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Introduction

Macquarie Island, a speck of land in the huge Southern Ocean, is a wild and beautiful place, windswept and lashed by stormy seas. It is of immense importance to the multitudes of seals and birds which, although they spend much of each year at sea, come ashore on the island to breed.

In addition to its intrinsic beauty, appealing to all who visit, the island is of immense interest to a variety of scientists. For geologists, it provides a unique example of seafloor material raised above sea level to become dry land in mid-ocean. The island has never been attached to any other land mass. To biologists, its plants and animals are of interest both as successful survivors of long-distance dispersal to the island and as tolerators of the harsh subantarctic climate. For meteorologists, climatologists and physicists, the island provides one of a very few land-based stations for monitoring southern high latitude climatic and atmospheric phenomena. It is of particular interest to ionospheric physicists since it is close to the southern auroral zone, and its geographic latitude is much less than its magnetic latitude.

Macquarie Island is one of six subantarctic islands or island groups: Macquarie Island, south of the Tasman Sea; South Georgia, south of the Atlantic Ocean; the Prince Edward Islands (Marion and Prince Edward), Iles Crozet, Iles Kerguelen, and the Macdonald Islands (Heard and Macdonald), south of the Indian Ocean (Figure 1.1).

All are oceanic islands, far from continental land masses. Their climates are strongly influenced by the Southern Ocean which surrounds them. All are close to the Antarctic convergence, an important oceanographic boundary where cold water from the ocean to the south meets warmer water from the north.

Macquarie Island, Marion Island, Prince Edward Island and Iles Crozet lie to the north of the Antarctic convergence; South Georgia, Heard Island and Macdonald Island lie to the south; Iles Kerguelen straddle it. All subantarctic islands experience cool, wet, windy conditions, but those to
Figure 1.1. Antarctica and the Southern Ocean, showing the location of subantarctic islands and Antarctic convergence. Based on the map of Antarctica and adjacent continents (Division of National Mapping, Australia, 1973).
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Figure 1.2. Macquarie Island, showing places named in text. Based on map of Macquarie Island, Tasmania (Division of National Mapping, Australia, 1971). See also Figures 3.6, 7.3.
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the south of the Antarctic convergence are somewhat cooler than those to the north. All experience considerable variation in daylight hours between summer and winter.

North of the subantarctic islands lie cool temperate oceanic islands; Auckland, Campbell, Antipodes, Snares and Bounty Islands in the New Zealand region; Tristan da Cunha, Nightingale, Inaccessible and Gough Islands in the southern Atlantic Ocean; Iles Amsterdam and Iles St Paul in the southern Indian Ocean. Well to the south lie the Antarctic continent and a number of Antarctic islands: Scott Island, Peter I Øya and the Balleny Islands south of the Pacific Ocean; the South Shetlands, South Orkneys, South Sandwich Islands and Bouvetøya south of the Atlantic Ocean.

Various systems of classifying these southern oceanic islands have been used, some based on latitudinal, some on climatic, some on vegetational criteria. A number of such systems were reviewed by Pickard & Seppelt (1984). Longton (1988) has proposed a series of vegetation zones for both north and south polar regions in which the islands, grouped here as subantarctic, would occupy what he has called a cool Antarctic zone.

The location of Macquarie Island is shown on maps of Antarctica and surrounding regions (e.g. Division of National Mapping, Australia, 1978). The island itself is as yet not well mapped in detail. The currently used topographic map of the island (Division of National Mapping, Australia, 1971) is acknowledged to have serious shortcomings (Berkery & Pritchard, 1987). The Tasmanian Lands Department is gradually conducting surveys which, when suitable aerial photography becomes available, will enable the preparation of a more accurate topographic map.

