

## New records of marine invertebrates from Ascension Island (central Atlantic)

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The sea anemone *Telmatactis forskalii*, the zoanthid *Isaurus tuberculatus*, the nemertine *Baseodiscus delineatus*, the echinoderms *Ophiocoma wendtii* and *Mithrodia clavigera*, the molluscs *Colubraria canariensis*, *Glyphesthema turtoni*, *Tonna pennata*, *Trivia candidula*, *Melanella eburnea*, *Melanella* n.sp., *Echineulima leucophaea*, *Stylocheilus striatus*, *Limaria hians*, *Pteria hirundo* and *Callistoctopus macropus*, and the crustaceans *Tetraclitella* sp., *Oxynaspis celata*, *Thor amboinensis* and *Parribacus antarcticus* are recorded from Ascension Island for the first time. A new depth record is given for the sea anemone *Telmatactis cricoides*. An undescribed shrimp species of the genus *Lysmata* and the shrimp *Lysmata moorei* were observed to clean fish at night.

Key words: Actiniaria, Nemertini, Gastropoda, Octopoda, Crustacea, cleaning behaviour

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### INTRODUCTION

Ascension Island is a small and isolated island situated in the tropical South Atlantic (7°56'S, 14°25'W), the nearest landfall being St Helena, an island 1,130 km away. Ascension Island itself is the tip of a large volcanic edifice rising 3 km above the oceanic lithosphere, with characteristically steeper marine slopes in the south and east of the island. In coastal areas, many of the expected tropical habitats such as coral reefs are absent, replaced only by volcanic rocky substrate with infrequent beaches of coarse sand (Price & John 1980). Whilst the intertidal zone can be reasonably expansive, often with rock pools, the eulittoral zone generally consists

of stark, bare rock below which the hard sublittoral habitats are characterised by encrusting coralline algae (Price & John 1980). Due to its position within ocean circulations, Ascension Island harbours a marine environment in which species from both the Eastern and Western Atlantic are represented. However, the isolation of the island has also contributed to a relatively high proportion of the marine fauna being endemic.

The marine invertebrates of Ascension Island have been the subject of studies for several years, with multiple expeditions seeking to identify communities and species. Some invertebrate groups have been classified for Ascension Island, including Scleractina (Zibrowius et al. 2014),

Zoantharia (Reimer et al. 2014), Echinodermata (Pawson 1978), Mollusca (Rosewater 1975; Padula et al. 2014), Polychaeta (Hartmann-Schröder 1992), Ostracoda (Maddocks 1975), Stomatopoda (Manning & Chace 1990) and Decapoda (Manning & Chace 1990; De Grave et al. 2014). Even for these comparatively well studied groups, however, there remain gaps in the record which subsequent expeditions continue to address. Here we provide information on 21 invertebrate species previously unknown from Ascension Island, most of them recorded during several recent scientific expeditions.

## MATERIAL AND METHODS

Marine invertebrates were observed in the intertidal zone and during SCUBA dives down to 30 m depth at multiple sites around Ascension Island (Table 1). Most species were photographed in situ before being collected. Voucher specimens of some of the species have been deposited at the Oxford University Museum of Natural History (OUM), the Swedish Museum of Natural History in Stockholm (SMNH) and the Zoologische Staatssammlung in Munich (ZSM), as detailed in the species accounts.

Table 1. Geographic coordinates of sample locations

Location name	Latitude	Longitude
Comfortless Cove	-7.910199	-14.403320
English Bay	-7.893967	-14.383500
Georgetown pier	-7.925224	-14.413884
Mars Bay	-7.988167	-14.403417
Monkey Rock	-7.924583	-14.416483
One Hook	-7.892333	-14.387167
Pan-Am	-7.9633	-14.4148
Porpoise Point	-7.89777	-14.3513
Portland Point	-7.973033	-14.415533
Pyramid Point	-7.902552	-14.403983
Red Rock	-7.894350	-14.394750
Rocket Pad	-7.975367	-14.415583
Triangles	-7.889276	-14.379091

## RESULTS

### CNIDARIA:

*Telmatactis forskalii* (Hemprich & Ehrenberg in Ehrenberg, 1834)

Individuals of *T. forskalii* have been photographed repeatedly during night dives in English Bay and at One Hook (Fig. 1a).

