The Marine Environment of the Pitcairn Islands

by

Robert Irving
Principal Consultant, Sea-Scope Marine Environmental Consultants, Devon, UK

and

Terry Dawson
SAGES Chair in Global Environmental Change, School of the Environment, University of Dundee, UK

Report commissioned by
The Pew Environment Group
Global Ocean Legacy

August 2012

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Dedication

This book is dedicated to the memory of Jo Jamieson, underwater photographer extraordinaire and Robert Irving's diving colleague in 1991 on the Sir Peter Scott Commemorative Expedition to the Pitcairn Islands, who sadly died just five years after what she described as "the adventure of her lifetime".

Acknowledgements

The authors are grateful for the support of the Pew Environment Group and a Darwin Initiative Overseas Territories Challenge Fund (Ref. no. EIDCF003) awarded to Terence Dawson.

In addition, we should like to thank the following for commenting on the final draft of this report:
Dr Michael Brooke and Dr Richard Preece (University of Cambridge); Jonathan Hall (RSPB); The Pew Environment Group's Global Ocean Legacy staff; The Government of the Pitcairn Islands and the Head of its Natural Resources Department (Michele Christian); and especially the entire community of Pitcairn.

While the majority of photographs featured in the report have been taken by the authors, we should like to thank the following for the use of their photographs, namely Dr Enric Sala (National Geographic Society), Dr Michael Brooke, Kale Garcia, Jo Jamieson (posthumously), Andrew MacDonald, Dr Richard Preece, Dr Jack Randall, Tubenoses Project ©Hadoram Shirihai and Dr Stephen Waldren. [The photo credit SPSCEPI stands for the Sir Peter Scott Commemorative Expedition to the Pitcairn Islands in 1991/92].

Citation

Irving, R.A. and Dawson, T.P. 2012. The marine environment of the Pitcairn Islands. A report to Global Ocean Legacy, a project of the Pew Environment Group.

Cover

Galapagos reef sharks *Carcharhinus galapagensis* swimming above the reef at Ducie atoll. © Enric Sala / National Geographic.

The warm-hearted and welcoming people of Pitcairn, whose good fortune it is to live on a wonderful island and be surrounded by a beautiful and plentiful sea.

Photo: Courtesy of Pew Environment Group/Global Ocean Legacy

The Marine Environment of the Pitcairn Islands

First published in Great Britain in 2012 by
Dundee University Press
University of Dundee
Dundee
DD1 4HN

ISBN – 9781845861612

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available on request from the British Library

Typeset by Communications Inc
Printed by Dundee University Press

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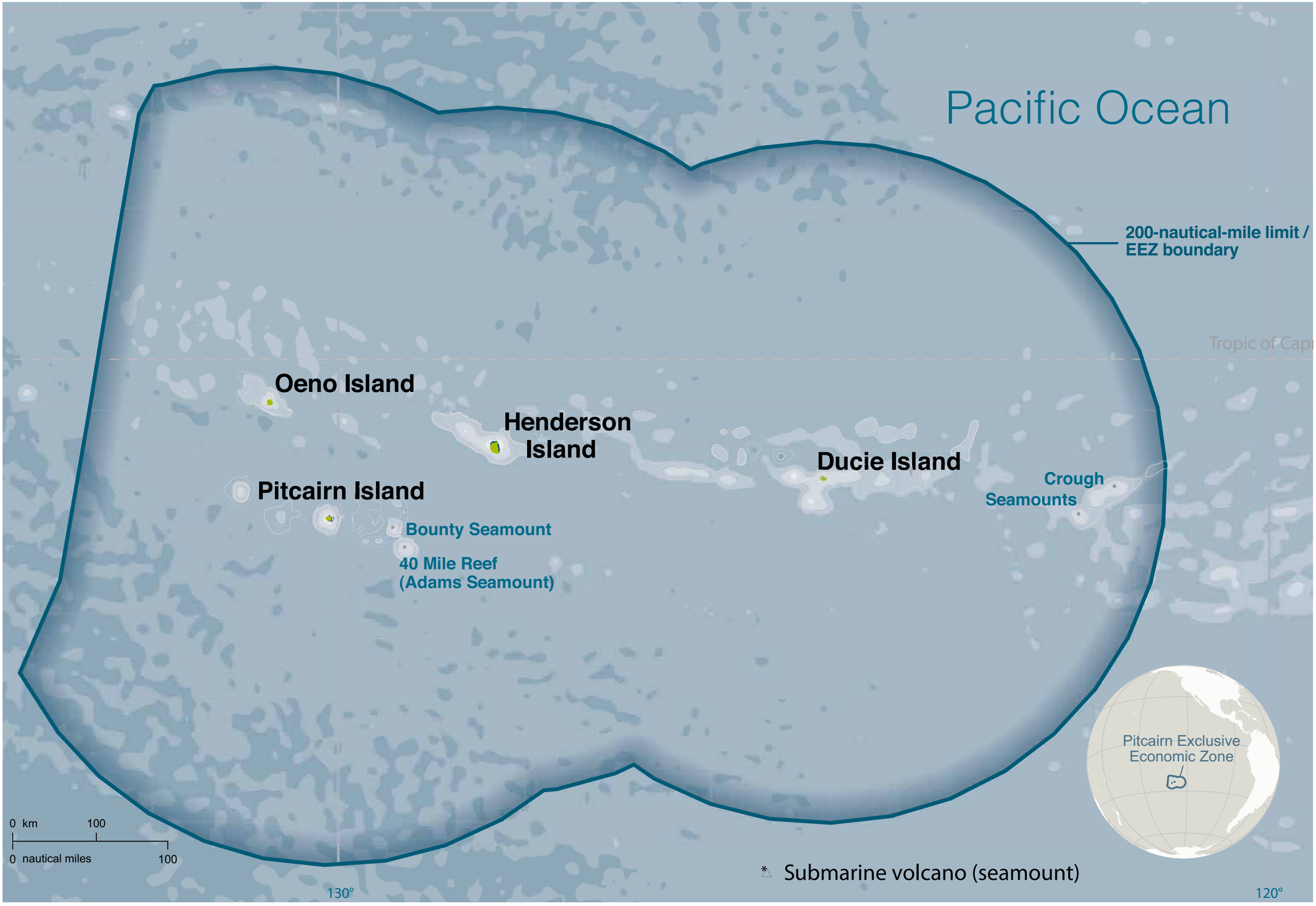
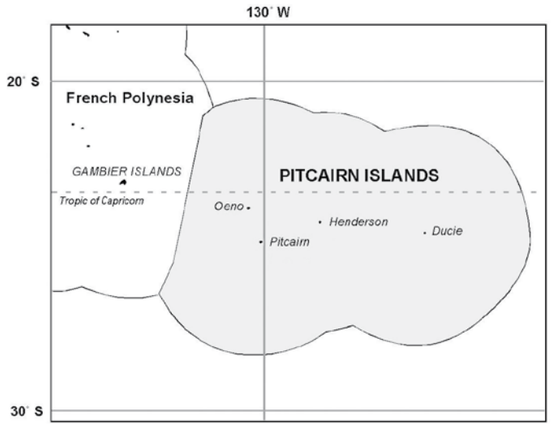
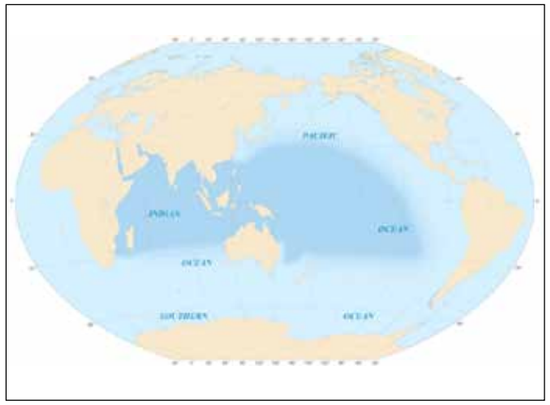


Executive summary



The extent of the Pitcairn Islands' Exclusive Economic Zone (EEZ), which defines the geographic extent of this report.



The extent of the Indo-West Pacific biogeographic province (shown in dark blue). (Source: http://en.wikipedia.org/wiki/File:Indo-Pacific_biogeographic_region_map-en.png)

Introduction

The Pitcairn Islands are a group of four near-pristine small islands which can claim to be some of the most remote islands in the world. They are situated between latitudes 23° and 26° south and longitudes 124° and 131° west and located in the crystal-clear waters of the central South Pacific, about 2,200 km south-east of Tahiti and 2,100 km west of Easter Island. The group comprises:

- Pitcairn Island, a high volcanic island of 450 ha with lava cliffs and rugged hills rising to a peak at 347 m; it is the only inhabited island, with a population of around 60 as of 2012;
- Henderson (200 km east-north-east of Pitcairn) is the largest island in the group with an area of 4,310 ha. It is a raised fossilised coral atoll which rises to 33 m. It is designated a UNESCO World Heritage Site on account of its unique natural history and ecological intactness, and it has been described as "a South Pacific conservation jewel"[1];
- Ducie (472 km east of Pitcairn), the most southerly coral atoll in the world, consists of a central lagoon surrounded by four islets covering an area of 70 ha;
- Oeno (120 km north-west of Pitcairn) is a low coral atoll of 65 ha comprising a central low-lying island surrounded by a shallow lagoon and a fringing reef (diameter approximately 4 km).

Together, all four islands and their surrounding waters out to the 200 nautical mile limit – also known as the Exclusive Economic Zone (EEZ) – span a vast area of ocean of about 836,000 km^2, more than three times the size of the UK.

A brief history

It is believed that Pitcairn and Henderson were first colonised by Polynesians in about AD 900 and their occupation lasted until about 1450[2]. In 1606, Fernández de Quirós was the first European to discover Henderson Island (by now uninhabited) and Ducie Island. British interest in the islands (and in Pitcairn in particular) began more than a century-and-a-half later in 1767 when HMS *Swallow*, under the command of Captain Philip Carteret, encountered Pitcairn and mistakenly plotted its position 188 nautical miles west of its actual location. This mistake, however, was to be of great benefit to the island's next inhabitants, the mutineers from HMS *Bounty*, who were looking for a safe island hideaway in 1790, and remained undiscovered there for 18 years. Pitcairn Island officially became a British dependency on 29 November 1838. The other three islands (Henderson, Oeno and Ducie) were annexed by Great Britain in 1902 and were included in the dependency in 1938. The Pitcairn Islands remain the only UK Overseas Territory in the Pacific.

Biogeography

The Pitcairn Islands are located at the south-eastern extremity of the Indo-West Pacific biogeographic province, resulting in a number of barriers to the establishment of species.

- Prevailing winds and currents are dominantly from the east in the central South Pacific, with the Islands lying upwind and upstream of all Indo-Pacific source areas.
- The Islands lie south of the Tropic of Capricorn (23°26'S), with relatively cool waters and climates imposing further barriers to the establishment of tropical species.

Studies of groups as diverse as corals, reef fishes, vascular plants and land birds support the arguments that colonisation has been from the biologically rich source areas to the west on the margins of South-East Asia,

taking advantage of the inter-island connectivity of the south-west Pacific Ocean[3]. As a consequence of these factors, the diversity of marine species present within the nearshore waters of the EEZ[4], when compared to island groups further to the west, is limited[5]. It also reflects the lack of some marine and coastal habitats at the four islands, such as mangroves and seagrass beds, due to their limited dispersal capabilities. The Islands' isolation, however, has led to a number of endemic species evolving in the nearshore zone i.e. they are found at the Pitcairn Islands and nowhere else.

Seafloor bathymetry and geological history

The seafloor within the EEZ is made up of a complex of abyssal plains, troughs and seamounts. An unusual feature of the region is that within an area of about 7,000 km^2 (or less than 1 percent of the EEZ), submarine volcanic activity has led to a particularly high density of volcanic cones or seamounts (over 90 in total) rising from the seafloor at 3,500 to 3,800 m depth, the summit of the tallest seamount rising to just 55 m beneath the ocean's surface. The seamounts have arisen along two geological 'hotspot' regions, each aligned east-south-east to west-north-west. The first, with the youngest features in the south-east, has along it: Ducie (8 Myr); Henderson (13 Myr); and Oeno (16 Myr) [all ages given ± 1 Myr – one million years][6]. The second active hotspot region has been located in a zone 40 km to 110 km south-east of Pitcairn, and extends through the Gambier Islands to the Duke of Gloucester Islands. This hotspot region was responsible for the creation of Pitcairn Island itself, which is the youngest of the four islands being formed as the result of volcanic activity around 0.8 to 0.9 million years ago[7].

When Pitcairn erupted, the weight of the new volcanic island caused the Earth's crust beneath it to depress, with a consequential uplift approximately 200 km from the load, a see-saw process known as 'lithospheric flexure'. Over thousands of years, this uplift caused Henderson to be raised above sea level and thus form an uplifted fossilised reef. The island has been emergent for about 380,000 years. Today, Henderson remains the world's only raised coral atoll which has its ecology largely intact.

Marine natural history

The nearshore marine life associated with each of the four islands is distinct in its own right, reflecting the habitats available and the prevailing environmental conditions. To date, around 1,250 marine species (including seabirds) have been recorded from the waters of the Pitcairn Islands EEZ. However, it should be noted that, largely due to the Islands' inaccessibility, much still remains to be discovered about their marine fauna and flora.

One of the first things to strike the underwater explorer is the stunning clarity of the water surrounding each of the four islands. This reflects the low levels of suspended organic matter in the water column as well as the fact that the waters are almost totally pollution-free[8].

The three islands of Henderson, Oeno and Ducie play host to internationally important seabird populations, with each of the islands being declared Important Bird Areas. Henderson is, without question, one of the petrel capitals of the world[9]. It is the only location in the world where the Henderson petrel *Pterodroma atrata* is known to breed, with over 16,000 pairs being resident (>95% of the world population). The species is listed by the IUCN as Endangered[10]. Nearly all of the world's Murphy's petrels nest in the Pitcairn Islands at Henderson, Ducie and Oeno, even though the species has a widespread distribution in the Pacific. In addition, there are around 11,100 breeding pairs of Herald petrel *Pterodroma heraldica* on Henderson. Of the non-breeding species, the bristle-thighed curlew *Numenius tahitiensis* (with a world population of just 7,000) is of international importance as a passing visitor at Henderson and Oeno. With the intention of allowing the populations of these breeding seabirds to stabilise and enlarge, the Pacific rat *Rattus exulans*, a major predator on petrel chicks, has been cleared from both Ducie and Oeno Islands in the past 15 years; and a major programme of eliminating rats from Henderson was undertaken in 2011 by the Royal Society for the Protection of Birds with assistance from the Pitcairn Islanders, though this has recently been found to have been unsuccessful.

Most of the major groups of marine life have now been studied (corals, molluscs, echinoderms, fishes, turtles, seabirds and cetaceans), although others remain to be investigated in full. Those species whose worldwide conservation status has been assessed and which have been found to be Endangered are listed in the table overleaf.

Offshore

Far less is known of the marine life of the EEZ's offshore waters than is known for the nearshore waters. The northern extremities of the EEZ overlap with migration routes for stocks of tuna species (skipjack *Katsuwonus pelamis*, yellowfin *Thunnus albacares* and bigeye *Thunnus obesus*). Prior to the declaration of the Pitcairn Islands EEZ in 1980, the oceanic waters were fished by the fleets of three distant-water fishing nations (Japan, Taiwan and South Korea), all using longline vessels to catch tuna and billfish. Migration routes for several species of whale (four of which are classified as Endangered) and other cetaceans, as well as for green turtles, pass through the waters of the EEZ. A number of oceanic shark species have also been recorded, such as the oceanic whitetip shark *Carcharhinus longimanus*.

Endangered marine species* known to be present within the Pitcairn Islands EEZ

Species	Status*	Notes**
Humpback whale ***Megaptera novaeangliae***	**EN**	Has a circumglobal distribution but subpopulations now recognised in the South Pacific and Australia. The individuals present within the Pitcairn Islands EEZ belong to the F2 (French Polynesia) breeding sub-stock, and it is this sub-stock specifically which is Endangered (other populations are of Least Concern).
Sei whale ***Balaenoptera borealis***	**EN**	Worldwide population estimated at 80,000 with that of the Southern Pacific at just over 9,000. Those seen within the Pitcairn Islands EEZ likely to be migrating between feeding and nursery grounds.
Blue whale ***Balaenoptera musculus***	**EN**	*B. m. brevicauda* (also known as the pygmy blue whale) is a subspecies found in the South Pacific Ocean. The population occurring off Chile and Peru may be a distinct population. Those seen within the Pitcairn Islands EEZ likely to be migrating between feeding and nursery grounds.
Fin whale ***Balaenoptera physalus***	**EN**	Found in all the world's major oceans, from polar to tropical waters. Fewer than 15,000 currently remain in the Southern Hemisphere (out of a total population of approx. 120,000).
Hawksbill turtle ***Eretmochelys imbricata***	**CR**	Has a circumglobal distribution throughout tropical and, to a lesser extent, subtropical waters. Hawksbills are migratory and individuals undertake complex movements through geographically disparate habitats during their lifetimes.
Green turtle ***Chelonia mydas***	**EN**	Has a circumglobal distribution throughout tropical and, to a lesser extent, subtropical waters (including the eastern Central Pacific Ocean). Known to nest on Henderson (an estimate of 10 laying females in 1991, approx. 1% of the French Polynesian population). Known to migrate long distances between feeding grounds and nesting beaches.
Phoenix petrel ***Pterodroma alba***	**EN**	Breeds in the Line and Phoenix Islands (Kiribati) and Marquesas Islands (French Polynesia). Believed to have once bred in the Pitcairn Islands but not currently. Observed offshore in 2010.
Henderson petrel ***Pterodroma atrata***	**EN**	Known to breed only on Henderson Island, but may have also bred on Pitcairn Island in the past and has apparently become extirpated from Ducie. In 1991–1992, the breeding population on Henderson was estimated at approx. 16,000 breeding pairs and it was suggested that the species could be undergoing a long-term decline, largely due to rat predation. >95% of world population on Henderson.
Polynesian storm petrel ***Nesofregetta fuliginosa***	**EN**	Worldwide population in the region of 1,000 mature individuals. Known to breed at the Gambier Islands and further west. Observed offshore within EEZ.
Black-browed albatross ***Thalassarche melanophrys***	**EN**	Has a circumpolar distribution ranging from subtropical to polar waters, with 67% of breeding pairs in the Falkland Islands.
Great hammerhead shark ***Sphyrna mokarran***	**EN**	Heavily fished for its large fins, which are extremely valuable on the Asian market. As a result, great hammerhead populations are declining substantially worldwide.
Humphead wrasse ***Cheilinus undulatus***	**EN**	A large fish, with males reaching 2 m in length. Found on steep coral reef slopes from 1–100 m. Adults prefer to occupy limited 'home ranges'. Recorded from Henderson.

** Information from the IUCN Red List (2012). **CR** = Critically Endangered; **EN** = Endangered. Information on whales, turtles and fish species from IUCN Red List (2012);*
*** Information on birds from Birdlife International species factsheets (http://www.birdlife.org).*

No. of marine species in major taxonomic groups recorded from within the Pitcairn Islands EEZ.

Group	No. of species recorded to date (May 2012)	No. of endemic species	Most endangered conservation status represented	Species richness	Level of study
Cetaceans	22	0	Endangered **(EN)**	Low/intermediate	Poor/ intermediate
Marine birds (breeding)	13	1	Endangered **(EN)**	Intermediate	Good
Marine birds (non-breeding)	20+	0	Endangered **(EN)**	Low/intermediate	Poor
Turtles	2	0	Critical **(CR)**	Low	Poor
Pelagic fishes	13	0	Near-Threatened **(NT)**	Low	Poor/ intermediate
Reef fishes	352	5	Endangered **(EN)**	Low/intermediate	Good
Echinoderms	>64	3	Not Evaluated (NE)	Intermediate	Intermediate
Molluscs	>502	5+	Not Evaluated (NE)	Low	Intermediate
Crustacea	>42	?	Not Evaluated (NE)	Low?	Poor
Ostracods	47	?	Not Evaluated (NE)	Intemediate	Intermediate
Hard corals	87	1	Vulnerable **(VU)**	Intermediate	Intermediate
Hydroids	8	0	Not Evaluated (NE)	Low	Intermediate
Sponges	12	0	Not Evaluated (NE)	Low	Poor
Forams	32	?	Not Evaluated (NE)	Low	Intermediate
Algae	29	0	Not Evaluated (NE)	Low	Poor/ intermediate
Blue-green algae	4	0	Not Evaluated (NE)	Low	Poor
Totals	**1,249+**	**15+**			

1. *Brooke, M. de L., 2010. Important Bird Areas: Henderson Island. British Birds, 103: 428–444.*
2. *Weisler, M.I., 1995. Henderson Island prehistory: colonization and extinction on a remote Polynesian island. Biological Journal of the Linnaean Society, 56: 377–404.*
3. *Stoddart, D.R. 1992. Biogeography of the tropical Pacific. Pacific Science, 46: 276–293.*
4. *The EEZ (Exclusive Economic Zone) extends to 200 nautical miles (370 km) around each of the four islands in the group and covers an area of 836,108 km² (or 322,823 mls²).*
5. *Benton, T.G. & Spencer, T., 1995b. Biogeographic processes at the limits of the Indo-West Pacific Province. Biological Journal of the Linnean Society, 56: 243–244.*
6. *Okal, E.A. & Cazenave, A., 1985. A model for the plate evolution of the east-Central Pacific based on SEASAT*
7. *Blake, S.G. 1995. Late Quaternary history of Henderson Island, Pitcairn Group. Biological Journal of the Linnean Society, 56: 43–62.*
8. *Note, however, that a surprising amount of water-borne litter can collect on remote oceanic atolls (Benton, T. G., 1995. From castaways to throwaways: marine litter in the Pitcairn Islands. Biological Journal of the Linnean Society, 56: 415–422.*
9. *Brooke, M. de L. 2010. Important Bird Areas: Henderson Island. British Birds, 103: 428–444.*
10. *IUCN Red List 2012.*

Introduction

1

Four islands make up the Pitcairn group. There is little reason to group the islands together other than geographical proximity (they happen to be neighbouring islands although the outliers, Oeno and Ducie, lie approximately 560 km apart) and political expediency (they were all claimed by Britain during the nineteenth century). Two are coral atolls (Oeno and Ducie); one is an uplifted coral atoll (Henderson); and one is an extinct volcano (Pitcairn). Of the four, Pitcairn is the only inhabited island, supporting a population of about 60 people at the present time.

Figure 1. The location of the Pitcairn Islands in the central South Pacific. (Illustration: R.A. Irving)

These South Pacific islands are exceptionally remote. From Pitcairn itself, the nearest island group is that of the Gambier Islands of French Polynesia which lie some 540 km to the west-north-west, while Easter Island is over 2,000 km to the east. The continental land masses of New Zealand and South America are over 5,500 km distant (Figure 1).

The four islands themselves are well spread out, each being the emergent pinnacle of a submarine volcano. Oeno is located 128 km north-north-west of Pitcairn; Henderson is 195 km east-north-east of Pitcairn; and Ducie is 475 km east of Pitcairn. Although their combined land area extends to only 49 km^2, their Exclusive Economic Zone (EEZ) is just over 836,108 km^2 (or 322,823 square miles) in extent, a vast area that is more than three times the size of the UK (Figure 2).

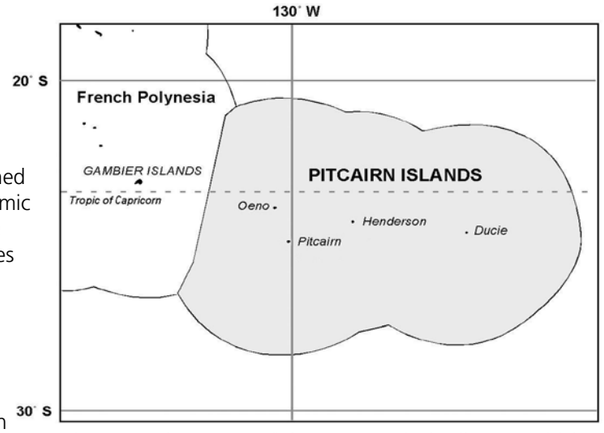


Figure 2. The extent of the 200-nautical-mile EEZ, which defines the geographic extent of this report. (Illustration adapted from Gillet, 2009)

1.1 Historical background

The first known settlers to Pitcairn were Polynesians. Archaeological evidence points to their occupying much of the island where any reasonably flat land was found (Weisler, 1995). Resources at their disposal would have included timber, fruit and planted crops, seabirds, fish and, perhaps most tellingly, suitable hard basalt for making adzes (woodworking tools). Indeed, Weisler (1995) states, "Despite its small size, Pitcairn had the best stone-tool resources in the region and was a source of cultivated foods and probably very large trees for canoe making." It is believed that Pitcairn and Henderson were first colonised by Polynesians in about AD 900 and that the occupation of both islands lasted until about 1450 – possibly up to 200 years later in the case of Henderson (Weisler, 1995).

Plate 1. As this signpost confirms, positioned at the highest point (347 m) on the island, Pitcairn is a long way from anywhere. (Photo: R.A. Irving)

Early European exploration of the Pacific led the Portuguese explorer Pedro Fernández de Quirós to encounter both Ducie and Henderson in 1606 (though no mention is made in his journal of the presence of Polynesians at Henderson). He named them 'La Encarnación and San João Baptista respectively – the anglicised names of the islands came later. He did not come across Pitcairn. The first European encounter with Pitcairn had to wait for a further 161 years when Captain Philip Carteret aboard HMS *Swallow* chanced upon it in

1767 and named it Pitcairn's Island after the man onboard who had first sighted it. Its position was marked as 133° 30' west, which is actually 188.4 nautical miles west of its true location. It was also noted that the island was uninhabited and difficult to land at, two key facts which were of great relevance some 22 years later when the mutineers from HMS *Bounty* were seeking a safe refuge.

It is the appearance of Fletcher Christian and his fellow eight mutineers which initiates the modern history of the island. Together with six Polynesian men and 12 Polynesian women they brought with them from Tahiti, they discovered Pitcairn on 15 January 1790 after a journey of four months spent searching for a suitable refuge. Their island was not to remain a paradise for long, however. Within three-and-a-half years, all bar four mutineers and 10 women (and their children) remained – the others murdered, mostly the result of ill treatment or jealousy. By 1800, there was just one survivor of the original mutineers, John Adams. The island was to remain undiscovered for a further eight years when an American whaling ship happened past, but it wasn't until 1814 that two British ships arrived at the island and the full story of the mutineers' hideaway became public knowledge.

In 1838, Pitcairn Island became a British dependency. By 1856 the population had grown to 193 and was increasing rapidly. It was feared that the island's resources would not be able to support this number for much longer and a compulsory evacuation of all islanders took place to Norfolk Island, east of Australia. However, by 1859, 16 had decided to return to Pitcairn to start afresh, followed by a further 27 in 1864. In 1902, Oeno, Henderson and Ducie were annexed by Great Britain and were included in the dependency in 1938 (Carter, 1981).

Recent history has seen the Islands' 200-nautical-mile EEZ established in 1980, and Henderson become a UNESCO World Heritage Site in 1988. One of the incentives to designate Henderson resulted from the interest in the island shown in the early-1980s by an American millionaire who wanted to build a holiday home with its own airstrip on the island. As Henderson was recognised, albeit only by a select group of scientists and conservationists, to be one of the world's remaining raised coral atolls with its ecology largely intact, moves were made to widen this recognition. However, it wasn't to be until after the Sir Peter Scott Commemorative Expedition to the Pitcairn Islands in 1991/92 that the composition of that ecology began to be known. A Management Plan for the period 2004–2009 was subsequently drawn up (Brooke *et al*., 2004), published by the Foreign and Commonwealth Office, London in conjunction with the Pitcairn Islands Administration and the Royal Society for the Protection of Birds. This consolidated much of the earlier literature and scientific knowledge of Henderson Island as a consequence of UNESCO designation.

Most recently, the Pitcairn Islands Environment Management Plan (PEMP) (Smyth, 2008), which covers all four islands, has been published. This develops 10 key objectives for managing the environment of the Pitcairn Islands, based upon the Environmental Charter jointly signed by the Mayor of Pitcairn Island and the UK Government in 2001. Although the UK Government ratified the Convention on Biological Diversity (CBD) in 1994, this has not been extended to the Pitcairn group. A review of the progress on the CBD in UK Overseas Territories, commissioned by the Worldwide Fund for Nature (WWF), highlighted that the main area of CBD legislation with which the Pitcairn group was not complying, was in connection with the ongoing monitoring of biodiversity (Cross & Pienkowski, 1998). A UK Overseas Territories Conservation Forum (UKOTCF) review of existing and potential Ramsar sites in UK Overseas Territories and Crown Dependencies, commissioned by the Department of Environment, Food and Rural Affairs (Defra), identified the coastal waters of the Pitcairn group as potential Ramsar Convention sites of International Importance (Pienkowski, 2005), but data remain inadequate to determine designations.

1.2 The islands today

Pitcairn remains geographically remote and isolated today, though the installation of a satellite link on the island in 2002 has allowed internet access and the immediacy of e-mail communications. However, getting to and from the island still remains a challenge. For international travellers, a flight to Tahiti in French Polynesia is required, followed by the once-weekly (or twice-weekly in the summer) flight to the Gambier Islands group (of which the main island is Mangareva), located over 1,600 km to the south-east of Tahiti. As there is no airstrip on Pitcairn, the only access route is by sea from this point. The island's supply ship *Claymore II* visits it once every three months and takes about 32 hours to sail to Pitcairn from Mangareva. Access may also be privately arranged through other travel companies[11]. At present, the only landing place on Pitcairn is at Bounty Bay on the north-east side of the island. Visitors are ferried to shore in one of the island's two longboats or by means of smaller local skiffs. However, plans are in place (and funding has been approved) to build an alternative landing at Tedside on the north-west side of the island, to increase the options for landing passengers.

Pitcairners have always been very welcoming to visitors. The island has no hotel, so visitors stay as guests of individual families. Recently, two units have been built to house visitors as families prepare for a growing tourism industry. Typically, stays are either of three or 10 days' duration, dependent upon the sailing schedule of the *Claymore II*[12] or of other vessels. Access to Oeno, Henderson or Ducie is considerably harder logistically, usually requiring the charter of a private vessel such as the SV *Xplore*, but not impossible. Very few commercial tour operators, private yachts or scientific expeditions visit the other islands (for which special permits are required). Pitcairners themselves visit Oeno and Henderson occasionally and Ducie extremely rarely.

Table 1. Pitcairn facts and figures. (Adapted from the UK FCO website: http://fco.gov.uk)

Status	British Overseas Territory	Population	About 60
Religion(s)	Seventh Day Adventist	Currency	New Zealand Dollar
Languages		English and Pitkern. The latter is a mixture of English and Tahitian and became an official language in 1997.	
Governance		Pitcairn Islanders manage their internal affairs through the Pitcairn Island Council. The Council is made up of Councillors and a Mayor elected by the community every two years. A new Governance Structure, introduced in April 2009, established for the first time public service positions to head up four Divisions: Community Development; Operations; Natural Resources; Finance and Economic.	
Administration		Pitcairn is administered by the Government of Pitcairn Islands (GPI), made up of the Governor's Office in Wellington, the Pitcairn Islands Office (PIO) in Auckland and the Pitcairn Island Council.	
National Day		23 January is Bounty Day, which commemorates the day in 1790 when HMS *Bounty* was set alight and sank.	
Economy		The working population is either self-employed or works for local government. There is no formal taxation. Pitcairn's primary source of income was traditionally the sale of postage stamps. However, the decline in philatelic sales worldwide, the advent of the internet and the increased cost of the service, have all had an impact. Individual income derives from subsistence horticulture, fishing and the sale of handicrafts (traded with visiting ships and also marketed by mail order through the internet). The Pitcairn Government is trying to boost revenue through the sale of .pn domain names, honey production and increasing tourist arrivals.	
National ties		Many Pitcairn Islanders have strong links with New Zealand – some are dual UK/New Zealand nationals. There are also increasing links with French Polynesia, Pitcairn's nearest neighbour, and Pitcairn is a member of the Secretariat of the Pacific Community.	
Education		The island school takes children up to the age of 15. Further education is undertaken in New Zealand. Correspondence courses are undertaken via the internet.	
UK responsibilities		The UK is responsible for Pitcairn's external relations, defence and internal security. Over the last decade the UK Government has provided extensive development assistance for a range of projects designed to help provide an environment which encourages economic and social development and to meet the needs of the community. These have included a health centre, rebuilding the school, upgrading satellite communications (to include telephones in all homes, a stable internet connection and television reception) bringing the island closer to the outside world, a sealed road from the jetty to the main settlement, other equipment and improved infrastructure. A new regular shipping service, which started in December 2009, has improved access to the island. Work is also progressing on projects to provide sustainable wind energy and an alternate harbour to make the landing of supplies, tourists (particularly from cruise ships) and islanders easier and safer.	

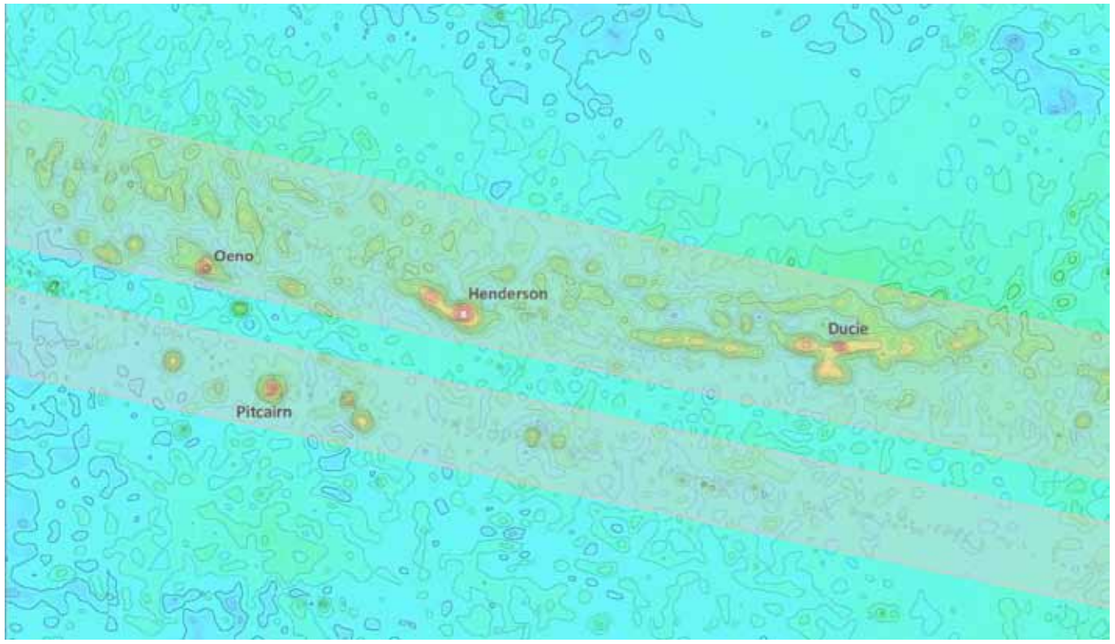


Figure 3. *Seafloor bathymetry in the vicinity of the Pitcairn Islands, showing the two main zones (shaded) of hotspot activity. (Adapted from satellite altimetry data [Smith & Sandwell, 1997]).*

1.3 Geology / geomorphology

The seafloor within the EEZ is a complex of abyssal plains, troughs and a series of seamounts (Figure 3). The deepest part of the seafloor is in the region of 4,000 m, with the summit of the tallest seamount rising to just 55 m beneath the ocean's surface. To the east of Ducie is a major structure topped by two seamounts reaching 1,000 m below present sea level at 25.0° south, 122.2° west and 24.8° south, 121.7° west. Okal (1984) proposed that this feature be known as Crough Seamount. This particular seamount is the youngest (4 Myr) in an area of hotspot activity on which are aligned Ducie (8 Myr), Henderson (13 Myr) and Oeno (16 Myr) [all ages given ± 1 Myr – one million years] (Okal & Cazenave, 1985). A second active hotspot region has been located in a zone 40 km to 110 km south-east of Pitcairn, which extends through the Gambier Islands and Mururoa atoll to the Duke of Gloucester Islands (Spencer, 1989a). This hotspot region was responsible for the creation of Pitcairn Island, which is the youngest of the four islands and was formed as the result of volcanic activity around 0.8 to 0.9 million years ago (Blake, 1995). Two particularly large submarine volcanoes along this second hotspot lineation, which lie to the south-east of Pitcairn, were discovered in 1989 by Stoffers *et al*. (1990). They were named 'Adams' and 'Bounty' by Binard *et al*. (1992) and rise to within 55 m and 450 m of sea level respectively. They have also been found to show evidence of very recent lava flows and hydrothermal activity (Hekinian *et al*., 2003). The relatively shallow apex of Adams Seamount is known locally as '40-mile Reef' (see also section 4.2).

The weight of the 'new' volcanic island of Pitcairn caused the crust beneath it to depress, with a consequential uplift approximately 200 km from the load by means of a 'see-saw' process known as 'lithospheric flexure'. Over thousands of years, this uplift caused Henderson, a former sea-level atoll, to be raised above sea level and thus form a raised fossilised reef with a dry, fossil lagoon. This process (which is still continuing at a rate of 0.1 mm/yr) has caused Henderson to be elevated to a maximum of 33.5 m above sea level. The island has been emergent for about 380,000 years (Blake, 1995).

1.4 Marine biogeography

In considering the origin of the Pitcairn Islands' marine life, one might reasonably expect that the nearest land mass to the east (i.e. South America) would act as the main source, as it is from the east that the dominant winds and currents come. However, this is not the case. The vast majority of nearshore species, including fishes, molluscs, echinoderms and corals, all have their sources of origin to the west (Kay, 1980 & 1984). This is enabled by the scattering of island 'stepping stones' between the extremely biodiverse waters of the western Pacific (around New Guinea) and the Pitcairn Islands or Easter Island (further east still), but there are no island stepping stones between Pitcairn or Easter Island and South America. This situation is as true for the Islands' terrestrial biota as it is for the nearshore marine component (Diamond, 1995).

Take the nearshore fish fauna of the Pitcairn Islands, for example. Compared to that of archipelagos to the west, it is impoverished. To date, a total of just 352 species are known from the four Pitcairn islands, of which 13 are pelagic species. There are 593 species of shore fishes known from the Society Islands, which lie approximately

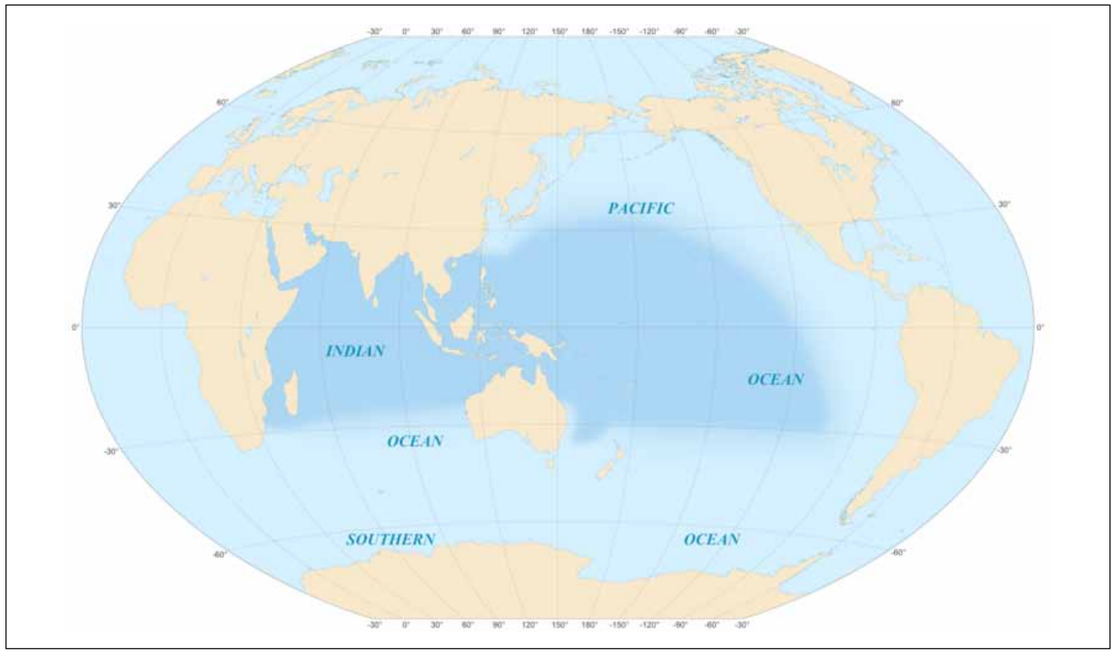


Figure 4. *The extent of the Indo-West Pacific biogeographic province (shown in dark blue). (Source: http://en.wikipedia.org/wiki/File:Indo-Pacific_biogeographic_region_map-en.png)*

1,500 km to the west (Randall, 1985), yet Easter Island, some 1,900 km further east of Pitcairn, has just 126 shore species (Disalvo *et al*., 1988). So it is likely that Pitcairn too has acted as a stepping stone (to some degree) for a number of species to reach Easter Island. In addition, the fish fauna of the Gambier Islands (south-eastern Tuamotu archipelago) is very similar to that of the Pitcairn Islands but there are about a dozen species which have yet to make the 'hop' to the Pitcairn Islands.

The mollusc fauna has a similar tale to tell. The recorded molluscan fauna from the whole of French Polynesia is 1,159 species (Richard, 1985); for the Pitcairn Islands, Preece (1995a) put the figure at 419 species (though the present review has increased this to 502), while for Easter Island only 133 species are known (Rehder, 1980). Rehder & Randall (1975) point out that Ducie atoll is the most eastern atoll of the vast Indo-Pacific biogeographical region (Figure 4) that possesses a pure, though impoverished Polynesian biota.