Names for places on the island are subject to approval by the Nomenclature Board of Tasmania, although a number of additional names are in use which are as yet unofficial. Figure 1.2, showing names used in the text, is based on the 1 : 50 000 topographical map (Division of National Mapping, Australia, 1971).
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Discovery and human occupation

Macquarie Island, with its sea stacks, reefs and attendant islets to north and south, rises from the Southern Ocean about 1000 km south-east of Tasmania in the path of almost incessant strong westerly winds of the ‘Furious Fifties’ (Figure 1.1). Cold, wet and windy, a Nature Reserve under the control of the Tasmanian government, the island is a hauling-out and breeding refuge for southern elephant seals, a growing population of fur seals (Chapter 9) and hundreds of thousands of penguins and other seabirds. The island’s wildlife is protected. This was not always so. For over a century the island’s shores were a slaughterhouse during a period when the mammals and birds of the Southern Ocean were pursued for furry skins, oil-yielding blubber fat, whalebone and penguin oil. Unlike some of the larger subantarctic islands such as South Georgia, Macquarie Island was never a base for whaling. Its coast offers no safe protected anchorages for land-based whaling ships and factories or even modern-day shipping (Figure 2.6).

Discovery and exploitation

Macquarie Island’s recorded history began in 1810 when the Perseverance, a sealing ship out of Sydney in the colony of New South Wales, was blown off course during a voyage to sealing grounds on islands south of New Zealand; its crew chanced upon this previously unknown island whose shingle beaches were littered with fur seals and ‘sea elephants’ (southern elephant seals). A gang of men was put ashore to harvest fur seal pelts, while the Perseverance returned to Sydney for provisions and all-important supplies of salt for treating the pelts. A hundred years of commercial exploitation of Macquarie Island’s marine mammals and penguins had begun.

The Perseverance’s crew may not have been the first humans to set foot on Macquarie Island. The Sydney Gazette of 5 January 1811 published an
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account of the island by Captain Smith of the American sealing ship *Aurora*:

Captain Smith saw several pieces of wreck of a large vessel on this island, apparently very old and high up in the grass, probably the remains of the ship of the unfortunate de la Perouse. (Cumpston, 1968: 15)

Mawson, too, referred to the wreck:

Though the *Perseverance* was the first vessel to report the existence of Macquarie Island she was not the first to reach its shores, for the sealing gang left ashore by Hasselborough found portions of wreckage of a large vessel of ancient design, and apparently long cast up, high amongst the tussock-grass above the shore on the west coast. No clue was obtained as to the origin of the vessel, nor was there any indication of former occupation of the island. (Mawson, 1943: 12)

Mawson’s description of the ‘ancient design’ of the wreck on the island’s west coast is interesting. We have been unable to find any reason for his decision that the vessel’s design was ‘ancient’, nor what he actually meant by the term. The wreck’s position could suggest a ship rounding the Cape of Good Hope only to be storm-driven onto Macquarie Island’s west coast. It could represent either a hulk driven ashore or a shipwreck. If the latter, any survivors would have led miserable lives.

Sea surface currents and ocean drift in the Macquarie Island–New Zealand region are complex and the wreck may have arrived on the island’s west coast from almost any direction. The wreck’s origin will never be known as the relics which may have yielded clues to modern archaeologists subsequently disappeared – possibly burnt for firewood (Cumpston, 1968: 15).

The sealers of the *Perseverance* and other sealing ships (it being difficult to keep secret the location of islands with fur seal populations) were efficient. Fur seals were effectively wiped out on the island within a decade. So ruthless was the onslaught that even the type(s) of fur seal originally present on the island (Chapter 9) is now unknown.

With fur seals gone from Macquarie Island, at least as a commercial proposition, hunters turned to producing oil from blubber of southern elephant seals and, later, the fat of penguins. In a world where animal fats and oils lit houses, formed a base for paints and acted as lubricants, there was a steady and remunerative demand for seals and penguins rendered down to fit neatly into standardised barrels.

Eventually the production of oil from Macquarie Island’s southern elephant seals and penguins ceased. Rusting try-pots, digesters and boilers
now stand on the island’s shores surrounded by distant descendants of some of the animal populations fed through them. The men and small ships involved in hunting for pelts and oil have gone, leaving behind names on the island map, a few graves, relics and shipwrecks (Figures 2.1, 2.2).

