NEW TASMANIAN RECORDS AND RANGE EXTENSIONS FOR MARINE MOLLUSCS FROM DREDGING SURVEYS OFF THE TASMAN AND FORESTIER PENINSULAS, SOUTH-EAST TASMANIA

Simon Grove and Robert de Little

Grove, S. and de Little, R. 2014. New Tasmanian records and range extensions for marine molluscs from dredging surveys off the Tasman and Forestier Peninsulas, south-east Tasmania. *Kanunnah 7*: 141–167. ISSN 1832-536X. Over the summer of 2013/2014, we carried out dredging surveys for marine molluscs off the coast of south-east Tasmania, in waters 12 to 131 m deep. From nine trips amounting to 70 tows, and employing a small dredge designed primarily to retain the larger molluscs, we documented the occurrence of 253 species, 243 of which we were able to assign to described taxa. Some of our identifications remain tentative, largely because many species in the regional fauna remain poorly characterised. We consider fourteen species to be newly recorded for Tasmanian waters – perhaps an indication of the level of under-recording of the local fauna, or in some cases suggestive of recent colonisation from the north as a result of strengthening currents. Some 67 species comprise an 'offshore' component to the fauna that would seldom, if ever, be beached locally. Only two feral species were caught; one was the dominant mollusc in many catches, and the other represents a range extension. Statistical analyses and examination of historical records suggest that many more species could be collected in the study-area with further sampling. Our surveys have added considerably to the knowledge-base concerning Tasmanian offshore marine molluscs, and to the TMAG collections.

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INTRODUCTION

The marine mollusc fauna of Tasmania has been a particular focus for study by collectors and researchers since the early days of the Royal Society of Tasmania (e.g. Tenison Woods, 1876). This focus continued with the foundation of the Tasmanian Museum, which saw the transfer of many valuable specimens, including type material, from the Royal Society collections to the Museum (e.g. Hardy, 1915). A few years later, a seminal publication (May, 1921) aimed to document the entire Tasmanian marine mollusc fauna then known; this list was later expanded, and illustrations added (May and McPherson, 1958). Until the publications of Richmond (1990, 1992), Grove *et al.* (2006) and Grove (2011), this 1958 publication was the most accessible source of information on the Tasmanian marine mollusc fauna. Many of the species mentioned and illustrated in it were known only from dredged specimens – and therefore represent species not covered in more recent guides. They were chiefly the result of two expeditions off the south-east coast of Tasmania. The first of these, in December 1907, involved the 25-ton steamship *Sea-Bird*, which was chartered by Charles Hedley, a curator at the Australian Museum, along with his then Hobart-based colleague, William May, a prominent local businessman and Society dignitary with a deep personal interest in the local mollusc fauna. They dredged in 100 fathoms of water, seven miles east of Cape Pillar (Hedley and May, 1908), finding some 80 species new for Tasmania. Then in March 1909, the Tasmanian Field Naturalists Club chartered the steamship *Koonookarra* for their Easter Campout on the Freycinet Peninsula; using his own equipment, May took the steamship into the Geographe Strait (the strait separating the Freycinet Peninsula from Schouten Island), and up to 10 miles east of Schouten Island, dredging in 40, 60, 80 and 100 fathoms. In the resultant publication (May, 1910), he reported on further new species for Tasmania as well as a degree of overlap with the Cape Pillar fauna.

Remarkably little further progress has been made in exploring Tasmania's deep-water mollusc fauna since these dedicated early 20th-century surveys. CSIRO conducted extensive benthic faunal sampling of the sea-mounts to the south of Tasmania, in 1997 (Koslow *et al.*, 2001); however, much of the molluscan material from this cruise awaits incorporation into the collections and databases of the Tasmanian Museum and Art Gallery (TMAG) and other museums. Undoubtedly, many other dredging events have taken place in Tasmanian offshore waters in recent decades, but most of these would have been researching other aspects of sea-floor biology, particularly in relation to fisheries, with small molluscs generally considered as by-catch at best. In any event, there has been no recent systematic documentation of the deep-water fauna close to the Tasmanian mainland. However, at least some of the specimens from some of these dredging events have since been deposited and identified at Australia's various state museums and the records made available on-line (Atlas of Living Australia, 2014). Together with the earlier publications, they form a useful baseline against which our own recording efforts can be compared.

Our own motivations for resuming dredging in south-east Tasmanian waters were modest. We aimed to test the

effectiveness of a home-made dredge for sampling marine molluscs that we would otherwise not be able to procure through beachcombing; and we wanted to augment our own collections, including those of TMAG. We also hoped to be able to collect good-quality specimens for photographing, to aid identification of poorly known taxa – including those already held in TMAG's collections.

METHODS

A permit to dredge was obtained from the Wild Fisheries Branch, Department of Primary Industries, Parks, Water and Environment. We conducted all dredging trips under this permit, in the 10-m motor-sailer, *Rambler,* belonging to RDL, who led all trips; SJG participated in four of these. For the first four trips, *Rambler* was moored at Taranna, enabling access (via the Denison Canal) to the coastal waters east of the Forestier Peninsula. For the remaining five trips, *Rambler* was moored at Port Arthur, enabling access to the stretch of coastal waters between Capes Pillar and Raoul. The boat's sounder was used to judge suitable sampling locations by providing depth readings and bottom profiles. Within the permitted sampling area, our aim was to sample from a range of water-depths, while avoiding reefs and boulder-fields that would snag the dredge, and avoiding sea-grass beds (as part of the permit conditions).

The dredge was made specifically for this study, and consisted of a sturdy, welded steel frame, 450 mm deep, and rectangular in cross-section with an opening 800 mm wide and 270 mm high. The frame was lined with galvanised steel wire sheeting with a 6.5 mm mesh-size. The front of the dredge bore a steel cross-chain and clip, to enable its attachment to 500 m of 8-mm bore polypropylene tow-rope, which was stored in a plastic drum on the rear deck of the boat. Total weight of the dredge was 9 kg, although one or two additional weights of 0.8 kg each were added to the mouth of the dredge for some of the later tows in deeper water, to assist in keeping the lip of the dredge in contact with the substrate. To further discourage the front of the dredge from lifting off the sea-floor when deployed and to offset the buoyancy of the rope, a 1 kg weight was clipped to the rope 10 m in front of the mouth; in deeper water, a second similar weight was clipped on once about 100 m of rope had been deployed.

Deployment involved attaching the dredge's cross-chain to the end of the rope and then lowering the dredge over the stern of the boat. The rope had previously been marked by attaching cable-ties at 50 metre intervals to assist in determining the length of rope deployed. Though it was not readily apparent as to when the dredge had made contact with the substrate and started sampling, trial and error eventually confirmed that the length of rope required was at least four times the water-depth, while motoring speed had to be kept to below two knots. We allowed the dredge to sample for 15 minutes. We employed a winch to help in recovering the dredge, a process that took from 10 to 30 minutes depending on the depth. The contents of the dredge were then tipped into a white polypropylene tub on the rear deck, for sorting. Using gloves and forceps, we picked out specimens of interest and placed these into smaller sample-pots. 75% ethanol was added to these pots for preservation, unless the specimens were

Fig. 1. The dredge, and some of the collected material being examined by the authors Robert de Little, left, and Simon Grove, right.

empty shells only, in which case they were stored dry. On a few occasions, bucketsful of promising-looking dredge material were taken back to base for sorting. Molluscs were identified through reference to a range of printed and on-line publications, through comparison with specimens in the TMAG collections, and through consultation with other experts interstate. Specimens of most, but not all, species were retained, either by RDL or for the TMAG collections.

In total, we conducted nine dredging trips, from September 2013 to March 2014. Our permit limited us to ten tows per trip but this number was seldom achieved because of time constraints, which were particularly apparent when sampling deeper water. In practice, we averaged just under eight separate dredgings per trip: 70 in total. The locations sampled are listed in Appendix 1 and plotted on Figure 2. The depth range covered was from 12 m to 131 m (mean depth 55 m).

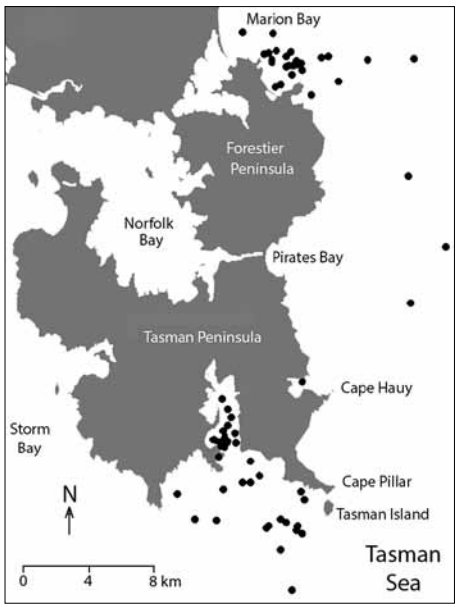

Fig. 2. The study-area in south-east Tasmania, showing dredging locations. See Appendix 1 for details of these.

To better understand how comprehensively our dredging had sampled the available mollusc fauna, we plotted sample-based species accumulation curves, based on the actual order of sampling and on a randomisation procedure (n = 100 runs), using the program *EstimateS* ver. 9.1.0 (Colwell, 2013). We used the same program to estimate asymptotic incidence-based species richness.