Corals exhibit considerable geographic variation in morphology and it may be difficult to determine whether unusual forms at peripheral locations (such as the Pitcairn Islands) are due to genetic or ecophenotypic differences (Paulay, 1989). Paulay (1989) found that several species in the Pitcairn group did not fit well the described species into which they were assigned. He commented that, "The Pitcairn coral fauna exhibits considerably more such odd geographic variation than the Cook Islands' fauna". Interestingly, coral fauna connectivity between south, central and eastern tropical Pacific sites indicates that there is a strong affinity between those of Easter Island, the Galapagos Islands and the coasts and islands of Ecuador, Colombia, Panama and Costa Rica further to the east (Glynn *et al*., 2007).

One should not forget that the amount of research carried out in any one location is also likely to have a bearing on the number of species recorded from that location. Not only is Pitcairn an isolated spot for nearshore marine species to reach, it is quite a challenge for marine biologists to get to as well!

Of course, the story is a little different for offshore pelagic species and for those that inhabit the ocean depths. Here, though the water volumes concerned are much greater, there is far more connectivity and so the same restrictions do not apply. The offshore waters within the Pitcairn Islands EEZ are known to feature in the migratory routes of several species (humpback whales and green turtles to name just two), and it is quite possible that the deep waters are as rich in species as other deep-water areas elsewhere in the Central Pacific. However, until further exploratory research is undertaken into these abyssal areas, these will remain suppositions.

11. Pitcairn Travel, a locally owned business, arranges passenger charters to Pitcairn and the other islands on the yacht SV Xplore *(www.pitcairntravel.pn). Less regular, one-off expeditions are run by other companies (e.g. www.uncharteredworldtravel.com).*

12. The sailing schedule of the MV Claymore II *can be found at: www.visitpitcairn.pn/visitpitcairn/shipping/index.html*

Information relevant to all four islands 2

Although each of the Pitcairn Islands is unique, a number of considerations are pertinent to all four. From a scientific point of view, it is often easier to group the four together and compare and contrast their marine faunas with neighbouring French Polynesia or Easter Island.

That said, it has not always been possible for visiting research expeditions to visit all four islands, even though they might well have done had time allowed or if the elements were in their favour. Initial collections of material were often undertaken on an *ad hoc* basis. The first truly scientific studies (including the collection of various marine shells) in the Pitcairn Islands were under the guidance of Captain F.W. Beechey onboard HMS *Blossom* in 1825. He was also responsible for the first full description of Ducie atoll (Rehder & Randall, 1975). Since that time there have been several individual visits and six major expeditions to the four Pitcairn Islands (Whitney South Seas Expedition [1922]; Magarevan Expedition [1934]; Westward expedition [1971]; Smithsonian Expedition [1987]; Sir Peter Scott Commemorative Expedition to the Pitcairn Islands [1991/92]; and most recently, the National Geographical Society Pristine Seas expedition to the Pitcairn Islands [2012]). Details of these are summarised in Appendix 4.

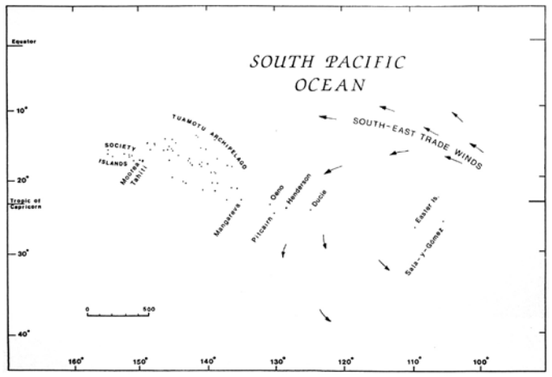


Figure 5. *The location of the four Pitcairn Islands (Oeno, Pitcairn, Henderson and Ducie) in the central South Pacific. (Illustration: R.A. Irving)*

2.1 Differences and similarities

Each of the four islands which make up the Pitcairn group is different. Not only is this true and obvious above sea level, but it is also true, maybe more so to the trained eye, below sea level. While each of the islands is perched on the very tip of its own huge submarine volcano, with steeply sloping sides descending to the abyssal depths, the shallower, nearshore sublittoral environment of each is very different.

Pitcairn is the only island of the four which has prolific seaweed growth; this makes it stand apart from the others and probably reflects its southerly position in the group. Extensive carpets of mostly brown macroalgal species (predominantly *Sargassum odontocarpum* and *Lobophora variegata*) cover bedrock outcrops in depths between 14 and 22 m. Cover of live coral varies considerably around the island, with some areas (such as off the east end of the north coast) having 80 percent cover and other areas just 0 to 10 percent cover. The only algae apparent at neighbouring **Henderson** Island are either hard, coralline species, or small wispy strands of red and green species, which have yet to be identified. While relatively inconspicuous, these latter species are heavily grazed upon by herbivorous fish and also by sea urchins. Huge numbers of the long-spined sea urchin *Diadema savignyi* are seen in aggregations on the fore-reef during the day, as there are so few places for them to hide away. Though Henderson boasts the greatest number of coral species in the group (60 in all), these do not grow into large reef formations but rather exist, on the whole, as solitary or low growing forms. Indeed, most of the fore-reef is composed of coral rubble, broken and dead pieces of coral which are likely to have been damaged periodically by fierce storm events.

The atoll of **Oeno** is characterised by its central island and surrounding shallow lagoon. Proportionately fewer marine studies have been undertaken at Oeno than at the other three islands and so our knowledge is that much less. Beyond the reef margin, the fore-reef has approximately 50 to 60 percent live coral cover, with patches of sand and coral rubble in between. While **Ducie** is also a coral atoll, its four islets make up the perimeter of the atoll, with a lagoon in the centre. The lagoon is noticeably deeper (up to 15 m) than that at Oeno (3 m) but it is also dotted with patch reefs and sandy channels. On the surface the islets appear largely barren from the point of view of vegetation, with just one species of shrub (*Heliotropium foertherianum* formerly known as *Tournefortia argentea*) predominating, though there are thousands of petrels which make the most of the island's isolation. By contrast, the reefs below the surface are surprisingly well developed, with an average live coral cover of 90 percent in depths between 11 to 20 m decreasing to 70 percent in deeper water, from 21 to 40 m. The dominant corals are a number of *Acropora* species and *Montipora* cf. *aequituberculata*, all of which are uncommon at neighbouring Henderson. The coral fauna shows remarkable resilience here as Rehder and Randall (1975) commented on a mass mortality of fore-reef corals which must have happened at some time prior to their visit in 1971. They speculated this might have been the result of an influx of cold water around the atoll.

One aspect of the underwater scenery which is common to all four islands (though is most noticeable at Henderson and Ducie) is the stunning clarity of the seawater. On a

Table 2. A summary of the total number of known marine taxa (in most cases species, but these numbers also include genera) recorded from within the Pitcairn Islands EEZ. Note that the vast majority of records are from nearshore or intertidal studies.

Taxon	No. of taxa recorded					Total no. of taxa present at all 4 islands
	Pit	Hen	Oen	Duc	Offshore	
Macroalgae (seaweeds)	24	5	-	-	?	29+
Cyanophyta (blue-green algae)	4	-	-	-	?	4
Foraminifera (forams)	11	26	2	0	?	32
Porifera (sponges)	-	6	4	6	?	12
Cnidaria: Hydrozoa	-	7+	4	0	?	8+
Cnidaria: Anthozoa (incl. corals)	15	60	17	27	?	87
Crustacea: Ostracoda	?	?	?	?	?	47
Crustacea (all groups except Ostracoda)	12+	32+	18+	11+	?	42+
Mollusca: Polyplacophora	1	?	?	?	?	1+
Mollusca: Gastropoda (snails, etc.)	71	270	192	62	?	415+
Mollusca: Bivalvia	16	40	46	18	?	81+
Mollusca: Cephalopoda	1+	1+	0	0	4	5+
(Molluscs: all groups)*	(88)	(326)	(255)	(80)	(4)	(502)
Echinodermata: Echinoidea (sea urchins, etc.)	2+	12	5	6	?	15
Echinodermata: Asteroidea (starfish)	7	7	1	0	?	10
Echinodermata: Ophiuroidea (brittlestars)	12	6	6	1	?	24
Echinodermata: Holothuroidea (sea cucumbers)	2+	10	7	5	?	15
Pisces: all species (reef & open water)	270	173	165	127	13	365
Reptilia (turtles)	?	1	?	?	2	2
Aves (marine): breeding seabirds	5	12	12	13	14	13
Aves (marine): non-breeding/migrants	6	4	6	2	19	20
Cetacea (whales & dolphins)	1	?	?	1	22	22
Totals:	**459+**	**672+**	**485+**	**279+**	**74+**	**1,249+**

** This row of the table provides sub-totals for the previous three rows, with entries in parentheses indicating they are excluded from the totals at the foot of the table.*

UK Joint Services diving expedition to the Islands in 2003, which visited Pitcairn and Henderson, the underwater horizontal visibility at 20 m depth at Henderson was measured at 75 m (R.A. Irving, *pers. obs.*). It was less at Pitcairn (at 50 m), which was to be expected as the inshore water there has a higher suspended sediment loading. However, while the clarity of the water may be good news for visiting divers, it is not so good for filter-feeding organisms. There is a distinct lack of these at all four islands, with sponges, hydroids, sessile polychaetes, bryozoans, crinoids and ascidians all under-represented on account of the lack of organic matter present in the water column.

SEABIRDS

The species of seabirds within the scope of this review include those which are resident (and breeding) on one or more of the islands, and those that are merely visiting (i.e. migrants or non-breeding). From observations made during the Sir Peter Scott Commemorative Expedition to the Pitcairn Islands in 1991/92, the migrants visiting the islands were all waders with Northern Hemisphere breeding grounds. Their numbers showed the expected annual pattern, reaching maxima during the northern winter. Those numbers were generally very modest (Brooke 1995a). Only bristle-thighed curlews were present in significant numbers; the Pitcairn Islands support almost 2 percent of the global population (Collar *et al*., 1992). Other observations of offshore seabirds have come from charter boat passages to and from the Islands, particularly those carrying ornithologists (see also section 4.3, Table 17).

The various seabirds which nest and raise young at the islands show varying breeding seasons throughout the year. In the absence of both information about the birds' diets and annual fluctuations in abundance of marine prey, the causes of the occurrence of these breeding seasons remains unknown (Brooke 1995a). However, they do confirm the seasonal nature of the marine environment surrounding the Pitcairn Islands (Spencer, 1995b).

Table 3. Estimates of the breeding populations in pairs [standard error] of *Pterodroma* species breeding in the Pitcairn Islands in 1991/92 (after Brooke, 1995b).
Pitcairn Island itself is not listed because no petrel species were breeding there.
The Phoenix petrel *P. alba* is not listed because none were found breeding during the 1991/92 expedition.

	Henderson	Oeno	Ducie	Red Data List status
Kermadec petrel *P. neglecta*	10,000 [3,000]	< 100	30,000 [10,000]	**LC**
Murphy's petrel *P. ultima*	2,500 [500]	12,500 [2,500]	250,000 [29,000]	**NT**
Herald petrel *P. heraldica*	11,100 [2,000]	0	10,000 – 99,999 [?]	**LC**
Henderson petrel *P. atrata*	16,000 [3,000]	0	0	**EN**

Plate 2. Kermadec petrel Pterodroma neglecta
(Photo: M. Brooke)

Plate 3. Murphy's petrel Pterodroma ultima
(Photo: M. Brooke)

Plate 4. Herald petrel Pterodroma heraldica
(Photo: Tubenoses Project © H. Shirihai)

Plate 5. Henderson petrel Pterodroma atrata
(Photo: M. Brooke)

The problem with rats…

A clear association has been established between the decline of certain bird populations on islands and the introduction of rats *Rattus* spp. Brooke (1995b) observed intense predation by Pacific rats *Rattus exulans* on newly hatched Murphy's and Kermadec petrel chicks while resident on Henderson Island for 15 months in 1991/92. He also attributed the loss of chicks of Henderson petrels and Herald petrels as likely due to Pacific rats (Brooke *et al*., 2010a).

Rats were introduced by the Polynesians to Henderson about 700 years ago (Weisler, 1994). Brooke (1995b) postulated that the combined population of Herald and Henderson petrels on Henderson Island at that time could have been in the region of six million pairs. A steady and constant decline in that number (which Brooke [1995b] calculated as being 0.77 percent per annum) as a result of both human and rat predation, would leave a combined population of the two species at between 4,500 and 45,000 respectively by the late twentieth century. In 1991, Brooke (1995b) estimated the combined population of Herald and Henderson petrels to be in the region of 27,000 pairs.

In 1997, successful rat eradications took place on both Oeno and Ducie atolls (G. Wragg, *pers. comm.*). Two attempts to eradicate rats from the larger, more rugged and more logistically complex Pitcairn have been unsuccessful, however. In August 2011 the much larger task of eradicating rats from Henderson was undertaken by the Royal Society for the Protection of Birds/Pitcairn Islands Government with on-the-ground assistance from Pitcairn Islanders. Unfortunately, this eradication attempt was also unsuccessful, with live rats being sighted by members of the National Geographic expedition to the islands in April 2012[13].

2.2 Endemism

The definition of an endemic species is "a species which is only found in a given region or location and nowhere else in the world" (http://www.biodiversity-worldwide.info)[14].

Corals, Molluscs and Echinoderms

Paulay (1989), who studied corals, molluscs and echinoderms at all four islands during the 1987 Smithsonian Expedition, concluded that seven out of the 310 species or subspecies he identified (or 2.2 percent) were known only from the Pitcairn group. These were the asteroid *Allostichaster peleensis*, the ophiuroids *Amphilimna tanyodes* and *Amphiura bountyia*, the coral *Porites* aff. *annae*, and the gastropods *Engina rosacea*, *Fusinus galatheae bountyi* and *Ziba cernohorskyi*. Five of the seven were only known from Pitcairn Island at the time. However, these five species were all obtained by dredging from fairly deep water (40-100 m), a habitat which has been minimally sampled in Polynesia (Paulay, 1989). Preece (1995a) doubled the number of marine molluscs known from the Pitcairn Islands and described several new species, including a few additional endemics with non-planktotrophic larvae, but concurred that the overall level of endemism for the marine molluscan fauna was about 2 percent. This is the percentage level of endemism seen in the fish fauna too (see below). These levels of endemism are relatively low. However, in terms of the number of endemic nearshore fish species per unit area, the Pitcairn Islands are among a select group of remote islands with the highest concentrations (Allen, 2008), the others in the group being Clipperton, Isla del Coco, Easter and Rapa.

Reef fishes

There are five species of bony fishes which are currently believed to be endemic to the Pitcairn Islands (Randall, 1999; FishBase, 2011). These are the Pitcairn sandlance *Ammodytoides leptus*, the many-spined butterflyfish *Hemitaurichthys multispinosus* (both only found at Pitcairn); the Henderson triplefin *Enneapterygius ornatus* and the squirrelfish *Sargocentron megalops* (both found only at Henderson). There is also an undescribed species of combtooth blenny *Alticus* sp. (Randall, 1999), found both at Pitcairn and Henderson. Thirty-three species of fishes were new to science when first collected from the Islands in 1971 and have since been described. A further 15 species were only recorded to genus when collected, although a number have since been identified to species level (Randall, 1999).

As indicated above, a number of species that were new to science at the time of their discovery have been recorded from the Pitcairn Islands. Several of these species now bear a name which refers to their place of origin (their type locality) in some way. Thus we have *Fusinus galatheae bountyi* (a neogastropod mollusc); *Cypselurus pitcairnensis* (a flyingfish); *Amphiura bountyia* (a brittlestar); and *Neonesidea blighi* and *Loxoconcha hendersonislandensis* (both ostracods).

For the curious, the Pitcairn Islands also have a number of endemic non-marine terrestrial species, including five land birds – the Pitcairn reed warbler, the Henderson fruit dove, the Henderson lorikeet, the Henderson rail or crake and the Henderson reed warbler (Brooke, 2010). Henderson also has nine endemic plants; Oeno had one but it could not be found in 1991; and Pitcairn has two endemic ferns and seven endemic flowering plants (Florence *et al*., 1995). There are seven species (or subspecies) of terrestrial gastropod molluscs which are endemic to Henderson and a further eight from Pitcairn (Preece, 1995b). There is also an undetermined number of endemic insects to the islands (Benton, 1995a) as well as of non-flying arthropods (Benton & Lehtinen, 1995). It should be remembered, however, that this list is not complete nor is it definitive – it simply reflects those groups which have been studied in detail.

2.3 Measures of protection

The UK Overseas Territory of the Pitcairn Islands and their marine waters are included within the UK's ratification of the following Conventions:

- World Heritage Convention[15]
- Ramsar Convention[16]
- Convention on Trade in Endangered Species (CITES)
- Convention for the Protection of the Natural Resources and Environment for the South Pacific Region (signed June 1988)
- International Convention on the Regulation of Whaling
- Convention on the Conservation of Migratory Species (CMS) – the Henderson petrel *Pterodroma atrata* is included in the appendices and a Memorandum of Understanding has been signed by the Pitcairn Islands Council with CMS concerning the conservation of cetaceans.

National legislation pertaining to species protection and protected areas includes:

- The Fisheries Zone Ordinance
- Local Government Regulations 1971 (Part IV) – see below
- UK Overseas Territories Environmental Charter.

Local Government Regulations

Under Chapter XI (Local Government Ordinance), Part IV (Animals and Wildlife), Section 5, of the Laws of Pitcairn, Henderson, Ducie and Oeno Islands (Revised edition 2010), it states that:

"No person shall take, hunt, fish, capture, harass or intentionally kill, or attempt to take, hunt, fish, capture, harass or kill, any member of the following species: blue whale (*Balaenoptera m[a]usculus*); humpback whale (*Megaptera novaeangliae*); right whale (*Eubalaena glacialis*); short-tailed albatross (*Diomedea albatrus*); cahow (*Pterodroma cahow*); dark-rumped petrel (*Pterodroma phaeopygia*); green sea turtle and related species (*Cheloniidae*); leather back sea turtle (*Dermochelys coriacea*); hawksbill turtle (*Eretmochelys imbricata*); loggerhead turtle (*Caretta caretta*); Ridley turtle (*Lepidochelys olivacea*).
Penalty: $50."

The list of species presented here clearly requires updating as, according to the authors' research, seven (of the 11) have never been recorded from the waters surrounding the islands: right whale *Eubalaena glacialis*; short-tailed albatross *Diomedea albatrus*; cahow *Pterodroma cahow*); dark-rumped petrel *Pterodroma phaeopygia*; leather back sea turtle *Dermochelys coriacea*; loggerhead turtle *Caretta caretta*; and Ridley turtle *Lepidochelys olivacea*.

13. See the National Geographic Newswatch blog article at http://newswatch.nationalgeographic.com/2012/04/28/mike-fays-pitcairn-journal-tragic-sighting

14. This definition requires that the region to which the species is endemic be defined. Thus one can have a 'habitat endemic' (e.g. only found within a certain habitat such as a cave or a seagrass bed); an 'island endemic' (e.g. just found at Pitcairn Island); a 'group endemic' (e.g. found only at two or more of the Pitcairn Islands), or even a 'geographical range endemic' (e.g. only found within the central South Pacific).

From these examples it is clear that the use of the mere term endemic as such is rather vague and without too much value by itself. It should be noted that the concept of endemism very much depends on the knowledge of the geographical range of a species. Usually, a newly discovered species has only been found at just one limited site, and with the knowledge of that moment, it should be considered an island and probably a group endemic. However, this only lasts until the time when someone discovers it at another island group. At that moment its original status of Pitcairn Islands endemism will be lost. This is bound to be the case for many endemic organisms which are difficult to see or recognise, as is the case with most marine invertebrates.

15. Henderson became a World Heritage Site in 1988.

16. Five sites are currently under consideration: Oeno, Henderson and Ducie (totalling an area of 5,300 ha), and two sites at Pitcairn – Brown's Water and the Coastal Waters of Pitcairn.

Nearshore waters[17]

3

3.1 Pitcairn Island

KEY FACTS			
Name	PITCAIRN	Island type	Volcanic island (extinct)
Location	25°04'S, 130°06'W	Distance/bearing from nearest island(s)	Oeno is 120 km to the NW. Henderson is 200 km to the ENE.
Dimensions	3.2 km (2 miles) long by 1.6 km (1 mile) wide	Land area	4.5 km² (450 ha)
Altitude	Sea level to 347 m	Length of coastline	~ 9.5 km long
Origin of name	First discovered by Europeans in 1767 by Capt. Philip Carteret onboard HMS *Swallow*, who named it after the look-out who had first sighted the island. Occupied by Polynesians from ~900 to ~1450 AD.		
Population/visitors	2011 population: 65 (56 native residents and 9 non-residents). Max. population of 250 in 1936.		
Status	Nearest inhabited island: Mangareva, Gambier Islands, French Polynesia (480 km away). Important Bird Area (2010). Proposed Ramsar Site – 'Coastal Waters' and 'Brown's Water' (2005)		
Overview	A small, isolated rocky island, being the emergent tip of a volcano thought to be < 1 million years old. Has one endemic bird species (the Pitcairn warbler), a number of endemic plant species and two endemic fishes. The island's waters have recently (since the early 1990s) become a regular haunt of small numbers of humpback whales during the austral winter.		

(Information extracted from various sources including the RSPB's A Directory of Wetlands in Oceania http://www.wetlands.org/RSIS/WKBASE/OceaniaDir/Pitcairn.htm)

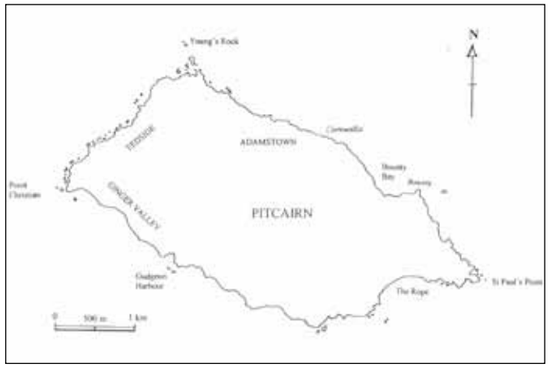


***Figure 6**. Map of Pitcairn Island. (Illustration: R.A. Irving)*

***Plate 6.** Aerial view of Pitcairn from the west. (Photo: A. McDonald, 2011)*

Plate 7. *Sea-level view of Pitcairn from the east. (Photo: R.A. Irving)*

Plate 8. *The jetty and boat shed, Bounty Bay, Pitcairn 2011. (Photo: R.A. Irving)*

Plate 9. *Rockpools at Down Isaacs, Pitcairn. (Photo: R.A. Irving)*

Plate 10. *St Paul's Pool, Pitcairn. (Photo: T.P. Dawson)*

3.1.1 Introduction

Pitcairn is a rugged island with steep cliffs forming much of its coastline. The only two places on the island which offer a reasonably safe landing are Bounty Bay (on the north-east coast) and Tedside (on the north-west coast) (Figure 6; Plate 8).

At 24° south, the subtropical nearshore waters around Pitcairn lack the typical coral reef formations found on most Pacific islands. Annual sea surface temperatures taken from an area to the north-east of Pitcairn (23.5°S, 128.0°W) show the monthly mean surface temperature to range from 22.5°C (Aug/Sept) to 26.3°C (Feb/Mar) (Streten & Zillman, 1984). This is just above the lower limit for structural coral reef construction which is typically taken as 20°C in the coldest month of the year (Stoddart, 1969).

3.1.2 Intertidal zone – habitats and species

Accessible intertidal habitats are few and far between on Pitcairn. Five which can be reached without too much difficulty are: Down Rope (largely consisting of a coarse sand beach with low-lying bedrock platforms either side and surrounded by very high vertical cliffs); Tedside (fissured bedrock platforms with shallow pools and large angular boulders); Down Isaacs, to the west of Bounty Bay (bedrock platforms with shallow pools); Bounty Bay (large and small boulders to the east of the jetty); and St Paul's Pool (a large pool with a maximum depth of 3 m at the eastern extremity of the island) (Plate 10).

The pools at Down Isaacs as well as the large one at St Paul's feature a number of macroalgal species including *Sargassum obtusifolium* and *Caulerpa racemosa* (Plates 15 & 16). They also support a number of winkles and limpets, electric blue hermit crabs *Calcinus elegans*, Sally Lightfoot crabs *Grapsus tenuicrustatus*, and various fishes within them, such as blennies, damselfishes, mullets, goatfishes and wrasses.

Plate 11. *Shallow vertical rock face, Adam's Rock, east of Bounty Bay, Pitcairn. (Photo: R.A. Irving)*

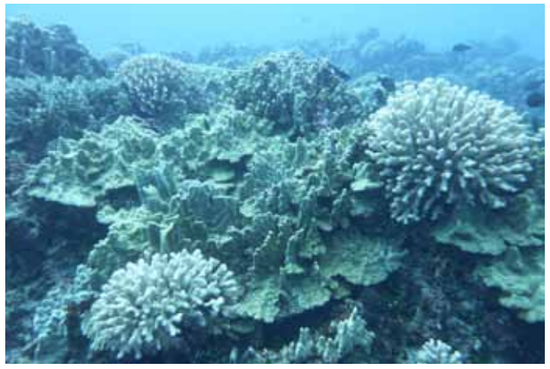


Plate 12. *100 percent coral cover evident at 18–22 m depth off Down Isaacs, north-east coast of Pitcairn. (Photo: R.A. Irving).*

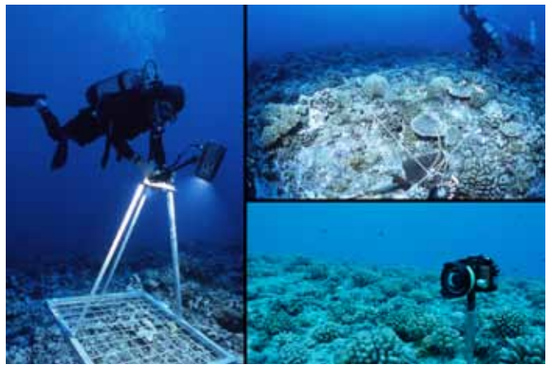


Plate 13 *Coral monitoring studies at 13 m depth off Pitcairn's north-west coast. (Photo C. Rives &Y. Chancerelle, CRIOBE).*

Plate 14. *Automatic data recorder set at 36 m depth off Pitcairn's north-west coast. (Photo: C. Rives & Y. Chancerelle, CRIOBE)*

3.1.3 Bathymetry and marine habitats

One might imagine that, as Pitcairn is just the tip of a submarine volcano which rises from the surrounding seafloor at a depth of some 2,500 to 3,750 m, there would be dramatic drop-offs and near-vertical cliffs close to low water mark all around the island. But this is not the case. The seabed appears to shelve very gradually from 10 m to 30 m in depth for approximately 300–500 m all the way round the island. In places, a level terrace-like seabed exists, with very little discernable difference in depth for stretches of 150–200 m perpendicular to the shoreline. It is likely that, over tens of thousands of years, the pounding surf affecting the nearshore zone has created a wave-cut platform as the volcanic sand has scoured away the underlying bedrock to a uniform depth.

Cover of live coral varies from 5 percent to 80 percent depending on the depth and the location around the island. Coral growth seemed most prolific in the 12–22 m range. However, in 1971, Randall (1999) undertook some of his fish collecting dives in deep water. On one such occasion, when diving a feature known as 'The Bear' off the north-east coast, which rises about 9 m above the seabed at 45 m, he recorded the live coral cover as being almost 100 percent. One of the most extensive areas of live coral growth is present off Adamstown at a depth of 18–30 m, covering an area of about 2 km^2.

In 2009 a reef monitoring programme off Pitcairn's north-west coast was initiated by the Institut des Récifs Coralliens du Pacifique / Centre de Recherches Insulaires et Observatoire de l'Environnement (Institute for Pacific Coral Reefs / Centre for Island Research and Observatory of the Environment, or IRCP / CRIOBE), based in Moorea, French Polynesia. The programme is part of an ongoing 16-year long-term project monitoring the outer reef slopes of 20 islands spread over the four French Polynesian archipelagos (Australs; Marquesas; Society; Tuamotu) and six Pacific Island Countries and Territories (PICTs) (Cook Islands; Niue; Kiribati; Tokelau; Kingdom of Tonga; Wallis and Futuna). The project focuses on the effects of natural disturbances on coral reef ecosystems.

At Pitcairn, monitoring will be of fish populations (species richness, sizes and abundance) and of Scleractinia coral populations (photo surveys of genus richness, coverage percentages, landforms) at a location of 25°3.821'S, 130°7.254'W. At a second survey site (25° 03.361' S, 130° 07.596' W) certain hydrological parameters will be continuously recorded (temperatures to the nearest milli-degree, swell heights and frequencies, and sea

level heights). A Memorandum of Understanding was signed to facilitate cooperation for this project in June 2011 between the Pitcairn Island Government's Natural Resources Division and IRCP / CRIOBE (Chancerelle & Lison de Loma, 2009).

3.1.4 Marine species

Those groups of marine taxa which have been investigated at Pitcairn are commented on below, together with any noteworthy species.

SEAWEEDS

Several species of macroalgae (seaweeds) occur in Pitcairn's nearshore waters, whereas there is a noticeable lack of macroalgae at Henderson, Oeno and Ducie. Why this should be so is unclear, but it may be to do with Pitcairn's position (it is the most southerly of the four islands) and the slightly lower temperature of its waters. There is also likely to be a higher nutrient input to the waters around Pitcairn accompanying rainwater run-off, compared with the other islands. The only published work on the island's marine algae which the authors have come across (Tsuda, 1976) is based on samples collected during the 1970/71 expedition. As just five samples were collected at the time (three from the intertidal and two from the subtidal), it is likely that more species of macroalgae will be added to the current total of 13 species. Some notes on the distribution of dominant species were made by the authors during their visits to Pitcairn in 2003 (RI) and 2011 (RI & TD) and, as this report was going to press, some initial findings of the National Geographical Society's 2012 Pristine Seas expedition to the Pitcairn Islands announced a further eight algal records via its website, bringing the total number of species to 24.

Bushy brown algae (*Sargassum odontocarpum*[18]) dominate the upward-facing surfaces of bedrock outcrops which are present between 14 m to 22 m depth around much of the island, with local variations in percentage cover (10 to 70 percent) depending on local sediment smothering, scour and grazing by sea urchins. Also present on these outcrops are clumps of *Lobophora variegata* and a *Padina*-like alga too. There are a number of encrusting coralline algal species too, which are both prolific in their coverage and widespread around the island, but these have yet to be studied.

FORAMS[19]

In 1991 a number of sediment and seaweed samples, collected by Richard Preece of the Sir Peter Scott Commemorative Expedition, were later analysed for Foraminifera (forams) by John Whittaker and Richard Hodgkinson of the Natural History Museum, London (Whittaker & Hodgkinson, 1995). Note that no Foraminifera were found in the sediment samples taken. A total of 11 species[20] of Foraminifera have been recorded from Pitcairn, although this is by no means a complete record (see Appendix 5).

SPONGES

As far as can be determined, no sponges have been collected from the intertidal nor from the subtidal at Pitcairn. However, small and cryptic encrusting forms are known to exist, though they are rare (R.A. Irving, *pers. obs.*).

CORALS, etc.

A total of 15 species of scleractinian (stony) coral are listed from Pitcairn by Paulay (1989), based on collections made from three expeditions: in 1967 (by H.A. Rehder, D.M. Devaney and B.R. Wilson using a dredge); in 1970–71 (by J.E. Randall and H.A. Rehder using scuba); and in 1987 (by G. Paulay using scuba). However, as Paulay only spent four days at Pitcairn with specimens being brought to him by divers, he does not consider his list for Pitcairn to be comprehensive.

A number of soft coral species (Order Alcyonarea) are present in the subtidal around Pitcairn, though these have yet to be identified. There are very few anemones (Order Actinaria) and those that are present are often well hidden (cryptic). The few species that are present have yet to be identified. Similarly, hydroids (Order Leptothecata) are small and sparse. It is likely that most of these forms struggle to become established as a result of grazing pressure from sea urchins and certain fish species. Fire coral (Order Milleporidae) *Millepora* sp. is also present at Pitcairn, but in much smaller abundances than at Henderson (R.A. Irving, *pers. obs.*).

Plate 15. Sargassum obtusifolium. *Intertidal pool, Down Isaacs, Pitcairn. (Photo: R.A. Irving)*

Plate 16. Caulerpa racemosa. *Intertidal pool, Down Isaacs, Pitcairn. (Photo: R.A. Irving)*

Table 4. Species of scleractinian coral recorded from Pitcairn (after Paulay, 1989) which are of conservation concern, with IUCN conservation status from Palomares *et al*. (2011) (excludes categories: LR, LC, DD & NE).

Species	IUCN Code*	Notes
Acropora acuminate (Verrill 1864)	VU	Presence at Pitcairn queried by Paulay. Also recorded from Ducie & Oeno.
Acropora secale (Studer 1878)	NT	Presence at Pitcairn queried by Paulay. Also recorded from Oeno.
Porites cf. lobata (Dana 1846)	NT	Also recorded from Henderson & Ducie.
Favia mathaii (Vaughan 1918)	NT	Also recorded from Henderson.

** IUCN's Red List categories (IUCN, 2012):* **VU** *= Vulnerable;* **NT** *= Near Threatened*

CRUSTACEANS

While there are a number of different crustacean families represented both intertidally and subtidally at Pitcairn, these have yet to be studied in any detail. A total of 29 non-ostracod species has so far been recorded, together with 47 ostracod[21 22] species.

Of the larger decapods, two species of spiny lobster occur at Pitcairn – the pronghorn or red spiny lobster *Panulirus penicillatus* (Plate 17) and the Easter Island spiny lobster *Panulirus pascuensis* (Plate 18). The former species has white stripes along its legs and the latter has blue stripes. Individuals of both species are caught by divers on a regular basis, either for sharing with other islanders on 'feast days', selling to the local restaurant when open, or for selling to chefs onboard visiting cruise ships. The Aesop slipper lobster *Scyllarides haanii* (Plate 19) is another commercially important crustacean which is caught using baited pots – see also section 3.1.5.

Recently, the presence of a small population of a caridean shrimp *Macrobrachium latimanus* (von Martens, 1868) has been confirmed in an isolated freshwater pond on Pitcairn Island (Plate 20). It is intriguing to think how the population might have got there – by deliberate introduction or possibly as larval stages attached to the muddy feet of migrant birds? In fact, neither of these is the case. It turns out that this shrimp has an intriguing life cycle: although the adults live in freshwater pools, its larvae must develop in a saline environment in the open sea (known as obligate amphidromous migration). The adults have to journey to the sea in order to shed their eggs. After a period of some months passing through several larval development phases, the juveniles then migrate back upstream to the adult freshwater habitat. The population must have become established at Pitcairn from larvae that had got to the island from Mangareva in the Gambier Islands (or possibly other islands to the west), where the species has also been recorded.

MOLLUSCS

Over 80 marine molluscan taxa have been recorded from Pitcairn, although the molluscan fauna is still poorly known (Preece, 1995a).

Pitcairn was the first place where the gastropod *Fusinus galatheae bountyi* (Plate 21) was found in depths of 40–100 m (Rehder & Wilson, 1975). It is believed to still be a subspecies endemic to Pitcairn, although it may occur at neighbouring localities. It is a predatory gastropod and is frequently found in the baited pots set out around the island to catch slipper lobsters.

A species of octopus, '*Octopus' oliveri*, is regularly caught in shallow rocky areas around Bounty Bay (Plate 22). It is also found in the intertidal at Henderson, particularly around the north-west point. The octopus was thought to have been an undescribed species when encountered on Henderson in 1991 (Preece, 1995a), but it has since been found to be the same species as is found elsewhere in the Pacific – in the Kermadec Islands off New Zealand and also at Hawai'i (F.G. Hochberg, *pers. comm.*). However, it is still not clear as to whether it belongs to the genus *Octopus* (Norman & Hochberg, 2005), hence the inverted commas. Its population size at Pitcairn appears to be able to sustain the numbers which are fished there.

STARFISH, SEA URCHINS & SEA CUCUMBERS (Echinodermata)

A total of 23+ species of echinoderms (sea urchins [2+ spp]; starfish/sea stars [7 spp]; brittlestars [12 spp]; sea cucumbers [2+ spp]) are listed from Pitcairn by Paulay (1989). The number of brittlestar species is relatively high as most of these were collected by dredge (Devaney, 1974). These species, together with their IUCN Red List status (all of which are 'Not Evaluated') are set out in Appendix 5.

REEF FISHES

From the literature searches carried out for this report, a total of 270 species of reef fishes have been recorded from Pitcairn. This equates to 77 percent of the total number of reef fishes (352) recorded from all four islands. Randall (1999) gave the figure of 271, which has been updated here to include some newly described species as well as discounting some dubious records. Many more species have been recorded from Pitcairn than from the other three islands in the group, which reflects the greater number of habitats available at Pitcairn. A total of

Plate 17. *Pronghorn or red spiny lobster* Panulirus penicillatus. *(Photo: R.A. Irving)*

Plate 18. *Easter Island spiny lobster* Panulirus pascuensis. *(Photo: R.A. Irving)*

Plate 19. *Aesop slipper lobster* Scyllarides haanii. *(Photo: T.P. Dawson)*

Plate 20. *The 'freshwater' shrimp* Macrobrachium latimanus. *(Photo: R.A. Irving)*

Plate 21. *The shell of the gastropod* Fusinus galatheae bountyi, *a subspecies believed to be endemic to Pitcairn. (Photo: R.C. Preece)*

Plate 22. *The octopus* 'Octopus' oliveri *is often caught in shallow rocky areas around Bounty Bay. (Photo: T.P. Dawson)*

33 species (all collected by Dr J.E. Randall) were new to science when first discovered at Pitcairn in 1971 (Randall, 1999), although several of these have now been found elsewhere. These are listed below in Table 5, together with those species regarded as being of conservation concern.

The most common fishes observed at diving depths of about 10–20 m at Pitcairn are the wrasses *Thalasoma lutescens* and *Coris* sp., the surgeonfish *Acanthurus leucopareius*, the damselfishes *Chrysiptera galba* and *Stegastes fasicolatus*, and drummer/nanwi *Kyphosus bigibbus* (Randall, 1999; R.A. Irving, *pers. obs.*). Nanwi (the local vernacular name) occur in very large shoals (up to 300 or so) near rocky outcrops, upon which tens of individuals may suddenly swoop and feed voraciously before being moved on by a dominant individual (which may well display different colouration). This species is an important food fish for the islanders (see also section 3.1.5).

The two shark species which are most likely to be seen at Pitcairn are the Galapagos shark *Carcharhinus galapagensis* and the whitetip reef shark *Triaenodon obesus*. The teeth of a caught shark will be used as teeth in hand-carved wooden sharks which are crafted for sale. To date, two tiger sharks *Galeocerdo cuvier* have been reported from Pitcairn, one in 1980 and one in 1985. In addition, a spotted eagle ray *Aetobatus narinari*, with a disc width of 1.5 m, was caught off the jetty in Bounty Bay in 1974.

Table 5. Noteworthy reef fishes occurring at Pitcairn.

Species	IUCN Code*	Notes	
Many-spined butterflyfish *Hemitaurichthys multispinosus*	**LC**	New species (first discovered at Pitcairn in 1971 by J.E. Randall) and endemic to Pitcairn Island. Depth range 40–44 m. Inhabits seaward reefs; apparently a deep dweller. Ref. Allen, G.R. (1985). (Photo: J.E. Randall)	
Pitcairn angelfish *Genicanthus spinus*	**LC**	New species, first discovered at Pitcairn in 1971 by J.E. Randall. Depth range 30–60 m. Max. length: 35 cm. Distribution: Eastern Pacific, Cook Islands to Ducie Atoll (Pitcairn). (Photo: J.E. Randall)	
Hotumatua's angelfish *Centropyge hotumatua*	**LC**	New species, first discovered at Pitcairn in 1971 by J.E. Randall. Depth range 30–60 m. Max. length 35 cm. Distribution: All four Pitcairn Islands, the Australs, and Rapa. (Photo: J.E. Randall)	
Smith's butterflyfish *Chaetodon smithi*	**LC**	New species, first discovered at Pitcairn in 1971 by J.E. Randall. Depth range: 10-30 m. Max. length 17 cm. Distribution: Pitcairn Island, Rapa & Ilots de Bass. (Photo: R.A. Irving)	
Pitcairn parrotfish *Scarus longipinnis*	**LC**	New species, first discovered at Pitcairn in 1971. Depth range: 10-55 m. Max. length 40 cm. Distribution: Pitcairn & Henderson; Great Barrier Reef and southern Pacific islands. (Photo: J.E. Randall)	

Species	IUCN Code*	Notes	Species	IUCN Code*	Notes
Giant grouper *Epinephalus lanceolatus*	**VU**	Also recorded from Henderson. Vulnerable status due to overfishing elsewhere.	White-tip reef shark *Triaenodon obesus*	**NT**	Present at all four islands. Near Threatened status due to practice of finning worldwide.
Surge grouper *Epinephalus socialis*	**NT**	Typically present in surge zone, 1–4 m. Near Threatened status due to overfishing elsewhere.	Spotted eagle ray *Aetobatus narinari*	**NT**	Only recorded from Pitcairn, though has circumtropical distribution. Near Threatened status due to overfishing elsewhere.
Moray eel *Gymnothorax australicola*	**NE**	New species	Tahiti damselfish *Pomachromis fuscidorsalis*	**NE**	New species
Moray eel *Uropterygius kamar*	**NE**	New species	Emery's gregory *Stegastes emeryi*	**NE**	New species
Lizardfish *Synodus capricornis*	**NE**	New species	Feminine wrasse *Anampses femininus*	**NE**	New species
Flyingfish *Cypselurus pitcairnensis*	**NE**	New species	Scott's wrasse *Cirrhlabrus scottorum*	**NE**	New species
Squirrelfish *Sargocentron hormion*	**NE**	New species	Wrasse *Coris* sp.	**NE**	New species
Doublespot perchlet *Plectranthias fourmanoiri*	**NE**	New species	Black-ear wrasse *Halichoeres melasmapomus*	**NE**	New species
Dwarf perchlet *Plectranthias nanus*	**NE**	New species	Wrasse *Pseudocheilinus citrinus*	**NE**	New species
Redblotch perchlet *Plectranthias winniensis*	**NE**	New species	Tailspot wrasse *Pseudocheilinus ocellatus*	**NE**	New species
Longfin anthias *Pseudanthias ventralis*	**NE**	New species	Polynesian wrasse *Pseudojuloides atavai*	**NE**	New species
Southern anthias *Pseudogramma australis*	**NE**	New species	Wrasse *Thalassoma heiseri*	**NE**	New species
Cardinalfish *Apogon caudicinctus*	**NE**	New species	Blenny *Alticus* sp.	**NE**	New species
Damselfish *Chromis pamae*	**NE**	New species	Eyebar goby *Gnatholepis cauerensis*	**NE**	New subspecies
Damselfish *Chrysiptera galba*	**NE**	New species	Goby *Trimmatom* sp.	**NE**	New species
Damselfish *Dascyllus flavicaudus*	**NE**	New species	Pitcairn sandlance *Ammodytoides leptus*	**NE**	New species

** IUCN's Red List categories (IUCN, 2012):* **VU** *= Vulnerable;* **NT** *= Near Threatened;* **LC** *= Least Concern;* **NE** *= Not Evaluated*

TURTLES

Two species of turtles are likely to be seen in the waters surrounding Pitcairn, the hawksbill *Eretmochelys imbricata* and the green turtle *Chelonia mydas*. During 1983 (one particular year when sightings were recorded) there were eight sightings of green turtles and six of hawksbill turtles (Groombridge & Luxmoore 1989). Neither of these species nest at Pitcairn, however, as there are no suitable sandy beaches.