They also left behind additions to the island’s original animal and plant life: mice, black rats, cats, wekas (Figure 2.3), rabbits and possibly three plant species. Wekas and rabbits were deliberately introduced. The island must be one of the few places in the world where black rats can be studied in the absence of competition from brown rats. The deliberate or accidental introduction of alien animal species led to extinction of two endemic birds: a flightless rail and a parakeet.

A very comprehensive history of Macquarie Island and the personalities involved in exploiting its animal populations from the time of discovery until its eventual declaration as a sanctuary in 1933 is given by Cumpston (1968).

**Early scientific visitors**

Macquarie Island’s isolated geographical position meant that scientific interest in it developed slowly. Exploring expeditions from various nations called there while probing the icy outlines of Antarctica but results from their short visits were meagre. Thaddeus von Bellingshausen, commanding an expedition from imperial Russia, visited Macquarie Island in 1820. Naturalists who were to have accompanied his expedition had, unfortunately, never boarded his ships and he left the island after a brief stay, taking with him two albatrosses, twenty dead parakeets, one live one, and the skin of an elephant seal. Specimens of *Stilbocarpa polaris* (Macquarie Island ‘cabbage’ – Figure 2.4), used by sealers, ship’s crews and early expeditions as an antiscorbutic, made their way back to St Petersburg. The United States Exploring Expedition of 1838–42 called at the island in 1840. Any specimens collected by the party sent ashore by expedition commander Wilkes were lost in the surf as the men returned to the ship. Wilkes commented: ‘Macquarie Island affords no inducement for a visit’ (Wilkes, 1845, quoted in Cumpston, 1968: 75).

Robert Falcon Scott, sailing from England to New Zealand on his way to Antarctica for the first time, landed on Macquarie Island with several companions and succeeded in shooting an elephant seal and specimens of several species of birds. In a hut on the island the party found a collection of prepared bird skins, including skins of the extinct endemic rail, but left the island without taking the collection with them (Cumpston, 1968: 209).

Before 1911 it was the individual traveller, prepared to brave wild seas
Figure 2.1. Oil storage and living huts at the Nuggets, 1913. E. R. Wäte Album. Reproduced courtesy South Australian Museum.
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in a tiny vessel, who contributed most to our knowledge of Macquarie Island. The first reasonably comprehensive report on the island was published in 1822 in Sydney, based on observations made by Thomas Raine, master of a vessel involved in sealing. Raine provided soundings at various locations around the island, commented on its geology and described plants, birds, seals and marine invertebrates.

Professor J.H. Scott of Dunedin, New Zealand, visited Macquarie Island in 1880 to make collections, and published a description of the island’s flora and fauna (Scott, 1883). Another New Zealander, Professor A. Hamilton, also of Dunedin, worked on the island in 1894. Plant
specimens collected by him made their way to the collections of the Royal Botanic Gardens, Kew.

To Hamilton belongs the rather dubious honour of being the first scientist to attempt deliberate modification of the island’s flora.

From the list given by Professor Scott, and the revision of the Macquarie Island plants published by Mr. T. Kirk . . . it was evident that there was very little chance of finding any useful shrubs; so before leaving Dunedin I determined to try and establish some on the island that might some day be of use, at any rate for firewood. (Hamilton, 1895)

Hamilton took with him ‘a large bag of seeds of several New Zealand Pittosporums, and of a variety of deciduous trees’. He also took seed of pines and ‘a quantity of cabbage seed’. These various seeds he planted near Lusitania Bay and wrote ‘I trust that some of them may become established’. Hamilton’s experiment failed and there are still no trees, shrubs or cabbages on the island. Further experimental plant introductions have been tried without, however, the intention of modifying the native flora to provide a source of fuel and food for humans (Chapter 12).

The Australasian Antarctic Expedition (AAE)

Long-term scientific investigation of Macquarie Island began in 1911. The Australasian Antarctic Expedition 1911–14, led by Douglas