RESULTS

After some initial teething problems our dredging apparatus and towing techniques, as outlined above, proved to work well. In total, we recorded 253 mollusc species (Appendix 2); specimens of 139 of these have been registered into TMAG's collections. Only a single non-shelled mollusc species was recorded: juveniles of an unidentified species of *Octopus*. We were able to assign full binomial scientific names to 243 species. However, some of these names are tentative, and for some contentious taxa we have had to make our own judgements on species allocation. For instance, we have chosen to treat the gastropod 'turrid' taxa *Vexitomina garrardi* and *V. agnewi* as distinct at the species level from *V. coxi*; this in turn entails claiming *V. garrardi* as new for Tasmania.

We were able to identify six of our recorded taxa only to the level of genus, two only to family and two (unidentified yet distinct bivalves) only to class. Some of those identified only to generic level are putative undescribed species. These include a *Fax* whelk (apparently distinct from the locally common *F. tenuicostata*), and two *Notocypraea* cowries (distinct from the five described species currently known from Tasmanian waters). The south-east Australian *Notocypraea* cowries are already notorious among collectors for the occurrence of a range of deeper-water taxa that do not match the described shallow-water species; our specimens seem to represent further examples of this phenomenon.

Our dredging samples were extremely variable in both quantity and quality. Several were completely void of any material, and seven produced no molluscs at all. On other occasions the dredge was almost completely full of sponges or of dead shells (mostly those of the feral New Zealand screw-shell *Maoricolpus roseus*, which appeared in samples taken from a wide range of depths, from 16 to 125 m). The only other feral species detected was

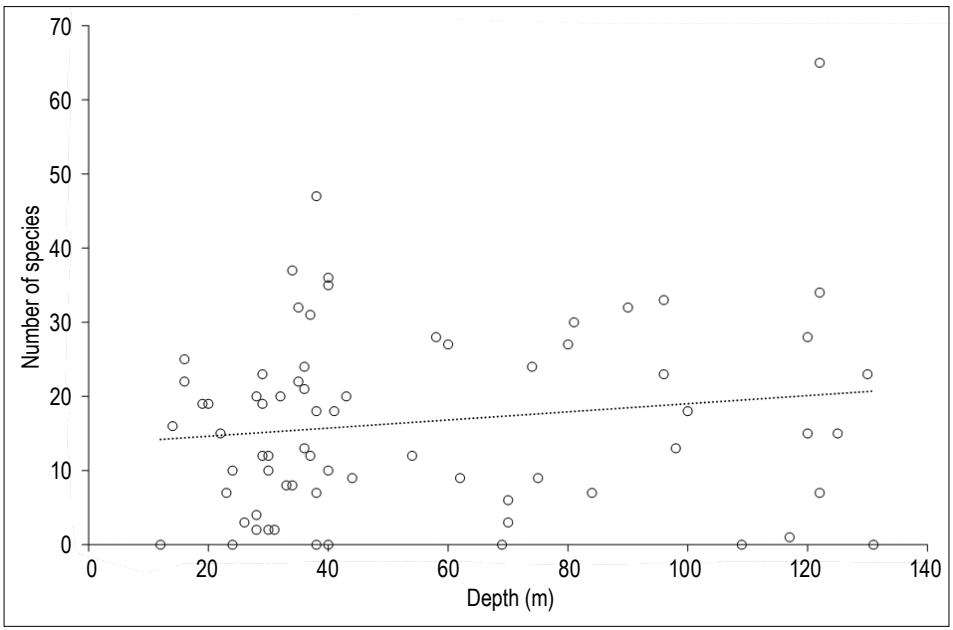

Fig. 3. Number of species of mollusc recorded per sample (n = 70) by depth of dredge. The dotted line is the linear trend-line through the data ($r^2 = 0.023$).

the European basket-shell *Corbula gibba* (from 28 and 40 m in Port Arthur).

The average number of mollusc species retrieved was 17; the most successful dredging produced 65 species. Total sample volume was not a good predictor of mollusc species richness; serendipity also played a part, for instance when micromolluscs that were theoretically small enough to be flushed out through the mesh were found lodged among larger items. To some extent these numbers are an artefact of the vigilance with which the samples were examined, because (a) the time required to examine large samples often exceeded the time available to do so between successive dredgings, and (b) common species may sometimes have been overlooked and remained undocumented because of a focus on more unusual specimens and rarities. There was no clear relationship between the number of species per dredge and dredging depth (Figure 3). The species accumulation curve (Figure 4) suggests not only that sampling is a bit hit-and-miss, but also that there should be many more species yet to be sampled from the same general area, given increased sampling effort. The Chao2 asymptotic species richness estimator was 360 species (with rather wide 95% confidence intervals of 315 and 435).

We consider fourteen of the species recorded as new for Tasmania (**Table 1**),

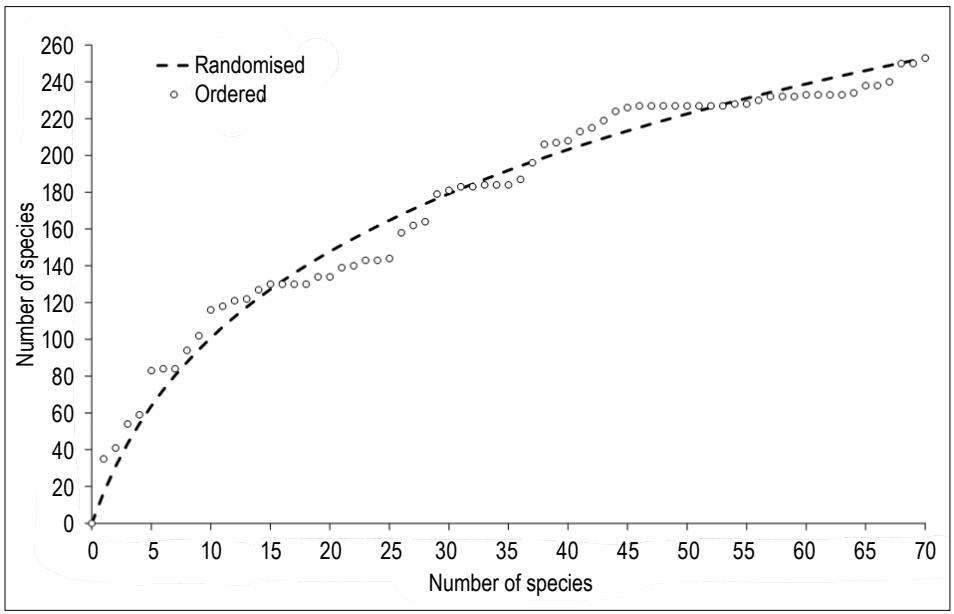

Fig. 4. Ordered (open circles) and randomised (dotted line) species accumulation curve for marine molluscs from our sampling program, based on the occurrence of all 253 species across 70 samples.

in the sense that there are no existing Tasmanian records in the Atlas of Living Australia (2014) (the Atlas includes databased mollusc records from TMAG as well as those of the Queen Victoria Museum and Art Gallery, plus state museums nationally). Of these species, half were already known from southern Australian waters (generally from New South Wales through Victoria to South Australia or Western Australia, but excluding Tasmania). One of these, *Clio recurva*, is a widespread oceanic pelagic 'sea-butterfly' whose delicate shells sink to the ocean-floor upon death of the occupant; these shells can be a dominant component of deep-sea benthic biogenic 'ooze' (Herring, 2002). For the other half, their occurrence in south-east Tasmanian waters represents a range extension of several hundred kilometres over what would previously have been considered the southern limits of an eastern Australian distribution generally spanning Queensland and New South Wales.

We consider that 67 of the species recorded are genuinely 'offshore' species that (unlike 'inshore' species) would rarely, if ever, turn up on a Tasmanian beach. Given the lack of readily available illustrations of many of these species, the figures that follow are used to illustrate some of these and their close congeners, as well as some of the other species of note that we recorded.

Some families of molluscs evidently contain many more offshore than inshore

Table 1. The 14 mollusc species recorded during this study and considered new for Tasmania.