SEABIRDS

Compared with the three uninhabited islands within the group, Pitcairn's seabirds are relatively few in number. The likely reasons why this should be so are humans, feral cats and introduced rats. Prehistoric breeding seabird populations were likely to have been substantially higher. Those species presently breeding on the island include black noddy *Anous minutus* (20 pairs), brown noddy *Anous stolidus* (100 pairs), blue-grey noddy *Procelsterna cerulea* (10 pairs), red-tailed tropicbird *Phaethon rubricauda* (30-50 pairs) and Christmas shearwater *Puffinus nativitatis* (probably <10 pairs) (all estimated numbers taken from Brooke [1995a]). None of the gadfly petrels (*Pterodroma* spp.) nest on Pitcairn. Again, this is likely to be due to the cats and rats. Non-breeding species include the reef heron *Egretta sacra*, Pacific golden plover *Pluvialis fulva*, grey plover *Pluvialis squatarola*, southern giant petrel *Macronectes giganteus*, and wandering tattler *Tringa incana* (formerly known as *Heteroscelus incanus*).

CETACEANS

The regular migration of humpback whales *Megaptera novaeangliae* to Pitcairn Island was first noted in about 1992 and since then small numbers have become expected visitors each austral winter (May to September). Four distinct breeding stocks of humpback whales are recognised in the South Pacific and around Australia, but it was not until 2007 that a further division of sub-stocks was recognised, one such being the F2 (French Polynesia) sub-stock to which the humpbacks that appear at Pitcairn belong (Childerhouse *et al*., 2008). While most humpback populations are considered of Least Concern, this particular sub-group is considered Endangered (IUCN Red List, 2012).

Their presence at Pitcairn was investigated over a three-month period from June to September 2007 by Catherine Horswill (Horswill, 2007). During a total of 84 survey days, 37 separate whale sightings were made totalling 59 whales, though the number of individual whales will be considerably less than this as many will have been counted on more than one occasion. Whales were seen all around the island, with most sightings occurring off the northern side (Figure 7). The largest group seen was of a passing pod of eight whales. All group classes except competitive groups were observed including singleton, pair of adults, mother and calf pair (Plates 23 & 24), and mother and calf and escort trio. Singletons were observed seven times participating in high energy surface displays. However, a secondary adult was never sighted in the same vicinity either for mating or competition. Calves were sighted in eight separate observations, witnessed on occasion less

Plates 23 (top) & 24 (above). *A female humpback whale and her calf. Photographed off Bounty Bay, Pitcairn on 5 September 2011. (Photos: R.A. Irving)*

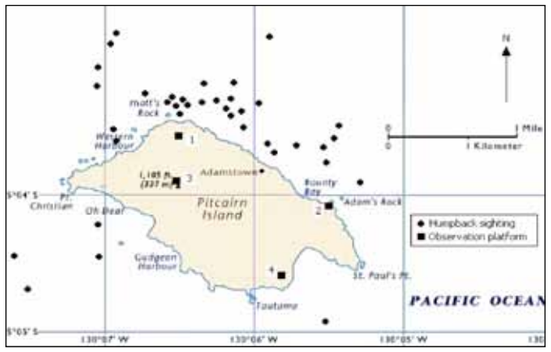


Figure 7. *Distribution map of sightings of humpback whales around Pitcairn Island between June and September 2007. (Illustration: from Horswill, 2007)*

than 200 m from land. The last humpback observation was made on 30 August when the project came to an end due to limited off-island transport. In the survey period sightings peaked in the last fortnight of August.

Other species of whales and dolphins have also been seen further off Pitcairn – see also section 4.

Plate 25. *Drummer (Pitkern: nanwi)* Kyphosus bigibbus. *(Photo: T.P. Dawson)*

Plate 26. *Black jack (Pitkern: ulwa)* Caranx lugubris. *(Photo: T.P. Dawson)*

3.1.5 Nearshore fisheries

The Pitcairn community fishes regularly for subsistence as well as for sale to passing cruise vessels and to the island's restaurant, which tends to be open just once a week when tourists are on the island. The cruise ships, visiting yachts and the few tourists who come to the island, provide the only opportunity currently for the Pitcairners to sell or trade their marine resources, mainly in the form of fresh fish (caught in the immediately preceeding days and refrigerated) or live lobsters. Most of the island households eat fish, with several families having two to three fish meals a week.

Although a lot of fishing is undertaken from the rocky shores, many households own small wooden boats or skiffs fitted with an outboard motor to enable access to nearshore rocky and coral reefs to catch their favoured species, or for trolling for pelagic species. Most of the reef and shore fishing is conducted using handlines although some fishers use rod and line. A small number of islanders are scuba divers and catch fish through spear fishing or collect spiny lobsters by hand. On fine days, when the sea is calm and public duties have been completed, one of the longboats may be launched and a party of islanders will go fishing for an afternoon. On these occasions, all the fish caught by the party are divided up equally by household and shared out irrespective of individual catch size.

Most of the shore-based fishing is undertaken to catch drummer *Kyphosus bigibbus*, known locally as nanwi (Plate 25), a reef fish often shoaling in large numbers and highly prized by the locals for its excellent taste. Also octopus is taken from rocky pools using a three-pronged pole spear, either for use as bait or for eating directly. Common reef fish caught from the boats using handlines or spear gun (diving or snorkeling) include coral trout (Pitkern: fafaya) *Variola louti*, greasy grouper (Pitkern: fito cod) *Epinephelus tauvina*, tan-faced parrotfish *Chlorurus frontalis*, clown coris (Pitkern: miti) *Coris aygula*, sunset wrasse (Pitkern: whistling daughter) *Thalassoma lutescens* and goatfish (Pitkern: be'ard) *Parupeneus* sp.. Some of the islanders also go trolling for pelagic fish, with wahoo *Acanthocybium solandri* being the most frequently caught, although yellow fin tuna (Pitkern: yellow-tail) *Thunnus albacares* is also targeted. Other species caught by trolling include dogtooth tuna *Gymnosarda unicolor*, common dolphinfish or mahi-mahi *Coryphaena hippurus*, giant trevally *Caranx ignobilis*, bonito *Sarda chiliensis lineolata* (Plate 27) and yellowtail kingfish (Pitkern: kingie) *Seriola lalandi*.

Fishing activities are significantly increased prior to the arrival of a visiting cruise ship, where there is a possibility of a commercial sale of fish and lobster. The Island's Provisions Officer (currently Steve Christian) coordinates orders, sales and share of returns among local fishers and maintains the records. The Pitcairn community is generally aware of the estimated time of arrival of most of the scheduled tourist vessels through a cruise ship calendar published online by the Pitcairn Islands Study Center[23]. Any revision to these schedules is updated through the internet and ship-to-shore radio communications at the time of arrival. Up to 12 cruise ships visit Pitcairn each year during the cruising season (approximately December to April), although not all of these will purchase seafood due to their requirement for food safety certification. On average about 50 kg of tuna, 50 kg of wahoo and 50 kg of reef fish (mainly coral trout, grouper and parrotfish) are requested by each of four cruise ships (although these orders are not always fully met, being dependent upon weather conditions) and about 400 kg of lobsters in total are sold each year. Lobsters are rarely targeted for personal consumption, but in the weeks leading up to a cruise ship visit an intensive lobster fishing effort is undertaken. Two types of lobsters are caught: the slipper lobster *Scyllarides haanii* and the spiny lobster or crayfish as it is locally known (either *Panulirus penicillatus* or *P. pascuensis*). Crayfish are caught by hand using scuba equipment at rocky inshore locations during calm weather, whereas slipper lobsters are caught using pots, which are deployed at depths of 30–50 m around the island. The lobsters are kept alive in large wire cages at the Bounty Bay landing site and are lifted in and out of the water by the quayside crane.

The reef fish of Pitcairn Island are not known to be contaminated with ciguatoxins associated with ciguatera fish poisoning, which is a significant public health problem in other parts of the Pacific, especially French Polynesia. Ciguatoxins produce a complex

Plate 27. *The 'Ocean Fish' Pitcairn Islands stamp issue from 2007 depicting six species of open-water fish regularly caught off Pitcairn. Top row, from left to right: dogtooth tuna* Gymnosarda unicolor; *wahoo* Acanthocybium solandri; *mahi-mahi* Coryphaena hippurus; *bottom row, from left to right: yellowfin tuna* Thunnus albacares; *giant trevally* Caranx ignobilis; *bonito* Sarda chiliensis lineolata.

array of gastrointestinal, neurological and cardiological symptoms with treatment options being ineffective or very limited (Dickey and Plakas, 2009). In particular, the coral reefs of Mangareva in the Gambier Islands hold large amounts of the dinoflagellate *Gambierdiscus toxicus*, a ciguatoxin precursor which attaches itself to algae and traverses the food chain bioaccumulating in carnivorous fin fish. High subsequent and ongoing rates of intoxications by ciguatera recorded in the Gambier Islands have been associated with French nuclear testing in the area around Moruroa Atoll and associated military infrastructure development on Mangareva conducted during the period 1968 to the mid-1970s, although the environmental pathways to the outbreak have not been established. While the existing presence of ciguatera is a potential barrier to the development of small-scale commercial fisheries in the Pacific Islands more generally, the Secretariat of the Pacific Community has proposed that the Pitcairn community may be in a good position to develop their inshore reef fisheries commercially for export to Mangareva (Michel Blanc, *pers. comm.*, Nov. 2011), although the purchase and installation of a blast freezer will be necessary to ensure production meets food safety regulation standards. However, as yet no assessment of stocks has been undertaken and the economics of such a venture have to be studied in detail.

17. *'Nearshore waters' here are defined as extending to approximately 2 km from low water mark or shallower than the 100 m depth contour.*
18. *Note that* Sargassum odontocarpum *was originally recorded as* Sargassum coriifolium *by Tsuda (1976). The taxonomy of the genus* Sargassum *in French Polynesia was revised in 2008 (Mattio* et al.*, 2008).*
19. *The Foraminifera ("hole bearers"), or forams for short, are a large group of amoeboid protists which are among the commonest plankton species. They have reticulating pseudopods, fine strands of cytoplasm that branch and merge to form a dynamic net. They typically produce a test, or shell, which can have either one or multiple chambers, some becoming quite elaborate in structure. These shells are made of calcium carbonate ($CaCO_3$) or agglutinated sediment particles. About 275,000 species are recognised, both living and fossil. They are usually less than 1 mm in size, but some are much larger, with the largest species reaching up to 20 cm. [Wikipedia entry, 24Nov11. URL: en.wikipedia.org/wiki/Foraminifera].*
20. *Note that only eight species of Foraminifera were listed from all four Pitcairn Islands by Palomares* et al.*, 2011.*
21. *Ostracoda is a class of the Crustacea, whose members are sometimes known as seed shrimps because of their appearance. Some 65,000 species (13,000 of which are extant taxa) have been identified, grouped into several orders. Ostracods are small crustaceans, typically around 1 millimetre in size. Their bodies are flattened from side to side and protected by a bivalve-like, chitinous or calcareous carapace or 'shell'. Ecologically, marine ostracods can be part of the zooplankton or (most commonly) they are part of the benthos, living on or inside the upper layer of the seafloor.*
22. *The figure of 47 species consists of 28 named species, three new genera and 16 new species (Whatley* et al. *2004).*
23. *(http://library.puc.edu/pitcairn/studycenter/cruiseship.shtml, last accessed 7/12/2011).*

3.2 Henderson

KEY FACTS			
Name	HENDERSON	Island type	Elevated coral atoll
Location	24°21'S, 128°19'W	Distance/bearing from nearest island(s)	Approx. 200 km ENE of Pitcairn; and approx. 360 km W of Ducie
Dimensions	9.6 km long x 5.1 km wide	Land area	43 km² (4,310 ha)*
Altitude	Sea level to approx. 33 m	Length of coastline	26.4 km
Origin of name	European discovery by Pedro Fernandez de Quiros, who passed without landing in 1606 and named it San João Baptista. Received current name in 1831 after it was visited by the British ship *Hercules* in 1819 under Capt. Henderson. From 1819–1831, however, it was known as Elizabeth Island.		
Population/visitors	Uninhabited. Occasional 2–3 day visits by Pitcairners to harvest miro wood for carving. A stop-off for a few cruise ships (e.g. *World Discoverer*), whose passengers land for 2–3 hours on North Beach.		
Status	World Heritage Site (1988); Endemic Bird Area; Important Bird Area; Alliance for Zero Extinction site (Brooke, 2010). Proposed Ramsar site (2005).		
Overview	One of the least disturbed raised coral atolls in the world, with its terrestrial ecosystems largely intact. The island supports a large breeding population of seabirds, including the endemic Henderson petrel *Pterodroma atrata* and also has four endemic landbirds, one of which is a flightless rail. The beaches and reef flats are important for wintering bristle-thighed curlews *Numenius tahitiensis*. An attempt was made to eradicate rats from the island in 2011 but this was unsuccessful.		

(Information extracted from various sources including the RSPB's A Directory of Wetlands in Oceania: http://www.wetlands.org/RSIS/WKBASE/OceaniaDir/Pitcairn.htm)

** Updated figure for land area obtained in 2011 using GPS. Previously, the figure was 37 km² (3,700 ha) (RSPB, Henderson Island Restoration Project).*

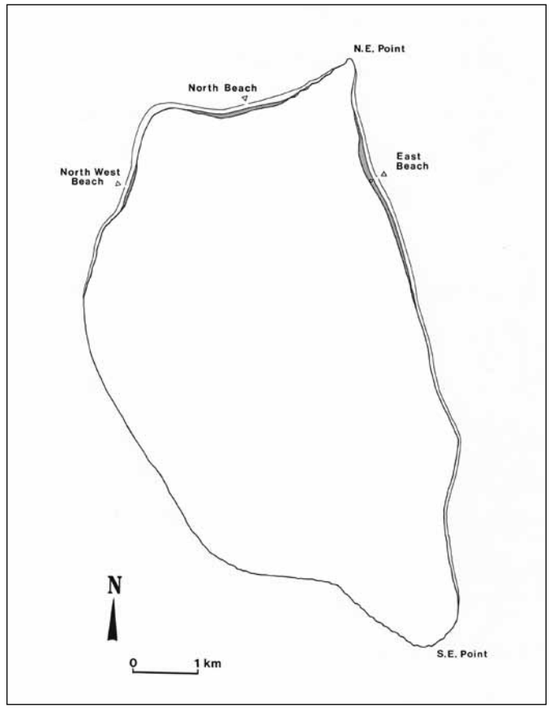


Figure 8. *Henderson Island (after Irving, 1995).*

Plate 29. *(right) East Beach, Henderson. (Photo: R.A. Irving)*

Plate 28. *Aerial view of the north end of the East Beach, Henderson. (Photo: SPSCEPI)*

3.2.1 Introduction

Henderson Island is a raised coral atoll composed of coralline limestone (makatea). The island consists of a flat plateau, some 30 m above sea level, densely covered by 6 m-high scrub with a slight depression in the centre where there was once a lagoon. The island is surrounded by steep bare limestone cliffs, with sandy beaches present off the north, east and north-west coasts.

The island has no surface freshwater except for some droplets which occur in caves. Fresh or brackish springs have been located below high tide level at North Beach and North-West Beach. No readily available source of groundwater has yet been located. The surface of the island is largely reef rubble, with some areas of dissected limestone, especially around the periphery.

There is a fringing reef averaging 50–100 m in width around most of the island except in the south and west. In three places, North Beach, North-West Beach and East Beach, the reef extends up to 200 m offshore and is backed by a wide, gently shelving coral sand beach over bedrock which is partly exposed. The reef off the East Beach has a poorly developed lagoon; those off the North and North-West beaches are seawardly sloping reef platforms without a well-defined reef crest. There are two narrow channels through the reef on the north and north-west coasts. Tides are semi-diurnal, with a tidal range at spring tides of approximately 1.5 m.

On 1 January 1989 Henderson Island was inscribed into the UNESCO World Heritage List under the 1972 Convention concerning the Protection of the World's Cultural and Natural Heritage.

3.2.2 Intertidal zone – habitats and species

Henderson has a reef platform adjacent to its North and East Beaches and, to a lesser extent, off the North-West Beach. The near-horizontal platform ranges from 20–40 m wide at the North-West beach; 40–75 m wide at the North Beach; and 40–90 m wide at the East Beach (Irving, 1995). At low water on spring tides, large areas of smooth horizontal rock are exposed at these beaches. Narrow (<15 cm) channels run perpendicular to the shore every 10–25 m. The hard tubes of the vermetid mollusc *Dendropoma maximum* are obvious here. At the reef front, these channels widen and deepen into larger grooves, allowing water to drain off the flat. Occasional sand-filled holes are present on the platform, up to 1.5 m across and 0.4 m deep, which often contain aggregations of the holothurian *Holothuria* cf. *arenicola* and the occasional sea urchin *Heterocentrotus trigonarius*. These holes are most developed at the eastern end of the North Beach and also towards the reef margin, where they may coalesce to form small channels (Irving, 1995). The northern end of the East Beach is probably the most biodiverse intertidal area, with small coral heads being exposed at low water on spring tides.

3.2.3 Bathymetry and marine habitats

A fringing 'reef' (much of it comprising bare exposures of bedrock with an average of just 10 to 30 percent live coral cover) extends around almost two-thirds of Henderson's 26.4 km perimeter, from off the North-West Beach clockwise to just north of the South-East Point, including a small gap off the North-East Point (Figure 8).

The seaward edge of the reef platform off each of the three beaches forms a rugged, indented margin of vertical and undercut promontories, interspersed with a maze of channels and small caves. There is no development of an algal ridge, as is typical on most Central and South Pacific coral reefs at lower latitudes. The jagged platform edge gives way to typical spur and groove topography, this being most apparent at the southern end of the East Beach.

An extensive level terrace at 3–6 m depth is present on the shallow fore-reef beyond the seaward edge of the reef platform off the North-West and East Beaches. The smooth bedrock here is pockmarked by small holes containing the urchin *Echinometra* sp. There is a noticeable absence of coral growth on these terraces. Indeed, generally speaking, the fore-reef as a whole is impoverished in terms of coral diversity, with the percentage of live coral cover typically in the order of 10 to 30 percent (Irving, 1995). Corals of the genus *Pocillopora* are the commonest corals beyond 10 m depths. Of the 18 species of acroporid coral known to occur at Henderson, the majority are found off the East Beach.

At several sites on the fore-reef, bare bedrock is apparent, typically covered by a thin crust of coralline algae. Elsewhere, and particularly in deeper water, extensive areas of coral rubble are present (Plate 30). Damage to the coral in these areas is likely to have come about as a result of strong wave action during storm events, with coral debris from shallower waters being moved into deeper waters. It is in these areas that large aggregations of long-spined sea urchins *Diadema savignyi* occur (Plate 36). Occasional patch reefs or 'bommies' are present within the 25–35 m depth band around the northern half of the island. These massive structures, which can be 7 m or more in height, are typically formed by just one coral (often *Porites lobata*) and may be over 750 years old (Irving, 1995).

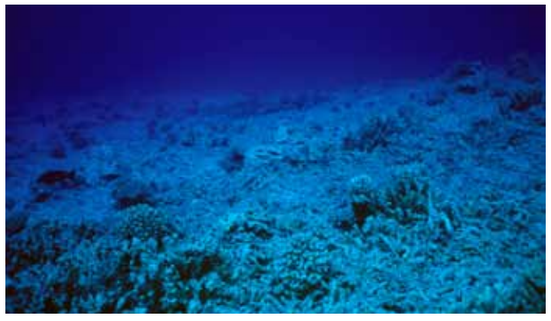


***Plate 30**. At 30 m off Henderson's north coast, extensive areas of coral rubble dominate the seabed. (Photo: J. Jamieson, 1991)*

3.2.4 Marine species

SEAWEEDS

Neither the few foliose macroalgal species nor the encrusting coralline forms have been properly studied at Henderson. Those species which have been recorded as being present include *Microdictyon boergesenii, Lobophora variegata, Stypopodium zonale, Halimeda* sp. and *Porolithon* spp. (Paulay, 1989) (Appendix 5).

FORAMS

Foraminifera from Henderson were first studied by Owen Green as part of a study of the island's sediments collected in 1987 by Spencer (1989b). Samples of beach sand were inspected from both the North Beach and the North-West Beach. A total of eight species were identified, including *Asterigerina carinata* (d'Orbigny) which was the only species not to be re-found in 1991 (Whittaker & Hodgkinson 1995). Whittaker & Hodgkinson (1995) found a total of 25 species from sediment samples collected from the North-West Beach, North Beach and East Beach (Appendix 5). They also identified a further 15 species from the fossil sediments on the island's plateau.

SPONGES

No published work has been found on the sponge fauna of Henderson. However, a number of subtidal specimens were collected by R.A. Irving during the Sir Peter Scott Commemorative Expedition to the Pitcairn Islands in 1991, which were subsequently identified by Rob van Soest and currently reside at the Natural History Museum in Amsterdam. A total of six species were recorded (Appendix 5). Most of the species are known from other South Pacific localities, such as Easter Island. Those that may be new species (written as 'sp. aff.') do not necessarily reflect particular endemism, but rather a lack of knowledge of the sponge fauna of the Pacific (Irving, 1995).

CORALS, etc.

A total of 59 species of scleractinian (stony) coral and one species of *Millepora* coral (Order Milleporidae) have been recorded from Henderson (Appendix 5). There are also a number of species of soft coral (leather coral) present at Pitcairn, Henderson and Ducie (Order Alcyonacea), though these have yet to be identified (R.A. Irving, *pers. obs.*). Much of the information on the scleractinian corals has come from Paulay (1989), based on collections made in 1967 (by H.A. Rehder, D.M. Devaney and B.R. Wilson using a dredge); in 1970-71 (by J.E. Randall and H.A. Rehder using scuba); in 1987 (by G. Paulay himself using scuba); and in 1991 (from collections made by J. Pandolfi and S. Blake as members of the Sir Peter Scott Commemorative Expedition to the Pitcairn Islands).

Of the 59 scleractinian coral species, the IUCN Red List lists two species as Vulnerable (VU) and nine species as Near Threatened (NT) (Table 6).

A total of six hydroid species (Appendix 5) were collected in the subtidal zone at Henderson (0–35 m depth) by R.A. Irving in 1991 (Irving, 1995). Note also that a number of *Millepora* species (fire coral) were also recorded from Henderson, where they dominate certain areas of the fore-reef.

Table 6. Species of scleractinian coral recorded from Henderson (after Paulay, 1989) noted as being Vulnerable (VU) or Near Threatened (NT) according to IUCN Red List conservation status (IUCN, 2012).

Species	IUCN Code*	Notes
Montipora caliculata (Dana 1846)	VU	Also recorded from Ducie in 1971 (Rehder & Randall, 1975).
Leptoseris incrustans (Quelch 1886)	VU	Also recorded from Ducie in 1971 (Rehder & Randall, 1975).
Acropora secale (Studer 1878)	NT	Presence at Pitcairn queried by Paulay. Also recorded from Oeno.
Pocillopora cf. eydouxi (Edwards & Haime 1860)	NT	Identification uncertain by Paulay. Note that the 'NT' status is for *P. eydouxi.*
Montipora foveolata (Dana 1846)	NT	Also recorded from Oeno & Ducie.
Acropora digitifera (Dana 1846)	NT	Only recorded from Henderson.
Acropora humilis (Dana 1846)	NT	Also recorded from Oeno & Ducie.
Acropora nasuta (Dana 1846)	NT	Also recorded from Ducie in 1971 (Rehder & Randall, 1975).
Porites cf. *lobata* (Dana 1846)	NT	Recorded by Paulay as being 'common' on Henderson. Also recorded from Pitcairn & Ducie.
Psammocora obtusangular (Lamarck 1816)	NT	Also recorded from Ducie in 1971 (Rehder & Randall, 1975).
Favia mathaii (Vaughan 1918)	NT	Also recorded from Pitcairn in 1967.

** IUCN's Red List categories (IUCN, 2012): VU = Vulnerable; NT = Near Threatened;*

Table 7. Specimens of Crustacea collected from Henderson by R.A. Irving and J. Jamieson in 1991; these still have to be identified to species.

Taxon	Probable no. of species
Majinae	1
Xanthidae	9
Grapsidae	4
Portunidae	2
Ocypodidae	1
Scyllaridae	1
Palinuridae	1
Anomura (hermit crabs)	4
Thalassinidae (lobster-like)	1
Natantia (shrimp-like)	1
Alphaeidae	1
Stomatopoda	1
Hapalocarcinidae (gall crab)	1
Cirrepedia: Thoracica	2
Cirrepedia: Acrothoracica	1
Total probable no. of species:	**31**

Plate 31 (top) & 32 (above). *Two species of the hermit crab family* Paguridae *which spend most of their time on land at Henderson but still need to shed their eggs in the sea. (top) The strawberry hermit crab* Coenobita perlatus *(Photo: J. Jamieson); and (above) the coconut crab* Birgus latro *(Photo: M. Brooke).*

CRUSTACEANS

Collections of crustaceans were made from Henderson by R.A. Irving and J. Jamieson in 1991. However, many of these specimens have still to be identified to species (they currently reside at the Natural History Museum, London). Table 7 sets out the probable number of species within this collection, all of which were collected from Henderson. Other crustaceans which have been identified from Henderson are included in Appendix 5. The marine Ostracoda have been examined by Whatley & Roberts (1995) who identified 33 species from Henderson (seven samples), Pitcairn (one sample) and Oeno (one sample), though more recent work by Whatley *et al*. (2004) has increased the number of species from these three islands to 47. Whatley & Roberts (1995) report that 25 of these species are likely to be endemic.

MOLLUSCA

A total of 326 taxa of marine molluscs have been recorded from Henderson Island (out of the 502 taxa recorded for the Pitcairn Islands as a whole). Preece (1995a), as part of the Sir Peter Scott Commemorative Expedition to the Pitcairn Islands in 1991/92, made considerable additions to the earlier collections of Harald Rehder (in Rehder & Randall, 1975; Rehder & Wilson, 1975; Rehder in Fosberg, Sachet & Stoddart, 1983) and Gustav Paulay (Paulay, 1989). Preece (1995a) added considerably to the known molluscan fauna by searching for and collecting many small gastropod species in particular. The figure of 502 is by no means comprehensive. Indeed, Preece (1995a) estimates the shallow-water marine molluscan fauna of the Pitcairn Islands together to be composed of about 700 species. A list of all molluscs recorded from Henderson (and the other islands in the group) is included in Appendix 5.

The gastropod *Engina rosacea* was first described from Henderson by Smith (1913) and has yet to be reported at any other locations. A species of octopus *'Octopus' oliveri*, thought to have been a new species when found at Henderson in 1991, has also been recorded from Pitcairn (Plate 22). However, it is still not clear as to whether it belongs to the genus *Octopus* (Norman & Hochberg, 2005) – hence the inverted commas.

STARFISH, SEA URCHINS AND SEA CUCUMBERS (Echinodermata)

A total of 32 species of echinoderms (sea urchins [12 spp], starfish/sea stars [4 spp], brittlestars [6 spp] and sea cucumbers [10 spp]) are listed from Henderson by Paulay (1989). These species, together with their IUCN Red List status (all of which are 'Not Evaluated'), are set out in Appendix 5. Noteworthy species are commented on below.

Plate 33. *The nudibranch* Dendrodoris tuberculosa, *off North-West Beach, Henderson. This is one of the largest species of nudibranch in the world and this particular specimen (at ~25 cm long) was almost twice the size of the previous largest recorded individual (Edmunds & Preece, 1996). (Photo: R.A. Irving)*

Plate 34. *The purple slate pencil urchin (Pitkern: fetuei)* Heterocentrotus trigonarius *in among various corals. North end of East Beach, Henderson. (Photo: M. Brooke)*

Plate 35. *The red slate pencil urchin* Heterocentrotus mammillatus. *Intertidal pool, Down Isaacs, Pitcairn. (Photo: R.A. Irving)*

Slate pencil urchins *Heterocentrotus trigonarius* and *H. mammillatus*

The distribution of the purple slate pencil urchin *H. trigonarius* (Plate 34) is widespread throughout Polynesia where it is found in the surf zone on reef fronts and on outer reef flats (Paulay, 1989). At Henderson, Oeno and Ducie populations are unusually dense (up to one to two individuals per square metre in places) and consist of very large individuals which have a different colour pattern (uniformly dark blue violet) and shape to those in central Polynesia. They occur in waters up to 3 m deep in the surf zone and on the fore-reef. Paulay (1989) suggests that their abundance within these Islands is at least in part the result of lack of human predation, as the species is frequently harvested by Polynesians elsewhere. Interestingly, *H. trigonarius* is not found at Pitcairn.
The red slate pencil urchin *H. mammillatus* (Plate 35) has a much more limited distribution than *H. trigonarius,* extending from Ducie westwards to Raroia in the Tuamotus (Paulay, 1989). Typically, it lives in crevices on fore-reef from 10 to 20+ m depth at Pitcairn, Henderson and Ducie, though on occasion it may be found in shallower depths.

The washed-up spines of both of these urchins on the strandline of Henderson's beaches have recently started to be collected by Pitcairners and made into jewellery for sale locally and for export.

Long-spined sea urchin *Diadema savignyi*

Sea urchins are often nocturnal (they may be preyed upon by triggerfish and pufferfish in particular, despite their protective spines) and usually hide away during daylight hours, tightly wedged under rocks or in crevices. However, in exposed situations, such as at Henderson, where there are insufficient hiding places, they cluster together to form large aggregations. These aggregations may consist of as many as 2,000 individual *D. savignyi*, spine to spine, covering areas up to 100 m^2 in depths of about 8–30 m (Plate 36). *D. savignyi* is also found at Ducie and Oeno.

Crown-of-thorns starfish *Acanthaster planci*

In general, asteroids (starfish) and ophiuroids (brittlestars) are rare at Henderson. Prior to 1991, the only record of the crown-of-thorns starfish *Acanthaster planci* within the Pitcairn Islands was from the lagoon at Ducie in 1970/71, where Rehder and Randall (1975) reported encountering just one individual. In December 1991, however, Irving (1995) found it at Henderson and counted 150 individuals in an area of approximately 100 m^2 within the depth range of 32–38 m off the North-West Beach (Plate 37). *Acanthaster planci* is known to be a voracious predator of corals and its presence at Henderson was a cause for concern. Large numbers of the starfish are known to suddenly appear on a reef, gorge themselves on live coral polyps – which then leaves the coral dead – and then disappear as mysteriously and rapidly as they arrived. Mass coral mortality events, such as was reported by Rehder & Randall (1975) at Ducie in 1971, may well have been caused by outbreaks of *A. planci* in the past.

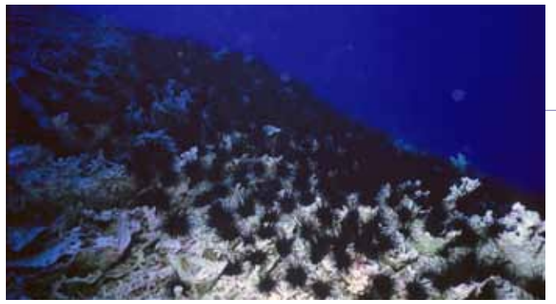


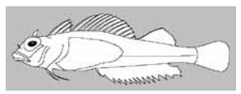
Plate 36. *An aggregation of long-spined sea urchins* Diadema savignyi *on Henderson's fore-reef. (Photo: R.A. Irving)*

Plate 37. *Crown-of-thorns starfish* Acanthaster planci *at 34 m depth off North-West Beach, Henderson in 1991. (Photo: R.A. Irving)*

Plate 38. *Whitetip reef shark* Triaenodon obesus *being followed by a grey reef shark* Carcharhinus amblyrhynchos *off the south-west coast of Henderson. (Photo: R.A. Irving)*

Plate 39. *A female green turtle* Chelonia mydas *making her way up Henderson's East Beach prior to laying. (Photo: S. Waldren)*

Table 8. Noteworthy reef fishes occuring at Henderson.

Species	IUCN Code*	Notes	
Squirrelfish *Sargocentron megalops*	**NE**	Endemic to Henderson Island. Found at 49 m depth, which may be near the upper limit of its depth range. Ref. Randall (1998)	
Henderson triplefin *Enneapterygius ornatus*	**NE**	Endemic to Henderson Island. Depth range 0–1 m. Found on rocky shores. Ref. Fricke (1997)	
Humphead wrasse *Cheilinus undulatus*	**EN**	Solitary individual observed at Henderson in 30 m depth (Irving, 1995). Endangered status due to overfishing elsewhere.	
Giant grouper *Epinephalus lanceolatus*	**VU**	Also recorded from Pitcairn. Vulnerable status due to overfishing elsewhere.	
Surge grouper *Epinephalus socialis*	**NT**	Typically present in surge zone, 1–4 m. Near Threatened status due to overfishing elsewhere.	
Grey reef shark *Carcharhinus amblyrhynchos*	**NT**	The commonest shark species at Henderson. Present all round the island, though fewer encounters off the east coast. Near Threatened status due to practice of finning worldwide.	
White-tip reef shark *Triaenodon obesus*	**NT**	Tends to stay around the southern end of the island. Near Threatened status due to practice of finning worldwide.	
Black-tip reef shark *Carcharhinus melanopterus*	**NT**	Present all round the island, though fewer encounters off the east coast. Near Threatened status due to practice of finning worldwide.	

** IUCN's Red List categories (IUCN, 2012):* **EN** *= Endangered;* **VU** *= Vulnerable;* **NT** *= Near Threatened;* **NE** *= Not Evaluated.*

REEF FISHES

A total of 173 species of reef fishes has been recorded from Henderson (49 percent), out of a total for the Pitcairn group as a whole of 352 species (Randall, 1999; Irving *et al.*, 1995). Many more species have been recorded from Pitcairn (270), which reflects the greater number of habitats available there.

The commonest shark encountered at Henderson is the grey reef shark *Carcharhinus amblyrhynchos*, typically as singles or in small groups in open water or on the fore-reef. This species, however, has yet to be recorded at Pitcairn, and the Galapagos shark *Carcharhinus galapagensis*, present at Pitcairn, has only been recorded on one occasion in 2008 from Henderson (G. Wragg, *pers. comm.*). Whitetip reef sharks *Triaenodon obesus*, however, are found at both islands (Plate 38).

TURTLES

Green turtles *Chelonia mydas* (Plate 39) nest on Henderson's East Beach. The main nesting season is around January to March. Observations in 1991–1992 suggested about 10 females may be using the island. Individuals were seen, some in mating pairs, in the shallows off East Beach, as well as on the beach itself. While 10 is a low number in global terms, it is a total that represents about 1 percent of the French Polynesian population (Brooke, 1995c). In addition to activity on the East Beach, Brooke (1995c) also recorded one laying on North Beach (29 April 1991); one landing, but not digging, on the North-West Beach (late April/early May 1991); and, more recently, there were signs of two separate diggings on North Beach in July 2011 (M. Brooke, *pers. comm.*).

Chelonia mydas is listed as Endangered on the IUCN's Red List (IUCN, 2012). Very little is known about their migratory movements in this part of the world once they return to the sea from a nesting beach. The green turtle has a circumglobal distribution, occurring throughout tropical and, to a lesser extent, subtropical waters. They are highly migratory and undertake complex migrations through geographically disparate habitats. Nesting is known to occur in more than 80 countries worldwide (Hirth, 1997).

Table 9. Seabirds noted at Henderson (all information taken from Brooke 1995a & b and Brooke *et al.*, 2010a).

	Species	IUCN Code*	Notes
Breeding	Great frigatebird *Fregata minor*	**LC**	Breeding population estimated to be 100 pairs.
	Black noddy *Anous minutus*	**LC**	Breeding population estimated to be 100 pairs.
	Brown noddy *Anous stolidus*	**LC**	Breeding population estimated to be 100 pairs.
	Fairy tern *Gygis alba*	**LC**	Breeding population estimated to be 5,000–10,000 pairs.
	Blue-grey ternlet *Procelsterna cerulea*	**LC**	Breeding population estimated to be 10 pairs.
	Red-tailed tropicbird *Phaethon rubricauda*	**LC**	Breeding population estimated to be 250 pairs.
	Henderson petrel *Pterodroma atrata*	**EN**	Breeding population estimated to be 16,000 pairs (>95% of world population).
	Herald petrel *Pterodroma heraldica*	**LC**	Breeding population estimated to be 11,100 pairs (20% of world population).
	Kermadec petrel *Pterodroma neglecta*	**LC**	Breeding population estimated to be 10,000 pairs (20% of world population).
	Murphy's petrel *Pterodroma ultima*	**NT**	Breeding population estimated to be 2,500 pairs.
	Masked booby *Sula dactylactra*	**LC**	Breeding population estimated to be 50 pairs.
	Red-footed booby *Sula sula*	**LC**	Breeding population estimated to be 100–200 pairs.
Non-breeding	Christmas shearwater *Puffinus nativitatis*	**LC**	Present but not breeding.
	White-tailed tropicbird *Phaethon lepturus*	**LC**	A rare visitor.
	Sanderling *Calidris alba*	**NE**	Two birds visited from late-Nov 1991 to mid-Jan 1992.
	Bristle-thighed curlew *Numenius tahitiensis*	**VU**	Northern winter maximum of 40–50 birds.
	Wandering tattler *Tringa incana*[24]	**NE**	Max. no. at any one time of 30 birds during the northern winter.

** IUCN's Red List categories (IUCN, 2012):* **EN** *= Endangered;* **VU** *= Vulnerable;* **NT** *= Near Threatened;* **LC** *= Least Concern;* **NE** *= Not Evaluated.*

SEABIRDS

Being uninhabited, seldom visited and ecologically undisturbed, Henderson hosts large breeding populations of seabirds. The island is the only known breeding site in the world for the Henderson petrel *Pterodroma atrata* (although there may be other sites in French Polynesia [M. Brooke, *pers. comm.*]) and, together with Oeno, the two islands have an internationally significant over-wintering (Northern Hemisphere) population of bristle-thighed curlews *Numenius tahitiensis*. A summary of the island's seabird importance is given in Table 9.

Henderson is, without question, one of the petrel capitals of the world (Brooke, 2010). The island is the only known site where the Henderson petrel *Pterodroma atrata* breeds (16,000 pairs), and significant numbers of Herald petrels *Pterodroma heraldica* (11,100 pairs), Kermadec petrels *Pterodroma neglecta* (10,000 pairs) and Murphy's petrels *Pterodroma ultima* (2,500 pairs) are also present (numbers given are breeding maxima in 1991).

Of the migratory population of bristle-thighed curlew *Numenius tahitiensis*, 40–50 individuals have been recorded on Henderson as a maximum number over the northern winter (Brooke, 2010). Together with the numbers spending time on Oeno (approximately 100 birds), this constitutes an internationally significant population (i.e. almost 2 percent of the world population of approximately 7,000).

Before the arrival of the Polynesians to Henderson (and the rats they brought with them), seabird numbers on the island have been estimated to have been in the region of 6 million pairs. This number has fallen to just 40,000 pairs today (Brooke, 1995b & Table 9 above).

CETACEANS

No published data on cetaceans are available for Henderson. However, humpback whales are known to be regular visitors, with four or five individuals being noted between July and September in 2003, 2009 and 2011 (M. Brooke, *pers. comm.*).

3.2.5 Nearshore fisheries

As Henderson is uninhabited, no nearshore fishing is done on a regular basis. Pitcairners are likely to catch a few fish for eating during their infrequent visits to the island, although no records exist of catches. The range of species which might be targeted is likely to be similar to those caught at Pitcairn.

Figure 9. *Around 50 pairs of masked booby* Sula dactylatra *nest on the North and East Beaches of Henderson. (Illustration: R.A. Irving)*

24. *There is currently some confusion as to the accepted scientific name of the wandering tattler. Some authorities (such as BirdLife International) use the synonym of* Heteroscelus incanus *but the World Register of Marine Species (used in this report as the lead taxonomic authority) only recognises* Tringa incana.