Specimens were not collected but the species can be recognized by its external appearance. *Telmatactis forskalii* has been known from the Mediterranean Sea and in the Eastern Atlantic from the Gulf of Biscay and the Azores to the Cape Verde Islands (den Hartog 1995; Wirtz et al. 2003). Recently, Brown (2014, p.18) recorded it from St. Helena Island.

*Telmatactis cricoides* Duchassaing, 1850

This is the only common sea anemone species at Ascension Island. It is frequently encountered when turning large stones. A few smaller specimens were seen in narrow cracks, inaccessible to the multitudes of the black triggerfish *Melichthys niger*. The only openly visible individuals of *T. cricoides* were seen in the *Procaris* pools, at the south-eastern end of the island, which are free of predatory fish (Price & John 1980). *Telmatactis cricoides* has been recorded from Ascension Island by den Hartog (1995); it is an amphi-Atlantic species. As in other places (cf. Wirtz 1997) the colour of *T. cricoides* individuals at Ascension is quite variable.

Grattan Seamount lies 260 km southeast of Ascension Island (9°48' S, 12°46' W) and rises to about 100 m from the surface. A video on the internet called "First look at Grattan Seamount" (Cothran [cited 2016]) shows, at 1 min 11 sec, a large individual of *Telmatactis cricoides* with a dark body and white tentacles. A *Telmatactis cricoides* specimen at 42 m depth (Wirtz 1997) previously constituted the depth record not only for the species but apparently also for the genus *Telmatactis* (Fautin et al. 2007). The image in the video by Cothran (cited 2016) thus considerably extends the known depth range for the species *T. cricoides* and for the genus *Telmatactis*.

***Isaurus tuberculatus* Gray, 1828**

A clump of open polyps of this species was seen during a night dive at One Hook at approximately 8 m depth, on the top of a rocky boulder in an open crevice (Fig. 1b). This zoanthid has a circum(sub)tropical distribution (Reimer et al. 2012). The photo in Brown (2014, p.22) from St. Helena Island shows the same species.

NEMERTINI:

***Baseodiscus delineates* (DelleChiaje, 1825)**

When turning stones in shallow water, this ribbon worm was encountered. The species, which can be recognized by its colour pattern, is moderately common all over the world in temperate to tropical latitudes (e.g. Strand et al. 2006; Wirtz 2009a) but has apparently not yet been recorded from Ascension Island. Colour photos of individuals from Madeira and from the Canary Islands can be found in Wirtz & Debelius (2003).

MOLLUSCA:

***Colubraria canariensis* Nordsieck & Talavera, 1979**

The gastropod *Colubraria canariensis* is here reported from Ascension Island for the first time: one specimen (35 mm length) was found at a depth of 20 m at Pyramid Point in July 2015 and a second one (50 mm) at Monkey Rock.

The distribution of *Colubraria canariensis* Nordsieck & Talavera, 1979 comprises most of the West African coast: Monsecour & Monsecour (2006) and Monsecour & Ryall (2008) published an overview of localities and forms occurring along these coasts, thereby establishing its range from Madeira in the north and as far as Angola in the south. In between these two localities, specimens can be found in Senegal, Ivory Coast, Ghana, São Tomé, the Canary Islands and the Cape Verde Islands. The species lives from shallow water (record from 1 m depth, in Tarrafal Bay, Santiago Island, Cape Verde Islands) to about 120 m depth (record from Luanda, Angola), the most common depth being between 10-40 m. A colour photo of the species can be found in Segers et al. (2009, p.467).