SPECIES	COMMENTS
Lamellileda typica	A bivalve found in offshore waters around SE Australia; taxonomic status and distribution uncertain. See **Fig. 7**.
Limopsis bassi	A bivalve found in offshore waters around SE Australia; precise distribution uncertain due to past taxonomic confusion. See **Fig. 7**.
Myadora antipodum	A bivalve that attaches itself to other bivalves, living subtidally and in offshore waters around SE Australia from SE QLD to SA. N.B. Species in this genus are poorly circumscribed; identifications are therefore tentative. See **Fig. 5**.
Myadora royana	A bivalve that attaches itself to other bivalves, living subtidally and in offshore waters around southern Australia from SE NSW to SW WA. N.B. Species in this genus are poorly circumscribed; identifications are therefore tentative. See **Fig. 5**.
Thracia speciosa	A bivalve that lives subtidally and in offshore waters around SE Australia from SE QLD to SA.
Cadella subdiluta	A bivalve that lives subtidally and in offshore waters around SE Australia from E VIC to SA. Only recently recognised as a separate taxon distinct from two SE Australian congenerics (neither of which is yet recorded from TAS). See **Fig. 7**.
Epitonium coretum	A gastropod associated with anemones, occurring subtidally and in offshore waters around southern Australia from CE NSW to SW WA. See **Fig. 9**.
Tubercliopsis quinquepila	A gastropod associated with sponges, occurring subtidally and in offshore waters in SE Australia (chiefly NSW). N.B. Species in this family (Cerithiopsidae) are poorly circumscribed; identifications are therefore tentative. See **Fig. 9**.
Socienna cylindricum	A gastropod associated with sponges, occurring subtidally and in offshore waters in SE Australia (chiefly NSW). N.B. Species in this family (Cerithiopsidae) are poorly circumscribed; identifications are therefore tentative. See **Fig. 9**.
Dolicholatirus thesaurus	A gastropod known from a handful of records from offshore waters in E Australia (QLD and NSW). See **Fig. 9**.
Filodrillia ordinata	A gastropod known from a handful of records from offshore waters in SE Australia (NSW). See **Fig. 9**.
Vexitomina garrardi	A gastropod that lives subtidally and in offshore waters in SE Australia, from SE QLD to E Vic. N.B. Species in this genus are poorly circumscribed; identifications are therefore tentative. See **Fig. 9**.
Guraleus tasmantis	A gastropod known from a handful of records from offshore waters in SE Australia (NSW). See **Fig. 9**.
Coralliophila wilsoni	A gastropod that lives subtidally and in offshore waters in southern Australia, perhaps from C NSW to SW WA. N.B. The southern Australian species in this genus have been the subject of much taxonomic confusion, so this species' true range remains unknown. See **Fig. 9**.
Clio recurva	A pelagic gastropod found in warmer oceanic waters worldwide; on death, the shells of this species can eventually sink to the sea-bed but are rarely detected in coastal samples. See **Fig. 9**.

Fig. 5. The six dredged species in the genus *Myadora* (Myochamidae).
Upper row L–R. *M. albida*, 10 mm; *M. royana*, 20 mm (new for Tasmania); *M. complexa* 18 mm.
Lower row L–R. *M. antipodum*, 14 mm (new for Tasmania); *M. brevis*, 23 mm; *M. rotundata* 17 mm.
Images: Robert de Little

species in our region. One example is the bivalve family Myochamidae. On local beaches, one might expect to find only three species (*Myadora brevis*, *M. rotundata* and *M. complexa*); yet we found not only these three but also three additional species in our dredging samples (**Fig. 5**). The gastropod 'screw-shell' family Turritellidae is similarly much more diverse in its offshore fauna (Figure 6); of the nine species recorded, only *Maoricolpus roseus*, *Colpospira australis* and *Gazameda gunnii* are regularly beached. The last of these screw-shell species is listed as Vulnerable under the Tasmanian Threatened Species Protection Act (State of Tasmania, 1995), perhaps because of the perceived threat of competition from the introduced *M. roseus*. In many of our samples, *M. roseus* was indeed often very common (and probably occurred in more samples than indicated in Appendix 2), but *G. gunnii* was by no means rare, being recorded from almost half of all samples, generally as live individuals. The gastropod 'auger' family Terebridae (Figure 6) is yet another with fewer inshore (3) than offshore (6 in total) species recorded, one of which (*Terebra lauretanae*) had in Tasmanian waters previously only been recorded from deep water east of Flinders Island.

Figs 7 & **8** illustrate some additional bivalves and gastropods, respectively, representing largely offshore species which would rarely, if ever, be beached. Figure 9 illustrates some of the remaining species considered new for Tasmania.

Fig. 6. The nine dredged species from the family Turritellidae, and the six from the family Terebridae.
Upper L–R. *Colpospira accisa* 22 mm; *C. atkinsoni* 18 mm; *C. australis* 19 mm; *C. circumligata* 17 mm; *C. quadrata* 15 mm; *C. smithiana* 16 mm; *C. wollumbi* 4.5 mm.
Lower L–R. *Gazameda gunnii* 41 mm; *Maoricolpus roseus* 56 mm; *Duplicaria kieneri* 27 mm; *D. ustulata* 27 mm; *Terebra assecla* 21 mm; *T. lauretanae* 21 mm; *T. tristis* 9.0 mm; *Hastula brazier* 26 mm.
Images: Robert de Little

Conversely, our dredging produced empty shells of some very evidently 'inshore' species, sometimes from depths well beyond the range at which they would be expected to live. Examples include the intertidal, estuarine clams *Katelysia scalarina* and *K. rhytiphora*, which were dredged off Port Arthur from depths of 34 m and 120 m respectively, and the air-breathing rocky-shore siphon-shell *Siphonaria funiculata*, dredged from 36 m off the Forestier Peninsula.

DISCUSSION

Our study revealed the existence of a rich marine mollusc fauna off the south-east coast of Tasmania in water depths down to 130 m: 253 shelled mollusc species represents 18% of the total for Tasmania, based on those listed in Grove (2014). That this habitat is poorly known is demonstrated by the fact that fourteen of our species records (6%) appear to be new for Tasmania; while many others represent species that are known from very few Tasmanian records in total. Yet our sampling still only revealed a relatively small

Fig. 7. Some additional dredged species of bivalve.
Top L–R. *Propeleda ensicula* 11 mm; *Lamellileda typica* 10 mm; *Cuspidaria exarata* 32 mm.
Second L–R. *Glycymeris mayi* 14 mm; *Limopsis bassi* 7 mm (new for Tasmania); *Limopsis penelevis* 26 mm; *Thyasira adelaideana* 10 mm; *Amygdalum striatum* 49 mm.
Third L–R. *Bathycardita raouli* 27 mm; *Centrocardita rosulenta* 27 mm; *Cardiolucina crassilirata* 11 mm.
Bottom L–R. *Gari modesta* 16 mm; *Cadella subdiluta* 11 mm (new for Tasmania); *Poromya illevis* 16 mm.
Images: Robert de Little

proportion of the potential offshore species-pool, as gauged by the lack of asymptote on our species accumulation curve, and the statistical estimate of the asymptote suggesting the likely existence of more than 100 further sampleable species (although with a wide error margin, and with the caveat that our species-by-sample records were incomplete, as mentioned earlier). As a further measure of the extent of under-sampling, it is instructive to browse the illustrations of Tasmanian shells in May and MacPherson (1958), in which appear many additional deep-water species described as

Fig. 8. Some additional dredged species of gastropod.
Top L–R. *Emarginula dilecta* 17 mm; *E. superba* 28 mm; *Astele subcarinatum* 28 mm; *Spectamen philippensis* 8.4 mm.
Middle L–R. *Alvania filocincta* 3.0 mm; *Rissoina royana* 12 mm; *Sassia kampyla* 20 mm; *Isotriphora vercoi* 3.7 mm; *Malluvium devotus* 14 mm; *Fax tenuicostata* 19 mm.
Bottom L–R. *Austrodrillia saxea* 4.9 mm; *Epidirella tasmanica* 24 mm; *Austroginella vercoi* 7 .0 mm; *Dentimargo mayii* 9.8 mm; *Domiporta strangei* 13 mm; *Typhis phillipensis* 21 mm.
Images: Robert de Little

having been obtained from 'off Cape Pillar' or 'off Schouten Island'. Perhaps we would need to dredge deeper than 130 m, or wider than the Forestier and Tasman Peninsulas, to ascertain the current status of these and maybe further unrecorded species. To this end we have now secured a renewal of our dredging permit for a further 12 months, with an increased range to encompass the area to the east of the southern end of Maria Island.

Many of our identifications remain tentative. One reason for tentative identifications can be the poor condition of the shell itself, which could have been sitting on the sea-floor for years since the death of its occupant. Beyond this issue, the local marine mollusc fauna contains a number of species complexes that are very difficult to identify even with intact shells, perhaps because speciation is incomplete or perhaps

Fig. 9. The dredged species considered new for Tasmania, beyond those already presented in Figs 5 to 8.
Upper L–R. *Dolicholatirus thesaurus* 23 mm; *Filodrillia ordinata* 7.7 mm; *Guraleus tasmantis* 9.0 mm; *Vexitomina garrardi* 22 mm; *V. agnewi* 13 mm.
Lower L–R. *Epitonium coretum* 16 mm; *Tubercliopsis quiquepila* 12 mm; *Socienna cylindricum* 6 mm; *Coralliophila wilsoni* 13 mm; *Clio recurva* 19 mm.
Images: Robert de Little

because the species-level differences in shell features are inconsistent or inadequately characterised in the literature. This is a common problem among members of almost any taxonomic group worldwide, but may be particularly so among the south-east Australian marine fauna. It could, at least in part, be a result of the interplay,

over tens or hundreds of thousands of years, between the orientation of the major coastlines, fluctuating influences of major warm-water and cool-water currents, and sea-level changes (Waters *et al.*, 2010). During the glacial maxima of the Pleistocene, an isthmus intermittently connected the landmasses of Tasmania and Victoria, isolating populations of warmer-water marine species to the east and west of the isthmus (because the only physical connection would have been through inhospitably cold water around the south of Tasmania). In some species, the separation gave rise to sibling species that remain genetically segregated despite the lack of a physical boundary today; others show regional variation in morphology or genetic structuring consistent with a level of past isolation that only partially disrupted interbreeding once populations were free to intermix (Waters, 2008). We suspect that these phenomena may account for the difficulties we had in putting names to some members of the genera *Myadora*, *Neotrigonia*, *Purpurocardia*, *Notocypraea, Fax*, *Duplicaria, Vexitomina* and perhaps others. For *Myadora*, for instance, the most recent publications differ significantly in their interpretation of species boundaries. We have followed the more recent (and conservative) of these (Hüber, 2010).