3.3 Oeno

KEY FACTS			
Name	OENO	Island type	Atoll
Location	23°56'S, 130°45'W Central South Pacific	Distance/bearing from nearest island(s)	Pitcairn is 120 km to the SE. Henderson is 235 km to the E.
Dimensions	Approx. 4 km in diameter (to perimeter reef)	Land area Land, reef & lagoon	65 ha; 1,600 ha.
Altitude	Sea level to 3.6 m.	Length of perimeter reef	Approximately 11 km
Origin of name	First European sighting by Capt. Henderson of HMS *Hercules* in 1819, but actually named after an American whaler which sighted the island in 1824.		
Population/visitors	Uninhabited. A 'holiday resort' for Pitcairn islanders, who may visit for 1–2 weeks at a time. Up to 5 passing yachts per year.		
Status	Important Bird Area (Brooke 2010). Proposed Ramsar site (2005).		
Overview	A low coral atoll comprising a central islet surrounded by a lagoon, mostly 3–6 m in depth, which in turn is surrounded by a fringing reef. Seldom visited and relatively ecologically undisturbed, it has an internationally significant wintering population of bristle-thighed curlews *Numenius tahitiensis* and large breeding populations of seabirds. One of the atoll's most striking features is the large number of giant clams embedded within coral outcrops within the lagoon.		

(Information extracted from various sources including the RSPB's A Directory of Wetlands in Oceania: http:// www.wetlands.org/RSIS/WKBASE/OceaniaDir/Pitcairn.htm)

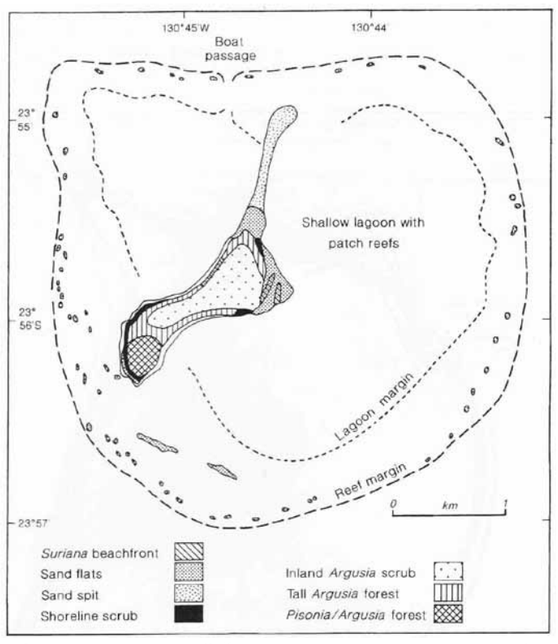


Figure 10. *Oeno atoll (from Spencer, 1995 – re-mapped using GPS in 1991).*

Plate 40. *Black-and-white aerial photograph of Oeno atoll, date uncertain. (Courtesy of Olive Christian, Pitcairn)*

Plate 41. *Aerial photograph of Oeno atoll, August 2011. (Photo: K. Garcia)*

3.3.1 Introduction

Oeno consists of a central, low-lying island surrounded by a shallow lagoon and a fringing reef. In 1991 a sand spit extended from the northern end of the main island, though this is known to have changed in shape over time as a result of water movements within the lagoon leading to sand accretion/erosion (Figure 10 and Plates 40 & 41). Around 1990, Pitcairners planted a number of young trees to help stabilise the sand spit. However, it can be seen in Plate 41 (taken in 2011) that the sand bar has been breached and a small sandy islet has been formed. The main island, covered by a mix of trees and other vegetation, is fringed by a narrow beach of sand with bedrock apparent on the north-west side of the island.

3.3.2 Lagoon – habitats and species

The shallow lagoon surrounding the central island is about 3 m deep and has an undulating bottom of sand and coral rubble (60 percent), reef pavement (20 percent) and patch reefs (20 percent) (Irving, 1995). These patch reefs have near-vertical sides, with some undercut at their bases to form small caves and overhangs. The most striking feature is the large number of giant clams *Tridacna maxima* (see Plate 45) embedded in these reefs, at an estimated maximum density of 8–10/m^2. Paulay (1989) reported that several *Montipora* species dominated the coral fauna within the lagoon, with *Acropora humilis, Acropora secale, Pavona varians, Montastrea curta* and *Cyphastrea* cf. *serailia* also being common. Pandolfi (1995) reported large stands of monospecific coral rubble within the lagoon, upon which smaller corals were growing. Various species of wrasse were the commonest fish seen in the lagoon in November 1991 (R.A. Irving, *pers. obs*.).

3.3.3 Bathymetry and marine habitats

Outside the margin of the fringing reef, the fore-reef slopes gradually into deeper water, steepening beyond the 30 m depth contour. The percentage of live coral cover on the fore-reef is greatest within the 11–20 m depth band (at a mean of 60 percent) and within the 21–30 m depth band (55 percent), decreasing to 10 percent cover within the 31–40 m depth band. The overall live coral cover recorded in 1991 was greater than that at Henderson but less than that at Ducie (Irving, 1995). In contrast to Ducie, large areas of sand were present, together with extensive areas of coral rubble. A series of sand channels, up to 3 m wide, were found to run perpendicular to the reef between 5–20 m depth.

3.3.4 Marine species

SPONGES

Just four sponge species have been recorded from Oeno's nearshore waters during a five-day visit to the island by Irving in 1991 (Irving, 1995): *Ascaltis* sp. (a lime-green sponge); *Batzella* sp. (an orange sponge); *Cliona* sp. aff. *vastifica* (a black sponge); and *Spirastrella decumbens* (a rust-brown sponge). The conservation status of these species (as with most sponges) has yet to be assessed by the IUCN.

CORALS, etc.

A total of 17 species of scleractinian (stony) coral have been recorded from Oeno, which is a relatively low diversity and puts it on a par with Pitcairn's coral fauna (15 species), but far fewer than either Ducie's (27 species) or Henderson's (59 species). Within the IUCN Red List (2012), one species (*Acropora acuminata*) is listed as Vulnerable; four species (*Montipora foveolata, Montipora incrassata, Acropora humilis* and *Acropora secale*) as Near Threatened; and eight as being of Least Concern (*Montipora grisea, Montipora tuberculosa, Acropora cytherea, Psammocora haimeana, Pavona varians, Montastrea curta, Plesiastrea versipora* and *Leptastrea purpurea*). The remaining four species are not considered to be of conservation concern.

CRUSTACEANS

Collections of crustaceans were made from Oeno by R.A. Irving and J. Jamieson in 1991. However, many of these specimens have still to be identified to species level (they currently reside at the Natural History Museum, London). Table 10 sets out the probable number of species within this collection which were collected from Oeno. Other crustaceans that have been identified from Oeno are included in Appendix 5.

Table 10. Specimens of Crustacea collected from Oeno by R.A. Irving and J. Jamieson in 1991; these still have to be identified to species level.

Taxon	Probable no. of species
Xanthidae	6
Grapsidae	3
Portunidae	2
Calappidae	1
Anomura (hermit crabs)	3
Natantia (shrimp-like)	1
Alphaeidae	1
Cirrepedia: Thoracica	1
Total probable no. of species:	**18**

MOLLUSCS

Approximately 255 species of marine molluscs have now been recorded from Oeno. During the present review a further 15 species have been added to the figure of 240 given by Preece (1995a). Collections of molluscs were made by Rehder in 1970/71 (Rehder, 1974; Rehder & Wilson, 1975 – making use of a dredge), Paulay in 1987 (Paulay, 1989 – only from the lagoon), and Preece in 1991 (Preece, 1995a – only from the lagoon and the sand spit). A new genus and species of a prosobranch gastropod of the Family Liotininae (due to be described by J.H. McLean of Los Angeles) was found by Preece (1995a) during his visit to Oeno in 1991. Another new species *Rissoina schubelae*, also found by Preece in 1991, is believed to be endemic to Oeno (Sleurs & Preece, 1994; Preece, 1995a). The soft sediments present in the shallow lagoon are particularly favourable for bivalves, and of the four islands Oeno supports the largest number of bivalve species (45) (Preece, 1995a).

STARFISH, SEA URCHINS AND SEA CUCUMBERS (Echinodermata)

A total of 19 species of echinoderms have been recorded from Oeno to date, consisting of five sea urchins, one starfish, six brittlestars (five of which are from deeper water and were collected by dredge) and seven holothurians (Paulay, 1989; Devaney, 1974).

REEF FISHES

There have been 165 species of reef fishes recorded from Oeno (Randall, 1999), which amounts to 46 percent of the total number recorded from all four islands (352 species). Of the 165 species, 20 have been recorded from Oeno alone. Some of the species only recorded from Oeno are commented on below.

- The black-saddled coral grouper *Plectropomus laevis* is found throughout the Indo-Pacific. Its Red List conservation status is Vulnerable because of its natural rarity, the heavy fishing pressure being experienced throughout its range (particularly the targeting of juveniles), and because it has shown declines in abundance of at least 30 percent (mature individuals). This trend is expected to continue into the future (IUCN, 2012).
- Two species of frogfish have been recorded from Oeno: the freckled frogfish *Antennarius coccineus* and the tuberculated frogfish *Antennarius tuberosus*. Frogfishes are peculiarly shaped fish, often very well camouflaged, which stay motionless on the seabed and use a small lure to entice fish close to their mouths.
- The rockmover wrasse *Novaculichthys taeniourus* is found throughout the Indo-Pacific. It feeds on a variety of small invertebrates by physically moving small rocks to expose them.

TURTLES

No recorded data exist for turtles seen either on the fore-reef or within the lagoon at Oeno. It would not be surprising, however, to find turtles within the lagoon here, though we are not aware of any nesting taking place. In a Secretariat of the Pacific Community report dating from 1987 it states that "…Oeno Island is a turtle nursery of international interest". This is clearly not substantiated by the evidence to date.

SEABIRDS

Being uninhabited, seldom visited and relatively ecologically undisturbed, Oeno hosts large breeding populations of seabirds and has an internationally significant wintering population of the bristle-thighed curlew *Numenius tahitiensis*. Note that the Pacific rat *Rattus exulans* was eradicated from the island in 1997 (M. Brooke, *pers. comm*.). A summary of the island's avian importance is given in Table 11.

In the order of 12,500 pairs of Murphy's petrel *Pterodroma ultima* (1991/92 estimates) may breed on Oeno in any one season. (Note that the breeding population may well have increased since the 1997 rat eradication). This is some way short of the 250,000 pairs on Ducie, but is still impressive nonetheless. The worldwide population of Murphy's petrel is estimated at 800,000 to one million individuals, though apart from Oeno and Ducie it is only known to breed in French Polynesia (Birdlife International Factsheet, 2012). The species was only described in 1949 (Murphy, 1949). Although there is now confirmation that breeding has taken place by Phoenix petrels *Pterodroma alba* on Oeno (H. Shirihai, *pers. comm.*), the number of breeding pairs is uncertain.

In January 1990, Brooke (1995a) recorded a maximum of 100 bristle-thighed curlew *Numenius tahitiensis* individuals on Oeno (Plate 42). With a world population believed to be around 7,000 birds (BirdLife International, 2012), the population here is of international significance (> 1 percent of world population).

CETACEANS

No recorded data on cetaceans are available for Oeno. However, it is likely that the humpback whales which are known to visit both Pitcairn and Henderson may well visit Oeno too from July to September.

3.3.5 Nearshore fisheries

Fishing pressure at Oeno is negligible and is only likely to be undertaken by Pitcairners during their annual holidays to the island. No written records are available to determine which species (and in what quantity) are taken, but it is likely to be a similar range of species to those caught at Pitcairn.

Plate 42. *Bristle-thighed curlew* Numenius tahitiensis. *(Photo: M. Brooke)*

Table 11. Seabirds noted at Oeno (all information taken from Brooke [1995a & b])

	Species	IUCN Code*	Notes
Breeding	Great frigatebird *Fregata minor*	**LC**	Breeding population estimated to be 100 pairs.
	Black noddy *Anous minutus*	**LC**	Breeding population estimated to be 100 pairs.
	Brown noddy *Anous stolidus*	**LC**	Breeding population estimated to be 800 pairs.
	Fairy tern *Gygis alba*	**LC**	Breeding population estimated to be 500–1,000 pairs.
	Sooty tern *Onychoprion fuscatus*	**LC**	Likely to be breeding but only 2 nest sites counted.
	Red-tailed tropicbird *Phaethon rubricauda*	**LC**	Breeding population estimated to be 500–1,000 pairs.
	Kermadec petrel *Pterodroma neglecta*	**LC**	Breeding population estimated to be <100 pairs.
	Murphy's petrel *Pterodroma ultima*	**NT**	Breeding population estimated to be 12,500 pairs.
	Phoenix petrel *Pterodroma alba*	**EN**	Unknown numbers. Identification of eggs by H. Shirihai *(pers. comm.)*
	Masked booby *Sula dactylactra*	**LC**	Breeding population estimated to be 250–300 pairs.
	Red-footed booby *Sula sula*	**LC**	Breeding population estimated to be 250 pairs.
	Christmas shearwater *Puffinus nativitatis*	**LC**	Breeding population estimated to be 10–100 pairs.
Non-breeding	Henderson petrel *Pterodroma atrata*	**EN**	Present but not breeding.
	Herald petrel *Pterodroma heraldica*	**LC**	Present but not breeding.
	Reef heron *Egretta sacra*	**LC**	Small number of individuals.
	Pacific golden plover *Pluvialis fulva*	**NE**	Small number of individuals.
	White-tailed tropicbird *Phaethon lepturus*	**LC**	Rare visitor.
	Sanderling *Calidris alba*	**NE**	Single bird recorded on Oeno in March 1992.
	Bristle-thighed curlew *Numenius tahitiensis*	**VU**	100 individuals recorded in January 1990.
	Wandering tattler *Tringa incana*[24]	**NE**	Max. no. of 25 individuals recorded at any one time in 1990–92.

** IUCN's Red List categories (IUCN, 2012):* **EN** *= Endangered;* **VU** *= Vulnerable;* **NT** *= Near Threatened;* **LC** *= Least Concern;* **NE** *= Not Evaluated.*

3.4 Ducie

KEY FACTS			
Name	DUCIE	Island type	Atoll
Location	24°40'S, 124°47'W Central South Pacific	Distance/bearing from nearest island(s)	345 km E of Henderson 1,336 km WNW of Easter Island
Dimensions	2 km long (NE–SW) by 1.6 km wide.	Land area Land, reef and lagoon	Land area: 70 ha 320 ha
Altitude	Sea level to 4 m.	Length of coastline	Approx. 8 km
Origin of name	European discovery in 1606 by the Portuguese explorer Pedro Fernandez de Quirós who named it 'Luna-Puesta' and later 'La Encarnación'. In 1791 named 'Ducie's Island' (in honour of Lord Ducie, Francis Reynolds-Moreton, fourth Baron Ducie of Tortworth) by Capt. Edwards of HMS *Pandora*.		
Population/visitors	Uninhabited. Sufficiently off the beaten track to avoid the interest of all bar the very determined!		
Status	Important Bird Area (Brooke, 2010). Proposed Ramsar site (2005).		
Overview	A seldom visited, exceptionally undisturbed atoll; the easternmost atoll in the Indo-Pacific biogeographic region, possessing a pure, though impoverished, Polynesian biota. Four islets (motus) constituting Ducie are: Acadia (largest); Pandora; Westward; Edwards (named in 1971 by Rehder & Randall, 1975). Note however that on the most recent chart, following a request by a group of Pitcairners in 1997, the name of Edwards has changed to Te Manu (G. Wragg, *pers. comm.*).		

(Information extracted from various sources including the RSPB's A Directory of Wetlands in Oceania: http:// www.wetlands.org/RSIS/WKBASE/OceaniaDir/Pitcairn.htm)

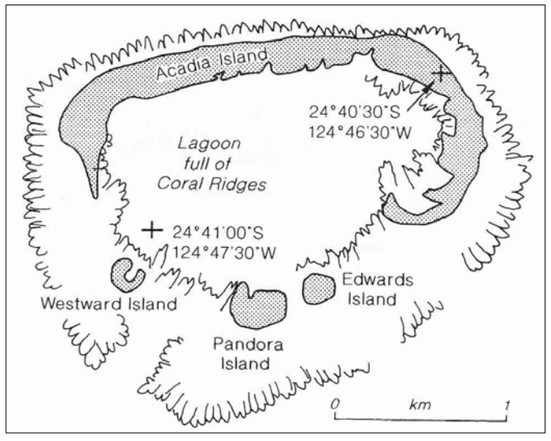


Figure 11. *Ducie atoll (from Spencer, 1995 – re-mapped using GPS in 1991).*

Plate 43. *Aerial photograph of Ducie atoll. (Photo: SPSCEPI)*

Plate 44. *View from Acadia islet looking SW across the lagoon. (Photo: R.A. Irving)*

3.4.1 Introduction

Ducie is a small coral atoll, the easternmost island on the Pacific plate and also the most southerly atoll in the world (UKOTCF, 2004). It comprises a main island (Acadia) and three smaller islets or 'motus' (Edwards/Te Manu, Pandora and Westward) encircling a central lagoon. The islets for the most part are composed of coral rubble, echinoid remains and dead shells. Acadia is largely surrounded by reef flats, the reef to the north-west consisting for the most part of a somewhat uneven reef pavement flat. Most water exchange into and out of the lagoon takes place via a shallow channel between Westward and Pandora islets (Figure 11). Small channels between the lagoon and the ocean are found at the northernmost extension of Westward and western end of Acadia, but these have little influence on water exchange within the lagoon. The greatest seaward extension of the reef is at the south-west, where the shelf extends 270 m offshore to a depth of 30 m. There is a regular semi-diurnal tide, measured accurately in January 1971 as being 0.4 m (spring tide) (Rehder & Randall, 1975).

In 1969, Ducie was proposed for listing as an 'Island for Science' (Elliot, 1973). This proposal has not effectively been taken up, although the island was visited on several occasions during 1991/92 by members of the Sir Peter Scott Commemorative Expedition to the Pitcairn Islands. Hepburn *et al*. (1992) recommended that the entire atoll be designated a Ramsar Site. This is still under consideration, as it is for Oeno.

In 1970 there was evidence of a relatively recent mass mortality of corals, the cause of which was not identified, although a sudden drop in water temperature was postulated (Rehder & Randall, 1975). This may well have come about due to a temporary northwards shift of cooler southern ocean water. By 1987, Paulay (1989) reported considerable recovery of live coral cover (58 percent at 17 m depth), and by 1991 this had increased to 100 percent at 17 m depth at the same location (Irving, 1995).

3.4.2 Lagoon – habitats and species

The lagoon has a maximum depth of about 16 m, though for the most part the floor of the lagoon lies between 8 m and 12 m. There are a large number of coral heads, some nearly reaching the surface, with sandy channels and scoured flat bedrock in between. In 1971, salinity (measured from a water sample taken at the bottom of the lagoon) was about 38 ppt (oceanic seawater salinity is typically 34–36 ppt), and the water temperature taken from shallow and deep sites within the lagoon was 26.5°C (Rehder & Randall, 1975). The water temperature of the oceanic water outside the lagoon was estimated to be a few degrees cooler than this (but was not measured). Water exchange with the open sea is thought to be quite limited, with most taking place via the shallow channel between Westward and Pandora. Irving (1995) made mention of two small 'tidal holes' (1.5 m in diameter) at the northern end of the lagoon. The water temperature in these holes was noticeably cooler (by an estimated 2°C) than the surrounding lagoonal water, and it was suggested that subterranean channels through Acadia may link to the open ocean.

Rehder & Randall (1975) commented on the dearth of species present within the lagoon, especially of corals, molluscs and fishes: "The most striking thing about the lagoon is the paucity of life." Just 47 species of fishes were seen, which disappointed Randall considerably. The most common species were drummer (nanwi) *Kyphosus bigibbus*, whitebar surgeonfish *Acanthurus leucopareius*, parrotfish *Scarus* sp. and sunset wrasse *Thalassoma lutescens*. Although most of the coral heads consisted of dead coral rock, some small live corals (*Montipora* spp.) were encountered (Rehder & Randall, 1975).

3.4.3 Bathymetry and marine habitats

A well-developed reef encircles the whole of the atoll, with an extensive fore-reef projecting around the southern half. The fore-reef gradually slopes from the shore to 25-30 m, whereafter it steepens sharply. Coral growth can be seen extending beyond 40 m in places. Irving (1995) found the cover of live coral to be considerably greater than at neighbouring Henderson Island, with mean values of 90 percent at 11–20 m, 70 percent at 21–30 m, and 70 percent at 31–40 m. This is the highest percentage of live coral cover of all four Pitcairn Islands. While small patches of coral rubble were reported in 1991, no areas of sand were seen. This had also been the case in 1971 (Rehder & Randall, 1975) and in 1987 (Paulay, 1989). Off the south-east side of the atoll, where 100 percent live coral cover was reported, the predominant coral species was *Montipora aequituberculata*, a species that is rare at Henderson and has not been recorded from either Pitcairn or Oeno.

3.4.4 Marine species

The following marine taxa have not been fully studied at Ducie: Algae and Foraminifera (beach sediment was collected and analysed in 1991, but no Foraminifera were found to be present).

SPONGES

Six sponge species have been recorded from Ducie, all from within the lagoon, during a short visit to the island by Irving in 1991 (Irving 1995): *Ascaltis* sp. (a lime-green sponge); *Darwinella* sp. aff. *gardineri* (a pink-red sponge); *Lamellodysidea herbacea* (a yellow-cream sponge); *Jaspis* sp. aff. *tuberculata* (various dark colours); *Spongia magallonica* (a black sponge); and *Tethya seychellensis* (an orange sponge). The conservation status of these species (as with most sponges) has yet to be assessed by the IUCN.

CORALS, etc.

A total of 27 species of scleractinian (stony) coral has been recorded from Ducie, which is noticeably fewer than Henderson's coral fauna (59 species) though considerably more than both Oeno's (17 species) and Pitcairn's (15 species). Much of the information on the scleractinian corals has come from Paulay (1989), based on collections made in 1967 (by H.A. Rehder, D.M. Devaney and B.R. Wilson using a dredge); in 1970–71 (by J.E. Randall and H.A. Rehder using scuba); and in 1987 (by G. Paulay himself using scuba).

Table 12. Species of scleractinian coral recorded from Ducie (after Paulay, 1989) with IUCN Red List conservation status (IUCN, 2012).

Species	IUCN Code*	Notes
Montipora caliculata (Dana 1846)	VU	Also recorded from Henderson.
Acropora acuminata (Verril, 1864)	VU	Also recorded from Oeno & Pitcairn (although dubious ID at Pitcairn).
Leptoseris incrustans (Quelch 1886)	VU	Also recorded from Henderson.
Pocillopora cf. *eydouxi* (Edwards & Haime 1860)	NT	Identification uncertain by Paulay. Note that the 'NT' status is for *P. eydouxi*. Also recorded from Henderson.
Montipora foveolata (Dana 1846)	NT	Also recorded from Oeno & Henderson.
Montipora incrassata (Dana 1846)	NT	Also recorded from Oeno.
Acropora humilis (Dana 1846)	NT	Also recorded from Oeno & Henderson.
Acropora nasuta (Dana 1846)	NT	Also recorded from Henderson.
Porites cf. *lobata* (Dana 1846)	NT	Also recorded from Pitcairn & Henderson.
Psammocora obtusangula (Lamarck 1816)	NT	Also recorded from Henderson.
Favia stelligera (Vaughan 1918)	NT	Only recorded at Ducie.

** IUCN's Red List categories (IUCN, 2012):* **VU** *= Vulnerable;* **NT** *= Near Threatened*

Of the 27 scleractinian coral species, the IUCN Red List lists three species as Vulnerable (VU) and eight species as Near Threatened (NT) (Table 12).

CRUSTACEANS

Collections of crustaceans were made from Ducie by R.A. Irving and J. Jamieson in 1991. However, many of these specimens have still to be identified to species (they currently reside at the Natural History Museum, London). Table 13 sets out the probable number of species within this collection which were collected from Ducie.

Other crustaceans which have been identified from Ducie are included in Appendix 5.

Table 13. Specimens of Crustacea collected from Ducie by R. Irving and J. Jamieson in 1991; these still have to be identified to species.

Taxon	Probable no. of species
Xanthidae	3
Grapsidae	1
Atelecyclidae	1
Stomatopoda	1
Anomura (hermit crabs)	5
Total probable no. of species:	**11**

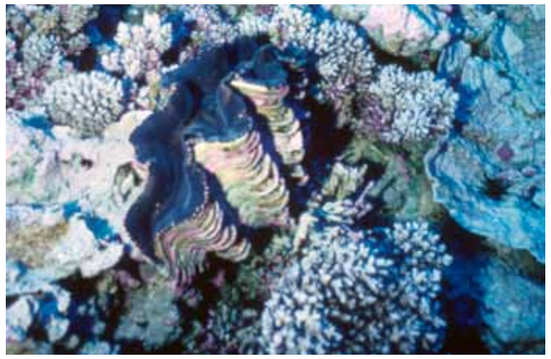


Plate 45. *The giant clam* Tridacna maxima *embedded in corals, Ducie fore-reef. This species is rare at Ducie, though abundant in the lagoon on Oeno. (Photo: R.A. Irving)*

Plate 46. *The type specimens of the nudibranch* Bornella irvingi, *found at Ducie in 1991 and described by Edmunds & Preece (1996). These remain the only known examples. (Photo: J. Jamieson)*

MOLLUSCA

To date, a total of about 80 species of molluscs have been recorded from Ducie (Preece, 1995a). Collections have been made primarily by Rehder in 1970/71 (Rehder & Randall, 1975 – making use of a dredge); by Paulay in 1987 (Paulay, 1989); and by Preece in 1991 from the lagoon and beach sediments.

Ducie is the type locality for a number of molluscan species. In 1991, a new species of nudibranch *Bornella irvingi* (Plate 46) was collected on the fore-reef at Ducie by J. Jamieson and R.A. Irving during the 1991/92 expedition (Edmunds & Preece, 1996). Preece (1995a) was disappointed by the number and quality of the species present within the shore sediments at Ducie, with many having very worn shells.

STARFISH, SEA URCHINS AND SEA CUCUMBERS (Echinodermata)

To date, a total of 12 species of echinoderm have been recorded from Ducie: six sea urchins (Echinoidea); one brittlestar (Ophiuroidea); and five sea cucumbers (Holothuria). The long-spined sea urchin *Diadema savignyi* was found to be abundant on the fore-reef in both 1987 (Paulay, 1989) and in 1991 (Irving, 1995). Paulay (1989) noted that those individuals present in the lagoon were noticeably larger (20–25 cm) than those on the fore-reef (15 cm). Paulay (1989) also reported the purple sea urchin *Heterocentrotus trigonarius* (Plate 34) to be abundant in the surf zone. The closely related *H. mammillatus* (Plate 35) was also very common in deeper water (10–20 m depth).

REEF FISHES

To date, a total of 127 species of reef fishes have been recorded from Ducie (Randall 1999), out of a total of 352 species for all four islands (or 28 percent). The most common species observed at Ducie were drummer/nanwi *Kyphosus bigibbus*, sunset wrasse *Thalassoma lutescens*, wrasse *Thalassoma heiseri*, steephead parrotfish *Chlorurus microrhinus*, whitebar surgeonfish *Acanthurus leucopareius*, damselfish *Chrysiptera galba*, Emery's Gregory *Stegastes emeryi* and black jack *Caranx lugubris*. The double-saddled butterflyfish *Chaetodon ulietiensis* was the most commonly seen butterflyfish, yet interestingly this species is not present at any of the other three islands. Blacktip grouper *Epinephelus fasciatus* and greasy grouper *E. tauvina* were the most commonly seen groupers; and two-barred goatfish *Parupeneus bifasciatus* and yellowsaddle goatfish *P. cyclostomus* the most common of the goatfishes (Randall, 1999; R.A. Irving, *pers. obs.*).

TURTLES

The substrate on Ducie probably precludes nesting of green turtles *Chelonia mydas*, though immature individuals (probably *Chelonia mydas*) were occasionally seen within the lagoon during 1991 (Brooke, 1995c). It is believed these records may well be the first from the atoll, as there is no record of turtles being sighted by previous expeditions (Rehder & Randall, 1975).

Table 14. Noteworthy reef fishes occuring at Ducie (after Randall, 1999).

Species	IUCN Code*	Notes
Galapagos reef shark *Carcharhinus galapagensis*	NT	
Whitetip reef shark *Triaenodon obesus*	NT	
Redblotch perchlet *Plectranthias winniensis*	**NE**	New species in 1971 (also found at Pitcairn).
Longfin anthias *Pseudanthias ventralis*	**NE**	New species in 1971 (also found at Pitcairn & Henderson).
Pacific double-saddled butterflyfish *Chaetodon ulietensis*	**NE**	The most common butterflyfish at Ducie, but not recorded from any of the other islands.
Hotumatua's angelfish *Centropyge hotumatua*	**NE**	New species in 1971 (also found at Oeno, Pitcairn & Henderson).
Pitcairn angelfish *Genicanthus spinus*	**NE**	New species in 1971 (also found at Pitcairn).
Damselfish *Chrysiptera galba*	**NE**	New species in 1971 (also found at Oeno, Pitcairn & Henderson).
Tahiti damselfish *Pomachromis fuscadorsalis*	**NE**	New species in 1971 (also found at Oeno, Pitcairn & Henderson).
Emery's gregory *Stegastes emeryi*	**NE**	New species in 1971 (also found at Oeno, Pitcairn & Henderson).
Polynesian wrasse *Pseudojuloides atavai*	**NE**	New species in 1971 (also found at Oeno & Pitcairn).
Wrasse *Thalassoma heiseri*	**NE**	New species in 1971 (also found at Oeno, Pitcairn & Henderson).
Goby *Trimmatom* sp.	**NE**	New species in 1971 (also found at Oeno, Pitcairn & Henderson).
Halfmoon picassofish *Rhinecanthus lunula*	**NE**	New species in 1971 (also found at Pitcairn & Henderson).

** IUCN's Red List categories (IUCN, 2012):* **NT** *= Near Threatened;* **NE** *= Not Evaluated.*

Table 15. Seabirds noted at Ducie (all information taken from Brooke (1995a & b).

	Species	IUCN Code*	Notes
Breeding	Great frigatebird *Fregata minor*	**LC**	Breeding population estimated to be 10–20 pairs.
	Blue-grey noddy *Procelsterna cerulea*	**LC**	Breeding population estimated to be 10–20 pairs.
	Brown noddy *Anous stolidus*	**LC**	Breeding population estimated to be 200 pairs.
	Fairy tern *Gygis alba*	**LC**	Breeding population estimated to be 5,000 pairs.
	Sooty tern *Onychoprion fuscatus*	**LC**	Breeding population estimated to be 100–200 pairs.
	Red-tailed tropicbird *Phaethon rubricauda*	**LC**	Breeding population estimated to be 500–1,000 pairs.
	Kermadec petrel *Pterodroma neglecta*	**LC**	Breeding population estimated to be 30,000 pairs.
	Murphy's petrel *Pterodroma ultima*	NT	Breeding population estimated to be 250,000 pairs.
	Herald petrel *Pterodroma heraldica*	**LC**	Breeding population estimated to be 10,000–99,999 pairs.
	Christmas shearwater *Puffinus nativitatis*	**LC**	Breeding population estimated to be 3,000 pairs.
	Masked booby *Sula dactylactra*	**LC**	Breeding population estimated to be 80–100 pairs.
	Red-footed booby *Sula sula*	**LC**	Breeding population estimated to be <30 pairs.
Non-breeding	Henderson petrel *Pterodroma atrata*	EN	Present but not breeding.
	Black noddy *Anous minutus*	**LC**	Present but not breeding.
	Sanderling *Calidris alba*	**NE**	Recorded on Ducie in1922, but numbers not known.
	Wandering tattler *Tringa incana*[24]	**NE**	Max. no. of 20 individuals recorded at any one time in 1990–92.

** IUCN's Red List categories (IUCN, 2012):* **EN** *= Endangered;* **NT** *= Near Threatened;* **LC** *= Least Concern;* **NE** *= Not Evaluated.*

SEABIRDS

Being uninhabited, rarely visited and ecologically undisturbed, Ducie hosts very large and important breeding populations of seabirds. The island supports particularly large numbers of Murphy's petrels *Pterodroma ultima* with around 250,000 pairs, estimated as being 90 percent of the world's population (UKOTCF, 2004). There are also in the region of 30,000 pairs of Kermadec petrels *P. neglecta* and 20,000 pairs of Herald petrels *P. heraldica*. Other breeding seabirds whose numbers are of international importance include Christmas shearwater *Puffinus nativitatis* (minimum population size estimated at 3,000 pairs or approximately 5 percent of the world's population – UKOTCF, 2004); red-tailed tropicbird *Phaethon rubricauda* (breeding population of 500–1,000 pairs, or approximately 1 percent of the world's population – UKOTCF, 2004); and fairy tern *Gygis alba* (breeding population of 5,000 pairs, or approximately 1 percent of the world's population – UKOTCF, 2004).

Other breeding seabird species include boobies *Sula* spp., great frigatebird *Fregata minor*, sooty tern *Sterna fuscata*, brown noddy *Anous stolidus* and blue-grey noddy *Procelsterna cerulea*. Two species of migrant shorebirds have been reported: wandering tattler *Tringa incana* (also known as *Heteroscelus incanus* – see footnote 24) and sanderling *Calidris alba*, but numbers are generally low (less than 20). A summary of the island's seabird populations is given in Table 15.

CETACEANS

Very little information is known about cetacean populations at Ducie. At the end of October 1991, a dead Cuvier's beaked whale *Ziphius cavirostris* was discovered, partially decayed, washed up on Edwards/Te Manu islet (R.A. Irving, *pers. obs.*).

3.4.5 Nearshore fisheries

As Ducie is uninhabited and very remote, no nearshore fishing is done on a regular basis. Crews on visiting yachts may well try their hand while close to the island to see what they may catch, but no records exist of catches. The range of species which might be caught is likely to be similar to those caught at Pitcairn.

In 1922 the scientific party and the crew of the schooner *France* suffered an attack of ciguatera poisoning after eating the black jack *Caranx lugubris* at Ducie (Rehder & Randall, 1975). This same problem was also experienced by those onboard the schooner *Yankee* during a visit to the island in January 1936 after eating what was thought to be yellowtail *Seriola lalandi,* though ciguatera poisoning had not been associated with this fish before (Rehder & Randall, 1975).

Offshore waters[25]

4

4.1 Introduction

Far less is known about the offshore waters of the EEZ than is known for the nearshore waters. Sightings of marine species, typically cetaceans and seabirds, have originated from those on board vessels of one sort or another, be they charter vessels (including the *Claymore II*), cruise ships or ocean-going cargo vessels. Additionally, within the past 25 years, a considerable amount of effort has been put into obtaining data from the seafloor using remote methods.

4.2 Geology/geomorphology

A number of large volcanic structures were discovered in December 1989 in a virtually uncharted region of the Pacific Ocean some 60–100 km east-south-east of Pitcairn Island (Stoffers *et al*., 1990). Three of these structures were composed of fresh volcanic rocks, glass and hydrothermal deposits with little, if any, sediment cover; in addition, methane anomalies in the surrounding water column suggested that at least one had a currently active hydrothermal circulation system. These undersea volcanoes are thought to represent the present-day expression of the Pitcairn 'hotspot', which formed during the last 8 million years the Pitcairn-Gambier-Mururoa-Duke of Gloucester linear island chain (Woodhead & Devey, 1993).

More recent studies using satellite altimetry[26] (Smith & Sandwell, 1997) and multibeam bathymetry[27] (Hekinian *et al*., 2003) have revealed that the submarine hotspot activity extends over an area of about 7,022 km^2. This area has a high density of volcanic cones rising from a seafloor at 3,500–3,800 m depth. There are two large edifices (> 2,000 m high), five intermediate (500–2,000 m high) and about 90 small (500 m high) edifices. The largest two edifices, known as Bounty Seamount and Adams Seamount (90 to 110 km east of Pitcairn Island) (Figure 12) are still active with steep scarps and fresh lava flows observed on their flanks during submersible diving surveys (Hekinian *et al*., 2003). The Bounty and Adams seamounts respectively rise to within about 450 m and 55 m of the ocean surface. Other smaller edifices in the same locality have been named Christian, Young and McCoy, after some of the original mutineers from HMS *Bounty*.

The Adams Seamount, located at 25° 23' S, 129° 15' W, is referred to locally as '40-mile Reef' as it lies approximately 40 miles from Pitcairn. The reef is occasionally visited by Pitcairners (their last visit was in 2003/04) and by charter boats (G. Wragg, *pers. comm.*). It takes about five hours to reach the reef from Pitcairn by longboat.

There are several other seamounts within the Pitcairn Islands EEZ, such as to the north-west of Pitcairn, to the north-west of Henderson and to the south, east and west of Ducie, although few of these areas rise to a depth less than 200 m.

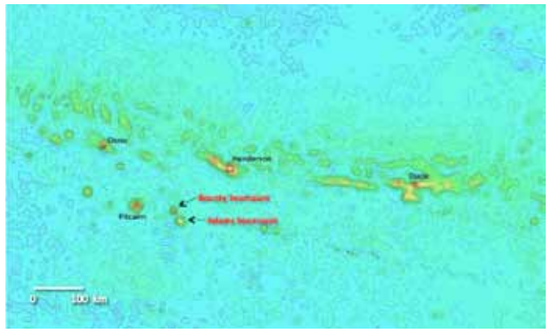


Figure 12. *Bathymetric map of the seafloor in the vicinity of the Pitcairn Islands, showing the location of the two seamounts closest to Pitcairn. (Adapted from satellite altimetry data [Smith & Sandwell, 1997])*

4.3 Marine species

MOLLUSCS

The only information the authors have been able to source on oceanic cephalopod species has come indirectly from a study assessing the food items of gadfly petrels breeding on the Pitcairn Islands.

The following data (Table 16) have been extracted from Imber *et al.*'s 1995 paper on the stomach contents of 29 Herald petrels *Pterodroma heraldica*, 27 Kermadec petrels *P. neglecta* and 37 Murphy's petrels *P. ultima* on the Pitcairn Islands during 1991. Ninety-two percent of samples were from chicks and samples were obtained from Henderson, Oeno and Ducie. There is a very strong probability that the parent birds would have been feeding somewhere within the boundary of the Pitcairn Islands EEZ, so the taxa listed provide a crude indication of some oceanic species which are present near the sea's surface either during the day or at night (Murphy's petrels were found to favour certain bioluminescent squid species). Cephalopods, which provided by far the greatest proportion of food items, can be identified to species level in most cases by their beaks.

Interestingly, Imber *et al*. (1995) point out that there is no evidence that, while feeding their chicks, any of the three petrel species forages further than 1,200 km southwards of the Pitcairn Islands, as this is where certain cooler water cephalopods would be encountered and these are missing from the list. Linked with this has been speculation by Brooke (2010), who has considered how far Murphy's petrels may travel from a base at the Pitcairn Islands "during their off-duty periods", as he puts it. He says: "A conservative flying speed of 40 kph and 12 hours of straight-line flying per day would give a bird, off-duty for 19 days, a potential foraging radius of 4,600 km. This would certainly bring the highly productive Antarctic Polar Front, 3,260 km to the south, within range. Even the rich

Table 16. The range of taxa (as food items) found in samples of stomach contents from three species of gadfly petrel from the Pitcairn Islands during 1991 (after Imber *et al*., 1995).

Cephalopoda		Other taxa
Squids	**Squids (cont.)**	**Fish**
Ancistrocheirus lesueuri	*Cranchia scabra*	*Sternoptychidae*
Octopoteuthis sp.	*Leachia* sp.	*Myctophidae*
Onychoteuthis banksii	*Taonius cf. belone*	*Gadiformes*
Onychoteuthis sp.2	*Megalocranchia* sp.	*Exocoetidae*
Discoteuthis sp.	*Heliocranchia* sp.	**Crustacea**
Pholidoteuthis boschmai	*Galiteuthis* sp.	*Lophogastridae* (Mysidacea)
Histioteuthis dofleini	*Bathothauma* sp.	*Lysianassidae* (Amphipoda)
H. meleagroteuthis	*Unidentified squids*	*Anuropodidae* (Isopoda)
Ctenopteryx sicula	**Vampyromorph**	*Decapoda* indet.
Ommastrephes bartramii	*Vampyroteuthis infernalis*	
Chiroteuthis cf. *capensis*	**Octopus**	
Mastigoteuthis dentata	*Japetella* sp.	
Mastigoteuthis sp.2		

Table 17. Seabirds recorded within the waters of the Pitcairn Islands EEZ by: (A) members of the Kent Ornithological Society (UK), 11 September–1 October 2010, while onboard the *Claymore II* by Don Taylor and posted on the Society's website (www.kentos.org.uk/Trip Reports/DonsList.htm); (B) Chris Gaskin of Pterodroma Pelagics (www.nzseabirds.com) on a bird-watching expedition to the Pitcairn Islands in June 2006; and (C) by Mike Brooke in 1991/92 (Brooke, 1995a).

