Echinolittorina austrotrochoides</i>	na	No	No	No	No
Littorinidae	<i>Echinolittorina vidua</i>	na	No	No	No	No
Littorinidae	<i>Littoraria articulata</i>	na	No	No	No	No
Littorinidae	<i>Littoraria filosa</i>	na	No	No	No	No
Littorinidae	<i>Littoraria pallescens</i>	na	No	No	No	No
Littorinidae	<i>Littoraria undulata</i>	na	No	No	No	No
Littorinidae	<i>Littoria intermedia</i>	na	No	No	No	No
Littorinidae	<i>Peasiella lutulenta</i>	na	No	No	No	No
Lucinidae	<i>Anodontia</i> sp. Bush Blitz Groote 1	na	No	No	No	No
Lucinidae	<i>Ctena divergens</i>	na	No	No	No	No
Lucinidae	<i>Divaricella irpex</i>	na	No	No	No	No
Lucinidae	<i>Wallucina</i> sp. Bush Blitz Groote 1	na	No	No	No	No
Mactridae	<i>Mactra maculata</i>	na	No	No	No	No
Mactridae	<i>Spisula trigonella</i>	na	No	No	No	No
Mesodesmatidae	<i>Atactodea striata</i>	na	No	No	No	No
Muricidae	<i>Cronia amygdala</i>	na	No	No	No	No
Muricidae	<i>Morulaanaxeres</i>	na	No	No	No	No

Family	Species	Common name	Putative new species	Threatened (EPBC Act)	Threatened (State / Territory Act)	Exotic/pest
Muricidae	<i>Morula</i> sp. Bush Blitz Groote 1	na	No	No	No	No
Muricidae	<i>Muricodrupa</i> sp. Bush Blitz Groote 1	na	No	No	No	No
Muricidae	<i>Tenguella granulata</i>	na	No	No	No	No
Muricidae	<i>Thalessa aculeata</i>	na	No	No	No	No
Myidae	<i>Tugonia</i> sp. Bush Blitz Groote 1	na	No	No	No	No
Mytilidae	<i>Brachidontes crebristriatus</i>	na	No	No	No	No
Mytilidae	<i>Leiosolenus malaccanus</i>	na	No	No	No	No
Mytilidae	<i>Lithophaga teres</i>	na	No	No	No	No
Mytilidae	<i>Septifer bilocularis</i>	na	No	No	No	No
Neritidae	<i>Clithon oualaniense</i>	na	No	No	No	No
Neritidae	<i>Neripteron violaceum</i>	na	No	No	No	No
Neritidae	<i>Nerita albicilla</i>	na	No	No	No	No
Neritidae	<i>Nerita balteata</i>	na	No	No	No	No
Neritidae	<i>Nerita chamaeleon</i>	na	No	No	No	No
Neritidae	<i>Nerita histrio</i>	na	No	No	No	No
Neritidae	<i>Nerita polita</i>	na	No	No	No	No
Neritidae	<i>Nerita undata</i>	na	No	No	No	No
Noetiidae	<i>Arcopsis afra</i>	na	No	No	No	No
Onchidiidae	<i>Peronia willani</i>	na	No	No	No	No
Ostreidae	<i>Saccostrea cucullata</i>	na	No	No	No	No
Ostreidae	<i>Saccostrea mytiloides</i>	na	No	No	No	No
Ostreidae	<i>Saccostrea scyphophilla</i>	na	No	No	No	No
Pisaniidae	<i>Cantharus fumosus</i>	na	No	No	No	No
Pisaniidae	<i>Cantharus undosus</i>	na	No	No	No	No
Planaxidae	<i>Planaxis sulcatus</i>	na	No	No	No	No
Plicatulidae	<i>Plicatula australis</i>	na	No	No	No	No
Potamididae	<i>Cerithidea anticipata</i>	na	No	No	No	No
Potamididae	<i>Cerithideopsis australiensis</i>	na	No	No	No	No
Potamididae	<i>Pirenella austrocingulata</i>	na	No	No	No	No
Potamididae	<i>Pirenella delicatula</i>	na	No	No	No	No

Family	Species	Common name	Putative new species	Threatened (EPBC Act)	Threatened (State / Territory Act)	Exotic/pest
Potamididae	<i>Telescopium telescopium</i>	na	No	No	No	No
Potamididae	<i>Terebralia palustris</i>	na	No	No	No	No
Potamididae	<i>Terebralia semistriata</i>	na	No	No	No	No
Potamididae	<i>Terebralia sulcata</i>	na	No	No	No	No
Pupillidae	<i>Pupoides pacificus</i>	na	No	No	No	No
Pyramidellidae	<i>Otopleura auriscati</i>	na	No	No	No	No
Siphonariidae	<i>Siphonaria cf. normalis</i>	na	No	No	No	No
Spondylidae	<i>Spondylus anacanthus</i>	na	No	No	No	No
Spondylidae	<i>Spondylus ocellatus</i>	na	No	No	No	No
Strombidae	<i>Canarium erythrinum</i>	na	No	No	No	No
Strombidae	<i>Canarium labiatum</i>	na	No	No	No	No
Strombidae	<i>Canarium orrae</i>	na	No	No	No	No
Tellinidae	<i>Iridona iridescens</i>	na	No	No	No	No
Tellinidae	<i>Macoma</i> sp. Bush Blitz Groote 1	na	No	No	No	No
Tellinidae	<i>Serratina capsoides</i>	na	No	No	No	No
Triphoridae	<i>Coriophora fusca</i>	na	No	No	No	No
Trochidae	<i>Calthalotia cf. arruensis</i>	na	No	No	No	No
Trochidae	<i>Eurytrochus charopiformis</i>	na	No	No	No	No
Trochidae	<i>Monodonta labio</i>	na	No	No	No	No
Trochidae	<i>Trochus nigropunctatus</i>	na	No	No	No	No
Truncatellidae	<i>Truncatella</i> sp. Bush Blitz Groote 1	na	No	No	No	No
Turbinidae	<i>Lunella cinerea</i>	na	No	No	No	No
Veneridae	<i>Gafrarium pectinatum</i>	na	No	No	No	No
Veneridae	<i>Marcia hiantina</i>	na	No	No	No	No
Veneridae	<i>Gafrarium dispar</i>	na	No	No	No	No
Vermetidae	<i>Thylacodes adamsii</i>	na	No	No	No	No
Volutidae	<i>Melo amphora</i>	na	No	No	No	No