One remarkable feature of the sampled mollusc fauna is its dissimilarity in composition from what can be found on local beaches. Over a quarter of all species recorded are 'offshore' species that would seldom, if ever, be found beached, even though our sampling may only have been within a few kilometres of the shore. It would seem that there are no local currents capable of wafting these species shorewards from these depths. On the other hand, the shells of some well-known intertidal species had made their way into much deeper water, presumably carried out on currents. These patterns mean that we can probably be fairly sure that the 'offshore' species had been living close to where they were dredged, even if the dredging only produced empty shells; however, logically we cannot conclude that 'inshore' species also live offshore.

Several of our new species for Tasmania were already well known from southern Australian waters from New South Wales to South Australia or Western Australia; finding these species for the first time in Tasmanian waters may reflect the poor state of knowledge of the local fauna. However, several others were previously considered to occur only along the eastern seaboard of mainland Australia, primarily New South Wales. Finding them for the first time off south-east Tasmania could conceivably reflect recent colonisation. The same could be true for further species that in Tasmanian waters were previously only known from the far north-east of the state – such as the auger *Terebra lauretanae* and the top-shell *Clanculus dunkeri*. The southwards-flowing East Australian Current seasonally extends down the east coast of Tasmania in a series of eddies that can be several hundred metres deep, raising local water temperatures by several degrees and carrying the planktonic eggs and larvae of many warmth-adapted benthic species. This current has strengthened markedly in recent years (Suthers *et al.*, 2011), and may have enabled some mollusc species to spread south into south-east Tasmanian waters from their more northern core range.

The dominance of the feral screw-shell *Maoricolpus roseus* in many of our samples, from a wide range of depths, confirms a phenomenon that is well-known: the species has spread widely from its point of introduction in the Derwent Estuary in the 1920s, and has now been found living at depths down to 200 m (Probst and Crawford, 2008). In many places, this filter-feeding species must now be sequestering a high proportion of the edible detritus that would otherwise feed native species. Despite this, it appears not yet to have excluded all competition, since we often found several native filter-feeders, including several screw-shell species, living alongside it. The other feral species detected, *Corbula gibba*, seems to represent a range extension from its assumed point of introduction, in about 1996, in the Derwent / d'Entrecasteaux Channel area (Whitehead, 1998). It remains to be seen whether its preference for sheltered, organic-rich silty substrates may limit its spread further east around the open coast.

CONCLUSION

What started as a simple trial of a home-made dredge turned into a remarkably productive sampling program that revealed the existence of a rich and hitherto unsuspected marine mollusc fauna in the waters off south-east Tasmania. The sampled fauna includes many species whose core ranges lie further north and which are newly recorded for Tasmania; and the fauna has a high proportion of 'offshore' species that probably never wash up on Tasmanian beaches. The curated material and data arising from this program comprise a valuable resource for understanding species distributions in an era and region of rapid environmental change. In future years, extending the surveys further offshore and along the coast will enhance the program's value further.

Acknowledgements

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Appendix 1. Details of dredging stations, sampling dates and depths.
*Stations from which no mollusc samples were retrieved (n = 7).

DATE	STATION	VICINITY	LATITUDE	LONGITUDE	DEPTH (m)
3 September 2013	01	Visscher Island	–42.8410	147.9412	40
3 September 2013	02	Visscher Island	–42.8413	147.9592	41
3 September 2013	03	Visscher Island	–42.8462	148.0045	58
3 September 2013	04	Visscher Island	–42.8464	147.9968	60
3 September 2013	05	Visscher Island	–42.8521	147.9721	38
3 September 2013	06	Visscher Island	–42.8543	147.9624	30
3 September 2013	07	Visscher Island	–42.8547	147.9534	34
3 September 2013	08	Visscher Island	–42.8426	147.9314	32
23 October 2013	09	Visscher Island	–42.8515	147.9668	36
23 October 2013	10	Visscher Island	–42.8576	147.9729	34
23 October 2013	11	Visscher Island	–42.8476	148.1085	70
23 October 2013	12	Visscher Island	–42.8486	148.0519	75
23 October 2013	13	Visscher Island	–42.8681	148.0171	70
23 October 2013	14	Visscher Island	–42.8797	147.9838	36
23 October 2013	15	Visscher Island	–42.8528	147.9653	35
23 October 2013	16	Visscher Island	–42.8543	147.9569	33
23 October 2013	17	Visscher Island	–42.8491	147.9351	31
23 October 2013	18	Visscher Island	–42.8441	147.9265	23
11 November 2013	19	Visscher Island	–42.8454	147.9529	38
11 November 2013	20	Visscher Island	–42.8499	147.9658	37
11 November 2013	21	Visscher Island	–42.8518	147.9673	37
11 November 2013	22	Visscher Island	–42.8623	147.9604	24
11 November 2013	23	Visscher Island	–42.8705	147.9466	20
11 November 2013	24*	Visscher Island	–42.8726	147.9394	12
11 November 2013	25	Visscher Island	–42.8512	147.9358	30
11 November 2013	26	Marion Bay	–42.8259	147.9369	40
11 November 2013	27	Marion Bay	–42.8246	147.8999	22
16 January 2014	28	Visscher Island	–42.8522	147.9656	35
16 January 2014	29	Hippolyte Rocks	–42.9517	148.1017	90
16 January 2014	30	Hippolyte Rocks	–43.0132	148.1472	100
16 January 2014	31	Hippolyte Rocks	–43.0625	148.1045	96
17 January 2014	32	Fortescue Bay	–43.1259	147.9729	28
17 January 2014	33	Cape Pillar	–43.1854	147.8914	43

DATE	STATION	VICINITY	LATITUDE	LONGITUDE	DEPTH (m)
17 January 2014	34*	Port Arthur	–43.1564	147.8817	40
17 January 2014	35*	Port Arthur	–43.2143	147.9207	69
5 February 2014	36	Port Arthur	–43.2549	147.9538	120
5 February 2014	37	Port Arthur	–43.1848	147.8811	29
5 February 2014	38	Port Arthur	–43.1808	147.8785	96
5 February 2014	39	Port Arthur	–43.1466	147.8749	28
13 February 2014	40	Port Arthur	–43.1697	147.8819	43
13 February 2014	41	Port Arthur	–43.2197	147.9101	80
13 February 2014	42	Port Arthur	–43.2582	147.9319	122
13 February 2014	43	Port Arthur	–43.2797	147.9466	130
13 February 2014	44	Port Arthur	–43.2582	147.9675	120
13 February 2014	45	Port Arthur	–43.2356	147.9755	74
13 February 2014	46	Port Arthur	–43.2278	147.9709	54
13 February 2014	47	Port Arthur	–43.2022	147.9092	44
13 February 2014	48	Port Arthur	–43.1842	147.8828	29
13 February 2014	49*	Port Arthur	–43.1756	147.8767	38
24 February 2014	50	Port Arthur	–43.1747	147.8761	38
24 February 2014	51	Port Arthur	–43.1840	147.8767	29
24 February 2014	52	Port Arthur	–43.1830	147.8691	16
24 February 2014	53	Port Arthur	–43.1893	147.8778	28
24 February 2014	54	Port Arthur	–43.1858	147.8798	36
24 February 2014	55	Port Arthur	–43.1776	147.8781	36
24 February 2014	56	Port Arthur	–43.1820	147.8640	16
24 February 2014	57	Port Arthur	–43.1882	147.8745	19
24 February 2014	58*	Port Arthur	–43.1774	147.8902	24
24 February 2014	59	Port Arthur	–43.1636	147.8860	40
3 March 2014	60	Port Arthur	–43.2260	147.8760	84
3 March 2014	61*	Port Arthur	–43.2530	147.8683	109
3 March 2014	62	Port Arthur	–43.2527	147.8421	98
3 March 2014	63	Port Arthur	–43.2303	147.8205	62
3 March 2014	64	Port Arthur	–43.1985	147.8709	14
3 March 2014	65	Port Arthur	–43.2602	147.9284	122
3 March 2014	66	Port Arthur	–43.2524	147.9473	117
20 March 2014	67	Port Arthur	–43.2651	147.9726	125
20 March 2014	68	Port Arthur	–43.2626	147.9664	122
20 March 2014	69*	Port Arthur	–43.3143	147.9599	131
20 March 2014	70	Port Arthur	–43.2204	147.8995	81

Appendix 2. Taxonomic list of the 253 mollusc species identified from 70 dredge samples collected off the Forestier and Tasman Peninsulas, Tasmania, over nine trips from September 2013 to March 2014. Nomenclature and list order follows Grove (2014). Numerals following the species name refer to the dredge sample-numbers (listed in Appendix 1) from which specimen(s) were identified. * - species for which specimen(s) have been registered into TMAG's collections (n = 139). ^ - species for which specimen(s) have been retained by RDL (n = 105). # - species that are rarely, if ever, found beached in Tasmania (n = 67). > - species apparently newly recorded from Tasmanian waters (n = 15). + - feral species.