In his book on the Cape Verde Islands, Rolán (2005) only figured a subadult specimen and identified it as *Colubraria obscura* (Reeve, 1844) but this was a misidentification of *C. canariensis*. Bernard (1984) listed *Colubraria reticulata* (Blainville, 1826) but the figured specimens are also *C. canariensis* Nordsieck & Talavera, 1979.

***Glypheapithema turtoni* (E.A. Smith, 1890)**

This quite rare species (synonym *Natica turtoni*) was taken at Wigan Pier on 11 July 2015. The species was originally described from St Helena Island from an animal 19 mm long; our Ascension specimen is 8 mm long. The species is known from the Canary Islands, Mauritania, Senegal, the Cape Verde Islands, Sierra Leone, and from Ghana to Angola but has not yet been recorded from Ascension Island (Rolán 2005; Hernández et al. 2011; Swinnen unpubl. data). In the Cape Verde Islands it can reach a size of up to 60 mm length.

***Tonna pennata* (Mörch, 1853)**

One broken specimen was obtained at Rocket Pad on 14 July 2015. *Tonna pennata* is an amphiatlantic species that has not yet been recorded from the mid-Atlantic Islands (Vos, pers. comm. to FS). In the Western Atlantic it is known from Southeast Florida and Bermuda to Brazil. It is fairly common, especially in the Caribbean and particularly around Puerto Rico. Records of this species in the Eastern Atlantic are extremely rare, only a few specimens are known from Madeira, the Canary Islands and the Cape Verde Islands. The average size is from 50-100 mm; the specimen from Ascension Island is 110 mm. This species was known in the past as *Tonna maculosa* (Dillwyn, 1817). A colour photo of the species can be found in Segers et al. (2009, p.451).

***Trivia candidula* (Gaskoin, 1836)**

Two specimens of this gastropod were obtained from Ascension Island in July 2015: the first one was found in detritus taken under a big arch at a depth of 12 m at Red Rock and the second one was found in detritus below an overhang at a depth of 15 m at Triangles.

This small white *Trivia* is an amphiatlantic species: from the Bay of Biscay south to the West

African coast as far as Angola, and into the Mediterranean, Azores, Madeira, Canary Islands, Cape Verde Islands and the Caribbean sea (Abbott 1974, p.149); Smith (1892) recorded one small specimen (5 mm length) from St. Helena Island. The species is illustrated in colour in Segers et al. (2009, p.445) and in Hernandez et al. (2011, p.497).

***Melanella n. sp.*** “red-spotted”

This undescribed eulimid snail is common on a holothurian of the genus *Isostichopus* (the holothurian also being an undescribed species, Giomar Borrero pers. comm. to PW). Specimens were collected near Georgetown pier in 7 m depth on 21 July 2015 and sent to Anders Warén in Stockholm, who will describe the species. They are now deposited in the Swedish Natural History Museum under the collection number SMNH 145901. Fig. 1c) shows the species in colour.

This species has previously been recorded from the Cape Verde Islands (Wirtz 2009b, Fig. 1e) and from São Tomé Island (Wirtz unpubl. data).

***Melanella eburnea*** (Mühlfeld, 1824)

Snails of this species were attached to a *Holothuria manningi* in English Bay at night. They are now deposited in the Swedish Natural History Museum under the collection number SMNH 123541. The species is known from the Caribbean and from the Cape Verde Islands (Wirtz 2009b, Fig. 1f).

Another *Melanella* species, as yet unidentified, was collected from a *Holothuria grisea* in English Bay at night. The specimens are now deposited in the Swedish Natural History Museum under the collection number SMNH 127099. These two species will be dealt with in more detail by Anders Warén.

***Echineulima leucophaes*** (Tomlin & Shackleford, 1913)

A pair of this eulimid snail sucking on the sea urchin *Diadema ascensionis* Mortensen, 1909 was photographed near Portland Point in about 12 m depth on 23 July 2015 and in 15 m depth at One Hook on 14 November 2015. The first pair was sent to Anders Warén in Stockholm and is now deposited in the Swedish Natural History

Museum under the collection number SMNH 149693.