Species	IUCN Code*	Species	IUCN Code*
Wandering albatross *Diomedea exulans* (B) & (C)	VU	Parkinson's petrel *Procellaria parkinsoni* (B)	VU
Buller's albatross *Thalassarche bulleri* (A)	NT	White-chinned petrel *Procellaria aequinoctialis* (A)	VU
Black-browed albatross *Thalassarche melanophris* (C)	EN	Westland petrel *Procellaria westlandica* (A)	VU
Northern giant petrel *Macronectes halli* (B)	LC	Sooty shearwater *Puffinus griseus* (B)	NT
Cape petrel *Daption capense* (A)	LC	White-faced storm petrel *Pelagodroma marina* (A)	LC
Tahiti petrel *Pseudobulweria rostrata* (B)	NT	Polynesian storm petrel *Nesofregetta fuliginosa* (A) & (B)	EN
Murphy's petrel *Pterodroma ultima* (A) & (B)	NT	White-bellied storm petrel *Fregetta grallaria* (B)	LC
Kermadec petrel *Pterodroma neglecta* (A) & (B)	LC	Red-tailed tropicbird *Phaethon rubricauda* (A) & (B)	LC
Herald petrel *Pterodroma heraldica* (A) & (B)	LC	White-tailed tropicbird *Phaethon lepturus* (B)	LC
Henderson petrel *Pterodroma atrata* (A) & (B)	EN	Greater frigatebird *Fregata minor* (A) & (B)	LC
Juan Fernandez petrel *Pterodroma externa* (C)	VU	Masked booby *Sula dactylatra* (A) & (B)	LC
Phoenix petrel *Pterodroma alba* (A)	EN	Red-footed booby *Sula sula* (A) & (B)	LC
White-necked petrel *Pterodroma cervicalis* (B)	VU	Blue-grey noddy *Procelsterna cerulea* (A)	LC
Collared petrel *Pterodroma brevipes* (A)	VU		

** IUCN's Red List categories (IUCN, 2012):* **EN** *= Endangered;* **VU** *= Vulnerable;* **NT** *= Near Threatened;* **LC** *= Least Concern;* **NE** *= Not Evaluated.*

Table 18. Cetacean species recorded from the offshore waters of the Pitcairn Islands EEZ. Species from: (A) Palomares *et al.*, 2011, believed to be derived from species ranges/known migration routes rather than from actual sightings; and (B) Chris Gaskin of Pterodroma Pelagics (www.nzseabirds.com) on a bird-watching expedition to the Pitcairn Islands in June 2006. Status and notes from IUCN Red List (2012).

Species	IUCN Code*	Notes
Common or dwarf minke whale *Balaenoptera acutorostrata*	**LC**	Occurs in both coastal and offshore waters. High abundance of minke whales reported in November between 10° and 30°S in the central South Pacific. (A)
Sei whale *Balaenoptera borealis*	**EN**	Populations in the southern hemisphere are listed as CITES Appendix I, indicating they are threatened with extinction if hunting (for 'scientific' purposes) is not halted. (A)
Blue whale *Balaenoptera musculus*	**EN**	Occurs in the eastern Pacific from around 44°S in southern Chile as far north as Costa Rica. Numbers severely depleted in the past by direct exploitation. However, there appear to be no major threats to blue whales at present. (A)
Fin whale *Balaenoptera physalus*	**EN**	Occurs worldwide in offshore waters, but typically confined to 50°–65°S in the South Pacific. Depleted worldwide by commercial whaling in the 20th century. Protected in the Southern Hemisphere since 1975. (A)
Humpback whale *Megaptera novaeangliae*	**EN**	Those within EEZ waters likely to belong to a sub-stock which includes the waters of Franch Polynesia (sub-stock F). Humpbacks have been protected from commercial whaling in the Southern Hemisphere since 1963. (A)
Bryde's whale *Balaenoptera edeni*	**DD**	Within the past 20 years this species of baleen whale has been classified as a 'complex' of a number of species, as there has been confusion regarding its true identification by taxonomists. The 'ordinary' Bryde's whale (the species given here) is known to have a distribution throughout the eastern tropical Pacific and across the South Pacific down to about 35°S. (B)
Minke whale *Balaenoptera acutorostrata*	**LC**	This species is likely to be the 'dwarf' minke whale which taxonomists have only regarded as being separate from the Antarctic minke whale *B. bonaerensis* within the past 15 years. Its distribution in the South Pacific is uncertain. (B)
(Short-nosed) common dolphin *Delphinus delphis*	**LC**	An oceanic species that is widely distributed in tropical to cool temperate waters of the Atlantic and Pacific Oceans, from nearshore waters to thousands of kilometres offshore. (A)
Pygmy killer whale *Feresa attenuata*	**DD**	A tropical/subtropical species that inhabits oceanic waters around the globe generally between 40°N and 35°S. Little is known about this species. (A)
Short-finned pilot whale *Globicephala macrorhynchus*	**DD**	Found in warm temperate to tropical waters of the world, generally in deep offshore areas. Feeds on vertically migrating prey. (A)
Cuvier's beaked whale *Ziphius cavirostris*	**LC**	Decaying carcass found on Edwards/Te Manu islet, Ducie in October 1991 by members of the Sir Peter Scott Commemorative Expedition. (A)
Risso's dolphin *Grampus griseus*	**LC**	A widely-distributed species, inhabiting primarily deep waters of the continental slope and outer shelf (especially with steep bottom topography), from the tropics through the temperate regions in both hemispheres. It also occurs in some oceanic areas, beyond the continental slope, such as in the eastern tropical Pacific. (A)
Fraser's dolphin *Lagenodelphis hosei*	**LC**	Exact distribution of this species is poorly known. Has a pantropical distribution, largely between 30°N and 30°S in all three major oceans. (A)
Killer whale *Orcinus orca*	**DD**	The most cosmopolitan of all cetaceans and may be the second most widely ranging mammal species on the planet, after humans. (A)
False killer whale *Pseudorca crassidens*	**DD**	Found in tropical to warm temperate zones, generally in relatively deep, offshore waters of all three major oceans. Feeds primarily on fish and cephalopods, but has also been known to attack small cetaceans, humpback whales, and sperm whales. (A)
Pantropical spotted dolphin *Stenella attenuata*	**LC**	Presence in Pitcairn Islands EEZ waters uncertain. (A)
Striped dolphin *Stenella coeruleoalba*	**LC**	A widely-distributed species, found in tropical and warm-temperate waters of the Atlantic, Pacific and Indian Oceans. (A)
Spinner dolphin *Stenella longirostris*	**DD**	The association of spinner dolphins with spotted dolphins and yellowfin tuna results in their entanglement in tuna purse seines in the eastern tropical Pacific. (A)
Rough-toothed dolphin *Steno bredanensis*	**LC**	A tropical to subtropical species which generally inhabits deep, oceanic waters of all three major oceans, rarely ranging north of 40°N or south of 35°S. In the eastern tropical Pacific it tends to associate with other cetaceans (especially pilot whales and Fraser's dolphins). (A)

** IUCN's Red List categories (IUCN, 2012):* **EN** *= Endangered;* **LC** *= Least Concern;* **NE** *= Not Evaluated;* **DD** *= Data Deficient.*

waters off California, 6,500 km to the north, could be reached if the birds flew for more than 12 hours a day, and Murphy's petrels are seen most often in those waters during the incubation months of June and July." (Brooke, 2010).

SEABIRDS

The seabirds of particular conservation interest listed in Table 17 have been observed at sea within the EEZ, in addition to those species already listed for the nearshore waters of each island.

CETACEANS

Several species of whales and dolphins have been recorded from the offshore waters within the Pitcairn Islands EEZ. These are listed in Table 18.

TURTLES AND NON-COMMERCIAL FISH SPECIES

See Table 19.

4.4 Fisheries

4.4.1 Non-commercial

A New Zealand fishing expedition to 40-mile Reef (the apex of the Adam's Seamount, lying to the east-south-east of Pitcairn) took place in August 1994 (Sharples, 1994). Using droplines, bottom longlines and hand-jigging methods, abundant catches of reticulate grouper *Epinephelus tuamotuensis*, coral trout *Variola louti*, blacktip grouper *Epinephelus fasciatus* and yellowtail kingfish *Seriola lalandi* were achieved fishing at depths of 70 to 185 m (Sharples, 1994).

Pitcairn Islanders also visit 40-mile Reef, though infrequently (their last visit was in 2003/04). Their catches have included various grouper species, coral trout *Variola louti* and trevally (probably *Caranx ignobilis*) (M. Christian, *pers. comm*.). Large numbers of sharks are known to frequent the reef and it also provides a feeding area for several species of seabird (G. Wragg, *pers. comm*.).

Table 19. Oceanic turtle and non-commercial fish species recorded from within the Pitcairn Islands EEZ. Species from Palomares *et al.,* 2011 believed to be derived from species ranges/known migration routes rather than from actual sightings.

Species	IUCN Code*	Notes
Hawksbill turtle *Eretmochelys imbricata*	**CR**	Has a circumglobal distribution throughout tropical and, to a lesser extent, subtropical waters including the Pacific Ocean. Hawksbills are migratory and individuals undertake complex movements through geographically disparate habitats during their lifetimes.
Green turtle *Chelonia mydas*	**EN**	Very little is known about their migratory movements in this part of the world once they return to the sea from a nesting beach. Has a circumglobal distribution, occurring throughout tropical and, to a lesser extent, subtropical waters. Highly migratory and undertakes complex migrations through geographically disparate habitats.
Oceanic whitetip shark *Carcharhinus longimanus*	**VU**	This is one of the most widespread sharks, ranging across entire oceans in tropical and subtropical waters. It is caught in large numbers as a bycatch of pelagic fisheries. Listed as a highly migratory species under the 1995 UN Agreement on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UNFSA).
Blue shark *Prionace glauca*	**NT**	One of the most wide-ranging of all sharks, being found throughout tropical and temperate seas from latitudes of about 60° N to 50°S. It is oceanic and pelagic, found from the surface to about 350 m depth. They are a major bycatch of longline and driftnet fisheries.
Whale shark *Rhincodon typus*	**VU**	A cosmopolitan tropical and warm temperate species and the world's largest living fish. Known to migrate over extremely large distances. Populations appear to have been depleted by harpoon fisheries in South-East Asia and perhaps incidental capture in other fisheries.

** IUCN's Red List categories (IUCN, 2012):* **CR** *= Critically Endangered;* **EN** *= Endangered;* **VU** *= Vulnerable;* **NT** *= Near Threatened;*

4.4.2 Commercial

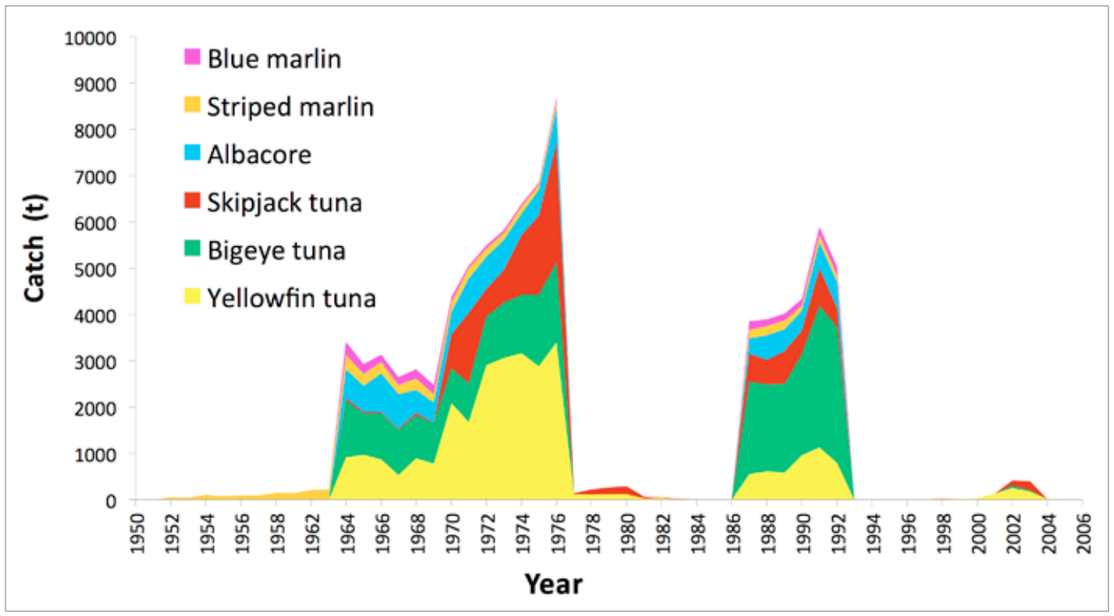
Since 1993 there have been no significant offshore industrial fishing activities being undertaken in the Pitcairn Island EEZ, except for a few exploratory expeditions and possible illegal incursions. The UK Government has issued permits to fish in the waters surrounding the Pitcairn Islands since the mid-1950s, initially to Japanese longline fishing fleets, which were mainly targeting tuna species. In the 1960s and 1970s, Korean and Taiwanese fishing vessels were also operating in the region, but all the Asian industrial fleets essentially withdrew activities by the late-1970s (Adams & Langley, 2005). The most recent industrial longline fishing efforts were conducted by the Japanese under an annual renewable licence agreement from the UK Government between 1987 and 1992, although all Asian fleets continue to operate in the international waters outside the Pitcairn Islands EEZ.

The proclaimation for establishing the Pitcairn Islands EEZ based upon the 200 nm limit (total area 836,108 km^2) was made in 1997, which updates earlier legislation given in three documents: Fisheries Zone Ordinance (1980); Fisheries Zone (amendment) Ordinance (1982 & 1986); and Foreign Fisheries Regulations (1982) (as amended). In December 2006, a single one-off licensing agreement was made to a Spanish-registered longliner by the Commissioner for the Pitcairn Islands for a flat fee of US$1,000, although only a few days of fishing took place due to a poor harvest[28]. Sporadic illegal fishing within Pitcairn waters is suspected by the Pitcairners, who have sighted foreign vessels in the vicinity of the islands that do not respond to any radio contact. However, without an airstrip or access to a fast patrol boat, they currently have no means of policing their territorial waters effectively. Catch records from regulated fishing around the Pitcairn Islands EEZ, drawn from logsheets of commercial tuna fishing vessels held by the Secretariat of the Pacific Community (SPC), show that the dominant fish caught were the migratory tuna species, including yellowfin (*Thunnus albacares*), bigeye (*Thunnus obesus*), skipjack (*Katsuwonus pelamis*) and albacore (*Thunnus alalunga*), along with smaller quantities of other billfish, such as the blue and striped marlin (Figure 13, data from Sea Around Us Project, 2010).

The main reason for the recent lack of interest in the commercial exploitation of the Pitcairn fisheries by the longline fleets of the distant-water fishing nations (DWFN) is probably because, even during the peak of the fishery in the early-1970s, the annual reported catches of these species were relatively minor compared to other regions in the south-western and Central Pacific (Figure 14, adapted from Adams & Langley, 2005). For example, during 2005 reported catches of albacore tuna species in the Pitcairn EEZ amounted to 5 tonnes (t) in total. In comparison, records from the locally based longliner fleet in French Polynesia for 2005 reported catch weights of albacore tuna to be 2,426 t; although it is a much larger area, with an EEZ of 5,030,000 km^2, it is six times larger than the Pitcairn EEZ of 836,108 km^2. Due to its remote location, lack of processing facilities, increasing fuel costs and marginal returns from fishing these waters, the economic development of Pitcairn's offshore fisheries is not currently attractive for DWFN.

In 2008 the Government of Pitcairn Islands signed a Joint Country Strategy (JCS) with the Secretariat of the Pacific Community (SPC) to provide SPC technical assistance and other support services to the Pitcairn Islands over the period 2009 to 2013. In support of the Pitcairn Islands development strategies, the JCS includes the provision of advice, training and services in managing and developing their fisheries and marine resources.

Figure 13. *Fish catch landings by species in the waters of Pitcairn (from Sea Around Us Project, 2010).*



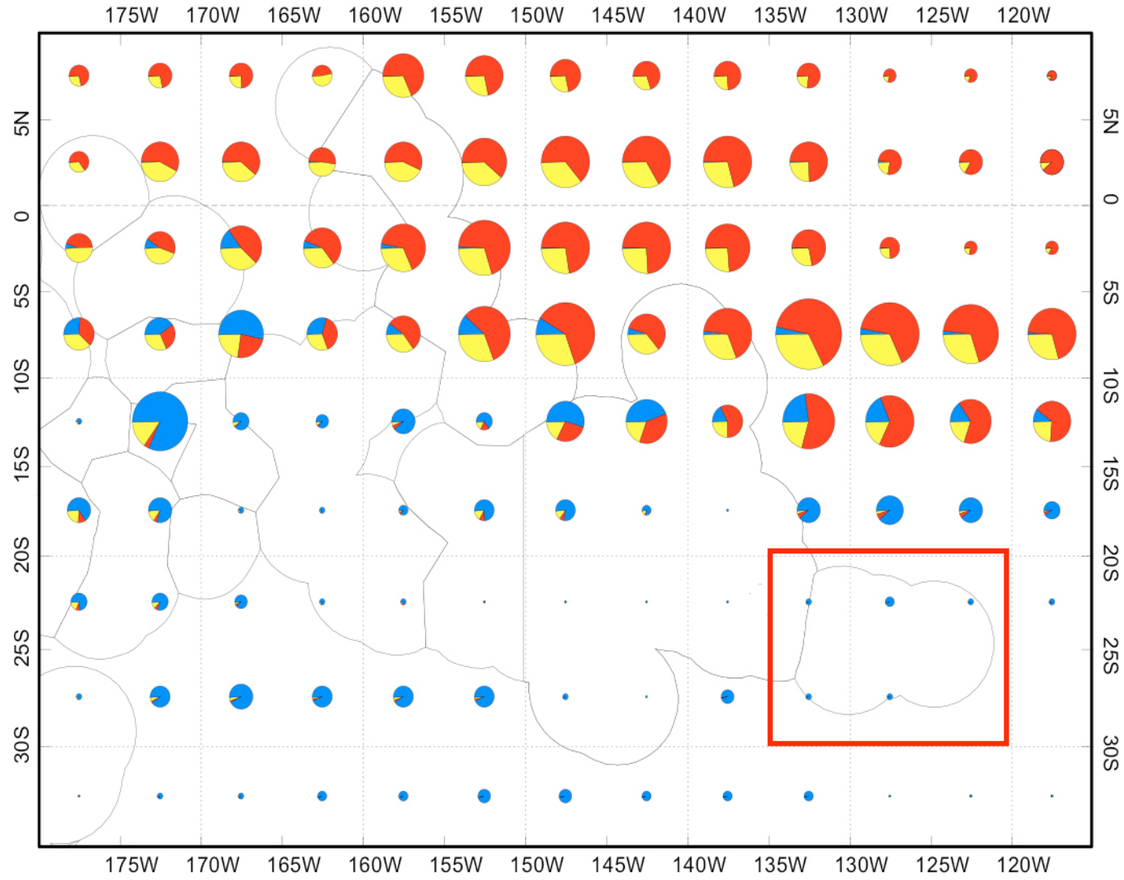
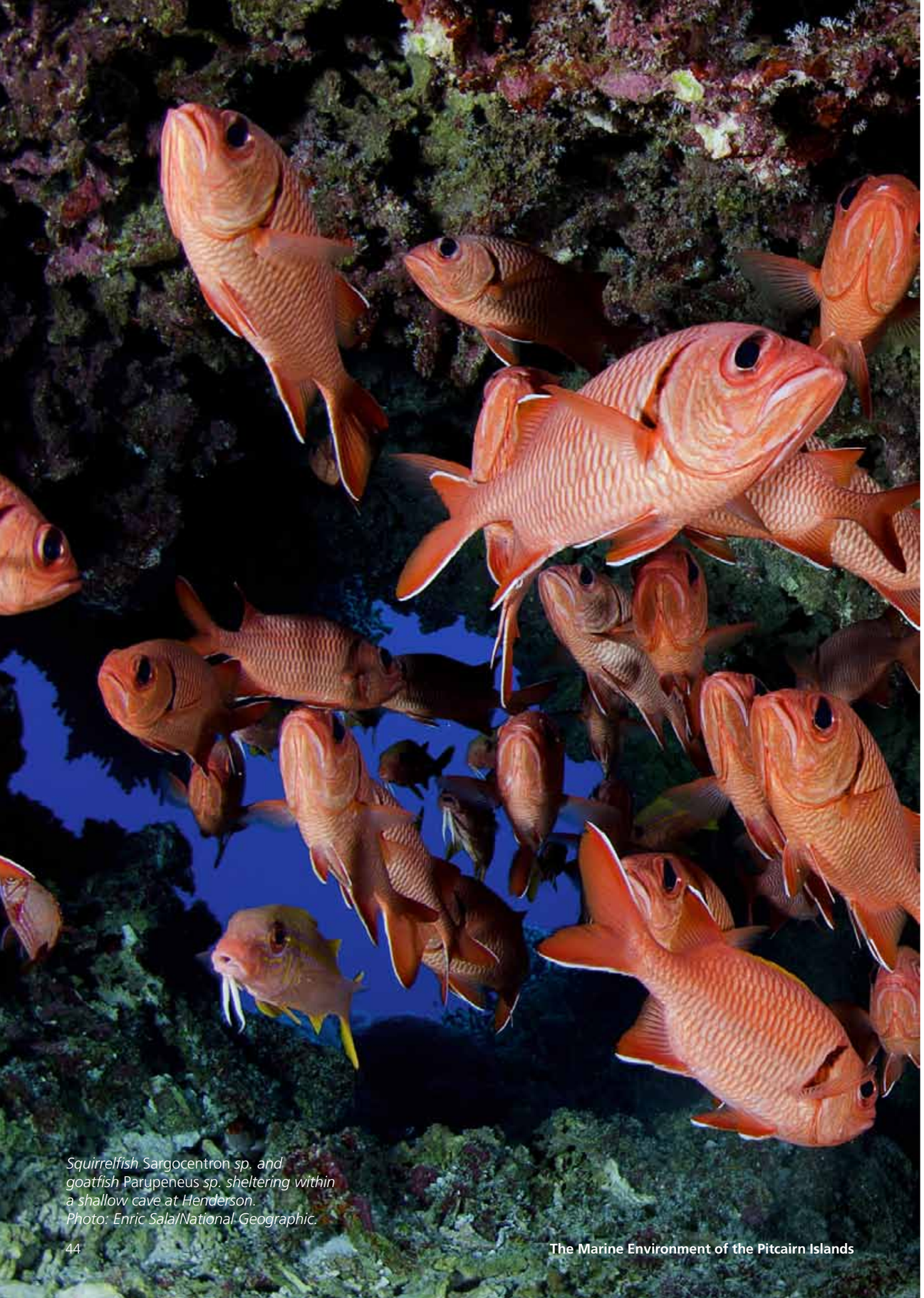


Figure 14. *Cumulative longline catch of yellowfin (yellow), bigeye (red) and albacore (blue) from 1990–2003 by 5 degrees of latitude and longitude. The area of the symbol is proportional to the cumulative catch, with the maximum circle size representing 20,000 tonnes. The red square depicts the area used to approximate the area of the Pitcairn Islands EEZ (adopted from Adams & Langley, 2005).*

25. *'Offshore waters' are defined here as extending beyond 2 km from low water mark for each island or deeper than 100 m depth, out to the 200 nm limit of the EEZ.*
26. *Altimetry satellites determine the height of the ocean surface by measuring the time it takes a radar pulse to travel from the satellite to the surface and back.*
27. *Multibeam bathymetry is a means by which the topography of the seafloor can be measured remotely from a vessel on the ocean's surface. Many beams of sound are emitted simultaneously to get a series of water depth readings along the line of a moving vessel. Multibeam bathymetry systems are now routinely used during research cruises to map areas of seafloor as large as thousands of square kilometers.*
28. *Information obtained from a fishers meeting in Adamstown, September 2011 attended by the authors.*



Squirrelfish Sargocentron *sp. and goatfish* Parupeneus *sp. sheltering within a shallow cave at Henderson. Photo: Enric Sala/National Geographic.*

Appendix 1: Bibliography

All references listed in the text are given in full here, together with other references relevant to the subject matter being presented – i.e. the marine environment of the Pitcairn Islands.

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Appendix 2: Additional data sources

Databases

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WoRMS database (World Register of Marine Species) (http://www.marinespecies.org).

IUCN Red List (http://www.iucnredlist.org) (International Union for the Conservation of Nature).

Birdlife International (http://www.birdlife.org).

Institutes

Marine Biological Association Library, The Laboratory, Citadel Hill, Plymouth (particular thanks to the Head Librarian, Linda Noble).

IUCN-World Conservation Monitoring Centre, Cambridge (Alison Rosser & Siobhan Kenney).

Individuals

Elisabeth Whitebread, the Pew Environment Group's Global Ocean Legacy Project, The Pew Charitable Trusts (London Office).

Dr Richard Preece, University Museum of Zoology, Cambridge.

Dr Michael Brooke, Zoology Dept, University of Cambridge.

Craig Hilton-Taylor, Red List Unit Manager, IUCN Species Programme, Cambridge.

Dr Enric Sala, Explorer-in-Residence, National Geographic Society, Washington D.C., USA.

Dr Graham Wragg, Pacific Expeditions, Cook Islands.

Hadoram Shirihai, Tubenoses Project.

Appendix 3: IUCN Red List Species

Table 20. IUCN Red List codes* and the categories they represent. (Note colours have been added by the authors).

IUCN Code	Category	IUCN Code	Category
CR	Critically Endangered	**LR/cd**	Low Risk/conservation dependent
EN	Endangered	**LR**	Low Risk
VU	Vulnerable	**LC**	Least Concern
NT	Near Threatened	**DD**	Data Deficient
		NE	Not Evaluated

** For further information about how these categories are decided upon for each species, the reader is refered to the following publication: IUCN (2001). IUCN Red List Categories and Criteria: Version 3.1. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK. ii + 30 pp*

The SeaLifeBase database lists 107 non-fish marine species from the Pitcairn Islands whose conservation status has been assessed by the IUCN. Of these, the hawksbill turtle *Eretmochelys imbricata* is the only species listed as being Critically Endangered (CR). Those non-fish marine species listed as being Endangered (EN) include the Sei whale *Balanoptera borealis*, the blue whale *Balaenoptera musculus*, the fin whale *Balaenoptera physalus* and the humpback whale *Megaptera novaeangliae* (distinct Oceania subpopulation breeding stock F2); the Phoenix petrel *Pterodroma alba*, the Henderson petrel *Pterodroma atrata*, the black-browed albatross *Thalassarche melanophrys*, and the green turtle *Chelonia mydas*. Of these, the black-browed albatross is not known to nest on any of the islands.

The FishBase database lists 108 marine fish species whose conservation status has been assessed by the IUCN, although for four of these there were insufficient data available (DD). Of the remaining 104 species, two (the humphead wrasse *Cheilinus undulatus* and the great hammerhead shark *Sphyrma mokarran*) are listed as Endangered (EN).

In addition, of the 72 species of scleractinian coral recorded from all four islands, the SeaLifeBase database lists eight species as being Vulnerable (VU) and 14 species as Near Threatened (NT).

Table 21. Numbers of species of conservation concern as grouped by taxa.

Taxon	No. of species within each IUCN Red List category							
	CR	EN	VU	NT	LC	NE	DD	Other*
Cetaceans	-	4	1	-	8	-	-	-
Marine birds (breeding)	-	1	-	1	12	-	-	-
Marine birds (non-breeding)	-	3	8	3	11	4	-	-
Turtles	1	1	-	-	-	-	-	-
Pelagic fishes	-	-	3	2	5	3	-	-
Reef fishes	-	2	5	14	63	263	3	2
Echinoderms	-	-	-	-	-	60	-	-
Molluscs	-	-	-	-	-	499	-	2
Crustacea (except Ostracods)	-	-	-	-	2	25	2	1
Ostracods	-	-	-	-	-	47	-	-
Hard corals	-	-	9	20	39	3	1	13
Hydroids	-	-	-	-	-	8	-	-
Sponges	-	-	-	-	-	12	-	-
Forams	-	-	-	-	-	32	-	-
Algae	-	-	-	-	-	1	28	-
Blue-green algae	-	-	-	-	-	-	-	4
TOTALS	**1**	**11**	**26**	**40**	**140**	**957**	**34**	**22**

** 'Other' includes those species where positive ID has yet to be confirmed.*

Table 22. IUCN Red List of species (2012) recorded within the Pitcairn Islands EEZ, listed by conservation status categories (http://www.iucnredlist.org).

Scientific name	Common name	Comment
Critically Endangered (CR)		
Eretmochelys imbricata	hawksbill turtle	pelagic-oceanic
Endangered (EN)		
Megaptera novaeangliae	humpback whale	specifically, the distinct Oceania subpopulation breeding stock F2
Balaenoptera borealis	sei whale	pelagic-oceanic
Balaenoptera musculus	blue whale	pelagic-oceanic
Balaeoptera physalus	fin whale	pelagic-oceanic
Pterodroma alba	Phoenix petrel	known to nest on Oeno (H. Shirihai, *pers. comm.*)
Pterodroma atrata	Henderson petrel	known to nest on Henderson (Brooke 1995b)
Nesofregetta fuliginosa	Tahiti storm petrel	pelagic-oceanic
Thalassarche melanophrys	black-browed albatross	pelagic-oceanic
Chelonia mydas	green turtle	known to nest on Henderson (Brooke 1995c).
Sphyrna mokarran	great hammerhead shark	pelagic-oceanic
Cheilinus undulatus	humphead wrasse	reef-associated – only recorded from Henderson and rarely seen (Irving *et al.*, 1995)
Vulnerable (VU)		
Physeter macrocephalus	sperm whale	pelagic-oceanic
Procellaria aequinoctialis	white-chinned petrel	pelagic-oceanic
Pterodroma cervicalis	white-necked petrel	pelagic-oceanic
Pterodroma brevipes	collared petrel	pelagic-oceanic
Procellaria parkinsoni	Parkinson's petrel	pelagic-oceanic
Procellaria westlandica	Westland petrel	pelagic-oceanic
Pterodroma externa	Juan Fernandez petrel	pelagic-oceanic
Nuamensis tahitiensis	bristle-thighed curlew	pelagic-oceanic
Diomedea exulans	wandering albatross	pelagic-oceanic
Carcharhinus longimanus	oceanic whitetip shark	pelagic-oceanic
Rhincodon typus	whale shark	pelagic-oceanic
Thunnus obesus	bigeye tuna	pelagic-oceanic
Epinephelus lanceolatus	giant grouper	reef-associated – recorded from Pitcairn and Henderson (Randall & Heemstra, 1991)
Acropora acuminata	hard coral	reef-associated – recorded from Oeno, Ducie and Pitcairn (ID in doubt for Pitcairn) (Paulay 1989)
Acropora globiceps	hard coral	reef-associated
Acropora listeri	hard coral	reef-associated
Acropora striata	hard coral	reef-associated
Acropora vaughani	hard coral	reef-associated
Montipora australiensis	hard coral	reef-associated – this species is widespread and naturally rare throughout its range; however, it is susceptible to bleaching, disease, crown-of-thorns starfish predation, and extensive reduction of coral reef habitat due to a combination of threats
Montipora caliculata	hard coral	reef-associated
Montipora crassituberculata	hard coral	reef-associated
Montipora lobulata	hard coral	reef-associated
Leptoseris incrustans	hard coral	reef-associated – recorded from Henderson and Ducie (Paulay, 1989)
Pocillopora elegans	hard coral	reef-associated
Near Threatened (NT)		
Thalassarche bulleri	Buller's albatross	pelagic-oceanic
Pseudobulweria rostrata	Tahiti petrel	pelagic-oceanic
Pterodroma ultima	Murphy's petrel	pelagic-oceanic
Puffinus griseus	sooty shearwater	pelagic-oceanic
Epinephelus socialis	surge grouper	reef-associated
Thunnus alalunga	albacore tuna	pelagic-oceanic
Carcharhinus amblyrhynchos	grey reef shark	reef-associated
Carcharhinus galapagensis	Galapagos shark	reef-associated
Carcharhinus melanopterus	blacktip reef shark	reef-associated
Prionace glauca	blue shark	pelagic-oceanic
Triaenodon obesus	whitetip reef shark	reef-associated
Acropora austera	hard coral	reef-associated
Acropora digitifera	hard coral	reef-associated
Acropora glauca	hard coral	reef-associated
Acropora humilis	hard coral	reef-associated
Acropora hyacinthus	hard coral	reef-associated
Acropora loripes	hard coral	reef-associated
Acropora lutkeni	hard coral	reef-associated
Acropora nasuta	hard coral	reef-associated
Acropora secale	hard coral	reef-associated
Montipora foveolata	hard coral	reef-associated
Montipora incrassata	hard coral	reef-associated
Montipora nodosa	hard coral	reef-associated
Montipora venosa	hard coral	reef-associated
Favia mathaii	hard coral	reef-associated
Favia rotumana	hard coral	reef-associated
Favia stelligera	hard coral	reef-associated
Pocillopora eydouxi	hard coral	reef-associated
Porites lobata	hard coral	reef-associated
Psammocora obtusangula	hard coral	reef-associated

Appendix 4: Scientific research expeditions to the Pitcairn Islands

Dates	Title	Organising institution & name of expedition leader(s)	Duration / overall purpose / islands visited / other notes
1825	Visit by HMS *Blossom*	Capt. F.W. Beechey	Included the first full description of Ducie's Island.
1827 & 1828	Private expedition	Hugh Cuming	11 days in total. Collected several new species of mollusc. Visited Pitcairn, Henderson & Ducie.
1912	Private expedition	J.R. Jamieson & D.R. Tait	Mollusca collections. Collections described by E.A. Smith (1913).
March 1922	Whitney South Sea Expedition	American Museum of Natural History (Rollo H. Beck)	Primarily an ornithological expedition. 11 days spent at Ducie, but also visited Pitcairn & Henderson. Concentrated mostly on the terrestrial biota.
1934	Mangarevan Expedition		Concentrated mostly on the terrestrial biota.
1935	Templeton-Crocker Expedition		Concentrated mostly on the terrestrial biota.
1964	Private expedition	Harald A. Rehder	Collection of molluscs from Pitcairn.
1967	Aboard the vessel Pele	H.A. Rehder, D.M. Devaney & B.R. Wilson	Collections of molluscs and echinoderms, particularly by using a dredge. (see Rehder, 1974 & Devaney, 1974). Visited Pitcairn (5 days) and Oeno (2 days).
1970–71	Aboard the vessel *Westward*	National Geographic Society/ Oceanic Institute expedition to SE Oceania. J. E. Randall & H.A. Rehder	Concentrated on molluscs and reef fishes, though also collected algae at Pitcairn. Spent most of one month staying on Pitcairn, but also visited Oeno (3 days), Henderson (3 days) & Ducie (2.5 days). Diving (fishes) and some dredging (molluscs).
June 1986	Operation Raleigh		Brief visits to Henderson (~16–22 June) and Pitcairn (~23–25 June). M. Richmond did some collecting of small marine intertidal fauna at both islands. Two pages of a subsequent expedition report seen by the authors.
1987	Smithsonian Expedition	Smithsonian Institution, Washington. (incl. Gustav Paulay and Tom Spencer)	Visited Ducie on 10 May 1987; Henderson on 12–21 May; Pitcairn on 22–26 May; and Oeno on 28 May (for 2 hours only). Collected by scuba diving on Henderson & Ducie. Collections made of corals, molluscs and echinoderms (Paulay). Studies of geology/ geomorphology on Henderson (Spencer).
January 1991 – March 1992	The Sir Peter Scott Commemorative Expedition to the Pitcairn Islands, 1991–1992	University of Cambridge, UK Dr Mike Brooke, Dept of Zoology, University of Cambridge Dr Tom Spencer, Dept of Geography, University of Cambridge Dr Graham Wragg, Dept of Zoology, University of Oxford, UK	14 months in total, with groups of scientists visiting for 3–4 months at a time. Most time spent on Henderson, but also with visits to Oeno, Pitcairn and Ducie. Primary objective: · to create a detailed geological and biological inventory of Henderson Island. Accompanying aims: · geomorphological studies to date the island's elevational history · meteorological monitoring · inventory of Henderson's fauna and flora · ecology and status of Henderson's endemic species · magnitude, duration and cultural links of Polynesian settlement · detailed studies of sub-fossil deposits to understand Henderson's palaeobiology · study of marine biota and nearshore habitats · preliminary studies of the biota of Oeno and Ducie · detailed mapping of Oeno and Ducie.
July–Sept 1997		Dr Steve Waldren, Trinity College, Dublin, Eire	Vegetation surveys – mostly on Pitcairn with four days on Henderson. Also follow-up visit in July/August 2003, accompanied by a PhD student, who also visited in 2004 and 2005.
1997		Dr Graham Wragg and others	Rat eradication projects on Pitcairn (unsuccessful), Ducie and Oeno (both successful).
Jan–Feb 2003	Operation Bounty Bay – a UK Joint Services Diving Expedition to the Pitcairn Islands	Leader: Lieutenant Rod Penrose (RN) Scientific adviser: Robert Irving Boat skipper: Dr Graham Wragg	Most of the time (3 weeks) spent diving at sites around Pitcairn, though two days were also spent at Henderson. Centred on marine archaeology and recreational diving. No collection of specimens, but many underwater photographs taken.
2003		Dr Steve Blake	Geological studies of Pitcairn and Henderson.
July/Aug 2003		Dr Mike Brooke and Alve Henricson	Assessment of rat predation of petrel chicks.
Aug/Sept 2009		Dr Mike Brooke, Dr Richard Cuthbert (RSPB) and others	Rat eradication preparatory trip to Henderson.
September 2010		Prof. Terry Dawson University of Dundee, UK	Short visit to Pitcairn – investigating management of inshore waters around the island (Darwin Initiative Overseas Territories Challenge Fund).
July–Nov 2011		Derek Brown & Nick Torr (Operational Managers), Dr Richard Cuthbert (RSPB) and Dr Mike Brooke	Joint RSPB/Pitcairn Islands Government rat eradication operation on Henderson Island.
September 2011		Prof. Terry Dawson and Robert Irving	Short visit to Pitcairn – follow-up visit investigating management of inshore waters around the island (Darwin Initiative Overseas Territories Challenge Fund).
March-April 2012	National Geographic 'Pristine Seas' expedition to the Pitcairn Islands	National Geographic Society Enric Sala (Explorer-in-Residence)	3-4 weeks visiting all four islands aboard the *Claymore II*. Main purpose was to make a film documentary of the natural history of the islands, particularly underwater. Also to catalogue previously unrecorded species of fish, coral and algae. In association with Pew Environment Group, Spain's National Research Council, US Geological Survey, University of Hawaii, US National Park Service & University of California Santa Barbara.

St Paul's Pool, Pitcairn Island
© Enric Sala/ National Geographic

Appendix 5: Marine species recorded from the Pitcairn Islands

Species	Authority*	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
MACROALGAE (Seaweeds)			Ref. Tsuda, 1976.						
Division Cyanophyta									
Microcoleus lyngbyaceus	(Kütz) Crouan				•				From tidepools and rocks awash on shore, West Harbour.
Hormothamnion enteromorphoides	Grunow, ex Bornet & Flahault, 1888				•				From tidepools and rocks awash on shore, West Harbour.
Brachytrichia quoyi	(C. Agardh) Bornet & Flahault, 1886				•				From tidepools and rocks awash on shore, West Harbour.
Calothrix pilosa	Harvey				•				From tidepools and rocks awash on shore, West Harbour.
Division Chlorophyta									
Cladophora coelothrix	Kützing, 1843				•				From tidepools and rocks awash on shore, West Harbour.
Bryopsis pennata	J.V. Lamouroux, 1809				•				From 13 m depth off Gudgeon Harbour.
Caulerpa pickeringii	Harvey & Bailey, 1851				•				From 13 m depth off Gudgeon Harbour. Also recorded by Nat. Geog. Soc. Expedition 2012 at Pitcairn.
Caulerpa racemosa	(Forsskål) J. Agardh, 1873	Sea grapes			•		•		From tidepools and rocks awash on shore, West Harbour. Also from large tidepool, Christian's Point. Noted as present on Ducie by Rehder & Randall (1975) (see Plate 16).
Halimeda incrassata	(J.Ellis) J.V. Lamouroux, 1816				•	•			From tidepools and rocks awash on shore, West Harbour. Also from large pool, 5 m deep, St John. Halimeda sp. recorded from Henderson in 1991 (Irving, 1995).
Halimeda samoense	?				•				Recorded by Nat. Geog. Soc. Expedition 2012 at Pitcairn, but not recognised as a species by the WoRMS marine species database.
Halimeda minima	(W.R. Taylor) Hillis-Colinvaux 1968				•				Recorded by Nat. Geog. Soc. Expedition 2012 at Pitcairn.
Verdigellas peltata	D.L. Ballantine & J.N. Norris, 1994				•				Recorded by Nat. Geog. Soc. Expedition 2012 at Pitcairn.
Cladophoropsis gracillima	E.Y.Dawson, 1950				•				From tidepools and rocks awash on shore, West Harbour.
Dictyosphaeria cavernosa	(Forsskål) Børgesen, 1932				•				From tidepools and rocks awash on shore, West Harbour.
Microdictyon boergesenii	Setchell, 1925					•	•		Present on fore-reef at Henderson (Paulay, 1989). Noted as present on Ducie by Rehder & Randall (1975).
Division Phaeophyta									
Asteronema breviarticulatum	(J. Agardh) Ouriques & Bouzon, 2000				•				Originally recorded by Tsuda (1976) as Ectocarpus breviarticulatus. From tidepools and rocks awash on shore, West Harbour.
Sphacelaria tribuloides	Meneghini, 1840				•				From tidepools and rocks awash on shore, West Harbour.
Dictyota acutiloba	J. Agardh, 1848				•				From large tidepool, Christian's Point.