BIVALVIA

NUCULANIDAE

*^#>*Lamellileda typica* Cotton, 1930: Station 70; depth 81 m

Nuculana crassa (Hinds, 1843): Station 44, 68; depth 120, 122 m

*^#*Propeleda ensicula* (Angas, 1877): Station 36, 68; depth 120, 122 m

NUCULIDAE

*^#*Ennucula obliqua* (Lamarck, 1819): Station 1, 3, 39, 40, 48, 50, 55, 59, 65; depth 28, 29, 36, 38, 40, 43, 58, 122 m

GLYCYMERIDIDAE

*^#*Glycymeris mayi* Cotton, 1947: Station 5, 30, 31, 36, 41, 43, 62, 65, 67, 68;depth 38, 80, 96, 98, 100, 120, 122, 125, 130 m

**Tucetona flabellata* (Tenison Woods, 1878): Station 36, 41, 44, 68; depth 80, 120, 122 m

**Glycymeris striatularis* (Lamarck, 1819): Station 1, 2, 8, 9, 10, 14, 15, 27, 28, 38, 51, 52, 57, 67, 70; depth 16, 19, 22, 29, 32, 34, 35, 36, 38, 40, 41, 81, 96, 125 m

LIMOPSIDAE

^#>*Limopsis bassi* E.A. Smith, 1885: Station 44; depth 120 m

*^#*Limopsis penelevis* Verco, 1907: Station 29, 30, 31, 36, 41, 42, 43, 44, 65, 68; depth 80, 90, 96, 100, 120, 122, 130 m

PHILOBRYIDAE

Philobrya crenatulifera (Tate, 1892): Station 9; depth 36 m

Philobrya rubra (Hedley, 1904): Station 9, 65; depth 36, 122 m

LIMIDAE

**Lima nimbifer* Iredale, 1924: Station 45, 52, 56; depth 16, 74 m

**Limaria imitans* A. Adams & Reeve, 1850: Station 14, 65; depth 36, 122 m

**Limatula strangei* (Sowerby, 1872): Station 5, 10, 31, 43, 62; depth 34, 38, 96, 98, 130 m

MYTILIDAE

*^#*Amygdalum striatum* (Hutton, 1873): Station 1, 4, 12, 13, 29, 70; depth 40, 60, 70, 75, 81, 90 m

Austromytilus rostratus (Dunker, 1857): Station 44; depth 120 m

Gibbomodiola albicostata (Lamarck, 1819): Station 4, 29, 38, 52, 68; depth 16, 60, 90, 96, 122 m

Modiolus areolatus Gould, 1850: Station 3, 6, 14, 20, 30, 31, 67; depth 30, 36, 37, 58, 96, 100, 125 m

**Musculus impactus* (Hermann, 1782): Station 23, 36; depth 20, 120 m

Mytilus galloprovincialis Lamarck, 1819: Station 5, 26; depth 38, 40 m

Xenostrobus pulex (Lamarck, 1819): Station 68; depth 122 m

OSTREIDAE

Ostrea angasi Sowerby, 1871: Station 1, 2, 3, 4, 5; depth 38, 40, 41, 58, 60 m

PECTINIDAE

**Mimachlamys asperrima* (Lamarck, 1819): Station 2, 3, 4, 9, 13, 14, 27, 28, 36, 42; depth 22, 35, 36, 41, 58, 60, 70, 120, 122 m

^*Notochlamys hexactes* (Péron in Lamarck, 1819): Station 3; depth 58 m

^*Pecten fumatus* Reeve, 1852: Station 1, 3, 4, 5, 28, 29, 30, 37, 38, 46, 51, 53, 55, 57, 63; depth 19, 28, 29, 35, 36, 38, 40, 54, 58, 60, 62, 90, 96, 100 m

*^#*Talochlamys pulleineana* (Tate, 1887): Station 12, 28, 29, 30, 31, 36, 41, 43, 44, 62, 65, 68, 70; depth 35, 75, 80, 81, 90, 96, 98, 100, 120, 122, 130 m

BIVALVIA *Cont'd*

PROPEAMUSSIIDAE
**#Parvamussium thetidis* (Hedley, 1902): Station 26; depth 40 m

VULSELLIDAE
Electroma papilionacea (Lamarck, 1819): Station 4; depth 60 m

TRIGONIIDAE
**^#Neotrigonia gemma* Iredale, 1924: Station 29, 31, 41, 60, 63, 64, 65, 67, 68, 70; depth 14, 62, 80, 81, 84, 90, 96, 122, 125 m
**Neotrigonia margaritacea* (Lamarck, 1804): Station 3, 4, 6, 9, 10, 12, 14, 16, 18, 28, 38, 41, 48, 51, 52, 53, 54, 57, 62, 67, 68, 70; depth 16, 19, 23, 28, 29, 30, 33, 34, 35, 36, 38, 58, 60, 75, 80, 81, 96, 98, 122, 125 m

HIATELLIDAE
**Hiatella australis* (Lamarck, 1818): Station 12, 29, 44, 64; depth 14, 75, 90, 120 m
Panopea australis Sowerby, 1833: Station 41, 44, 68; depth 80, 120, 122 m

CORBULIDAE
**^+Corbula gibba* (Olivi, 1792): Station 39, 59; depth 28, 40 m

CUSPIDARIIDAE
**#Cuspidaria angasi* (E. A. Smith, 1885): Station 60; depth 84 m
**#Cuspidaria exarata* Verco, 1908: Station 29, 43, 65; depth 90, 122, 130 m

CLEIDOTHAERIDAE
Cleidothaerus albidus (Lamarck, 1819): Station 5, 50; depth 38 m

MYOCHAMIDAE
**^#Myadora albida* Tenison Woods, 1876: Station 38, 45, 68; depth 74, 96, 122 m
**^#>Myadora antipodum* E. A. Smith, 1881: Station 11, 31, 62, 65, 68; depth 70, 96, 98, 122 m
**Myadora brevis* Sowerby, 1827: Station 1, 28, 32, 44, 68; depth 28, 35, 40, 120 m
**^Myadora complexa* Iredale, 1924: Station 3, 4, 6, 8, 9, 10, 19, 21, 23, 28, 29, 30, 37, 38, 41, 43, 44, 47, 48, 51, 53, 54, 57, 59, 63, 64, 65; depth 14, 19, 20, 28, 29, 30, 32, 34, 35, 36, 37, 38, 40, 44, 58, 60, 62, 80, 90, 96, 100, 120, 122, 130 m
**Myadora rotundata* Sowerby, 1875: Station 10, 41, 44, 68; depth 34, 80, 120, 122 m
**^#>Myadora royana* Iredale, 1924: Station 15, 19, 51; depth 29, 35, 38 m
**^#Myochama anomioides* Stutchbury, 1830: Station 5, 10, 28; depth 34, 35, 38 m

POROMYIDAE
**^#Poromya illevis* Hedley, 1913: Station 29, 65; depth 90, 122 m

PERIPLOMATIDAE
Offadesma angasi Crosse & Fischer, 1864: Station 27; depth 22 m

THRACIIDAE
^#Thracia myodoroides E. A. Smith, 1885: Station 5, 9; depth 36, 38 m
**#>Thracia speciosa* Angas, 1869: Station 38; depth 96 m
**Thraciopsis peroniana* Iredale, 1924: Station 44, 68; depth 120, 122 m

CARDIIDAE
^Acrosterigma cygnorum (Deshayes, 1855): Station 21; depth 37 m
Fulvia tenuicostata (Lamarck, 1819): Station 3; depth 58 m
**Nemocardium thetidis* (Hedley, 1902): Station 1,
3, 4, 5, 7, 8, 9, 10, 12, 13, 15, 21, 23, 29, 36, 38, 40, 41, 43, 45, 51, 53, 57, 65, 67, 68, 70; depth 19, 20, 28, 29, 32, 34, 35, 36, 37, 38, 40, 43, 58, 60, 70, 74, 75, 80, 81, 90, 96, 120, 122, 125, 130 m

CARDITIDAE
**^#Bathycardita raouli* (Angas, 1872): Station 1, 3, 4, 5, 41, 60, 62, 70; depth 38, 40, 58, 60, 80, 81, 84, 98 m
^Cardita aviculina Lamarck, 1819: Station 25, 46; depth 30, 54 m
**^Centrocardita rosulenta* (Tate, 1887): Station 29, 31, 41, 43, 46, 62, 65, 67, 68; depth 54, 80, 90, 96, 98, 122, 125, 130 m
**Purpurocardia amabilis* (Deshayes, 1854): Station 9, 10, 12, 21, 26, 28, 30, 31, 36, 38, 41, 43, 65, 67, 68, 70; depth 34, 35, 36, 37, 38, 40, 75, 80, 81, 96, 100, 120, 122, 125, 130 m
**Purpurocardia bimaculata* (Deshayes, 1854): Station 1, 2, 3, 4, 5, 9, 15, 21, 27, 28, 30, 51, 56, 59, 65; depth 16, 22, 29, 35, 36, 37, 38, 40, 41, 58, 60, 100, 122 m