*E. leucophaes* is known from Madeira Island, the Canary Islands, the Cape Verde Islands, and São Tomé Island (Rolán 2005; Wirtz 2009b) but this is the first record from Ascension Island. *Diadema ascensionis* is a new host record for the species. See Wirtz & Debelius (2003, p.168) for a colour photo of this species.

***Stylocheilus striatus*** (Quoy & Gaimard, 1832)

This little sea hare was common on an unidentified filamentous green alga in English Bay in July 2015. It was active at night and hiding during the day. Specimens have been deposited at the Zoologische Staatssammlung in Munich under the registration number ZSM Mol 20150457. A single individual was encountered in English Bay in November 2015. *Stylocheilus striatus* is a circumtropical species (Segers et al. 2009). See Wirtz & Debelius (2003, p.192) for a colour photo of this species.

***Limaria hians*** (Gmelin, 1791)

In September 2015 during a dive off Wigan Pier a single specimen of *Limaria hians* was seen and photographed when turning over a stone in approximately 10m depth. The species was also recorded slightly north of Comfortless Cove when turning over a large stone in 8 m depth on 10 November 2015 and again below a stone in 12 m depth at Wigan Pier on 2 April 2016. *Limaria hians* is an Eastern Atlantic species, known from Norway south to Nigeria and from the Mediterranean Sea (Segers et al. 2009). Recently, Brown (2014) has recorded it from St. Helena Island. See Wirtz & Debelius (2003, p.236) for a colour photo of this species.

***Pteria hirundo*** (Linné, 1758)

A 25 mm long specimen of this bivalve species was collected at Rocket Pad from a bush of black coral in 20 m depth on 18 July 2014. It is an Eastern Atlantic species, recorded from the British Isles to Angola and from the Mediterranean Sea (Segers et al. 2009). Recently, Brown (2014, p. 91) has recorded *Pteria hirundo* from St. Helena Island. See Wirtz & Debelius (2003, p.234) for a colour photo of this species.

***Callistoctopus macropus*** (Risso, 1826)

This unmistakable species was seen and photographed (Fig. 1d) during several night dives at Pyramid Point and One Hook. Despite being common, this circum(sub)tropical species has apparently not yet been recorded from Ascension Island. Its presence there is not listed by either Rosewater (1975) or Norman et al. 2014. Brown (2014, p.96) has recently recorded it from St. Helena Island (as *Octopus macropus*).

CRUSTACEA:

***Tetraclitella* sp.**

There are no intertidal barnacles known from Ascension Island. Pieter van West photographed a small barnacle group in the intertidal at Mars Bay in September 2013 (Fig. 2a). The exposed and slightly elevated radii and the rhombic-shaped operculum show that the animals belong to the genus *Tetraclitella* Hiro, 1939. The only known Atlantic species in this genus is the circum-tropical *Tetraclitella divisa* (Nilsson-Cantell, 1921) and the Ascension specimens probably belong to this species but they cannot be identified with certainty because all shells are empty. The small group of dead individuals shown in Fig. 4 apparently is the result of an unsuccessful settlement attempt of a barnacle species at Ascension Island.

***Oxynaspis celata*** Darwin, 1852

Numerous specimens of the pedunculate barnacle *Oxynaspis celata* were encountered on a black coral species resembling *Tanacetipathes* at Red Rock in a depth of 7 m. Specimens have been deposited in the Zoologische Staatssammlung in Munich with the registration number ZSMA20161001. Young (1998, Fig. 2) and Southward (1998) reviewed the geographic distribution of this cosmopolitan species and Wirtz (2001) also recorded it from the Cape Verde Islands. It has not yet been recorded from Ascension Island. A colour photo of animals from the Azores is given in Wirtz (1995, p.89) under the name *Heteralepas* sp. and in Wirtz & Debelius (2003, p.106).