** The citing of the naming authority here follows the International Code of Zoological Nomenclature, 4th edition, 1999. (http://www.nhm.ac.uk/hosted-sites/iczn/code). The World Register of Marine Species (WoRMS) has been used to verify species names and authorities (http://www.marinespecies.org).*

Species	Authority*	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
Lobophora variegata	(J.V. Lamouroux) Womersley ex E.C. Oliveira, 1977				•	•			From large tidepool, Christian's Point; from 13 m depth off Gudgeon Harbour; from large pool, 5 m deep, St John; & from 21 m depth off the south coast, with a boulder seabed with some sand and live corals. Also recorded by Paulay (1989) on fore-reef at Henderson.
Sargassum odontocarpum	Sonder, 1871				•				Originally recorded by Tsuda (1976) as Sargassum coriifolium. From tidepools and rocks awash on shore, West Harbour; from large tidepool, Christian's Point; from 13 m depth off Gudgeon Harbour; and from large pool, 5 m deep, St John.
Sargassum obtusifolium	J. Agardh, 1848				•				Present in rockpool at Down Isaacs, Pitcairn (see Plate 15).
Stypopodium zonale	(J.V. Lamouroux) Papenfuss, 1940		**NE**		•	•			Recorded by Tsuda (1976) at Pitcairn and by Paulay (1989) at Henderson.
Zonaria stipitata	Tanaka & K. Nozawa, 1962				•				Recorded by Nat. Geog. Soc. Expedition 2012 at Pitcairn.
Division Rhodophyta									
Gelidiopsis intricata	(C. Agardh) Vickers, 1905				•				From tidepools and rocks awash on shore, West Harbour; and from 13 m depth off Gudgeon Harbour.
Corallina cuvieri	J.V.Lamouroux, 1816				•				From tidepools and rocks awash on shore, West Harbour; and from 13 m depth off Gudgeon Harbour.
Porolithon spp.						•	•		Recorded by Paulay (1989) on fore-reef at Henderson. Tentative IDs of P. onkodes and P. gardineri in Ducie's lagoon by Rehder & Randall (1975).
Hydrolithon onkodes	(Heydrich) D. Penrose & Woelkerling, 1992				•				Recorded by Nat. Geog. Soc. Expedition 2012 at Pitcairn.
Lithophyllum kotschyanum	Unger, 1858				•				Recorded by Nat. Geog. Soc. Expedition 2012 at Pitcairn.
Neogoniolithon brassica-florida	(Harvey) Satchell & L.R. Mason, 1943				•				Recorded as N. frutescens by Nat. Geog. Soc. Expedition 2012 at Pitcairn.
Botryocladia skottsbergii	(Børgesen) Levring, 1941				•				From tidepools and rocks awash on shore, West Harbour.
Centroceras clavulatum	(C. Agardh) Montagne, 1846				•				From tidepools and rocks awash on shore, West Harbour.
Chondria intertexta	P.C. Silva, 1972				•				Originally recorded by Tsuda (1976) as *Chondria intricata*. From large tidepool, Christian's Point.
FORAMINIFERA (Forams)			Refs. Whittaker & Hodgkinson, 1995; Palomares et al., 2011.						
Amphistegina lobifera	Larsen, 1976		**NE**		•	•			Present in samples of beach sediment, NW Beach and N Beach (Henderson); and from seaweed sample (green clumped weed) collected in 1 m depth and sample of 'yellow fucoid weed', (Pitcairn: Tedside); and from beach sediment (Oeno).
Amphistegina lessonii	d'Orbigny in Guerin-Meneville, 1843		**NE**		•	•			Present in samples of beach sediment, NW Beach and N Beach (Henderson). From seaweed sample ('yellow fucoid weed') (Pitcairn: Tedside); and from beach sediment (Oeno).
Asterigerina carinata	d'Orbigny, 1839		**NE**			•			Recorded by O. Green in sand from the North Beach at Henderson (results included in Spencer, 1989b).

Species	Authority*	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
Hauerina sp.	-		**NE**		•	•			From seaweed sample (green clumped weed) collected in 1 m depth in high energy environment (Pitcairn: Tedside). Also from dried seaweed sample; and from sediments collected at 23 m and 33 m depth (Henderson); and from beach sediment (Oeno).
Bolivina sp.	-		**NE**		•				From seaweed sample (green clumped weed) collected in 1 m depth in high energy environment (Pitcairn: Tedside).
Heterostegina depressa	d'Orbigny, 1826		**NE**		•	•			Present in sample of beach sediment, N Beach; and from sediment collected at 33 m depth (Henderson). From seaweed sample (loose 'strandy' and attached weed) and from sample of 'yellow fucoid weed' (Pitcairn: Tedside).
Peneroplis sp.	-		**NE**		•	•			From seaweed sample (loose 'strandy' and attached weed) (Pitcairn: Tedside). Also from dried seaweed sample (Henderson).
Spirillina sp.	-		**NE**		•				From seaweed sample (loose 'strandy' and attached weed) (Pitcairn: Tedside).
Miliolinella sp.	-		**NE**		•	•			From seaweed sample (loose 'strandy' and attached weed) (Pitcairn: Tedside). Present in sample of beach sediment, N Beach; and from sediment at 33 m depth (Henderson).
Acervulina sp.	-		**NE**		•				Present in sample of beach sediment, N Beach; and from seaweed sample from 1 m depth (Henderson). From seaweed sample (loose 'strandy' and attached weed) and from sample of 'yellow fucoid weed' (Pitcairn: Tedside).
Discorbids	-		**NE**		•				From seaweed sample (loose 'strandy' and attached weed) (Pitcairn: Tedside).
Small miliolids	-		**NE**		•				From seaweed sample ('yellow fucoid weed') (Pitcairn: Tedside).
Pyrgo sp.	-		**NE**			•			Present in sample of beach sediment, N Beach; and from sediment sample collected at 33 m depth (Henderson).
Spiroloculina sp.	-		**NE**			•			Present in sample of beach sediment, N Beach; and from seaweed sample from 1 m depth; and from sediment at 33 m depth (Henderson); and from beach sediment (Oeno).
Spirosigmoilina sp	-		**NE**			•			Present in seaweed sample from 1 m depth, reef flat (Henderson).
Schlumbergerina sp.	-		**NE**			•			Present in sample of beach sediment, N Beach (Henderson).
Quinqueloculina sp.	-		**NE**			•			Present in sample of beach sediment, N Beach; and in sediment from 33 m depth (Henderson).
Pseudolachlanella sp.	-		**NE**			•			Present in sample of beach sediment, N Beach; and in sediment from 23 m depth (Henderson).
Amphisorus hemprichii	Ehrenberg, 1839		**NE**	•		•			Present in samples of beach sediment, NW Beach and N Beach; and from seaweed sample from 1 m depth (Henderson). From beach sediment (Oeno).
Marginopora vertebralis	Quoy & Gaimard, 1830		**NE**	•		•			Present in samples of beach sediment, NW Beach and N Beach (Henderson); and from beach sediment (Oeno).
Sphaerogypsina globula	(Reuss, 1848)		**NE**	•		•			Present in samples of beach sediment, NW Beach & N Beach (Henderson); and in beach sediment (Oeno).
Triloculina sp.	-		**NE**			•			Present in sample of beach sediment, NW Beach (Henderson).

Species	Authority*	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
Borelis pulchra	(d'Orbigny, 1839)		**NE**			•			Present in sample of beach sediment, N Beach; and from sediment sample from 33 m depth (Henderson). Not found in WoRMS database.
Sorites marginalis	(Lamarck, 1816)		**NE**			•			Present in sample of beach sediment, N Beach (Henderson); and from beach sediment (Oeno).
Anomalinoides sp.	-		**NE**			•			Present in sample of beach sediment, N Beach; and also from dried seaweed sample; and from sediment sample from 23 m depth (Henderson).
Scutuloris sp.	-		**NE**			•			Present in seaweed sample from 1 m depth, reef flat; and in sediment samples from 23 m and 33 m depth (Henderson).
Cymbaloporetta sp.	-		**NE**			•			Present in seaweed sample from 1 m depth, reef flat; and in sediment sample from 33 m depth (Henderson); and from beach sediment (Oeno).
Rugobolivinella sp.	-		**NE**			•			From dried seaweed sample; and from sediments collected at 23 m and 33 m depth (Henderson).
Fischerinella sp.	-		**NE**			•			From sediment collected at 23 m depth (Henderson).
Anomalinella sp.	-		**NE**			•			From sediment collected at 33 m depth (Henderson).
Homotrema rubrum	(Lamarck, 1816)		**NE**			•			From sediment collected at 12 m depth (Henderson).
Phylum PORIFERA (Sponges)			Ref. Irving, 1995.						
Ascaltis sp.	-		**NE**	•			•		Lime-green sponge. W end of lagoon, Ducie. Also found at Oeno.
Batzella sp.	-		**NE**	•					Orange sponge. Reef crest, NW Oeno.
Chondrosia chucalla	de Laubenfels, 1954		**NE**			•			Black encrusting sponge. In among coral rubble at 15 m depth off the NW of Henderson.
Cliona sp. aff. *vastifica*	-		**NE**	•					Black sponge. At 22m depth, outer reef, Oeno.
Darwinella sp. aff. *gardineri*	-		**NE**				•		Red-pink sponge. E end of lagoon, Ducie.
Lamellodysidea herbacea	(Keller, 1889)		**NE**				•		Originally identified as *Dysidea herbacea*. Yellow/cream sponge. E end of lagoon, Ducie.
Jaspis sp. aff. *tuberculata*	-		**NE**			•	•		Dark green/brown/black. From reef flat to 16 m depth at Henderson. Together with *Spirastrella decumbens*, this is the commonest sponge at Henderson. Also present at E end of lagoon, Ducie.
Scopalina sp. aff. *australiensis*	-		**NE**			•			Very thin orange encrusting sponge. At 30 m depth off the NW and E coasts of Henderson.
Spirastrella decumbens	Ridley, 1884		**NE**	•		•			Thin rust-brown/red/orange sponge. Reef flat, E end of N. Beach and from NW Point, down to 13 m off the SW and NW coasts, Henderson. Also W end of lagoon, Oeno. Also recorded intertidally by M. Richmond (Operation Raleigh) in 1986.
Spheciospongia solida	(Ridley & Dendy, 1886)		**NE**			•			Originally identified as Spirastrella solida. Thin, orangey-brown sponge. Reef flat, N Beach, Henderson.
Spongia magallonica	-		**NE**			•	•		Black encrusting sponge. On wave-cut ledge, NW Point, Henderson; and at E end of lagoon, Ducie.
Tethya seychellensis	(Wright, 1881)		**NE**				•		Orange sponge. W end of lagoon, Ducie.

Species	Authority*	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
Phylum CNIDARIA (hydroids, corals, anemones, etc.)									
Class Hydrozoa - hydroids			Ref. Irving, 1995).						
Aglaophenia postdentata	Billard, 1913		**NE**			•			Recorded from several Indo-West Pacific localities, including Fiji. Probably distributed over whole of tropical Pacific.
Gymnangium hians	(Busk, 1852)		**NE**	•		•			Also recorded from Oeno. Widely distributed reef species from tropical and subtropical Indo-Pacific, Red Sea, S. Africa and Caribbean.
Lytocarpia brevirostris	(Busk, 1852)		**NE**			•			Recorded from the tropical Indo-West Pacific, including Fiji. Probably with wider distribution in tropical Pacific.
Macrorhynchia phoenicea	(Busk, 1852)		**NE**			•			Reef species of the tropical Indo-Pacific, including Fiji. Probably distributed over whole of tropical Pacific.
Plumularia strobilophora	Billard, 1913		**NE**	•		•			Also recorded from Oeno. Recorded from Malaysia, French Polynesia and Trinidad. Recently described from Fiji.
Sertularia loculosa	(Busk, 1852)		**NE**	•					Originally identified as *Sertularia ligulata*. Widely distributed in the tropical Indo-Pacific and Indo-West Pacific. Found in French Polynesia and also Fiji.
Sertularella ?simplex	(Hutton, 1873)		**NE**			•			Identification uncertain. May possibly be *S. robusta* or an undescribed species. (Status of 'NE' given for *S. ligulata* by Palomares *et al.*, 2011).
Millepora spp.	Linnaeus, 1758	fire coral	**NE**	•	•	•			Widespread around each island and particularly abundant at Henderson, with some individual colonies up to 2 m tall.
Class Anthozoa / Order Scleractinia (stony corals)			Ref. Paulay, 1989); Palomares et al., 2011); personal notes from John Pandolfi.						
Stylocoeniella guentheri	Bassett-Smith, 1890		**LC**		•	•			Paulay (1989): A large clump of arborescent *S. guentheri* was dredged from 37 m off Henderson; and similar colonies were dredged from 47-63 m and 72-108 m off Pitcairn in 1967. This is an unusual growth form of this species.
Pocillopora damicornis	(Linnaeus, 1758)		**LC**		•	•			Original record by Paulay (1989). Specimens collected from Henderson by Blake and/or Pandolfi in 1991.
[Pocillopora elegans]	Dana, 1846		**[VU]**						Paulay (1989): "This species was originally recorded from the Pitcairn Islands by Rehder & Randall (1975), but was a misidentification."
Pocillopora eydouxi	(Milne Edwards & Haime, 1860)		**NT**			•	•?		Original record by Paulay (1989). Also collected by Blake and/or Pandolfi in 1991 from Henderson.
Pocillopora meandrina	Dana, 1846		**LC**			•			Not listed by Paulay (1989), but specimens collected by Blake and/or Pandolfi in 1991 from Henderson and subsequently listed by Palomares *et al.* (2011).
Pocillopora verrucosa	(Ellis & Solander, 1786)		**LC**						Paulay (1989) identified "*Pocilliopora* sp. 1" as being similar to *P. verrucosa* but differing in having hood-like ramifications over the calices, as in *Stylophora*. It is not known if he subsequently identified "sp.1" any further.
Pocillopora woodjonesi	Vaughan, 1918		**LC**			•?			Paulay (1989): "P. woodjonesi is fairly common at Henderson." Specimens collected by Blake and/or Pandolfi in 1991 from Henderson could not be ID'd for certain by J.E. Veron.
Montipora aequituberculata	Bernard, 1897		**LC**			•?	•		One of the most common corals on the Ducie fore-reef, but uncommon on Henderson (Paulay 1989).

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Montipora australiensis	Bernard, 1897		VU			•			Specimens collected by Blake and/or Pandolfi in 1991 from Henderson, with IDs confirmed by J.E. Veron.
Montipora aff. *bilaminata*	Bernard, 1897						•		Listed by Paulay (1989) but not listed by Palomares *et al.* (2011).
Montipora caliculata	(Dana, 1846)		VU			•	•		Specimens collected by Blake and/or Pandolfi in 1991 from Henderson, with IDs confirmed by J.E. Veron.
Montipora cf. *capitata*	(Dana, 1846)					•			Listed by Paulay (1989) but not listed by Palomares *et al.* (2011).
[Montipora composita]	Not known		[NE]						Paulay (1989): This species was originally recorded from the Pitcairn Islands by Rehder & Randall (1975), but was a misidentification.
Montipora crassituberculata	Bernard, 1897		VU			•			Not listed by Paulay (1989). Specimens collected by Blake and/or Pandolfi in 1991 from Henderson, with IDs confirmed by J.E. Veron. Subsequently listed by Palomares *et al.* (2011).
Montipora foveolata	(Dana, 1846)		NT	•		•	•		Specimens collected by Blake and/or Pandolfi in 1991 from Henderson, with IDs confirmed by J.E. Veron.
Montipora grisea	Bernard, 1897		LC	•					
Montipora incrassata	(Dana, 1846)		NT	•			•		
Montipora lobulata	Bernard		VU						Not listed by Paulay (1989), but listed by Palomares *et al.* (2011).
Montipora nodosa	(Dana, 1846)		NT			•			Specimens collected by Blake and/or Pandolfi in 1991 from Henderson, with IDs confirmed by J.E. Veron.
Montipora tuberculosa	(Lamarck, 1816)		LC	•					
[Montipora venosa]	(Ehrenberg)		[NT]						Paulay (1989): This species was originally recorded from the Pitcairn Islands by Rehder & Randall (1975), but was a misidentification.
Montipora cf. *verrucosa*	(Lamarck, 1816)			•?			•		Listed by Paulay (1989) but not listed by Palomares *et al.* (2011).
Acropora acuminata	(Verrill, 1864)		VU	•	•?		•		
Acropora austera	(Dana, 1846)		NT			•			Not listed by Paulay (1989), but listed by Palomares *et al.* (2011). Specimens collected by J. Pandolfi from Henderson in 1991 with ID confirmed by J. Wolstenholme.
Acropora cerealis	(Dana, 1846)		LC			•			Not listed by Paulay (1989) or Palomares *et al.* (2011). Specimen(s) collected by J. Pandolfi from Henderson in 1991 with ID confirmed by J. Wolstenholme.
Acropora cytherea	(Dana, 1846)		LC	•					
Acropora abrotanoides	(Lamarck, 1816)		LC			•			Not listed by Paulay (1989) or Palomares *et al.* (2011). Specimens collected by J. Pandolfi from Henderson in 1991 with ID confirmed by J. Wolstenholme. (Synonym: *A. danai)*.
Acropora digitifera	(Dana, 1846)		NT			•			Specimens collected in 1991 from Henderson by Blake and/or Pandolfi could not be ID'd with certainty by J.E. Veron.
Acropora divaricata	(Dana, 1846)		NT			•			Not listed by Paulay (1989) or Palomares *et al.* (2011). Specimens collected by J. Pandolfi from Henderson in 1991 with ID confirmed by J. Wolstenholme.

Species	Authority*	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
Acropora gemmifera	(Brook, 1892)		LC			•			Not listed by Paulay (1989). Specimens collected by Blake and/or Pandolfi in 1991 from Henderson, with IDs confirmed by J.E. Veron. Subsequently listed by Palomares *et al.* (2011).
Acropora glauca	(Brook, 1893)		NT			•			Listed by Paulay (1989) as *A.* cf. *glauca*. ID confirmed by J. Wolstenholme from specimens collected by J. Pandolfi from Henderson in 1991. However, not listed by Palomares *et al.* (2011).
Acropora globiceps	(Dana, 1846)		VU						Not listed by Paulay (1989), but listed by Palomares *et al.* (2011).
Acropora humilis	(Dana, 1846)		NT	•		•	•		Positive ID by J. Wolstenholme from specimens collected by J. Pandolfi from Henderson in 1991.
Acropora hyacinthus	(Dana, 1846)		NT			•			Not listed by Paulay (1989). Specimens collected by Blake and/or Pandolfi in 1991 from Henderson, with IDs confirmed by J.E. Veron. Subsequently listed by Palomares *et al.* (2011).
Acropora latistella	(Brook, 1891)		LC			•	•		Paulay (1989) lists *A. latistellata* (Brook, 1892) which no longer exists (if indeed it ever did) and is presumed to be the same as *A. latistella* listed by Palomares *et al.* (2011). Specimens collected by Blake and/or Pandolfi in 1991 from Henderson, with IDs confirmed by J.E. Veron.
Acropora listeri	(Brook, 1893)		VU			•			Not listed by Paulay (1989). Specimens collected by Blake and/or Pandolfi in 1991 from Henderson, with ID confirmed by J.E. Veron. Subsequently listed by Palomares *et al.* (2011).
Acropora loripes	(Brook, 1892)		NT			•			Not listed by Paulay (1989) or Palomares *et al.* (2011). Specimens collected by J. Pandolfi from Henderson in 1991 with ID confirmed by J. Wolstenholme.
Acropora lutkeni	Crossland, 1952		NT				•		Listed by Paulay (1989) as *A.* cf. *lutkeni.* ID subsequently confirmed by J.E. Veron. However, not listed by Palomares *et al.* (2011).
Acropora cf. *microclados*	(Ehrenberg, 1834)						•		Listed by Paulay (1989) but not listed by Palomares *et al.* (2011).
Acropora microphthalma	(Verrill, 1859)		LC			•			Not listed by Paulay (1989). Specimens collected by Blake and/or Pandolfi in 1991 from Henderson, with IDs confirmed by J.E. Veron. Subsequently listed by Palomares *et al.* (2011).
Acropora nasuta	(Dana, 1846)		NT			•	•		Not listed by Paulay (1989) or by Palomares *et al.* (2011). Specimens collected by Blake and/or Pandolfi in 1991 from Henderson, with IDs confirmed by J.E. Veron.
Acropora pocilloporina	Wallace, 1994		NE						Not listed by Paulay (1989), but listed by Palomares *et al.* (2011).
Acropora robusta	(Dana, 1846)		LC			•			Not listed by Paulay (1989) or by Palomares *et al.* (2011). However, specimen collected by Blake and/or Pandolfi in 1991 from Henderson, with ID confirmed by J.E. Veron.
Acropora samoensis	(Brook, 1891)		LC			•			Not listed by Paulay (1989). Specimens collected by Blake and/or Pandolfi in 1991 from Henderson, with IDs confirmed by J.E. Veron. Subsequently listed by Palomares *et al.* (2011).

Species	Authority*	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
Acropora secale	(Studer, 1878)		NT	•	•?	•			Not listed by Paulay (1989) or by Palomares *et al.* (2011). However, specimen(s) collected by Pandolfi in 1991 from Henderson, with ID confirmed by J.Wolstenholme.
Acropora cf. *solitaryensis*	Veron & Wallace, 1984						•		Listed by Paulay (1989) but not listed by Palomares *et al.* (2011).
Acropora striata	(Verrill, 1866)		VU						Not listed by Paulay (1989) or by Palomares *et al.* (2011). However, specimen(s) collected by Pandolfi in 1991 from Henderson, with ID confirmed by J.Wolstenholme.
Acropora subulata	(Dana, 1846)		LC						Not listed by Paulay (1989). Specimens collected by Blake and/or Pandolfi in 1991 from Henderson, with IDs confirmed by J.E. Veron. Subsequently listed by Palomares *et al.* (2011).
Acropora tortuosa	(Dana, 1846)		LC			•			Not listed by Paulay (1989) or by Palomares *et al.* (2011). However, specimen collected by Blake and/or Pandolfi in 1991 from Henderson, with ID confirmed by J. Wolstenholme.
Acropora valida	(Dana, 1846)		LC			•	•		Not listed by Paulay (1989) or by Palomares *et al.* (2011). However, specimen(s) collected by Pandolfi in 1991 from Henderson, with ID confirmed by J. Wolstenholme.
Acropora vaughani	Wells, 1954		VU			•			Not listed by Paulay (1989) or by Palomares *et al.* (2011). However, specimen collected by Blake and/or Pandolfi in 1991 from Henderson, with ID confirmed by J. Wolstenholme.
Astreopora myriophthalma	(Lamarck, 1816)		LC		•	•	•?		Probable ID by J.E. Veron of two specimens collected by Blake and/or Pandolfi in 1991 from Henderson.
Astreopora cf. *moretonensis*	Veron & Wallace, 1984					•			Listed by Paulay (1989) but not listed by Palomares *et al.* (2011).
Porites aff. *annae*	Crossland, 1952			•	•	•	•		Listed by Paulay (1989) but not listed by Palomares *et al.* (2011). Some differences in growth form from P. annae.
Porites australiensis	Vaughan, 1918		LC			•	•		
Porites lobata	Dana, 1846		NT		•	•	•		Listed as Porites cf. lobata by Paulay (1989), mentioning differences in growth form with *P. lobata*. Recorded as common at Henderson and occasional at Ducie. Positive ID by J.E. Veron from specimens collected by Blake and/or Pandolfi in 1991 from Henderson.
Porites lutea	Milne Edwards & Haime, 1851		LC			•			Positive ID by J.E. Veron from specimens collected by Blake and/or Pandolfi in 1991 from Henderson.
Psammocora haimeana	(Milne Edwards & Haime, 1851)		LC	•	•	•			
Psammocora obtusangula	(Lamarck, 1816)		NT			•	•		
Alveopora tizardi	Bassett-Smith, 1890		LC			•			Positive ID by J.E. Veron from single specimen collected by Blake and/or Pandolfi in 1991 from Henderson.

Species	Authority	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
Pavona sp. *1*						•	•		Listed by Paulay (1989) but not listed by Palomares *et al.* (2011). Paulay (1989) states that it is intermediate in form between *P. maldivensis* and *P. clavus/P. minuta*. Specimens collected by Blake and/or Pandolfi in 1991 from Henderson have led J.E. Veron to think this might be a new species.
[Pavona sp. cf. *pollicata]*	(Wells, 1954)								Paulay (1989): This species was originally recorded from the Pitcairn Islands by Rehder & Randall (1975), but was a misidentification.
Pavona maldivensis	(Gardiner, 1905)		LC			•			
Pavona varians	Verrill, 1864		LC	•		•			Positive ID by J.E. Veron from specimens collected by Blake and/or Pandolfi in 1991 from Henderson.
Leptoseris hawaiiensis	Vaughan, 1907		LC		•				
Leptoseris incrustans	(Quelch)		VU			•	•		
Leptoseris solida	(Quelch, 1886)		LC						Not listed by Paulay (1989). Specimens collected by Blake and/or Pandolfi in 1991 from Henderson, with IDs confirmed by J.E. Veron (checking against holotype from Tahiti). Subsequently listed by Palomares *et al.* (2011).
Cycloseris vaughani	(Boschma, 1923)		NE		•				
Psammocora albopicta	Benzoni, 2006		DD			•			Positive ID by J.E. Veron from specimens collected by Blake and/or Pandolfi in 1991 from Henderson. (Synonym: *Psammocora superficialis*).
Psammocora profundacella	Gardiner, 1898		LC			•			Positive ID by J.E. Veron from specimens collected by Blake and/or Pandolfi in 1991 from Henderson.
Coscinaraea columna	Dana, 1846		LC			•			Positive ID by J.E. Veron from specimens collected by Blake and/or Pandolfi in 1991 from Henderson.
Fungia paumotensis	Stuchbury, 1833		NE						Originally identified as *Fungia danai* by Palomares *et al.* (2011). Not listed by Paulay (1989), however.
Fungia scutaria	Lamarck, 1801		LC			•	•		Positive ID by J.E. Veron from specimens collected by Blake and/or Pandolfi in 1991 from Henderson.
Fungia vaughani	Boschma, 1923		LC						Not listed by Paulay (1989), but listed by Palomares *et al.* (2011).
Lobophyllia hemprichii	(Ehrenberg, 1834)		LC			•			Positive ID by J.E. Veron from specimens collected by Blake and/or Pandolfi in 1991 from Henderson.
Scolymia cf. *vitiensis*	Bruggemann, 1877				•	•			Listed by Paulay (1989) but not listed by Palomares *et al.* (2011).
Caulastrea cf. *furcata*	Dana, 1846				•				Listed by Paulay (1989) but not listed by Palomares *et al.* (2011).
Favia matthaii	Vaughan, 1918		NT		•	•			Listed by Paulay (1989) but not listed by Palomares *et al.* (2011). Positive ID by J.E. Veron from specimens collected by Blake and/or Pandolfi in 1991 from Henderson.
Favia rotumana	(Gardiner, 1899)		NT			•			Listed by Paulay (1989) but not listed by Palomares *et al.* (2011). Positive ID by J.E. Veron from specimens collected by Blake and/or Pandolfi in 1991 from Henderson.
Favia stelligera	(Dana, 1846)		NT			•	•		Positive ID by J.E. Veron from specimens collected by Blake and/or Pandolfi in 1991 from Henderson.

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Goniastrea australensis	(Milne Edwards & Haime, 1857)		**LC**		•	•			Not recognised by WoRMS database. Positive ID by J.E. Veron from specimen collected by Blake and/or Pandolfi in 1991 from Henderson.
Montastrea curta	(Dana, 1846)		**LC**	•		•	•		Positive ID by J.E. Veron from specimens collected by Blake and/or Pandolfi in 1991 from Henderson.
Plesiastrea versipora	(Lamarck, 1816)		**LC**	•		•	•		Listed by Paulay (1989).
Leptastrea pruinosa	Crossland, 1952		**LC**			•			Positive ID by J.E. Veron from specimens collected by Blake and/or Pandolfi in 1991 from Henderson. "Very distinct from *L. purpurea.*"
Leptastrea purpurea	(Dana, 1846)		**LC**	•	•?	•			Positive ID by J.E. Veron from specimens collected by Blake and/or Pandolfi in 1991 from Henderson.
Leptastrea ?transversa	Klunzinger, 1879			•		•			Listed by Paulay (1989) but not listed by Palomares *et al.* (2011).
Cyphastrea cf. *serailia*	(Forskal, 1775)			•		•	•		Listed by Paulay (1989) but not listed by Palomares *et al.* (2011).
Platygyra daedalea	(Ellis & Solander, 1786)		**LC**						Not listed by Paulay (1989), but listed by Palomares *et al.* (2011).
Class Anthozoa /Order Alcyonacea (soft corals)									
Unidentified species		Soft or leather corals			•	•	•		Several species known to occur but as yet not studied/identified.
Phylum ARTHROPODA Superclass CRUSTACEA			Refs. Palomares et al., 2011; J. Poupin, 2011; Internet Database of Crustacea.						
Class Malacostraca									
Albunea bulla	Boyko, 2002		**NE**						J. Poupin, 2011.
Calappa gallus	(Herbst, 1803)	box crab	**NE**						
Calcinus elegans	(H. Milne Edwards, 1836)	electric blue hermit crab	**NE**						J. Poupin, 2011.
Calcinus seurati	Forest, 1951	white-banded hermit crab	**NE**						J. Poupin, 2011.
Coenobita perlatus	H. Milne Edwards, 1837	strawberry hermit crab (terrestrial)	**NE**			•	•		Mentioned by Rehder & Randall (1975).
Coenobita spinosa	H. Milne Edwards, 1837	purple hermit crab (terrestrial)	**NE**	•		•	•		Large numbers on Ducie, Oeno and on Henderson (R.A. Irving, pers. obs.).
Birgus latro	(Linnaeus, 1767)	coconut crab (terrestrial)	**DD**	•	•	•			Larvae spend first 2–3 months in shallow seawater.
Carpilius convexus	(Forsskål, 1775)	red reef crab	**NE**						
Carpilius maculates	(Linnaeus, 1758)	spotted reef crab	**NE**						
Cardisoma carnifex	(Herbst, 1796)	crab (terrestrial)	**NE**						
Macrobrachium latimanus	(von Martens, 1868)	'freshwater' pool shrimp	**NE**		•				
Jasus caveorum	Webber & Booth, 1995	rock lobster	**NE**						
Panulirus penicillatus	(Olivier, 1791)	pronghorn or red spiny lobster	**LC**		•	•?			Occurs at Pitcairn and possibly at Henderson (uncertain which species is present at Henderson).
Panulirus pascuensis	Reed, 1954	spiny lobster	**DD**		•	•?			Poupin, J., 2011 and Palomares *et al.*, 2011. Besides Pitcairn (and possibly Henderson), known only from Easter Island and Austral Islands (French Polynesia).

Species	Authority	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
Scyllarides haanii	de Haan, 1841	Aesop slipper lobster	**LC**		•				Caught at Pitcairn using baited traps (T. Dawson, pers. obs.). Possibly S. squammosus (Götesson, 2012)
Metapenaeopsis velutina	(Dana, 1852)	velvet shrimp	**NE**						J. Poupin, 2011 & Palomares *et al.*, 2011.
Carupa tenuipes	Dana, 1852	violet-eyed swimming crab	**NE**						J. Poupin, 2011.
Thalamita admete	(Herbst, 1803)	swimming crab	**NE**						J. Poupin (2011) & Palomares *et al.* (2011).
Thalamita auauensis	Rathburn, 1906	swimming crab	**NE**						J. Poupin, 2011.
Notopoides latus	Henderson, 1888	spanner crab	**NE**						J. Poupin, 2011 & Palomares *et al.*, 2011; Dawson & Yaldwyn, 2002. Recorded from Ducie.
Trapezia areolata	Dana, 1852	guard crab	**NE**						J. Poupin, 2011.
Trapezia tigrina	Eydoux & Souleyet, 1842	red-spotted guard crab	**NE**						J. Poupin, 2011 & Palomares *et al.*, 2011.
Etisus laevimanus	Randall, 1840	smooth spooner crab	**NE**						Palomares *et al.*, 2011.
Ocypode sp.		ghost crab	**NE**			•			R.A. Irving, pers. obs.
Grapsus tenuicrustatus	(Herbst, 1783)	Sally Lightfoot crab	**NE**		•	•	•		Rehder & Randall, 1975 – Ducie records; R.A. Irving – Henderson and Pitcairn records (pers. obs. from 1991).
Class Maxillopoda									
Euraphia hembeli	Conrad, 1837	Hembel's rock barnacle	**NE**						
Nesochthamalus intertextus	(Darwin, 1854)	purple rock barnacle	**NE**						
Rehderella belyaevi		barnacle	**NE**						Name not recognised by WoRMS database.
Tetraclitella divisa	(Nilsson-Cantell, 1921)	barnacle	**NE**						
		goose barnacle indet.				•	•		R.A. Irving, pers. obs.
Class Ostracoda									
Macrocyprina maculata			**NE**						
Cytherelloidea fijiensis	(Brady) 1880		**NE**						
Neonesidea apostasies			**NE**						Endemic
Neonesidea blighi			**NE**						
Neonesidea supercaudata			**NE**						
Neonesidea tenera	(Brady) 1886		**NE**						
Triebelina sertata	(Triebel) 1948		**NE**						
Anchistrocheles fumata	(Brady) 1890		**NE**						
Cytheroma aphanes			**NE**						
Tenedocythere apios			**NE**						
Tenedocythere stasiotes			**NE**						
Tenedocythere transoceanica	(Teeter) 1975		**NE**						

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Thesceloscythere labyrinthos			**NE**						
Loxoconcha dictyoklostos			**NE**						Endemic
Loxoconcha hendersonislandensis			**NE**						
Loxochonchella catarrhopos			**NE**						
Loxocorniculum mayburyae			**NE**						
Keijia demissa			**NE**						
Kotoracythere inconspicua	(Brady) 1880		**NE**						
Peripontocypris magnafurcata			**NE**						
Cletocythereis rastromarginata	(Brady) 1880		**NE**						
Cletocythereis watsonae			**NE**						
Xestoleberis entrichos			**NE**						
Xestoleberis insolanos			**NE**						
Xestoleberis kyrtonos			**NE**						
Xestoleberis macrocicatrigosa	(Titterton) 1984		**NE**						
Xestoleberis macrorhinos			**NE**						
Xestoleberis polys			**NE**						
Ambostracon sp. *nov.*			**NE**						New genus
Loxocorniculum sp. *nov.*			**NE**						New genus
Pseudocaudites sp. *nov.*			**NE**						New genus
Australimoosella sp.			**NE**						New species
Chejudocythere sp.			**NE**						New species
Cyprideis sp.			**NE**						New species
Cytherelloidea sp. 1			**NE**						New species
Cytherelloidea sp. 2			**NE**						New species
Cytherois sp.			**NE**						New species
Loxoconcha sp.			**NE**						New species
Neonesidea sp. 1			**NE**						New species
Neonesidea sp. 2			**NE**						New species
Neonesidea sp. 3			**NE**						New species
Paracytheridea sp.			**NE**						New species
Paradoxostoma sp. 1			**NE**						New species
Paradoxostoma sp. *2*			**NE**						New species
Pellucistoma sp.			**NE**						New species
Xestoleberis sp. *1*			**NE**						New species
Xestoleberis sp. *2*			**NE**						New species

Species	Authority	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
Phylum BRACHIOPODA			Refs.						
Terebratella crenulata			**NE**						Palomares *et al.* (2011)
Phylum MOLLUSCA			Refs. Preece, 1995a; SeaLifeBase, 2011; Paulay, 1989.						
Class: Bivalvia – Order: Mytiloida									
Botula fusca	(Gmelin, 1791)		**NE**		•				
Modiolus auriculatus	Krauss, 1848		**NE**	•					
Modiolus matris	Pilsbry, 1921		**NE**		•	•			
Septifer bryanae	(Pilsbry, 1921)		**NE**	•					
Class: Bivalvia – Order: Arcoida									
Acar plicata	(Dillwyn, 1817)		**NE**	•		•			
Arca patriarchalis	Röding, 1798		**NE**	•		•			Originally recorded by Preece (1995a) as *Arca avellana* Lamarck, 1819.
Barbatia parva	(Sowerby, 1833)		**NE**	•	•	•	•		
Barbatia plicata	(Dillwyn, 1817)		**NE**						Recorded as *Acar plicata* by Preece (1995a).
Cosa n. sp.									Recorded by Preece (1995a). Still undescribed so far as is known.
Class: Bivalvia – Order: Pterioida									
Atrina vexillum			**NE**						Not listed by Preece (1995a).
Pinna muricata			**NE**						Not listed by Preece (1995a).
Streptopinna saccata	(Linnaeus, 1758)		**NE**			•			
Pinctada maculata	(Gould, 1850)		**NE**	•	•		•		
Pinctada margaritifera	(Linnaeus, 1758)	pearl oyster	**NE**	•		•	•		
Isognomon anomioides	(Reeve, 1858)		**NE**			•			
Isognomon perna	(Linnaeus, 1758)		**NE**	•		•	•		
Isognomon rupella	(Dufo, 1840)		**NE**		•		•		Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Class: Bivalvia – Order: Ostreoida									
Chlamys coruscans	(Hinds, 1845)		**NE**	•	•	•	•		
Chlamys sp.	-		**NE**		•				Listed by Preece (1995a) but not by Palomares *et al.* (2011).

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Excellichlamys spectabilis parva	(Sowerby I, 1835)		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Gloripallium pallium	(Linnaeus, 1758)		**NE**	•					
Gloripallium spiniferum	(Sowerby I, 1835)		**NE**	•					
Mirapecten mirificus	(Reeve, 1853)		**NE**			•			
Mirapecten sp.	-		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Semipallium sp.			**NE**						Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Chlamydella cf. *incubata*	Hayami & Kase, 1993		**NE**						Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Spondylus nicobaricus	Schriebers, 1793		**NE**			•			
Spondylus violascens	Lamarck, 1819		**NE**	•		•			
Spondylus sp.	-		**NE**			•	•		Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Class: Bivalvia – Order: Limoida									
Lima bullifera	Deshayes, 1863		**NE**		•	•			
Lima lima			**NE**						Not listed by Preece (1995a).
Lima vulgaris	(Link, 1807)		**NE**	•		•			
Limatula sp.	-			•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Ostrea sp.			**NE**						Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Hyotissa hyotis	(Linnaeus, 1758)		**NE**		•				
Dimyella n. sp.			**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Class: Bivalvia – Order: Veneroida									
Chama asperella	Lamarck, 1819		**NE**			•	•		
Chama iostoma			**NE**						Not listed by Preece (1995a).
Chama limbula	Lamarck, 1819		**NE**	•		•	•		
Chama spinosa	Broderip, 1835		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011)
Chama sp.	-		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011)
Ctena bella	(Conrad, 1837)		**NE**	•	•	•	•		
Codakia punctata	(Linnaeus, 1758)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011)
Codakia tigerina	(Linnaeus, 1758)		**NE**	•		•	•		
Anodontia hawaiensis	(Dall, Bartsch & Rehder, 1938)		**NE**	•	•	•	•		Formerly *A. edentula.*
'Parvilucina' n. gen. in prep.	-		**NE**	•	•				Listed by Preece (1995a) but not by Palomares *et al.* (2011). New genus to be described.
Pillucina pacifica	Glover & Taylor, 2005		**NE**	•					

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Pillucina sp.	-		**NE**	•					
Funafutia levnkana	(Smith, 1885)		**NE**	•					
Lasaea sp.			**NE**		•	•			
Marikellia cf. *solida*	Angas, 1877		**NE**		•				
Montacuta spp.			**NE**	•		•			
Galeomma cf. *macrochisma*	Deshayes, 1856		**NE**	•					
Trachycardium orbitum	(Sowerby, 1833)		**NE**				•		Listed by Palomares *et al.* (2011) as T. orbita.
Fragum mundum	(Reeve, 1845)		**NE**	•		•			
Fragum fragum			**NE**						Not listed by Preece (1995a).
Corculum cardissum			**NE**						Not listed by Preece (1995a) but listed by Palomares *et al.* (2011).
Corculum dionaeum	(Broderip & Sowerby, 1829)		**NE**	•		•	•		Not listed by Palomares *et al.* (2011).
Tridacna maxima	(Röding, 1798)		**LR/CD**	•		•	•		
Tridacna squamosa	Lamarck, 1819		**LR/CD**	•		•	•		
Tellina scobinata	Linnaeus, 1758		**NE**	•		•			
Tellinella crucigera	Lamarck, 1818		**NE**	•					
Tellina ?bougei	(G.B. Sowerby III, 1909)		**NE**	•					Not listed by Palomares *et al.* (2011).
Tellina euglypta	Gould, 1861		**NE**	•		•			Not listed by Palomares *et al.* (2011).
Tellina (Pinguitellina) sp.	-		**NE**	•					Not listed by Palomares *et al.* (2011).
Loxoglypta rhomboides	(Quoy & Gaimard, 1835)		**NE**	•					Not listed by Palomares *et al.* (2011).
Cadella semen	Hanley, 1844		**NE**	•					Not listed by Palomares *et al.* (2011).
Asaphis violascens	(Forsskål, 1775)		**NE**	•					Not listed by Palomares *et al.* (2011).
Semele australis	(Sowerby, 1832)		**NE**	•		•	•		
Semelangulus crebrimaculata	(Sowerby, 1868)		**NE**	•			•		
Ervilia bisculpta	(Gould, 1861)		**NE**	•		•			
Rochefortina sandwichensis	(Smith, 1885)		**NE**	•		•			Not listed by Palomares *et al.* (2011).
Lonoa hawaiensis	Dall, Bartsch & Rehder, 1938		**NE**	•					Not listed by Palomares *et al.* (2011).
Trapezium oblongum	(Linnaeus, 1758)		**NE**	•	•	•			
Globivenus toreuma	(Gould, 1850)		**NE**		•				Used to be known as *Venus toreuma.*
Periglypta reticulata	(Linnaeus, 1758)		**NE**	•		•			

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Dorisca cf. *cookei*	Dall, Bartsch & Rehder, 1938		**NE**			•			
Hiatella arctica	(Linnaeus, 1767)		**NE**			•			
Quidnipagus palatam	(Iredale, 1929)		**NE**						Not listed by Preece (1995a).
Class: Bivalvia – Order: Myoida									
Martesia striata			**NE**						Not listed by Preece (1995a).
Lyrodus pedicellatus			**NE**						Not listed by Preece (1995a).
Class: Cephalopoda – Order: Octopoda									
'Octopus' oliveri	(Berry, 1914)	Pitcairn Islands' octopus (Pitkern: cat-fish, though known as pulu when used as bait)	**NE**		•	•			Thought to have been a new species in 1991 (see Preece, 1995) but which has since been determined, though the genus still remains in doubt. Not listed by Palomares *et al.* (2011).
Argonauta argo	Linnaeus, 1758	greater argonaut	**NE**					•	Not listed by Preece (1995a). A species of pelagic octopus.
Class: Cephalopoda – Order: Teuthida									
Sthenoteuthis oualaniensis	Lesson, 1830	purpleback flying squid	**NE**					•	Not listed by Preece (1995a). The most abundant large squid in the tropical and subtropical waters of the Indo-Pacific region.
Onychoteuthis banksii	Lichtenstein, 1818	common clubhook squid	**NE**					•	Not listed by Preece (1995a).
Thysanoteuthis rhombus	Troschel, 1857	diamondback squid	**NE**					•	Not listed by Preece (1995a).
Class: Polyplacophora									
Onithochiton lyellii	(Sowerby in Broderip & Sowerby, 1832)		**NE**		•				Not listed by Preece (1995a) who lists *O.* cf. *societatis* Thiele, 1910.
Class: Gastropoda – Superorder: Archaeogastropoda									
Patella flexuosa	Quoy & Gaimard, 1834		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Cellana taitensis	(Röding, 1798)		**NE**		•				
Scutellastra flexuosa	(Quoy & Gaimard, 1834)		**NE**						
Patelloida aff. *chamorrorum*	Lindberg & Vermeij, 1985		**NE**		•	•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Patelloida conoidalis	(Pease, 1868)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Haliotis pulcherrima	Gmelin, 1791		**NE**	•		•	•		Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Sinezona plicata	(Hedley, 1899)		**NE**			•			Added by R. Preece (*pers. comm.*). Not listed by Palomares *et al.* (2011).
Sinezona "microferriezi" n. sp.	-		**NE**			•			Added by R. Preece (*pers. comm.*). Not listed by Palomares *et al.* (2011).
Sinezona sp.	-		**NE**			•			Added by R. Preece (*pers. comm.*). Not listed by Palomares *et al.* (2011).
Sinezona cf. *zimmeri*	Geiger, 2003		**NE**		•				Added by R. Preece (*pers. comm.*). Not listed by Palomares *et al.* (2011).
Emarginula cf. *dilecta*	A. Adams, 1852		**NE**	•	•	•	•		Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Diodora granifera	(Pease, 1861)		**NE**	•	•	•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).