BIVALVIA *Cont'd*

CARDITIDAE *cont'd*
*#*Purpurocardia cavatica* (Hedley, 1902): Station 1, 3, 21, 23, 29, 41, 43, 44, 62, 65, 68; depth 20, 37, 38, 40, 58, 80, 90, 98, 120, 122, 130 m
*#*Vimentum dilectum* (E. A. Smith, 1885): Station 43; depth 130 m

CRASSATELLIDAE
**Eucrassatella kingicola* (Lamarck, 1805): Station 16, 41; depth 33, 38, 80 m

CYAMIIDAE
Reloncavia mactroides Tate & May, 1900: Station 26; depth 40 m

GALEOMMATIDAE
Mysella donaciformis Angas, 1878: Station 26; depth 40 m

LUCINIDAE
*^*Callucina lacteola* (Tate, 1897): Station 1, 9, 10; depth 34, 36, 40 m
*^*Cardiolucina crassilirata* (Tate, 1887): Station 10, 19; depth 34, 38 m
Divalucina cumingi (A. Adams & Angas, 1863): Station 1, 4, 10, 15, 23, 63; depth 20, 34, 35, 40, 60, 62 m
Epicodakia tatei (Angas, 1879): Station 46; depth 54 m
*^*Myrtea botanica* Hedley, 1918: Station 41, 51, 55; depth 29, 36, 80 m
Wallucina assimilis (Angas, 1868): Station 5, 26, 32, 38, 40, 50, 55; depth 28, 36, 38, 40, 43, 96 m

THYASIRIDAE
#^*Thyasira adelaideana* (Iredale, 1930): Station 40; depth 43 m

UNGULINIDAE
^*Diplodonta tasmanica* Tenison Woods, 1877: Station 5, 70; depth 38, 81 m
*^*Felaniella globularis* (Lamarck, 1818): Station 29, 43, 44, 70; depth 81, 90, 120, 130 m
**Numella adamsi* (Angas, 1867): Station 9, 37, 40, 45; depth 29, 36, 43, 74 m

MACTRIDAE
Mactra jacksonensis E. A. Smith, 1885: Station 37, 38; depth 29, 96 m
Spisula trigonella (Lamarck, 1818): Station 37; depth 29 m

MESODESMATIDAE
Atactodea erycinaea (Lamarck, 1819): Station 37; depth 29 m
Paphies elongata (Reeve, 1854): Station 10, 64; depth 14, 34 m

SOLENIDAE
**Solen vaginoides* (Lamarck, 1818): Station 5, 14, 22, 38, 50, 51, 57; depth 19, 24, 29, 36, 38, 96 m

PSAMMOBIIDAE
Gari livida (Lamarck, 1818): Station 33, 37, 38, 40, 47, 51, 52, 53, 54, 56, 57, 64; depth 14, 16, 19, 26, 28, 29, 30, 43, 44, 96 m
^#Gari modesta* (Deshayes, 1855): Station 9, 10, 13, 16, 17, 28, 30, 31, 38, 43, 44, 51, 52, 53, 59, 65, 67, 68, 70; depth 16, 28, 29, 31, 33, 34, 35, 36, 38, 40, 70, 81, 96, 100, 120, 122, 125, 130 m

TELLINIDAE
^#>*Cadella subdiluta* (Tate, 1887): Station 38; depth 96 m

VENERIDAE
Bassina disjecta (Perry, 1811): Station 2, 4, 5, 22, 52; depth 16, 24, 38, 41, 60 m
*^*Callista diemenensis* (Hanley, 1844): Station 1, 2, 3, 4, 5, 9, 10, 14, 15, 20, 21, 27, 28, 31, 40, 51, 52, 53, 55, 57, 62, 70; depth 16, 19, 22, 28, 29, 34, 35, 36, 37, 38, 40, 41, 43, 58, 60, 81, 96, 98 m
**Callista kingii* (Gray, 1826): Station 5, 18; depth 23, 38 m
*^*Chioneryx cardioides* (Lamarck, 1818): Station 1, 2, 5, 6, 9, 10, 21, 23, 28; depth 20, 30, 34, 35, 36, 37, 38, 40, 41 m
*^*Dosinia caerulea* Reeve, 1850: Station 8, 21, 28, 38, 52, 53, 57, 64; depth 14, 16, 19, 28, 32, 35, 37, 96 m
*^*Dosinia grata* Deshayes, 1853: Station 1, 4, 5, 7, 11, 28, 29, 32, 36, 45, 53, 54, 55, 65, 68, 70; depth 28, 30, 34, 35, 36, 38, 40, 60, 70, 74, 81, 90, 120, 122 m
**#Gouldiopa australis* Angas, 1865: Station 38; depth 96 m
Katelysia rhytiphora (Lamy, 1935): Station 44; depth 120 m
Katelysia scalarina (Lamarck, 1818): Station 10, 37; depth 29, 34 m

BIVALVIA *Cont'd*

VENERIDAE *Cont'd*
Placamen placidum (Philippi, 1844): Station 1, 3, 4, 14, 40, 51, 53, 55; depth 28, 29, 36, 40, 43, 58, 60 m
**Tawera gallinula* (Lamarck, 1818): Station 5, 10, 15, 28, 30, 33, 37, 38, 43, 51, 52, 53, 55, 56, 57, 59, 64, 65, 68; depth 14, 16, 19, 26, 28, 29, 34, 35, 36, 38, 40, 96, 100, 122, 130 m
^Tawera lagopus (Lamarck, 1818): Station 22; depth 24 m

UNPLACED
^*#Bivalvia unplaced 01: Station 38, 44; depth 96, 120 m
*#Bivalvia unplaced 02: Station 68; depth 122 m

CEPHALOPODA

OCTOPODIDAE
**Octopus* unplaced: Station 4, 51, 53; depth 28, 29, 60 m

GASTROPODA

EOACMAEIDAE
**^Eoacmaea calamus* (Crosse & Fischer, 1864): Station 5, 15, 21, 22, 27, 52, 56; depth 16, 22, 24, 35, 37, 38 m

LEPETIDAE
Propilidium tasmanicum (Pilsbry, 1895): Station 26; depth 40 m

LOTTIIDAE
Patelloida latistrigata (Angas, 1865): Station 56; depth 16 m
Patelloida victoriana (Singleton, 1937): Station 14; depth 36 m

PATELLIDAE
Scutellastra peronii (Blainville, 1825): Station 9; depth 36 m

PHASIANELLIDAE
Phasianella australis (Gmelin, 1791): Station 26; depth 40 m
**Phasianella ventricosa* Swainson, 1822: Station 68; depth 122 m

FISSURELLIDAE
Amblychilepas javanicensis (Lamarck, 1822): Station 26; depth 40 m
^Cosmetalepas concatenatus (Crosse & Fischer, 1864): Station 67; depth 125 m
Emarginula candida (A. Adams, 1851): Station 37, 64; depth 14, 29 m
**^Emarginula dilecta* (A. Adams, 1851): Station 29, 43, 68; depth 90, 122, 130 m
**^#Emarginula superba* (Hedley, 1906): Station 29, 31, 42, 45, 66, 67, 68; depth 74, 90, 96, 117, 122, 125 m
Macroschisma tasmaniae Sowerby, 1866: Station 21; depth 37 m

CALLIOSTOMATIDAE
Astele armillata (Wood, 1828): Station 70; depth 81 m
**^Astele subcarinata* (Swainson, 1855): Station 14, 29, 31, 43, 44, 68; depth 36, 90, 96, 120, 122, 130 m
**Calliostoma legrandi* (Tenison Woods, 1876): Station 1, 2, 7, 15, 19, 20, 26, 27, 28, 41; depth 22, 34, 35, 37, 38, 40, 41, 80 m

TROCHIDAE
Bankivia fasciata (Menke, 1830): Station 10, 26, 56, 64, 68; depth 14, 16, 34, 40, 122 m
Chlorodiloma odonte (Wood, 1828): Station 10; depth 34 m
**^Clanculus aloysii* Tenison Woods, 1876: Station 2, 5, 10, 14, 15, 20, 23, 26, 27, 28, 52, 53, 56, 70; depth 16, 20, 22, 28, 34, 35, 36, 37, 38, 40, 41, 81 m
**Clanculus dunkeri* (Koch, 1843): Station 10; depth 34 m
Clanculus limbatus (Quoy & Gaimard, 1834): Station 2, 5, 10, 18, 68; depth 23, 34, 38, 41, 122 m
Clanculus plebejus (Philippi, 1851): Station 9; depth 36 m

GASTROPODA *Cont'd*

TROCHIDAE
Gibbula hisseyiana (Tenison Woods, 1876): Station 56; depth 16 m
**Phasianotrochus eximius* (Perry, 1811): Station 10, 40, 68; depth 34, 43, 122 m
**Phasianotrochus irisodontes* (Quoy & Gaimard, 1834): Station 10, 40, 56, 59; depth 16, 34, 40, 43 m
**Phasianotrochus rutilis* (A. Adams, 1853): Station 5, 12, 15, 18; depth 23, 35, 38, 75 m

SOLARIELLIDAE
**^#Spectamen philippensis* Watson, 1881: Station 6, 9, 30, 45, 65, 68; depth 30, 36, 38, 74, 100, 122 m

TURBINIDAE
**Bellastraea aurea* (Jonas, 1844): Station 2, 5, 21, 27, 46, 56, 64; depth 14, 16, 22, 37, 38, 41, 54 m