***Thor amboinensis*** (de Man, 1888)

When turning over a stone in 9 m depth in English Bay in July 2015, two individuals of *Thor amboinensis* were encountered. This is the first record of this circum(sub)tropical species at Ascension Island. The specimens are now in the collection of the Oxford University Natural History Museum (specimen Oxford University Museum unregistered). Other records and photographs of the same species were taken on 3 October 2015 at Pan-Am under a *Diadema ascensionis* (Fig. 2b) and at night at Wigan Pier on 21 August 2015 associated with *Telmatactis cricoides* anemones.

***Parribacis antarcticus*** (Lund, 1793)

During two night dives in March and November 2015 off One Hook several *Parribacis antarcticus* were seen and photographed at a depth of between 15-20 m. An exuvia of this species has also been collected from Comfortless Cove. The species has been recorded from the Indo-Pacific and from the western Atlantic Ocean but not yet from Ascension Island (Holthuis 1991).

CLEANING BEHAVIOUR OF *LYSMATA* SPECIES

During a night dive at One Hook in November 2015, an undescribed species of *Lysmata* (currently being described by S. de Grave) and *Lysmata moorei* (Rathbun, 1901) were observed to clean sleeping fish. Both species have not yet been reported as cleaner shrimps. The frequency and importance of nocturnal cleaning behaviour is still largely unknown (Bonaldo et al. 2015). During the day, the common shrimp *Lysmata grabhami* (Gordon, 1935) is the main cleaning shrimp at Ascension Island (Morais et al., submitted). Surprisingly, we have never seen *Stenopus hispidus* cleaning fishes at Ascension Island, even though it is also common and known to clean fishes at other places; it may be out-competed by *Lysmata grabhami* at Ascension Island.

## ECHINODERMATA:

*Ophiocoma wendtii* (Müller & Troschel, 1842) Fig. 2c) almost certainly shows *Ophiocoma wendtii*, photographed off One Hook at night on 25 April 2015. The animal was in its dark colour phase (during daylight hours it has distinctive dark and light bands on the arms).

The species was also seen at night off Wigan Pier in approximately 8 m of water. On both occasions the brittle star was part hidden under overhanging rock ledges. This species is common, ranging from Bermuda throughout the Caribbean down to Brazil in 0-384 m (Hendler et al. 1995).

*Mithrodia clavigera* (Lamarck, 1816)

On 23 January 2016 *Mithrodia clavigera* was seen on a rocky reef at Porpoise Point in 15 m and was photographed (Fig. 2d). It is a reef-dwelling species which is known to range from the Red Sea through the Indo-Pacific to Mexico, and through the Caribbean (Abreu-Perez et al. 2005), and now also at Ascension.

## DISCUSSION

We have recorded 21 invertebrate species previously unknown from Ascension Island. Some of them belong to comparatively well-studied groups such as gastropods (Rosewater, 1975; Padula et al. 2014) or decapods (Manning & Chace 1990; De Grave et al. in 1975; Padula et al. 2014) or decapods (Manning & Chace 1990; De Grave et al. 2014). Nine of them are circum(sub)tropical species and a further three are amphi-Atlantic species. A genetic study would be necessary to elucidate from where they have come to settle on Ascension Island. Seven of the 21 species recorded here clearly are of eastern Atlantic origin, whereas one appears to originate from the western Atlantic. Previous studies, e.g. on fishes (Wirtz et al. 2014) and on zoanthids (Reimer et al. 2014), have already shown that the coastal marine species of Ascension Island have come from western as well as eastern Atlantic shores.



Fig. 1. a) *Telmatactis forskalii* at night; b) *Isaurus tuberculatos* at night; c) *Melanella* n.sp. on *Isostichopus* n.sp.; d) *Callistoctopus macropus* (photo credits – a, b and c by Judith Brown, photo d by Peter Wirtz)



Fig. 2. a) *Tetracitella* sp.; b) *Thor amboinensis*; c) *Ophiocoma wendtii* at night; d) *Mithrodia clavigera* (photo credits – a by Pieter van West, photo b, c and d by Judith Brown)

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## New marine invertebrates from Ascension Island

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