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Broderipia iridescens	(Broderip, 1834)		**NE**			•			
Cantharidus marmoreus	(Pease, 1867)		**NE**	•		•	•		
Euchelus cf. *atratus*	(Gmelin, 1791)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Pseudostomatella speciosa	(A.Adams, 1850)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Stomatella auricula	(Lamarck, 1816)		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Stomatella tuberculata	(A.Adams, 1850)		**NE**						Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Stomatia sp.			**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Synaptocochlea concinna	(Gould, 1845)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Turbo argyrostomus	Linnaeus, 1758		**NE**	•	•	•	•		
Turbo petholatus	Linnaeus, 1758		**NE**		•	•	•		
Astralium confragosum	(Gould, 1849)		**NE**	•			•		
Collonista maculosus	(Pease, 1863)		**NE**		•	•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Collonista sp.			**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
New genus and species			**NE**	•					Belonging to the family Liotininae. Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Tricolia variabilis	(Pease, 1861)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Cyclostremiscus emeryi	(Ladd, 1966)		**NE**	•		•	•		Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Leucorhynchia cf. *rotatum*	Hedley, 1899		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Leucorhynchia sp.			**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Class: Gastropoda – Superorder: Neritopsina									
Neritopsis radula	(Linnaeus, 1758)		**NE**	•	•	•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Nerita lirellata	Rehder, 1980		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Nerita morio	(Sowerby, 1833)		**NE**	•	•	•	•		Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Nerita plicata	Linnaeus, 1758		**NE**	•	•	•	•		Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Nerita polita	Linnaeus, 1758		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Phenacolepas scobinata	(Gould, 1859)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Phenacolepas sp.			**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Class: Gastropoda – Superorder: Caenogastropoda									
Littoraria coccinea	(Gmelin, 1791)		**NE**	•	•	•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Echinolittorina pascua	(Rosewater, 1970)		**NE**	•	•	•			*Nodilittorina pascua* listed by Preece (1995a); not listed by Palomares *et al.* (2011).

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Eatonina sp.			**NE**		•	•	•		Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Eatoniella sp.			**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Alvinia isolata	(Laseron, 1956)		**NE**	•	•	•	•		Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Stosicia chiltoni	(Oliver, 1914)		**NE**	•	•?	•	•		Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Stosicia sp. cf. *hiloense*	(Pilsbry & Vanatta, 1908)		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Merelina wanawana	(Kay, 1979)		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Rissoina ambigua	(Gould, 1849)		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Rissoina cerithiiformis	Tryon, 1887		**NE**	•		•	•		Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Rissoina costata	A. Adams, 1851		**NE**	•	•				Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Rissoina fratercula	Sleurs & Preece, 1994		**NE**	•	•	•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Rissoina heroensis	Laseron, 1956		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Rissoina tenuistriata	Pease, 1867		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Rissoina schubelae	Sleurs & Preece, 1994		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Zebina bidentata	(Philippi, 1845)		**NE**	•	•	•	•		Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Zebina sp.			**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Parashiela sp.			**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Pusillina marmorata	(Hedley, 1907)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Astrosansonia dautzenbergi	(Bavay, 1917)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Lophocochlias minutissimus	(Pilsbry, 1921)		**NE**		•	•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Lophocochlias sp.			**NE**	•?		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Sansonia cf. *halligani*	(Hadley, 1899)		**NE**				•		Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Sansonia n. sp. *1*			**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Sansonia n. sp. *2*			**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Caecum maculata	Habe, 1963		**NE**	•	•	•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Caecum attenuatum	Folin, 1879		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Caecum glabellum	Carpenter in Adams, 1868		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Caecum glabriformis	Carpenter, 1857		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Caecum gulosum	Hedley, 1899		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Caecum cf. *trachea obsoletum*	Carpenter, 1858		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Caecum sp.			**NE**		•				Listed by Preece (1995a) but not by Palomares *et al.* (2011).

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Parastrophia sp.			**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Hinea brasiliana	Lamarck, 1822		**NE**		•				Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Hinea niger	Quoy & Gaimard, 1834		**NE**		•	•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Angiola fasciata	(Pease, 1868)		**NE**	•	•	•	•		Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Fossarus cumingii	(A.Adams, 1855)		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Fossarus cf. *garretti*	Pease, 1868		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Fossarus sp.			**NE**		•	•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
cf. *Bittium impendens*	(Hedley, 1899)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Bittium zebrum	(Kiener, 1841)		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Pseudovertagus clava			**NE**	•	•		•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Rhinoclavis articulata	(Adams & Reeve, 1850)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Rhinoclavis gemmatus	(Hinds, 1844)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Rhinoclavis sinensis	(Gmelin, 1791)		**NE**						Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cerithium punctatum	(Bruguière, 1792)		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Cerithium atromarginatum	Dautzenberg & Bouge, 1933		**NE**		•	•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cerithium columna	Sowerby, 1834		**NE**	•		•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cerithium cf. *dialeucum*	(Philippi, 1849)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Cerithium echinatum	(Lamarck, 1822)		**NE**	•	•	•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cerithium egenum	Gould, 1849		**NE**	•	•	•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cerithium interstriatum	Sowerby, 1855		**NE**	•	•				Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Cerithium nesioticum	Pilsbry & Vanatta, 1906		**NE**	•		•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Royella sinon	(Bayle, 1880)		**NE**		•	•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Cerithidium cf. *perparvulum*	(Watson, 1886)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Finella sp.			**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Plesiotrochus cf. *unicinctus*	(A. Adams, 1853)		**NE**	•		•?			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Dendropoma maxima	(Sowerby, 1825)	tubicolous vermetid	**NE**			•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Petaloconchus sp.			**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
cf. *Thylaeodus* sp.			**NE**	•	•	•	•		Listed by Preece (1995a) but not by Palomares *et al.* (2011).
cf. *Serpulorbis* sp.			**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).

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Tridentarius dentatus	(Linnaeus, 1758)		**NE**						Listed by Palomares *et al.* (2011) as *Strombus dentatus*, but not listed by Preece (1995a).
Gibberulus gibberulus	(Linnaeus, 1758)		**NE**						Listed by Palomares *et al.* (2011) as *Strombus gibberulus* but not listed by Preece (1995a).
Canarium maculatum	(G.B. Sowerby II, 1842)		**NE**	•		•	•		Listed by Preece (1995a) as *Strombus maculatus* and by Palomares *et al.* (2011).
Strombus mutabilis	Swainson, 1821		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Harpago chiragra	(Linnaeus, 1758)		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Lambis chiragra	(Linnaeus, 1758)		**NE**		•	•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Lambis truncata	(Humphrey, 1786)		**NE**	•	•	•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cheilea equestris	(Linnaeus, 1758)		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Vanikoro ?acuta	(Recluz, 1844)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Vanikoro cancellata	(Lamarck, 1822)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Vanikoro plicata	(Recluz, 1844)		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Vanikoro sp.			**NE**	•	•	•	•		Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Sabia conica	(Schumacher, 1817)		**NE**	•		•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Hipponix conicus			**NE**		•	•	•		Listed by Palomares *et al.* (2011) and listed by Preece (1995a) as *Hipponix* spp.
Cypraea annulus	Linnaeus, 1758		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Maurita arabica	(Linnaeus, 1758)		**NE**						Listed by Palomares *et al.* (2011) as *Cypraea arabica* but not listed by Preece (1995a).
Arestorides argus	(Linnaeus, 1758)		**NE**						Listed by Palomares *et al.* (2011) as *Cypraea argus* but not listed by Preece (1995a).
Erosaria bernardi	(Richard, 1974)		**NE**		•				Listed by Palomares *et al.* (2011). Listed by Preece (1995a) as *Cypraea bernardi*
Cypraea bistrinotata	(Schilder & Schilder, 1937)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Lyncina leviathan bouteti	(Burgess & Arnette, 1981)		**NE**						Listed by Palomares *et al.* (2011) as *Cypraea bouteti* but not listed by Preece (1995a).
Cypraea caputserpentis	Linnaeus, 1758		**NE**	•	•	•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Lyncina carneola	(Linnaeus, 1758)		**NE**						Listed by Palomares *et al.* (2011) as *Cypraea carneola* but not listed by Preece (1995a).
Lyncina lynx	(Linnaeus, 1758)		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Lyncina vitellus	(Linnaeus, 1758)		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Cypraea childreni	Gray, 1825		**NE**	•		•			Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Cypraea cicercula	Linnaeus, 1758		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Cypraea cumingii	Sowerby, 1832		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Cypraea dillwyni	Schilder, 1922		**NE**	•		•			Listed by Preece (1995a) and by Palomares *et al.* (2011).

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Erosaria erosa	(Linnaeus, 1758)		**NE**						Listed by Palomares *et al.* (2011) as *Cypraea erosa* but not listed by Preece (1995a).
Cypraea fimbriata	Gmelin, 1791		**NE**	•		•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cypraea globulus	Linnaeus, 1758		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Cypraea goodalli	Sowerby, 1832		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cypraea helvola	Linnaeus, 1758		**NE**	•		•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cypraea irrorata	Gray, 1828		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cypraea isabella	Linnaeus, 1758		**NE**	•		•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cypraea lynx	Linnaeus, 1758		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Cypraea maculifera	(Schilder, 1932)		**NE**	•	•	•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cypraea mappa	Linnaeus, 1758		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cypraea moneta	Linnaeus, 1758		**NE**	•	•	•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cypraea poraria	Linnaeus, 1758		**NE**			•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cypraea schilderorum	Iredale, 1939		**NE**	•	•	•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cypraea scurra	Gmelin, 1791		**NE**	•		•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cypraea subterres	Weinkauff, 1881		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Cypraea testudinaria	Linnaeus, 1758		**NE**		•	•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cypraea tigris	Linnaeus, 1758		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Cypraea ventriculus	Lamarck, 1810		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cypraea vitellus	Linnaeus, 1758		**NE**	•	•				Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Talostolida subteres	(Weinkauff, 1881)		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Cribrarula cumingii	Sowerby, 1832		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Mauritia depressa	(J.E. Gray, 1824)		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Pustularia cicercula	(Linnaeus, 1758)		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Talparia talpa	(Linnaeus, 1758)		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Trivia edgari	Shaw, 1990		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Trivia hordacea	Kiener, 1845		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Trivia spp.			**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Trivirostra exigua	(Gray, 1831)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
cf. *Erato sandwicensis*	Pease, 1860		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Mammilla simiae	(Deshayes, 1838)		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).

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Mammilla melanostoma	(Gmelin, 1791)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Natica gualteriana	Recluz, 1844		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Natica cernica	Jousseaume, 1874		**NE**	•?	•	•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Natica cf. *arachnoidea*	(Gmelin, 1791)		**NE**	•		•?			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Tectonatica bougei	(Sowerby, 1908)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Notocochlis cernica	(Jousseaume, 1874)		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Notocochlis gualteriana	(Récluz, 1844)		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Polinices mammilla	(Linnaeus, 1758)		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Tonna perdix	(Linnaeus, 1758)		**NE**	•	•	•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Malea pomum	(Linnaeus, 1758)		**NE**	•	•				Listed by Preece (1995a) and by Palomares *et al.* (2011).
Casmaria erinaceus	(Linnaeus, 1758)		**NE**	•		•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Charonia tritonis	Linnaeus, 1767		**NE**	•	•	•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cymatium aquatile	(Reeve, 1844)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Cymatium muricinum	(Röding, 1798)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Cymatium nicobaricum	(Röding, 1798)		**NE**	•		•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Monoplex pilearis	(Linnaeus, 1758)		**NE**						Listed by Palomares *et al.* (2011) as Cymatium pileare but not listed by Preece (1995a).
Distorsio pusilla	Pease, 1861		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Bursa cruentata	(Sowerby, 1841)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Bursa granularis	(Röding, 1798)		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Bursa latituda	Garrard, 1961		**NE**	•	•				Listed by Preece (1995a) but not by Palomares *et al.* (2011).
'Cerithiopsis' spp.			**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Metaxia spp.			**NE**	•	•	•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Liniphora spp.			**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Janthina janthina	(Linnaeus, 1758)		**NE**	•	•	•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Janthina prolongata	(de Blainville, 1822)		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Recluzia johnii	(Holten, 1802)		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Epitonium replicatum	(Sowerby, 1844)		**NE**	•		•?			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Gyroscala lamellosa	(Lamarck, 1822)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Melanella cumingii	(A.Adams, 1854)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Pyramidelloides spp.			**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).

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Balcis spp.			**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Cronia margariticola	(Broderip, 1833)		**NE**	•	•?	•	•?		Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Maculotriton bracteatus	(Hinds, 1844)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Maculotriton serriale	(Deshayes, 1834)		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Phyllocoma convoluta	(Broderip, 1833)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Drupa clathrata	(Lamarck, 1816)		**NE**		•	•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Drupa elegans	(Broderip & Sowerby, 1829)		**NE**			•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Drupa grossularia	Röding, 1798		**NE**	•		•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Drupa morum	Röding, 1798		**NE**	•	•	•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Drupa ricinus	(Linnaeus, 1758)		**NE**	•	•	•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Drupa speciosa	(Dunker, 1867)		**NE**	•		•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Drupella cornus	(Röding, 1798)		**NE**			•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Drupella ochrostoma	(Blainville, 1832)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Morula dealbata	(Reeve, 1846)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Morula granulata	(Duclos, 1832)		**NE**	•		•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Morula nodicostata	(Pease, 1868)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Morula parva	(Reeve, 1846)		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Morula parvissima	Cernohorsky, 1987		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Morula uva	Röding, 1798		**NE**	•	•	•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Morula oparense	(Melvill, 1912)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Thais aculeata	Deshayes & Milne-Edwards, 1844		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Thais armigera	Link, 1807		**NE**	•		•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Thais intermedia	(Kiener, 1835)		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Thais tuberosa	(Röding, 1798)		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Nassa serta	(Bruguière, 1789)		**NE**	•		•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Vexilla vexillum	(Gmelin, 1791)		**NE**	•		•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Vexilla lineata	A.Adams, 1853		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Coralliophila latilirata	Rehder, 1985		**NE**			•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Coralliophila violacea	(Kiener, 1836)		**NE**			•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).

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Quoyula monodonta	(Blainville, 1832)		**NE**	•		•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Magilopsis cf. *lamarckii*	(Deshayes, 1863)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Rapa rapa	(Linnaeus, 1758)		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Vasum armatum	(Broderip, 1833)		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Engina cf. *alveolata*	(Kiener, 1836)		**NE**	•	•				Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Engina fuscolineata	E.A.Smith, 1913		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Engina rosacea	(E.A.Smith, 1913)		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Prodotia iostoma	(Gray, 1834)		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Pisania decollata	(Sowerby, 1933)		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
cf. *Pisania gracilis*	Reeve, 1846		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Caducifer decapitata	(Recluz, 1844)		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Nassarius gaudiosus	(Hinds, 1844)		**NE**	•		•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Nassarius papillosus	(Linnaeus, 1758)		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Nassarius pauperus	(Gould, 1850)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Fusinus galatheae bountyi	Rehder & Wilson, 1975		**NE**		•				Carnivourous species present at Pitcairn, where it is frequenly found in lobster pots. Listed by Preece (1995a) and by Palomares *et al.* (2011).
Fusinus genticus	(Iredale, 1936)		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Latirus nodatus	(Gmelin, 1791)		**NE**			•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Peristernia nassatula	(Lamarck, 1822)		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Euplica loisae	Rehder, 1980		**NE**		•				Listed by Preece (1995a) and by Palomares *et al.* (2011).
Euplica turturina	(Lamarck, 1822)		**NE**	•		•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Euplica varians	(Sowerby, 1834)		**NE**	•	•	•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Mitrella rorida	(Reeve, 1859)		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Pyrene flava	(Bruguière, 1789)		**NE**		•	•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Pyrene obtusa	(G.B. Sowerby I, 1832)		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Mitrella scripta	(Linnaeus, 1758)		**NE**						Listed by Palomares *et al.* (2011) as Pyrene scripta but not listed by Preece (1995a).
Euplicata varians	(G.B. Sowerby I, 1832)		**NE**						Listed by Palomares *et al.* (2011) as Pyrene varians but not listed by Preece (1995a).
Seminella virginea	(Gould, 1860)		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Zafra spp.			**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Colubraria nitidula	(Sowerby, 1833)		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).

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Colubraria sp.			**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Harpa harpa	(Linnaeus, 1758)		**NE**		•				Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Harpa major	Röding, 1798		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Morum ponderosum	(Hanley, 1858)		**NE**	•		•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Granula sandwicensis	(Pease, 1860)		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Granula spp. *(small)*			**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Cystiscus huna	Kay, 1979		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Vexillum cancellarioides	Anton, 1838		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Vexillum moelleri	(Kuster, 1840)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Vexillum suavis	(Souverbie, 1875)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Vexillum piceum	(Pease, 1860)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Mitra acuminata	Swainson, 1824		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Mitra auriculoides	Reeve, 1845		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Mitra coffea	Schubert & Wagner, 1829		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Mitra colombelliformis	Kiener, 1838		**NE**		•				Listed by Preece (1995a) and by Palomares *et al.* (2011).
Mitra coronata	Lamarck, 1811		**NE**		•				Listed by Preece (1995a) and by Palomares *et al.* (2011).
Mitra cucumerina	Lamarck, 1811		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Mitra litterata	Lamarck, 1811		**NE**	•		•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Mitra mitra			**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Mitra cf. *lugubris*	Swainson, 1821		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Mitra pele	Cernohorsky, 1970		**NE**		•				Listed by Preece (1995a) and by Palomares *et al.* (2011).
Mitra saltata	Pease, 1865		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Mitra stictica	(Link, 1807)		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Mitra testacea	Broderip, 1836		**NE**	•	•				Listed by Preece (1995a) and by Palomares *et al.* (2011).
Mitra pellisserpentis	Reeve, 1844		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Ziba cernohorskyi	Rehder & Wilson, 1975		**NE**		•				Listed by Preece (1995a) and by Palomares *et al.* (2011).
Iredalea sp.			**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Xenuroturris cingulifera	(Lamarck, 1822)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Lovellona atramentosa	(Reeve, 1849)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Mitrolumna metula	(Hinds, 1843)		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).

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Mitrolumna stepheni	(Melvill & Standen, 1897)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Anacithara cf. *decipiens nervilliana*	(Preston, 1905)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Anacithara cf. *longispira*	(E.A. Smith, 1879)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Etrema cf. *alphonsiana*	Hervier, 1895		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Etrema sp.			**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Eucithara cf. *coronata*	(Hinds, 1843)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Eucithara cf. *dealbata*	Hervier, 1897		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Eucithara cf. *debilis*	(Pease, 1868)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Lienardia apiculata	(Montrouzier, 1864)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Lienardia caelata	(Garrett, 1873)		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Lienardia cf. *compta*	(Reeve, 1845)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Lienardia crassicostata	(Pease, 1860)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Lienardia fallax	G. & H. Nevill, 1875		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Lienardia mighelsi	Iredale & Tomlin, 1917		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Macteola interrupta	(Reeve, 1846)		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
cf. *Daphnella olyra*	Reeve, 1845		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Daphnella flammea	(Hinds, 1843)		**NE**	•?		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
cf. *Daphnella terina*	Melvill & Standen, 1896		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Eucyclotoma cf. *bicarinata*	(Pease, 1862)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Eucyclotoma fusiformis	(Garrett, 1873)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Kermia felina	(Hinds, 1843)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
cf. *Kermia hindsi*	Reeve, 1843		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Kermia cf. *pumila*	(Mighels, 1845)		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Kermia reeviana	Deshayes, 1863		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Kermia sp. 1			**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Kermia sp. 2			**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Kermia sp. 3			**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Microdaphne morrisoni	Rehder, 1980		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Pseudodaphnella cf. *iospira*	Hervier, 1896		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).

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Tritonoturris cumingi	(Powys, 1835)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Tritonoturris cf. *subrissoides*	(Hervier, 1897)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
cf. *Elathurella edychroa*	Hervier, 1897		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
cf. *Mangelia nanisca*	Hervier, 1897		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Conus chaldaeus	(Röding, 1798)		**NE**	•		•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Conus coronatus	Gmelin, 1791		**NE**	•					Listed by Preece (1995a) and by Palomares *et al.* (2011).
Conus cylindraceus	Broderip & Sowerby, 1830		**NE**				•		Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Conus ebraeus	Linnaeus, 1758		**NE**	•	•	•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Conus flavidus	Lamarck, 1810		**NE**	•			•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Conus geographus	Linnaeus, 1758		**NE**			•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Conus leopardus	Röding, 1798		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Conus litoglyphus	Hwass, 1792		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Conus lividus	Hwass, 1792		**NE**	•		•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Conus magnificus	Reeve, 1843		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Conus marmoreus	Linnaeus, 1758		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Conus miliaris	Hwass, 1792		**NE**	•		•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Conus nanus	Sowerby, 1833		**NE**	•		•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Conus pennaceus	Born, 1778		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Conus rattus	Hwass, 1792		**NE**	•		•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Conus retifer	Menke, 1829		**NE**			•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Conus sanguinolentus	Quoy & Gaimard, 1834		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Conus sponsalis	Hwass, 1792		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Conus tenuistriatus	Sowerby, 1856		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Conus tessulatus	Born, 1778		**NE**		•	•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Conus textile	Linnaeus, 1758		**NE**	•		•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Conus tulipa	Linnaeus, 1758		**NE**	•		•	•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Conus vitulinus	Hwass in Brugière, 1792		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Terebra affinis	Gray, 1834		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Oxymeris areolata	(Link, 1807)		**NE**						Listed by Palomares *et al.* (2011) as Terebra areolata, but not by Preece (1995a).
Terebra crenulata	(Linnaeus, 1758)		**NE**	•		•			Listed by Preece (1995a) and by Palomares *et al.* (2011).

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Terebra maculata	(Linnaeus, 1758)		**NE**	•					Listed by Preece (1995a) and by Palomares *et al.* (2011).
Terebra subulata	(Linnaeus, 1758)		**NE**				•		Listed by Preece (1995a) and by Palomares *et al.* (2011).
Impages hectica	(Linnaeus, 1758)		**NE**						Listed by Palomares *et al.* (2011) as *Hastula hectica*, but not by Preece (1995a).
Hastula penicillata	(Hinds, 1844)		**NE**			•			Listed by Preece (1995a) and by Palomares *et al.* (2011).
Cantharus iostomus			**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Cantharus undosus			**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Neocancilla takiisaoi			**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Chicoreus ramosus			**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Oliva annulata			**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Oliva caerulea			**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Class: Gastropoda – Superorder: Heterostropha									
Orbitestella spp.			**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Architectonica perspectiva	(Linnaeus, 1758)		**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Heliacus trochoides	Deshayes, 1830		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Heliacus infundibuliformis	(Gmelin, 1791)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Psilaxis radiatus	(Röding, 1798)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Rissoella sp.			**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Miralda sp.			**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Herviera sp.			**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Syrnola sp.			**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Turbonilla cornelliana	(Newcomb, 1870)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Pyrgiscus sp.			**NE**			•			R. Preece, *pers. comm.* Not listed by Palomares *et al.* (2011).
Evalea peasei			**NE**	•		•?			R. Preece, *pers. comm.* Not listed by Palomares *et al.* (2011).
Odostomia spp.			**NE**	•		•			R. Preece, *pers. comm.* Not listed by Palomares *et al.* (2011).
Odostomia (Islea) sp.			**NE**	•					R. Preece, *pers. comm.* Not listed by Palomares *et al.* (2011).
Oscilla sp.			**NE**			•			R. Preece, *pers. comm.* Not listed by Palomares *et al.* (2011).
Class: Gastropoda – Superorder: Opisthobranchia									
Pupa cf. *solidula*	Linnaeus, 1758		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Cylichna sp.			**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
cf. *Philina* sp.			**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).

Species	Authority	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
Bulla orientalis	Habe, 1950		**NE**	•		•			Listed by Preece (1995a) as *Bulla* cf. *punctulata.* Not listed by Palomares *et al.* (2011).
Smaragdinella calyculata	(Broderip & Sowerby, 1829)		**NE**		•	•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Atys cylindricus	Helbling, 1779		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Atys semistriata	Pease, 1860		**NE**	•		•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Haminoea sp.			**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Retusa sp.			**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Limacina bulimoides	(d'Orbigny, 1836)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Limacina lesueuri	(d'Orbigny, 1836)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Dolabrifera cf. *fusca*	Pease, 1868		**NE**				•		Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Dolabella auricularia	Lightfoot, 1786	wedge sea hare	**NE**						Listed by Palomares *et al.* (2011) but not by Preece (1995a).
Berthellina citrina	(Ruppell & Leuckort, 1831)		**NE**			•			Listed by Palomares *et al.* (2011) and also by R. Preece (*pers. comm.*).
Julia exquisita	Gould, 1862		**NE**	•	•	•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Bornella irvingi	Edmunds & Preece, 1996		**NE**				•		Listed by Preece (1995a) as *Bornella* sp., and named by Edmunds & Preece (1996).
Phyllobranchillus orientalis	(Kelaart, 1858)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Peltodoris fellowsi	Kay & Young, 1969		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Dendrodoris tuberculosa	(Quoy & Gaimard, 1832)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Phyllidiella pustulosa	(Cuvier, 1804)		**NE**	•					Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Phyllidiella annulata	(Gray, 1853)		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Glaucus atlanticus	Forster, 1777		**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Melampus flavus	(Gmelin, 1791)		**NE**						Listed by Palomares *et al.* (2011) as *Melampus luteus*. Also listed by Preece (1995a).
Allochroa layardi	(H. & A. Adams, 1855)		**NE**						Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Oncidium sp.			**NE**			•			Listed by Preece (1995a) but not by Palomares *et al.* (2011).
Phylum ECHINODERMATA	Refs. Paulay, 1989; Palomares *et al.*, 2011; and additions from Irving (1995)								
Class Echinoidea – sea urchins, etc.									
Diadema savignyi	(Audouin, 1826)	long-spined sea urchin	**NE**	•		•	•		Abundant at Henderson, forming large aggregations between 8–30 m depth.
Diadema paucispinum			**NE**						Listed by Palomares *et al.*, 2011.
Echinothrix calamaris	(Pallas, 1774)		**NE**			•			
Tripneustes gratilla	(Linnaeus,, 1758)		**NE**			•			

Species	Authority	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
Echinometra mathaei	(de Blainville, 1825)	Matha's sea urchin	**NE**			•			
Echinometra oblonga	(de Blainville, 1825)	black oblong sea urchin	**NE**		•	•			Common on reef flat and shallow fore-reef (0–9 m) at Henderson.
Echinometra sp. 1	-		**NE**	•			•		
Echinostrephus aciculatus	A. Agassiz, 1863		**NE**			•	•		
Heterocentrotus mammillatus	(Linnaeus,, 1758)	red slate pencil urchin	**NE**		•	•	•		Lives in crevices on fore-reef from 10–20+ m depth.
Heterocentrotus trigonarius	(Lamarck, 1816)	purple slate pencil urchin	**NE**	•		•	•		Particularly abundant at Henderson, Oeno and Ducie on the fore-reef (0–3 m).
Echinoeus cyclostomus	Leske, 1778		**NE**	•		•			
Clypeaster sp. *?reticulatus*	(Linnaeus,, 1758)		**NE**			•			
Mortonia australis	(Desmoulins, 1835)		**NE**	•		•			
Brissus latecarinatus	(Leske, 1778)		**NE**				•		
Metalia spatangus	(Linnaeus, 1758)		**NE**			•			A relatively dense population found by Paulay on fore-reef at Henderson 10–18 m depth.
Class Asteroidea – starfish/sea stars, cushion stars, etc.									
Asteropecten polyacanthus	Mueller & Troschel, 1842		**NE**		•	•			
Culcita novaeguineae	Mueller & Troschel, 1842		**NE**		•	•			
Dactylosaster cylindricus	(Lamarck 1816)		**NE**			•			
Linckia guildingi	Gray, 1840		**NE**		•				
Linckia laevigata	(Linnaeus, 1758)		**NE**		•				
Linckia multifora	(Lamarck, 1816)		**NE**	•	•	•			
Neoferdina cumingi	(Gray, 1840)		**NE**			•			
Ophidiaster lorioli	Fisher, 1906		**NE**		•				
Acanthaster planci	(Linnaeus, 1758)		**NE**			•B	•		
Allostichaster peleensis	Marsh, 1974		**NE**		•	•			
Class Ophiuroidea – brittlestars, etc.									
Amphilimna tanyodes	Devaney, 1974		**NE**		•				
Amphiura bountyia	Devaney, 1974		**NE**		•				
Ophiactis sp.	-		**NE**				•		
Macrophiothrix demessa	(Lyman, 1861)		**NE**	•	•				
Macrophiothrix sp.	-		**NE**			•			
Ophiarachna megacantha			**NE**						Not listed by Paulay (1989) but by Palomares *et al.*, 2011
Ophiothrix purpurea	Martens, 1867		**NE**		•				

Species	Authority	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
Ophiocoma brevipes	Peters, 1851		**NE**	•	•				
Ophiocoma dentata	Mueller & Troschel, 1842		**NE**	•		•			
Ophiocoma cf. *doderleini*	Loriol, 1899		**NE**			•			
Ophiocoma erinaceus	Mueller & Troschel, 1842		**NE**	•		•			
Ophiocoma longispina	H.L. Clark, 1917		**NE**		•				
Ophiocoma macroplaca	(H.L. Clark, 1915)		**NE**		•				
Ophiocoma pica	Mueller & Troschel, 1842		**NE**	•		•			
Ophiocoma pusilla	(Brock, 1888)		**NE**		•				
Ophiocomella sexradia	(Duncan, 1887)		**NE**	•	•				
Ophionereis aff. *dubia*	Mueller & Troschel, 1842)		**NE**			•			Not listed by Palomares *et al.* (2011).
Ophionereis porrecta	Lyman, 1860		**NE**		•				
Ophiarachna megacantha erythema	Devaney, 1974		**NE**		•				
Ophiopeza kingi	Devaney, 1974		**NE**		•				
Class Holothuroidea – sea cucumbers									
Actinopyga mauritiana	(Quoy & Gaimard, 1833)		**NE**			•			
Actinopyga palauensis	Panning, 1944		**NE**			•			
Holothuria (Halodeima) atra	Jaeger, 1833		**NE**	•		•	•		
Holothuria (Halodeima) signata	Ludwig, 1875		**NE**	•	•	•			
Holothuria (Lessonothuria) sp.3			**NE**			•			
Holothuria (Microthele) nobilis	(Selenka, 1867)		**NE**	•	•	•	•		
Holothuria (Platyperona) difficilis	Semper, 1878		**NE**	•			•		
Holothuria (Semperothuria) cinerascens	(Brandt, 1835)		**NE**				•		
Holothuria (Thymiosycia) arenicola	Semper, 1868		**NE**			•			
Holothuria (Thymiosycia) hilla	Lesson, 1830		**NE**	•					
Holothuria (Thymiosycia) impatiens	(Forsskål, 1775)		**NE**	•					
Labidodemas semperianum	Selenka, 1867		**NE**			•			

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Euapta godeffroyi	(Semper, 1868)		**NE**			•	•		
Chiridota hawaiiensis	Fisher, 1907		**NE**	•					
Chiridota sp.	-		**NE**			•			
PISCES (cartilaginous & bony fishes)		Refs. Irving *et al.*, 1995; Randall, 1999; Palomares *et al.*, 2011.							
Family Carcharhinidae (requiem sharks)									
Carcharhinus amblyrhynchos	(Bleeker, 1856)	grey reef shark	NT			•			Götesson (2012) reports records of grey reef sharks at Pitcairn and Oeno.
Carcharhinus galapagensis	(Snodgrass & Heller, 1905)	Galapagos reef shark	NT		•	•	•		Common at Ducie, infrequent at Pitcairn and rare at Henderson (one individual seen by G. Wragg in 2008 off SE coast – G. Wragg, *pers. comm.*).
Carcharhinus longimanus	(Poey, 1861)	oceanic whitetip shark	VU					•	Listed by Palomares *et al.* (2011) but not by Randall (1999). One individual observed by G. Wragg in 1991 2 km to E of Pitcairn (G. Wragg, *pers. comm.*).
Carcharhinus melanopterus	(Quoy & Gaimard, 1824)	blacktip reef shark	NT			•			
Prionace glauca	(Linnaeus, 1758)	blue shark	NT					•	Listed by Palomares *et al.* (2011) but not by Randall (1999).
Galeocerdo cuvier	(Péron & Lesueur, 1822)	tiger shark	NT		•				Listed by Randall (1999) but not by Palomares *et al.* (2011).
Triaenodon obesus	(Rüppell, 1837)	whitetip reef shark	NT	•	•	•	•		
Family Sphyrnidae (hammerhead sharks)									
Sphyrna mokarran	(Rüppell, 1837)	great hammerhead shark	EN					•	Listed by Palomares *et al.* (2011) but not by Randall (1999).
Family Rhincodontidae (whale sharks)									
Rhincodon typus	Smith, 1828	whale shark	VU					•	Listed by Palomares *et al.* (2011) but not by Randall (1999).
Family Myliobatidae (eagle rays)									
Aetobatus narinari	(Euphrasen, 1790)	spotted eagle ray	NT		•				Randall (1999) mistakenly lists this species as *Aetobatis narinari.*
Family Anguillidae (eels)									
Anguilla megastoma	Kaup, 1856	Polynesian longfinned eel	**NE**						Listed by Palomares *et al.* (2011) but not by Randall (1999).
Family Moringuidae (worm eels)									
Moringua ferruginea	-	worm eel	**NE**	•	•	•	•		This species listed by Palomares *et al.* (2011). Randall (1999) lists *Moringua* sp.
Family Chlopsidae (false morays)									
Kaupichthys diodontus	Schultz, 1943	common false moray	**NE**	•	•				
Family Congridae (conger eels)									
Ariosoma sp.	-			•					May turn out to be *A. marginatum* (Vaillant & Sauvage) (Randall, 1999).
Conger cinereus	Rüppell, 1830	moustache conger / longfin African conger	**NE**		•				Identified by Randall (1999) as *Conger cinereus cinereus*.
Family Ophichthidae (snake eels)									
Apterichtus sp.	-	snake eel			•				Randall (1999) believes this to be an undescribed species.
Ichthyapus vulturis	(Weber & de Beaufort, 1916)	vulture sand eel		•					
Leiuranus semicinctus	(Lay & Bennett, 1839)	saddled snake eel			•				

Species	Authority	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
Scolecenchelys gymnota	(Bleeker, 1857)	Indo-Pacific slender worm eel			•				Originally recorded by Randall (1999) as *Muraenichthys gymnotus.*
Scolecenchelys laticaudata	(Ogilby, 1897)	redfin worm eel		•	•	•	•		Originally recorded by Randall (1999) as *Muraenichthys laticaudata.*
Myrichthys maculosus	(Cuvier, 1816)	spotted snake eel			•				
Family Muraenidae (moray eels)									
Anarchias exulatus	Reece, Smith & Holm, 2010		**NE**	•?	•?	•?	•?		New species. This species listed by Palomares *et al.* (2011). Randall (1999) lists *Anarchias* sp.
Anarchias seychellensis	Smith, 1962	Seychelles moray	**NE**	•?	•?	•?	•?		It is unclear from Randall (1999) from which island(s) this species was recorded.
Enchelynussa canina	(Quoy & Gaimard, 1874)	-	**NE**			•			
Gymnothorax australicola	Lavenberg, 1992	-	**NE**		•				Misidentified as *G. panamensis* by Rehder & Randall (1975). New species.
Gymnothorax buroensis	(Bleeker, 1857)	latticetail moray			•				Not listed by Palomares *et al.* (2011).
Gymnothorax eurostus	(Abbott, 1861)	salt and pepper moray	**NE**	•	•	•	•		
Gymnothorax fuscomaculatus	(Schultz, 1953)	freckled moray	**NE**	•	•				
Gymnothorax gracilicauda	Jenkins, 1903	slendertail moray	**NE**	•					
Gymnothorax javanicus	(Bleeker, 1859)	giant moray	**NE**		•	•			
Gymnothorax kidako	(Temminck & Schlegel, 1846)	Kidako moray			•				Not listed by Palomares *et al.* (2011).
Gymnothorax melatremus	Schultz, 1953	dirty yellow moray	**NE**	•	•				
Gymnothorax meleagris	(Shaw, 1795)	whitemouth moray	**NE**	•	•	•			
Gymnothorax nasuta	de Buen, 1961	Easter Island moray			•				Not listed by Palomares *et al.* (2011).
Gymnothorax pindae	Smith, 1962	Pinda moray	**NE**		•				
Uropterygius fuscoguttatus	Schultz, 1953	brown-spotted snake moray	**LC**	•	•				
Uropterygius inornatus	Gosline, 1958	drab snake moray		•					
Uropterygius kamar	McCosker & Randall, 1977	barlip reef eel		•	•				New species.
Uropterygius macrocephalus	Bleeker, 1864	needle-toothed moray		•	•	•			
Uropterygius supraforatus	(Regan, 1909)	many-toothed snake moray		•					
Uropterygius xanthopterus	Bleeker, 1859	freckleface reef eel		•	•				
Family Synodontidae (lizardfishes)									
Saurida flamma	Waples, 1982	orangemouth lizardfish			•				

Species	Authority	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
Saurida gracilis	(Quoy & Gaimard, 1824)	graceful lizardfish		•	•	•	•		
Synodus capricornis	Cressey & Randall, 1978	capricorn lizardfish			•				New species.
Synodus variegatus	(Lacepède, 1803)	variegated lizardfish			•				
Family Antennariidae (frogfishes)									
Antennarius coccineus	(Lesson, 1831)	freckled or scarlet frogfish		•					
Antennatus tuberosus	(Cuvier, 1817)	tuberculated frogfish		•					
Family Isonidae (surf fishes)									
Iso nesiotes	Saeed, Ivantsoff & Crowley, 1993	Samoan surf sardine			•				
Family Ophidiidae (cusk eels)									
Brotula multibarbata	Temminck & Schlegel, 1846	bearded brotula		•	•				
Family Bythitidae (viviparous brotulas)									
Brosmophyciops pautzkei	Schult, 1960	-		•	•				Originally listed as *Brosmophysiops pautzkei* by Randall (1999).
Dinematicthys sp.	-	-							Specimens on loan to Yoshihiko Machida (Randall, 1999).
Family Carapidae (pearlfishes)									
Onuxodon fowleri	(Smith, 1955)	Fowler's pearlfish			•				
Family Belonidae (needlefishes)									
Platybelone argalus platyura	(Bennett, 1832)	keeltail needlefish			•	•	•		
Tylosurus crocodilus crocodilus	(Peron & Lesueur, 1821)	hound needlefish				•			
Family Hemiramphidae (halfbeaks)									
Euleptorhamphus viridis	(van Hesselt, 1823)	ribbon halfbeak			•	•			
Hyporhamphus acutus acutus	(Günther, 1861)	Pacific halfbeak			•	•			
Family Exocoetidae (flyingfishes)									
Cheilopogon sp.	-	-			•				
Cypselurus pitcairnensis	Nichols & Breder, 1935				•				First described from specimen caught at Pitcairn.
Exocoetus obtusirostris	Günther, 1866	blunt-snouted flyingfish				•	•		
Exocoetus sp.	-	-					•		
Family Holocentridae (soldierfishes and squirrelfishes)									
Myripristis amaena	(Castlenau, 1873)	brick soldierfish		•	•		•		
Myripristis berndti	Jordan & Evermann, 1903	bigscale soldierfish (Pitkern: 'ihihi)		•	•		•		
Myripristis randalli	Greenfield, 1974	Randall's soldierfish			•				New species.
Myripristis tiki	Greenfield, 1974	-			•		•		New species.
Neoniphon sammara	(Forsskål, 1775)	spotfin squirrelfish					•		