BATILLARIIDAE
Zeacumantus diemenensis (Quoy & Gaimard, 1834): Station 5, 10; depth 34, 38 m

CERITHIIDAE
**^Cacozeliana granaria* Kiener, 1842: Station 5, 14, 16, 21, 22, 23, 26, 28, 56; depth 16, 20, 24, 33, 35, 36, 37, 38, 40 m

DIALIDAE
Diala suturalis (A. Adams, 1853): Station 26; depth 40 m

TURRITELLIDAE
**#Colpospira accisa* (Watson, 1881): Station 3, 4, 13, 15, 20, 26, 41, 42, 44, 60, 68, 70; depth 35, 37, 40, 58, 60, 70, 80, 81, 84, 120, 122 m
**#Colpospira atkinsoni* (Tate & May, 1900): Station 3, 4; depth 58, 60 m
**Colpospira australis* (Lamarck, 1822): Station 14, 37, 40, 41, 47, 54, 57, 68; depth 19, 29, 30, 36, 43, 44, 80, 122 m
**^#Colpospira circumligata* (Verco, 1910): Station 37, 38, 40, 45, 48, 54, 63; depth 29, 30, 43, 62, 74, 96 m
**^#Colpospira quadrata* (Donald, 1900): Station 3, 4, 9, 10, 16, 19, 20, 21, 27, 28, 45, 68, 70; depth 22, 33, 34, 35, 36, 37, 38, 58, 60, 74, 81, 122 m
**^#Colpospira smithiana* (Donald, 1900): Station 44, 60, 68; depth 84, 120, 122 m
#^*Colpospira wollumbi* Garrard, 1972: Station 1; depth 40 m
**^Gazameda gunnii* (Reeve, 1848): Station 1, 2, 3, 4, 7, 8, 9, 10, 14, 15, 16, 18, 20, 21, 23, 27, 28, 30, 32, 38, 45, 46, 48, 51, 52, 53, 54, 55, 56, 57, 60, 63, 68, 70; depth 16, 19, 20, 22, 23, 28, 29, 30, 32, 33, 34, 35, 36, 37, 38, 40, 41, 54, 58, 60, 62, 74, 81, 84, 96, 100, 122 m
**+Maoricolpus roseus* (Quoy & Gaimard, 1834): Station 1, 2, 3, 4, 5, 6, 7, 8, 15, 19, 28, 29, 38, 47, 48, 50, 52, 55, 56, 62, 67, 70; depth 16, 29, 30, 32, 34, 35, 36, 38, 40, 41, 44, 58, 60, 81, 90, 96, 98, 125 m

CALYPTRAEIDAE
**Sigapatella calyptraeformis* Lamarck, 1822: Station 1, 5, 14, 15, 22, 28, 51, 52, 56, 57, 68; depth 16, 19, 24, 29, 35, 36, 38, 40, 122 m
**Sigapatella hedleyi* (E. A. Smith, 1915): Station 38, 45, 47; depth 44, 74, 96 m

EATONIELLIDAE
Crassitoniella erratica (May, 1913): Station 26; depth 40 m

CYPRAEIDAE
Notocypraea angustata (Gmelin, 1791): Station 57; depth 19 m
^#*Notocypraea* TAS sp 01: Station 42; depth 122 m
^#*Notocypraea* TAS sp 02: Station 43; depth 130 m

EPITONIIDAE
^#>*Epitonium coretum* (Iredale, 1936): Station 38; depth 96 m

JANTHINIDAE
Janthina janthina (Linnaeus, 1758): Station 29; depth 90 m

ACLIDIDAE
^*Austrorissopsis consobrina* (Tate & May, 1900): Station 27; depth 22 m

MURCHISONELLIDAE
Murchisonellidae unplaced: Station 27; depth 22 m

NATICIDAE
Conuber conicus (Lamarck, 1822): Station 15, 23, 52, 53, 57, 64; depth 14, 16, 19, 20, 28, 35 m

GASTROPODA *Cont'd*

NATICIDAE *Cont'd*
**Conuber controversus* (Pritchard & Gatliff, 1913): Station 41, 64, 68; depth 14, 80, 122 m
**Eunaticina umbilicata* (Quoy & Gaimard, 1833): Station 5, 21, 44, 48, 65; depth 29, 37, 38, 120, 122 m
**^Friginatica beddomei* (Johnston, 1884): Station 21, 48, 56, 65, 70; depth 16, 29, 37, 81, 122 m
^*Naticarius subcostatus* (Tenison Woods, 1878): Station 5; depth 38 m
Sinum zonale (Quoy & Gaimard, 1833): Station 38; depth 96 m
**#Tanea luculenta* (Iredale, 1929): Station 68; depth 122 m

ANABATHRIDAE
**Pisinna bicolor* (Petterd, 1884): Station 23; depth 20 m
^*Pisinna tasmanica* (Tenison Woods, 1876): Station 4; depth 60 m

RISSOIDAE
**^#Alvania filocincta* Hedley & Petterd, 1906: Station 12, 68; depth 75, 122 m
Lironoba unilirata (Tenison Woods, 1878): Station 26; depth 40 m
Rissoina fasciata (A. Adams, 1853): Station 57; depth 19 m
^#*Rissoina royana* (Iredale, 1924): Station 37, 45; depth 29, 74 m
Rissoina unplaced: Station 68; depth 122 m

RANELLIDAE
Cabestana spengleri (Perry, 1811): Station 29; depth 90 m
**Cabestana tabulata* (Menke, 1843): Station 10, 31; depth 34, 96 m
**^Monoplex parthenopeum* (von Salis, 1793): Station 13, 56, 59; depth 16, 40, 70 m
**Ranella australasia* (Perry, 1811): Station 8, 19, 21, 23; depth 20, 32, 37, 38 m
Sassia eburnea (Reeve, 1844): Station 54; depth 30 m
**^#Sassia kampyla* (Watson, 1885): Station 29, 30, 31, 36, 41, 42, 43, 44, 45, 62, 65, 68; depth 74, 80, 90, 96, 98, 100, 120, 122, 130 m
**Sassia parkinsoniana* (Perry, 1811): Station 3, 6, 7, 18, 20, 21, 62, 65, 70; depth 23, 30, 34, 37, 58, 81, 98, 122 m
**#Sassia petulans* (Hedley & May, 1908): Station 30, 68; depth 100, 122 m
^*Sassia subdistorta* (Lamarck, 1822): Station 10, 19, 26, 37; depth 29, 34, 38, 40 m
**Sassia verrucosa* (Reeve, 1844): Station 9, 14, 45, 56, 68; depth 16, 36, 74, 122 m

TONNIDAE
Semicassis semigranosa (Lamarck, 1822): Station 1, 15, 28, 29, 31, 37, 38, 51, 57, 64, 68; depth 14, 19, 29, 35, 40, 90, 96, 122 m
CERITHIOPSIDAE
**Prolixodens dannevigi* (Hedley, 1911): Station 19; depth 38 m
^>*Tubercliopsis quinquepila* (Laseron, 1951): Station 68; depth 122 m

NEWTONIELLIDAE
**Ataxocerithium serotinum* (A. Adams, 1855): Station 1, 3, 5, 7, 19, 23, 26, 68; depth 20, 34, 38, 40, 58, 122 m
**#>Socienna cylindricum* (Watson, 1886): Station 68; depth 122 m

TRIPHORIDAE
**Aclophoropsis festiva* (A. Adams, 1851): Station 1, 2, 26; depth 40, 41 m
**^Brucetriphora granifera* (Brazier, 1894): Station 3, 26; depth 40, 58 m
**Hedleytriphora fasciata* (Tenison Woods, 1879): Station 19, 26; depth 38, 40 m
^#*Isotriphora vercoi* Marshall, 1983: Station 68; depth 122 m
**^Monophorus angasi* (Crosse & Fischer, 1865): Station 1, 3; depth 40, 58 m
^*Monophorus nigrofuscus* (A. Adams, 1851): Station 3, 68; depth 58, 122 m

HIPPONICIDAE
**^#Malluvium devotus* (Hedley, 1904): Station 29, 30, 31, 41, 43, 44, 65, 67, 68; depth 80, 90, 96, 100, 120, 125, 130 m

TRIVIIDAE
**Ellatrivia merces* (Iredale, 1924): Station 8, 44, 68; depth 32, 120, 122 m

VERMETIDAE
**Serpulorbis sipho* (Lamarck, 1818): Station 5, 45; depth 38, 74 m

GASTROPODA *Cont'd*

BUCCINIDAE
*^#*Fax tenuicostata* (Tenison Woods, 1877): Station 15, 21, 36, 37, 38, 40, 41, 43, 44, 45, 47, 48, 54, 56, 67, 68, 70; depth 16, 29, 30, 35, 37, 43, 44, 74, 80, 81, 96, 120, 122, 125, 130 m
#*Fax* unplaced: Station 70; depth 81 m
Penion maximus (Tryon, 1881): Station 26; depth 40 m
**Tasmeuthria clarkei* (Tenison Woods, 1876): Station 21, 27, 45, 46; depth 22, 37, 54, 74 m

COLUMBELLIDAE
**Anachis atkinsoni* (Tenison Woods, 1876): Station 23, 26; depth 20, 40 m
**Mitrella austrina* (Gaskoin, 1851): Station 26, 40; depth 40, 43 m
**Mitrella leucostoma* (Gaskoin, 1852): Station 19, 33, 56; depth 16, 26, 38 m
**Mitrella lincolnensis* (Reeve, 1859): Station 1, 8, 20, 22, 23, 26; depth 20, 24, 32, 37, 40 m
**Mitrella menkeana* (Reeve, 1859): Station 1, 2, 26; depth 40, 41 m
Mitrella semiconvexa (Lamarck, 1822): Station 10; depth 34 m
**Pseudamycla miltostoma* (Tenison Woods, 1877): Station 1, 19, 26, 40; depth 38, 40, 43 m
Zella beddomei Petterd, 1884: Station 8; depth 32 m

FASCIOLARIIDAE
^#>*Dolicholatirus thesaurus* (Garrard, 1963): Station 38; depth 96 m
Fusinus undulatus (Perry, 1811): Station 1, 21; depth 37, 40 m
Australaria australasia (Perry, 1811): Station 3, 4, 20, 36, 41, 52, 53, 56; depth 16, 28, 37, 58, 60, 80, 120 m
**^Fusinus novaehollandiae* (Reeve, 1847): Station 1, 2, 9, 10, 14, 15, 19, 21, 28, 29, 31, 36, 40, 42, 44, 45, 51, 52, 56, 65, 68, 70; depth 16, 29, 34, 35, 36, 37, 38, 40, 41, 43, 74, 81, 90, 96, 120, 122 m

NASSARIIDAE
**Nassarius nigellus* (Reeve, 1854): Station 1, 4, 5, 6, 8, 10, 14, 16, 19, 23, 26, 28, 29, 37, 38, 50, 52, 53, 54, 55, 56, 57, 64, 68, 70; depth 14, 16, 19, 20, 28, 29, 30, 32, 33, 34, 35, 36, 38, 40, 60, 81, 90, 96, 122 m
Nassarius pauperatus (Lamarck, 1822): Station 10; depth 34 m
Nassarius pyrrhus (Menke, 1843): Station 10; depth 34 m

CANCELLARIIDAE
**Cancellaria lactea* Deshayes, 1830: Station 6, 18, 21; depth 23, 30, 37 m

BORSONIIDAE
*^#>*Filodrillia ordinata* Laseron, 1954: Station 68; depth 122 m

CLATHURELLIDAE
^*Turrella letourneuxiana* (Crosse & Fischer, 1865): Station 8; depth 32 m

HORAICLAVIDAE
^#*Austrodrillia saxea* (Sowerby, 1896): Station 67; depth 125 m
*^#*Vexitomina agnewi* (Tenison Woods, 1879): Station 1, 2, 6, 8, 19, 21, 26, 40, 45, 68; depth 30, 32, 37, 38, 40, 41, 43, 74, 122 m
*^#>*Vexitomina garrardi* Laseron, 1954: Station 8, 14, 15, 17, 20, 21, 38; depth 31, 32, 35, 36, 37, 96 m

MANGELIIDAE
*^*Guraleus alucinans* (Sowerby, 1896): Station 21, 23, 26; depth 20, 37, 40 m
^*Guraleus tasmanicus* (Tenison Woods, 1876): Station 28, 68; depth 35, 122 m
*^#>*Guraleus tasmantis* Laseron, 1954: Station 41, 65, 68; depth 80, 122 m
**Marita compta* (A. Adams & Angas, 1864): Station 29; depth 90 m

PSEUDOMELATOMIDAE
*^#*Epidirona torquata* (Hedley, 1922): Station 1, 3, 4, 12, 14, 15, 21, 23, 25, 26, 28, 29, 40, 41, 48, 52, 55, 56, 59, 62, 65, 70; depth 16, 20, 29, 30, 35, 36, 37, 40, 43, 58, 60, 75, 80, 81, 90, 98, 122 m

RAPHITOMIDAE
^*Asperdaphne legrandi* (Beddome, 1883): Station 2; depth 41 m

TEREBRIDAE
*^#*Duplicaria kieneri* (Deshayes, 1859): Station 37, 45, 47, 48, 53, 59, 63; depth 28, 29, 40, 44, 62, 74 m

GASTROPODA *Cont'd*

TEREBRIDAE *Cont'd*
**Duplicaria ustulata* (Deshayes, 1857): Station 9, 15, 16, 20, 21, 27, 37, 46, 51; depth 22, 29, 33, 35, 36, 37, 54 m
**^Hastula brazieri* (Angas, 1871): Station 8, 22, 37, 45, 47, 53, 54, 55, 64, 70; depth 14, 24, 28, 29, 30, 32, 36, 44, 74, 81 m
**^#Terebra assecla* (Iredlae, 1924): Station 45, 46, 53; depth 28, 54, 74 m
^#*Terebra lauretanae* Tenison Woods, 1878: Station 65; depth 122 m
**Terebra tristis* Deshayes, 1859: Station 37, 40, 45, 46, 48, 70; depth 29, 43, 54, 74, 81 m

TURRIDAE
**^#Epidirella tasmanica* (May, 1911): Station 70; depth 81 m

COSTELLARIIDAE
^*Austromitra analogica* (Reeve, 1845): Station 19, 56, 68; depth 16, 38, 122 m

MARGINELLIDAE
^#*Alaginella vercoi* (May, 1910): Station 11; depth 70 m
**Austroginella formicula* (Lamarck, 1822): Station 64, 68; depth 14, 122 m
**^#Dentimargo mayii* (Tate, 1900): Station 5, 21, 28, 30, 31, 43, 44, 45, 68; depth 35, 37, 38, 74, 96, 100, 120, 122, 130 m
^#*Mesoginella olivella* (Reeve, 1865): Station 28; depth 35 m
^*Mesoginella turbinata* (Sowerby, 1846): Station 8; depth 32 m
^*Ovaginella ovulum* (Sowerby, 1846): Station 37, 38; depth 29, 96 m
**Ovaginella pisum* (Reeve, 1865): Station 68; depth 122 m

MITRIDAE
^*Domiporta strangei* (Angas, 1867): Station 68; depth 122 m
Mitra badia Reeve, 1844: Station 9, 46; depth 36, 54 m

MURICIDAE
Agnewia tritoniformis (Blainville, 1832): Station 1, 10, 22, 23, 28, 45; depth 20, 24, 34, 35, 40, 74 m
**Bedeva paivae* (Crosse, 1864): Station 1, 4, 7, 8, 10, 19, 21, 37, 38, 40, 50, 52, 53, 54, 63, 70; depth 16, 28, 29, 30, 32, 34, 37, 38, 40, 43, 60, 62, 81, 96 m
**^#>*Coralliophila wilsoni* Pritchard & Gatliff, 1898: Station 29, 44, 65; depth 90, 120, 122 m
Phycothais reticulata (Blainville, 1832): Station 65; depth 122 m
**^Pterochelus triformis* (Reeve, 1845): Station 4, 29, 30, 31; depth 60, 90, 96, 100 m
**Prototyphis angasi* (Crosse, 1863): Station 41, 46; depth 54, 80 m
**^#Typhis phillipensis* Watson, 1883: Station 36, 60, 63; depth 62, 84, 120 m

VOLUTIDAE
^*Amoria undulata* (Lamarck, 1804): Station 3, 5, 8, 10, 29, 38, 47, 52, 57; depth 16, 19, 32, 34, 38, 44, 58, 90, 96 m
Ericusa sowerbyi (Kiener, 1839): Station 31, 43; depth 96, 130 m

OLIVELLIDAE
^*Belloliva leucozona* (A. Adams & Angas, 1864): Station 8, 22, 26, 28; depth 24, 32, 35, 40 m

OLIVIDAE
^*Amalda marginata* (Lamarck, 1811): Station 29, 31, 65, 68; depth 90, 96, 122 m
**^Amalda petterdi* (Tate, 1893): Station 30; depth 100 m

PYRAMIDELLIDAE
Odostomia deplexa Tate & May, 1900: Station 26; depth 40 m
^*Puposyrnola petterdi* Gatliff, 1900: Station 8; depth 32 m

HAMINOEIDAE
Liloa brevis (Quoy & Gaimard, 1833): Station 26; depth 40 m

CYLICHNIDAE
^*Adamnestia arachis* (Quoy & Gaimard, 1833): Station 31, 44, 68; depth 96, 120, 122 m

PHILINIDAE
**^#Philine columnaria* Hedley & May, 1908: Station 38, 68; depth 96, 122 m

GASTROPODA *Cont'd*

RETUSIDAE
**Retusa atkinsoni* (Tenison Woods, 1876): Station 26; depth 40 m

CLIIDAE
^#>*Clio recurva* (Children, 1823): Station 65; depth 122 m

SIPHONARIIDAE
Siphonaria funiculata Reeve, 1856: Station 14; depth 36 m

POLYPLACOPHORA

ISCHNOCHITONIDAE
*Ischnochitonidae unplaced: Station 5, 23; depth 20, 38 m

SCAPHOPODA

GADILIDAE
^*Gadila angustior* (Verco, 1911): Station 27; depth 22 m
^*Gadila spretus* (Tate & May, 1900): Station 65; depth 122 m

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