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Plectrypops lima	(Valenciennes, 1831)	cardinal soldierfish		•	•				
Sargocentron diadema	(Lacepède, 1801)	crown squirrelfish		•	•				
Sargocentron ensifer	Jordan & Evermann, 1903	yellow-striped squirrelfish			•				
Sargocentron hormion	Randall, 1998	-			•				New species.
Sargocentron lepros	(Allen & Cross, 1983)	-		•	•				
Sargocentron megalops	Randall, 1998	-				•			Endemic to Henderson (Randall, 1998).
Sargocentron punctatissimum	(Cuvier, 1829)	speckled squirrelfish		•	•	•			
Sargocentron spiniferum	(Forsskål, 1775)	sabre squirrelfish		•		•	•		
Sargocentron tiere	(Cuvier, 1829)	blue-lined squirrelfish		•	•	•	•		
Family Aulostomidae (trumpetfishes)									
Aulostomus chinesis	(Linnaeus, 1766)	trumpetfish			•		•		
Family Fistulariidae (cornetfishes)									
Fistularia commersonii	Rüppel, 1838	cornetfish		•	•	•	•		
Family Syngnathidae (pipefishes and seahorses)									
Cosmocampus howensis	(Whitley, 1948)	Lord Howe's pipefish			•				
Family Scorpaenidae (scorpionfishes)									
Iracundus signifer	Jordan & Evermann, 1903	decoy scorpionfish		•	•				
Parascorpaena macadamsi	(Fowler, 1938)	McAdam's scorpionfish			•		•		
Pontinus sp.	-	-			•				
Pterois antennata	(Bloch, 1787)	spotfin lionfish		•	•	•			
Pterois volitans	(Linnaeus, 1758)	lionfish		•		•			
Scorpaenodes hirsutus	(Smith, 1957)	hairy scorpionfish		•	•				
Scorpaenopsis sp.	-	scorpionfish (indet.)			•				New species.
Sebastapistes fowleri	(Pietschmann, 1934)	-		•					Originally *Scorpaenopsis fowleri,* but genus changed in 2002 (see Randall & Poss, 2002).
Sebastapistes galatacma	Jenkins, 1903	-		•	•				
Sebastapistes mauritiana	(Cuvier, 1829)	Mauritius scorpionfish			•	•			
Sebastapistes tinkhami	(Fowler, 1946)	darkspotted scorpionfish		•	•	•			
Family Platycephalidae (flatheads)									

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Sunagocia otaitensis	(Cuvier, 1829)	fringelip flathead			•				Originally recorded by Randall (1999) as *Eurycephalus otaitensis*.
Family Caracanthidae (orbicular velvetfishes)									
Caracanthus maculatus	(Gray, 1831)	spotted croucher		•	•				
Caracanthus unipinna	(Gray, 1831)	pygmy coral croucher		•		•			
Family Dactylopteridae (helmet gurnards)									
Dactyloptena orientalis	(Cuvier, 1829)	common helmet gurnard			•				
Family Serranidae (groupers and seabasses)									
Cephalopholis argus	Bloch & Schneider, 1801	peacock grouper	**LC**	•	•	•	•		
Cephalopholis spiloparaea	(Valenciennes, 1828)	strawberry grouper	**LC**		•				
Cephalopholis urodeta	(Forster in Bloch & Schneider, 1801)	flagtail grouper / darkfin hind (Pitkern: matapu'u)	**LC**	•	•	•			
Epinephelus fasciatus	(Forsskål, 1775)	blacktip grouper (Pitkern: red snapper)	**LC**	•	•		•		
Epinephelus hexagonatus	(Forster in Bloch & Schneider, 1801)	hexagon grouper	**LC**		•	•			
Epinephelus lanceolatus	(Bloch, 1790)	giant grouper	**VU**		•	•			
Epinephelus merra	Bloch, 1793	honeycomb grouper	**LC**			•			
Epinephelus socialis	(Günther, 1873)	surge grouper	**NT**		•	•	•		
Epinephelus tauvina	(Forsskål, 1775)	greasy grouper (Pitkern: fito cod)	**DD**	•	•	•	•		
Epinephelus tuamotuensis	Fourmanoir, 1971	-	**LC**			•			
Liopropoma pallidum	(Fowler, 1938)	pallid basslet	**NE**	•					
Plectranthias fourmanoiri	Randall, 1980	doublespot perchlet	**NE**		•				New species.
Plectranthias nanus	Randall, 1980	dwarf perchlet	**NE**	•	•				New species.
Plectranthias winniensis	(Tyler, 1966)	redblotch perchlet	**NE**		•		•		New species.
Plectropomus laevis	(Lacepède, 1801)	black-saddled coral grouper	**VU**	•					Observed at Oeno by Randall in 1970/71.
Pseudanthias mooreanus	(Herre, 1935)	-		•	•				
Pseudanthias ventralis	(Randall, 1979)	longfin anthias	**NE**		•	•	•		New species.
Pseudogramma australis	Randall & Baldwin, 1997	-			•				New species.
Pseudogramma polyacanthum	(Bleeker, 1856)	mottled soapfish	**NE**	•	•		•		
Variola louti	(Forsskål, 1775)	coral trout (Pitkern: fafaya)	**LC**	•	•	•	•		

Species	Authority	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
Family Kuhliidae (flagtails)									
Kulia marginata	(Cuvier, 1829)	dark-margined flagtail	**LR/ LC**		•	•	•		
Family Pseudochromidae (dottybacks)									
Pseudoplesiops revellei	Schultz, 1953	bearded dottyback		•					
Family Priacanthidae (bigeyes)									
Heteropriacanthus cruentatus	(Lacepède, 1801)	glasseye			•		•		
Family Cirrhitidae (hawkfishes)									
Amblycirrhitus bimacula	(Jenkins, 1903)	two-spotted hawkfish		•	•				
Amblycirrhitus wilhelmi	(Lavenberg & Yáñez, 1972)	hawkfish indet.		•	•	•			
Cirrhitops hubbardi	(Schultz, 1943)	hawkfish indet.		•	•	•			
Cirrhitus pinnulatus	(Forster in Bloch & Schneider, 1801)	stocky hawkfish			•	•			
Neocirrhites armatus	Castlenau, 1873	flame hawkfish		•	•				
Paracirrhites arcatus	(Cuvier, 1829)	arc-eye hawkfish		•	•	•			
Paracirrhites forsteri	(Bloch & Schneider, 1801)	freckled hawkfish			•	•	•		
Paracirrhites hemistictus	(Günther, 1874)	Half-spotted hawkfish		•	•	•	•		
Paracirrhites nisus	Randall, 1963	-		•					
Family Apogonidae (cardinalfishes)									
Apogon angustatus	(Smith & Radcliffe, 1911)	broadstripe cardinalfish		•	•				
Apogon caudicinctus	Randall & Smith, 1988	cardinalfish indet.			•				New species
Apogon kallopterus	Bleeker, 1856	irridescent cardinalfish		•	•				
Apogon taeniophorus	Regan, 1908	reef-flat cardinalfish		•	•		•		
Apogon sp.	-	cardinalfish indet.							Specimens passed to D.W. Greenfield for identification. No records given by Randall (1999) as to where this species was caught.
Apogon sp.	-	cardinalfish indet.			•				Undescribed species sent to T.H. Fraser (Randall, 1999).
Cercamia cladara	Randall & Smith, 1988	cardinalfish indet.		•	•				
Cheilodipterus macrodon	(Lacepède, 1801)	large-toothed cardinalfish			•				
Cheilodipterus quinquelineatus	Cuvier, 1828	five-lined cardinalfish					•		
Gymnapogon vanderbilti	(Fowler, 1938)	Vanderbilt's cardinalfish			•				
Gymnapogon sp.	-	-			•				Undescribed species.
Pseudamiops gracilicauda	(Lachner, 1953)	graceful-tailed cardinafish		•					
Family Echeneidae (remoras)									

Species	Authority	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
Phtheirichthys lineatus	(Menzies, 1791)	slender suckerfish			•			•	
Remora remora	(Linnaeus, 1758)	common remora						•	No record (from 1899) as to where this was caught.
Family Carangidae (jacks)									
Carangoides ferdau	(Forsskål, 1775)	bar jack			•	•	•		
Carangoides orthogrammus	(Jordan & Gilbert, 1881)	yellow-spotted trevally (Pitkern: ulwa)			•	•			
Caranx ignobilis	Forsskål, 1775	giant trevally		•		•	•		
Caranx lugubris	Poey, 1860	black jack (Pitkern: ulwa)		•		•	•		
Caranx melampygus	(Cuvier, 1833)	bluefin trevally		•	•	•	•		
Decapterus sp.	-	-		•					
Pseudocaranx dentex	(Bloch & Schneider, 1801)	silver trevally (Pitkern: ofe)		•	•	•			
Seriola lalandi	Valenciennes, 1833	yellowtail kingfish (Pitkern: kingie)			•	•	•		
Seriola rivoliana	Valenciennes, 1833	Almaco jack / longfin yellowtail					•		
Uraspis sp.	-	jack, indet.			•				Specimen probably now lost, pre-identification (Randall, 1999).
Family Coryphaenidae (dolphinfishes)									
Coryphaena hippurus	Linnaeus, 1758	common dolphinfish / mahi-mahi				•		•	
Family Lutjanidae (snappers)									
Aphareus furca	(Lacepède, 1802)	smalltooth jobfish		•	•	•			
Lutjanus bohar	(Forsskål, 1775)	twinspot snapper		•	•	•	•		
Lutjanus kasmira	(Forsskål, 1775)	bluelined snapper		•	•				
Lutjanus monostigma	(Cuvier, 1828)	onespot snapper			•				
Paracaesio sordidus	Abe & Shinohara, 1962	false fusilier snapper			•				
Family Caesionidae (fusiliers)									
Pterocaesio tile	(Cuvier, 1830)	bluestreak fusilier			•	•			
Family Lethrinidae (emperors)									
Gnathodentex aureolineatus	(Lacepède, 1802)	yellowspot emperor			•	•	•		
Lethrinus olivaceus	Valenciennes, 1830	longfaced emperor				•			
Monotaxis grandoculis	(Forsskål, 1775)	bigeye emperor		•	•	•	•		
Family Mugilidae (mullets)									
Neomyxus leuciscus	(Günther, 1871)	acute-jawed mullet		•	•	•	•		
Family Polynemidae (threadfins)									
Polydactylus sexfilis	(Valenciennes, 1831)	sixfeeler threadfin (Pitkern: moi)			•				

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Family Mullidae (goatfishes)		(Note that the Pitkern name for all goatfishes is be'ard).							
Mulloidichthys flavolineatus	(Lacepède, 1801)	yellowstripe goatfish		•	•	•	•		
Mulloidichthys vanicolensis	(Valenciennes, 1831)	yellowfin goatfish		•	•	•			
Parupeneus bifasciatus	(Lacepède, 1801)	two-barred goatfish		•	•	•	•		
Parupeneus ciliatus	(Lacepède, 1802)	white-lined goatfish			•				
Parupeneus cyclostomus	(Lacepède, 1801)	yellowsaddle goatfish		•	•	•	•		
Parupeneus multifasciatus	(Quoy & Gaimard, 1825)	multibarred goatfish		•	•	•	•		
Parupeneus pleurostigma	(Bennett, 1831)	sidespot goatfish			•		•		
Family Pempheridae (sweepers)									
Pempheris otaitensis	(Cuvier, 1831)	sweeper			•	•			
Family Kyphosidae (sea chubbs)									
Kyphosus bigibbus	Lacepède, 1802	drummer, chub (Pitkern: nanwi)		•	•	•	•		
Family Ephippidae (spadefishes)									
Platax sp.	-					•			Probably *P. orbicularis* (Irving *et al.*, 1995).
Family Chaetodontidae (butterflyfishes)									
Chaetodon auriga	Forsskål, 1775	threadfin butterflyfish	**LC**	•	•	•	•		
Chaetodon bennetti	Cuvier, 1831	bluelashed butterflyfish	**DD**						Listed by Palomares *et al.* (2011) but not by Randall (1999).
Chaetodon flavirostris	Günther, 1874	black butterflyfish	**LC**	•		•	•		
Chaetodon lineolatus	Cuvier, 1831	lined butterflyfish	**LC**						Listed by Palomares *et al.* (2011) but not by Randall (1999).
Chaetodon lunula	(Lacepède, 1802)	racoon butterflyfish	**LC**	•	•	•			
Chaetodon mertensii	Cuvier, 1831	Merten's butterflyfish	**LC**	•	•	•	•		
Chaetodon ornatissimus	Cuvier, 1831	ornate butterflyfish	**LC**	•	•	•	•		
Chaetodon pelewensis	Kner, 1868	dot-and-dash butterflyfish	**LC**	•	•	•	•		
Chaetodon quadrimaculatus	Gray, 1831	fourspot butterflyfish	**LC**	•	•	•	•		
Chaetodon reticulatus	Cuvier, 1831	reticulated butterflyfish	**DD**		•	•	•		
Chaetodon smithi	Randall, 1975	Smith's butterflyfish *(Pitkern: Yellow latus)*	**LC**		•				New species. Due to its bold colouration, limited distribution and the difficulty of acquiring live specimens, this species is known to be a target for aquarium fish collectors.
Chaetodon ulietensis	Cuvier, 1831	Pacific double-saddled butterflyfish	**LC**				•		Listed by Randall (1999) but not by Palomares *et al.* (2011). The commonest butterflyfish at Ducie.
Chaetodon unimaculatus	Bloch, 1787	teardrop butterflyfish	**LC**		•	•	•		
Forcipiger flavissimus	Jordan & McGregor, 1898	long-nosed butterflyfish	**LC**		•	•	•		
Forcipiger longirostris	(Broussonet, 1782)	big long-nosed butterflyfish	**LC**		•	•			

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Hemitaurichthys multispinosus	Randall, 1975	many-spined butterflyfish	**LC**		•				New species. Endemic.
Hemitaurichthys polylepis	(Bleeker, 1857)	pyramid butterflyfish	**LC**		•				
Heniochus chrysostomus	Cuvier, 1831	pennant bannerfish	**LC**	•	•				
Heniochus monoceros	Cuvier, 1831	masked bannerfish	**LC**	•		•			
Family Pomacanthidae (angelfishes)									
Centropyge flavissima	(Cuvier, 1831)	lemonpeel angelfish	**LC**	•	•	•	•		
Centropyge heraldi	Woods & Schultz, 1953	Herald's angelfish	**LC**	•	•				
Centropyge hotumatua	Randall & Caldwell, 1973	Hotumatua's angelfish	**LC**	•	•	•	•		New species.
Centropyge loricula	(Günther, 1874)	flame angelfish	**LC**	•	•	•	•		
Genicanthus spinus	Randall, 1975	Pitcairn angelfish	**LC**		•		•		New species.
Genicanthus watanabei	(Yasuda & Tominaga, 1970)	Watanabe's angelfish	**LC**		•	•			
Pomacanthus imperator	(Bloch, 1787)	emperor angelfish	**LC**		•	•			
Family Pomacentridae (damselfishes)									
Abudefduf sordidus	Forsskål, 1775	black-spot sergeant (Pitkern: mummy)			•		•		
Chromis acares	Randall & Swerdloff, 1973	-		•					
Chromis agilis	Smith, 1960	bronze reef chromis		•	•	•	•		
Chromis bami	Randall & McCosker, 1992	Polynesian chromis		•		•			New species.
Chromis pamae	Randall & McCosker, 1992	chromis indet.		•	•	•			New species.
Chromis vanderbilti	(Fowler, 1941)	Vanderbilt's chromis			•		•		
Chromis xanthura	(Bleeker, 1854)	black chromis		•	•				
Chrysiptera galba	(Allen & Randall, 1974)	demoiselle indet.		•	•	•	•		New species.
Dascyllus flavicaudus	H. Randall & Allen, 1977	yellow-tailed dascyllus		•	•	•			New species.
Dascyllus reticulatus	(Richardson, 1846)	reticulated dascyllus			•				
Dascyllus trimaculatus	(Rüppel, 1829)	three-spot dascyllus			•				
Plectroglyphidodon imparipennis	Valliant & Sauvage, 1875)	brighteye damsel			•	•	•		
Plectroglyphidodon johnstonianus	Fowler & Ball, 1924	Johnston damsel		•	•	•			
Plectroglyphidodon leucozona	(Bleeker, 1859)	whiteband damsel			•	•			
Plectroglyphidodon Phoenixensis	(Schultz, 1943)	Phoenix damsel		•		•			

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Pomachromis fuscidorsalis	Allen & Randall, 1974	Tahiti damselfish		•	•	•	•		New species.
Stegastes emeryi	(Allen & Randall, 1974)	Emery's gregory		•	•	•	•		New species
Stegastes fasciolatus	(Ogilby, 1889)	Pacific gregory		•	•	•	•		
Family Labridae (wrasses)									
Anampses caeruleopunctatus	Rüppell, 1828	blue-spotted wrasse	**LC**		•	•	•		
Anampses femininus	Randall, 1972	feminine wrasse	**LC**	•	•				New species
Anampses twistii	Bleeker, 1856	Yellow-breasted wrasse			•				
Bodianus anthioides	(Bennett, 1832)	lyretail hogfish	**LC**			•			
Bodianus axillaris	(Bennett, 1831)	axilspot hogfish	**LC**	•	•	•			
Bodianus bilunulatus	(Lacepède, 1801)	saddleback hogfish	**LC**			•	•		
Cheilinus undulatus	Rüppell, 1835	humphead wrasse	**EN**			•			Endangered status worldwide due to overfishing. Only one individual seen by Irving *et al.* (1995) at 30 m depth at Henderson.
Cheilio inermis	(Forsskål, 1775)	cigar wrasse			•				
Cirrhliabrus scottorum	Randall & Pyle, 1989	Scott's wrasse	**LC**	•	•				New species
Coris aygula	Lacepède, 1801	clown coris (Pitkern: miti)	**LC**	•	•	•	•		
Coris sp.	-	coris		•	•				A new species to be described by Randall (1999).
Gomphosus varius	Lacepède, 1801	bird wrasse	**LC**	•	•	•	•		
Halichoeres margaritaceus	(Valenciennes, 1839)	weedy surge wrasse	**LC**	•	•				
Halichoeres marginatus	Rüppell, 1835	dusky wrasse	**LC**	•					
Halichoeres melasmapomus	Randall, 1980	black-ear wrasse	**LC**		•				New species
Halichoeres trimaculatus	(Quoy & Gaimard, 1834)	three-spot wrasse	**LC**				•		
Hemigymnus fasciatus	(Bloch, 1792)	barred thicklip wrasse	**LC**		•	•	•		
Hologymnosus annulatus	(Lacepède, 1801)	ring wrasse	**LC**		•				
Labroides bicolor	Fowler & Bean, 1928	bicolor cleaner wrasse	**LC**	•	•				
Labroides dimidiatus	(Valenciennes, 1839)	bluestreak cleaner wrasse	**LC**	•	•	•	•		
Labroides rubrolabiatus	Randall, 1958	redlip cleaner wrasse	**LC**	•	•	•	•		
Macropharyngodon meleagris	(Valenciennes, 1839)	leopard wrasse	**LC**	•	•		•		
Novaculichthys taeniourus	(Lacepède, 1801)	rockmover wrasse	**LC**	•					
Oxycheilinus unifasciatus	(Streets, 1877)	ringtail wrasse	**LC**		•		•		

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Oxycheilinus sp.	-					•			An undescribed species awaiting naming by J.E. Randall, M. Westneat and M.F. Gomon (Randall, 1999).
Pseudocheilinus octotaenia	Jenkins, 1901	eightline wrasse	**LC**	•	•	•	•		
Pseudocheilinus tetrataenia	Schultz, 1960	fourline wrasse	**LC**	•	•	•	•		
Pseudocheilinus citrinus	Randall, 1999	wrasse indet.	**LC**		•	•			Pitcairn: type locality
Pseudocheilinus ocellatus	Randall, 1999	tailspot wrasse	**LC**		•				New species
Pseudojuloides atavai	Randall & Randall, 1981	Polynesian wrasse	**DD**	•	•		•		New species
Pseudolabrus fuentesi	(Regan, 1913)	wrasse indet. (Pitkern: Archie)	**LC**		•				
Stethojoulis bandanensis	(Bleeker, 1851)	red-shoulder wrasse	**LC**	•	•		•		
Thalassoma heiseri	Randall & Edwards, 1984	wrasse indet.	**LC**	•	•	•	•		Pitcairn: type locality
Thalassoma lutescens	(Lay & Bennett, 1839)	sunset wrasse (Pitkern: whistling daughter)	**LC**	•	•	•	•		
Thalassoma purpureum	(Forsskål, 1775)	surge wrasse	**LC**	•	•	•	•		
Thalassoma trilobatum	(Lacepède, 1801)	Christmas wrasse (Pitkern: hu'u'u)	**LC**	•	•	•			
Wetmorella nigropinnata	(Seale, 1901)	sharpnose wrasse	**LC**	•					
Xyrichthys pavo	Valenciennes, 1839	blue razorfish			•	•			
Family Scaridae (parrotfishes)									
Calotomus carolinus	(Valenciennes, 1839)	stareye parrotfish	**LC**		•				
Chlorurus frontalis	(Valenciennes, 1839)	tan-faced parrotfish	**LC**	•	•				
Chlorurus microrhinus	(Bleeker, 1854)	steephead parrotfish	**-**	•	•	•	•		
Chlorurus sordidus	(Forsskål, 1775)	daisy parrotfish	**LC**	•			•		
Leptoscarus vaigiensis	(Quoy & Gaimard, 1824)	seagrass parrotfish	**LC**		•				
Scarus altipinnis	(Steindachner, 1879)	filament-fin parrotfish	**LC**		•				
Scarus forsteni	(Bleeker, 1861)	rainbow parrotfish	**LC**	•	•	•	•		
Scarus frenatus	Lacepède, 1802	bridled parrotfish	**LC**				•		
Scarus ghobban	Forsskål, 1775	bluebarred parrotfish	**LC**				•		
Scarus longipinnis	Randall & Choat, 1980	highfin parrotfish (Pitkern: 'uhu)	**LC**		•	•			New species. Now recognised as the most abundant parrotfish on coral sea atolls.
Family Pinguipedidae (Sand Perches)									
Parapercis millepunctata	(Günther, 1860)	black-dotted sandperch	**-**		•				
Parapercis multiplicata	Randall, 1984	Multi-spotted sandperch	**-**		•				
Parapercis schauinslandii	(Steindachner, 1900)	Red-spotted sandperch	**-**		•				

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Family Tripterygiidae (triplefins)									
Enneapterygius ornatus	Fricke, 1997	Henderson triplefin				•			New species. Endemic to Pitcairn.
Enneapterygius pyramis	Fricke, 1994	pyramid triplefin		•	•				
Norfolkia thomasi	Whitley, 1964	?			•				Not listed by Palomeres *et al.* (2011).
Family Creediidae (sand burrowers)									
Chalixodytes tauensis	Schultz, 1943	saddled sand burrower	**LC**		•				
Crystallodytes cookei enderburyensis	Schultz, 1943	Cookie's sand burrower	**-**		•				
Limnichthys donaldsoni	Schultz, 1940	Donaldson's sand burrower	**-**		•				
Family Ammodytiidae (sand lances)									
Ammodytoides leptus	Randall & Collette, 2000	Pitcairn sand lance			•				New species, endemic to Pitcairn. Listed by Randall (1999) as *Ammodytes* sp.
Family Blenniidae (blennies)									
Alticus sp.	-	-			•	•			New species to be described by J.T. Williams (Randall, 1999).
Blenniella gibbifrons	(Quoy & Gaimard, 1824)	picture rockskipper			•	•	•		
Blenniella paula	(Bryan & Herre, 1903)	Blue-dashed rockskipper					•		
Cirripectes alboapicalis	(Ogilby, 1899)	blenny indet.		•	•	•	•		
Cirripectes quagga	(Fowler & Ball, 1924)	squiggly blenny				•			
Cirripectes variolosus	(Valenciennes, 1836)	Red-speckled blenny			•	•	•		
Entomacrodus caudofasciatus	(Regan, 1909)	rockskipper indet.			•	•	•		
Entomacrodus niuafoouensis	(Fowler, 1932)	tattoo-chin rockskipper			•	•			
Entomacrodus rofeni	Springer, 1967	-				•	•		
Entomacrodus sealei	Bryan & Herre, 1903	Seale's rockskipper			•	•			
Entomacrodus striatus	(Valenciennes, 1836)	Black-spotted rockskipper			•	•	•		
Exallias brevis	(Kner, 1968)	leopard blenny				•			
Istiblennius edentulus	(Bloch & Schneider, 1801)	rippled rockskipper			•				
Plagiotremus tapeinosoma	(Bleeker, 1857)	piano fangblenny		•	•	•			
Praealticus caesius	(Seale, 1906)	-			•				
Rhabdoblennius ellipes	(Jordan & Starks, 1906)	barred-chin blaenny			•	•	•		
Stanulus seychellensis	Smith, 1959	Seychelles blenny				•			
Family Gobiesocidae (clingfishes)									
Lepadichthys frenatus	Waite, 1904	-		•	•				

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Pherallodus indicus	(Weber, 1913)	-				•			
Family Callionymidae (dragonets)									
Synchiropus ocellatus	(Pallas, 1770)	ocellated dragonet		•	•				
Family Gobiidae (gobies)									
Bathygobius cocosensis	(Bleeker, 1854)	Cocos goby			•				
Bathygobius cotticeps	(Steindachner, 1879)	cheekscaled frill-goby			•				
Eviota albolineata	Jewett & Lachner, 1983	spotted fringefin goby					•		
Gnatholepis cauerensis	(Bleeker, 1853)	eyebar goby		•	•				Likely to be a new subspecies (Randall, 1999).
Gobiodon sp.	-	-				•			
Hetereleotris sp.	-	-		•					
Paragobiodon sp.	-	goby indet.		•	•				
Priolepis squamogena	Winterbottom & Burridge, 1989	goby indet.			•		•		Reported from Ducie by Rehder & Randall (1975) as *Quisquilius cinctus*.
Priolepis semidoliatus	(Valenciennes, 1830)	goby indet.			•		•		
Trimmatom sp.	-	goby indet.		•	•	•	•		An undescribed species.
Family Microdesmidae (dartfishes and wormfishes)									
Nemateleotris magnifica	Fowler, 1938	fire dartfish		•	•	•			
Ptereleotris evides	(Jordan & Hubbs, 1925)	scissortail dartfish		•					
Family Acanthuridae (surgeonfishes)									
Acanthurus achilles	(Shaw, 1803)	Achilles tang				•	•		
Acanthurus guttatus	Bloch & Schneider, 1801	whitespotted surgeonfish			•	•			
Acanthurus leucopareius	(Jenkins, 1903)	whitebar surgeonfish (Pitkern: Letas)		•	•	•	•		
Acanthurus nigrofuscus	(Forsskål, 1775)	brown surgeonfish			•	•			
Acanthurus nigroris	Valenciennes, 1835	bluelined surgeonfish				•			
Acanthurus nubilus	(Fowler & Bean, 1929)	bluelined surgeonfish			•	•	•		
Acanthurus thompsoni	(Fowler, 1923)	Thompson's surgeonfish		•	•	•	•		
Acanthurus trigostegus	(Linnaeus, 1758)	convict surgeonfish		•	•	•	•		
Ctenochaetus hawaiiensis	Randall, 1955	Hawaiian surgeonfish			•	•	•		
Ctenochaetus striatus	(Quoy & Gaimard, 1825)	striped bristletooth		•	•	•			
Ctenochaetus strigosus	(Bennett, 1828)	goldring britletooth		•	•	•	•		
Naso brevirostris	(Cuvier, 1829)	spotted unicornfish				•	•		
Naso caesius	Randall & Bell, 1992	grey unicornfish			•	•			

Species	Authority	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
Naso hexacanthus	(Bleeker, 1855)	blacktongue unicornfish			•	•	•		
Naso lituratus	(Forster in Bloch & Schneider, 1801)	orangespine unicornfish		•	•				
Naso unicornis	(Forsskål, 1775)	bluespine unicornfish		•	•	•			
Zebrasoma rostratum	(Günther, 1873)	longnose surgeonfish			•		•		
Zebrasoma scopas	(Cuvier, 1829)	brushtail tang			•	•			
Zebrasoma veliferum	(Bloch, 1797)	sailfin tang			•	•			
Family Zanclidae (Moorish idol family)									
Zanclus cornutus	(Linnaeus, 1758)	Moorish idol		•	•	•	•		
Family Siganidae (rabbitfishes)									
Siganus argenteus	(Quoy & Gaimard, 1825)	forktail rabbitfish			•				
Family Trichiuridae (cutlassfishes)									
Benthodesmis sp.	-	-				•			
Family Sphyraenidae (barracudas)									
Sphyraena helleri	Jenkins, 1901	Heller's barracuda		•	•	•			
Family Gempylidae (snake mackerels)									
Gempylus sp.	-	-					•		
Family Scombridae (tunas and mackerels)									
Acanthocybium solandri	(Cuvier, 1831)	wahoo (Pitkern: kuta)	**LC**	•?	•	•?	•?	•	Reportedly occurs at each island (Steve Christian, *pers. comm.*) although no documented evidence at Oeno, Henderson or Ducie.
Katsuwonus pelamis	(Linnaeus, 1758)	skipjack tuna	**LC**		•			•	
Gymnosarda unicolor	(Rüppell, 1836)	dogtooth tuna	**NE**	•	•	•	•?	•	Reportedly occurs at each island (Steve Christian, *pers. comm.*), although no documented evidence at Ducie.
Sarda chiliensis lineolata	(Girard, 1858)	Pacific bonito	**LC**	•?	•?	•?	•?	•?	Featured on the 2007 'Ocean Fish' Pitcairn Islands stamp issue and reportedly occurs at each island (Steve Christian, *pers. comm.*). Not listed by Randall (1999) or the SeaLifeBase list (Palomares et al., 2011).
Thunnus albacares	(Bonnaterre, 1788)	yellowfin tuna (Pitkern: yellow-tail)	**LR/ LC**	•?	•	•?	•?	•	Reportedly occurs at each island (Steve Christian, pers. comm.) although no documented evidence at Oeno, Henderson or Ducie.
Thunnus obesus	(Lowe, 1839)	bigeye tuna	**VU**		•			•	
Thunnus alalunga		albacore	**NT**					•	Sea Around Us Project, 2010. In the Eastern Pacific, this species occurs as two populations: from British Columbia to the tip of Baja; and from southern Peru to southern Chile. Both of these populations are trans-Pacific.
Family Xiphidae (swordfishes)									
Xiphias gladius	Linneaus, 1778	swordfish	**LC**					•	Record derived from 2012 offshore fishery licence application.
Family Istiophoridae (billfishes)									

Species	Authority	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
Makaira mazara	(Jordan & Snyder, 1901)	blue marlin	**NE**					•	Sea Around Us Project, 2010.
Tetrapturus audax	(Philippi, 1887)	striped marlin	**NE**					•	Sea Around Us Project, 2010.
Family Bothidae (left-eye flounders)									
Bothus mancus	(Broussonet, 1782)	peacock flounder	**LC**	•	•	•	•		
Family Samaridae (slender flounders)									
Samariscus triocellatus	Woods, 1960	three-spot righteye flounder		•					
Family Ballistidae (triggerfishes)									
Balistoides viridescens	(Bloch & Schneider, 1801)	moustache triggerfish			•	•			
Pseudobalistes fuscus	(Bloch & Schneider, 1801)	blue or rippled triggerfish		•	•		•		
Rhinecanthus aculeatus	(Linnaeus, 1758)	Picasso triggerfish		•		•			
Rhinecanthus lunula	Randall & Steene, 1983	halfmoon picassofish			•	•	•		New species.
Rhinecanthus rectangulus	(Bloch & Schneider, 1801)	wedge picassofish		•	•	•	•		
Sufflamen bursa	(Bloch & Schneider, 1801)	scythe triggerfish		•	•	•	•		
Sufflamen fraenatus	(Latreille, 1804)	masked triggerfish		•		•			
Xanthichthys mento	(Jordan & Gilbert, 1882)	crosshatch triggerfish (Pitkern: pick-pick)			•				
Family Monacanthidae (filefishes)									
Aluterus scriptus	(Osbeck, 1765)	scribbled filefish			•	•			
Cantherines dumerilii	(Hollard, 1854)	barred filefish			•	•	•		
Cantherines pardalis	(Rüppell, 1837)	wire-net filefish			•	•	•		
Family Ostraciidae (trunkfishes)									
Ostracion meleagris	Shaw, 1796	whitespotted boxfish				•			
Family Tetraodontidae (pufferfishes)									
Arothron meleagris	(Lacepède, 1798)	guineafowl puffer		•	•	•	•		
Canthigaster janthinoptera	(Bleeker, 1855)	honeycomb toby		•	•				
Family Diodontidae (porcupinefishes)									
Diodon holocanthus	Linnaeus, 1758	balloonfish		•	•	•			
Diodon hystrix	Linnaeus, 1758	porcupinefish		•	•		•		
Family Molidae (molas)									
Ranzania laevis	(Pennant, 1776)	slender sunfish				•			Dropped on land by fairy terns at Henderson (Irving, 1995).

Species	Authority	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
REPTILIA (Turtles)		Refs. Brooke, 1995c; Palomares et al., 2011.							
Family Cheloniidae									
Chelonia mydas	(Linnaeus, 1758)	green turtle	**EN**			•		•	Estimated breeding population of 10 individuals at Henderson in 1991/92 (Brooke, 1995c).
Eretmochelys imbricata	(Linnaeus, 1766)	hawksbill turtle	**CR**					•	Listed by Palomares *et al.* (2011).
AVES (Seabirds)		Refs. Brooke, 1995a & b; Palomares et al., 2011; additional offshore observations by Gaskin in 2006 & Taylor in 2010 (see also Table 17).							
Family Ardeidae									
Egretta sacra	(Gmelin, 1789)	reef heron	**LC**	•	•			•	Brooke (1995a) reports seeing a number of individuals at Oeno and Henderson, but with no evidence of breeding.
Family Charadriidae									
Pluvialis fulva	(Gmelin, 1789)	Pacific golden plover	**NE**	•	•			•	Brooke (1995a) reports a few non-breeding birds being seen at Oeno and Henderson.
Pluvialis squatarola	(Linnaeus, 1758)	grey plover	**NE**		•			•	Brooke (1995a) reports a single bird being seen on Henderson in March 1991.
Family Fregatidae									
Fregata minor	(Gmelin, 1789)	great frigatebird (Pitkern: hawk)	**LC**	•		•	•	•	Brooke (1995a) estimated the breeding population on Oeno to be about 100 pairs; on Ducie 10–20 pairs; and on Henderson 100 pairs. The species does not breed on Pitcairn. Also observed offshore.
Family Laridae									
Anous minutus	Boie, 1844	black noddy	**LC**	•	•	•	•	•	Brooke (1995a) reports that, although small numbers are present on Ducie, the species probably does not breed there. For the other three islands, he estimated the numbers of breeding pairs to be: Oeno (100); Henderson (100); Pitcairn (20).
Anous stolidus	(Linnaeus, 1758)	brown noddy	**LC**	•	•	•	•	•	Williams (1960) reported that breeding takes place on all four islands. Brooke (1995a) confirmed numbers of breeding pairs in 1991 to be: Ducie (200); Oeno (800); Henderson (100); Pitcairn (100).
Gygis alba	(Sparrman, 1786)	fairy tern	**LC**	•	•	•	•	•	Brooke (1995a) estimates the breeding populations (pairs) among the four islands to be: Pitcairn (a few hundred); Oeno (several hundred and possibly above 1,000); Ducie (about 5,000); Henderson (several thousands and possibly above 10,000).
Larus atricilla	(Linnaeus, 1758)	laughing gull	**LC**		•				One found dead at Down Rope, Pitcairn in late March 1992 (Wragg, 1994).
Onychoprion fuscatus	Linnaeus, 1766	sooty tern	**LC**	•			•	•	Listed as Sterna fuscata by Brooke (1995a). Brooke (1995a) notes that breeding took place on Ducie (100 chicks observed in late October 1991) and Oeno (two nest sites found in September 1991).
Procelsterna cerulea	(Bennett, 1840)	blue-grey noddy	**LC**		•	•	•	•	Brooke (1995a) supposes that around 10 pairs nest on inaccessible ledges at Henderson and Pitcairn, but breeding not confirmed. At Ducie, 15 breeding pairs were noted in late-October 1991. Also observed offshore.
Family Phaethontidae									
Phaethon lepturus	Daudin, 1802	white-tailed tropicbird	**LC**	•		•		•	Not seen during the 1991/2 expedition, but reported by Williams (1960) as a rare visitor to Henderson and Oeno. Observed offshore in June 2006.

Species	Authority	Common name (if known)	IUCN code	Oen	Pit	Hen	Duc	Off-shore	Notes
Balaenoptera acutorostrata	Lacépède, 1804	common or dwarf minke whale	**LC**					•	This species has only been recognised as separate from the Antarctic minke whale B. bonaerensis in the past 15 years.
Megaptera novaeangliae	(Borowski, 1781)	humpback whale	**EN**		•			•	While most humpback populations worldwide have been assessed as being of 'least concern', a distinct Oceania subpopulation (breeding stock F2) is now recognised, which is endangered. Regularly seen nearshore off Pitcairn from June–September (Horswill 2007).
Balaenoptera edeni	Anderson, 1879	Bryde's whale (also known as Eden's whale)	**DD**					•	Within the past 20 years, this species of baleen whale has been classified as a 'complex' of a number of species, as there has been confusion regarding its true identification by taxonomists. The 'ordinary' Bryde's whale (the species given here) is known to have a distribution throughout the eastern tropical Pacific and across the South Pacific down to about 35°S.
Family Delphinidae									
Delphinus delphis	Linnaeus, 1758	(short-nosed) common dolphin	**LC**					•	
Grampus griseus	(G. Cuvier, 1812)	Risso's dolphin	**LC**					•	
Lagenodelphis hosei	Fraser, 1956	Fraser's dolphin	**LC**					•	
Stenella attenuata	(Gray, 1846)	pantropical spotted dolphin	**LC**					•	
Stenella coeruleoalba	(Meyen, 1833)	striped dolphin	**LC**					•	
Steno bredanensis	(G. Cuvier in Lesson, 1828)	rough-toothed dolphin	**LC**					•	
Feresa attenuata	Gray, 1874	pygmy killer whale	**DD**					•	
Globicephala macrorhynchus	Gray, 1846	short-finned pilot whale	**DD**					•	
Orcinus orca	(Linnaeus, 1758)	killer whale	**DD**					•	
Pseudorca crassidens	(Owen, 1846)	false killer whale	**DD**					•	
Stenella longirostris	(Gray, 1828)	spinner dolphin	**DD**					•	
Family Kogiidae									
Kogia breviceps	(de Blainville, 1838)	pygmy sperm whale	**DD**					•	
Kogia sima	(Owen, 1866)	dwarf sperm whale	**DD**					•	
Family Physeteridae									
Physeter macrocephalus	Linnaeus, 1758	sperm whale	**VU**					•	
Family Ziphiidae									
Mesoplodon densirostris	(de Blainville, 1817)	Blainville's beaked whale	**DD**					•	
Ziphius cavirostris	Cuvier, 1823	Cuvier's beaked whale	**LC**				•	•	Carcass found on reef flat at Ducie, Nov 1991 (R.A. Irving, pers. obs.)

Robert Irving

Robert is recognised as being the UK's leading authority on the marine life of the Pitcairn Islands. His first visit to Pitcairn was in 1991 when he took part in the Sir Peter Scott Commemorative Expedition to the Pitcairn Islands. The expedition centred on investigating the terrestrial and marine ecology of Henderson Island, with over 25 scientists from all over the world taking part during its 15 month lifespan. He and his colleague Jo Jamieson spent a very enjoyable 3½ months 'marooned' on Henderson (with five fellow scientists), diving all around the island and recording, collecting and taking over 2,500 underwater photographs. They also managed to dive around Oeno and Ducie. Although he spent a week on Pitcairn too, it wasn't until 2003 that he managed to dive around the island, when he acted as scientific advisor to a 3-week long UK Joint Services diving expedition. His third visit to Pitcairn was in 2011 when he and Terry Dawson spent 10 days on the island as part of a UK Darwin Initiative project investigating the management of the island's nearshore waters.

Robert is based in Devon in SW England where he runs his own marine environmental consultancy firm, Sea-Scope. Most of his time is spent on UK marine conservation projects, though over the years he has undertaken projects in the Turks & Caicos Islands, Tanzania, Saudi Arabia and the United Arab Emirates. He has also taken part in diving expeditions to Indonesia, Ascension Island and Sri Lanka. Robert has written numerous articles on marine conservation issues, over 40 scientific reports papers, as well as two books.

Terry Dawson

Professor Terry Dawson holds the SAGES (Scottish Alliance for the Geosciences, Environment and Society) Chair in Global Environmental Change in the School of the Environment, University of Dundee. His earlier career included academic appointments at the Universities of Oxford (1998-2004), Edinburgh (2004-2007) and Southampton (2007-2011). His research interests are very broad, but they mainly focus on environmental change, ecology and biodiversity conservation with a special interest in island biogeography. His passion for the marine environment began as a volunteer member of the 1985 underwater survey of Hong Kong shortly after qualifying as a British Sub-Aqua Club Advanced Diver whilst living there. This was followed up with a diving expedition to the Solomon Islands, Papua New Guinea and Coral Sea in 1986. Since then, Terry has undertaken a wide variety of projects in Borneo, Galapagos Islands, Seychelles, Mozambique, Madagascar and Cuba. His first visit to Pitcairn Island was in 2010 which was followed up with a second visit the following year as part of a UK Darwin Initiative project. He is a Fellow of the Royal Geographical Society and has published over 120 scientific manuscripts, books and reports to date.