

## INTRODUCTION

The Lord Howe Group is one of Australia's most significant seabird breeding sites. More than 100 000 seabirds of 14 species breed there, with many colonies being of significant national or global importance.

- The Red-tailed Tropicbird *Phaethon rubricauda* breeds on Lord Howe Island (the main island of the Group) in greater concentrations than perhaps anywhere else in the world.
- The Lord Howe Group is one of only a handful of breeding localities known for the White-bellied Storm-petrel *Fregetta grallaria*.
- The Wedge-tailed Shearwater *Ardenna pacifica*, the species most widely distributed within the Group, nests on the main island as well as on many of the smaller islets.
- The Flesh-footed Shearwater *A. carneipes* breeds in large numbers on the main island, where the population has declined due to mortality from longline fishing (globally) and expanding urbanisation (locally).
- The Little Shearwater *Puffinus assimilis*, in Australian east coast waters, breeds only within the Lord Howe and Norfolk Island groups.
- The Kermadec Petrel *Pterodroma neglecta* breeds within the Lord Howe Group (on Balls Pyramid) in greater numbers than anywhere else within the Australasian region.
- Lord Howe Island is home to the only substantive breeding colony of the globally threatened Providence Petrel *P. solandri*. This species once bred in huge numbers on Norfolk Island but was exterminated between 1790 and 1800, soon after the establishment of a penal settlement. A remnant colony still survives on Phillip Island within the Norfolk Group.
- The Black-winged Petrel *P. nigripennis* and White Tern *Gygis alba* have recently colonised Lord Howe Island.



• Red-tailed Tropicbird.

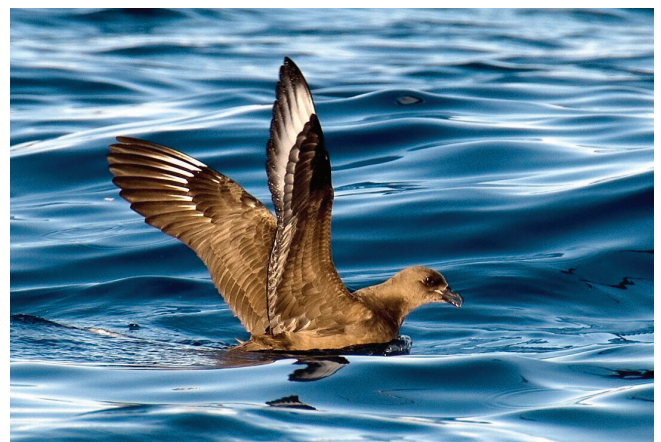
Photo: I. Hutton

- The Lord Howe Group is among the southernmost breeding localities for Masked Booby *Sula dactylatra*, Common Noddy *Anous stolidus*, Black Noddy *A. minutus* and Sooty Tern *Onychoprion fuscata*, and the most westerly breeding locality of the Grey Ternlet *Procelsterna cerulea*.

The Lord Howe Group (31°31'S, 159°04'E) is located in the South Pacific Ocean, 780 kilometres north-east of Sydney. The main island (1455 ha) is approximately 12 kilometres long by up to 2.7 kilometres wide, and is in the shape of a crescent, with a coral reef enclosing a lagoon on the western side. The most significant of the surrounding 27 islets and rocks (total area 60 ha) is the Admiralty Group (1 km to the north of the main island) and Balls Pyramid (a 551-metre-high eroded volcanic remnant about 23 km to the south-east).

Seabirds, along with the other remarkable wildlife of the Group, survived and flourished undiscovered and unmolested by humans until late in the 18<sup>th</sup> century. Previously uncharted, Lord Howe Island was first observed from the deck of the British tender HMS *Supply* on 14 February 1788, on route from Sydney Cove to Norfolk Island. During the return trip the following month, humans landed on the island's shores for the very first time. They were greeted by an abundance of wildlife, including great numbers of land birds and seabirds, many of which displayed little or no fear. Large numbers were harvested with minimal effort to replenish the larders of the visiting ships. Early reports of such bounty soon reached the fledgling penal colony in Sydney Cove, ending the island's period of isolation. Lord Howe Island became a regular stopover for supply ships sailing between Port Jackson and Norfolk Island. Later, whaling ships also called in to reprovision.

Two bird species—the White Gallinule *Porphyrio albus* and White-throated Pigeon *Columba vitiensis*—soon disappeared, and marine turtles stopped hauling out onto the pristine beaches. Because of its large size, the seabird that attracted most early attention was the Masked Booby; both eggs and birds were collected. Masked Boobies once nested amongst the sand dunes on the main island, but are now confined to isolated promontories and offshore islets.



• Kermadec Petrel.

Photo: I. Hutton

Seafarers introduced the first exotic animals, with devastating consequences for the native wildlife. Domestic pigs *Sus scrofa* and goats *Capra hircus* were released to provide sustenance for any unfortunates that become marooned on the islands. Pigs preyed on ground-nesting birds, quickly diminishing their populations. Goats trampled the nests and burrows of many seabirds, destroying their fragile breeding habitat.

The establishment of a settlement on Lord Howe Island in 1834 was accompanied by the introduction of more exotic species. Domestic cats *Felis catus* were brought ashore and established feral (or semi-feral) populations. House Mouse *Mus musculus* probably arrived before 1890, and Black Rat *Rattus rattus* landed in 1918 when the damaged ship SS *Makambo* was careened onto the main island to carry out essential repairs. Despite numerous attempts to control rats, this pest has flourished and is now ubiquitous across Lord Howe Island. Small seabirds, such as storm-petrels, are highly vulnerable to predation by rodents; consequently these birds now survive only on smaller islets where rats and mice are absent. Rats are competent swimmers, so it was uncertain, until the surveys reported in this volume of *Corella*, as to whether any of the smaller islets had also been invaded by rats.

The Masked Owl *Tyto novaehollandiae* was deliberately introduced to Lord Howe Island from the 1920s onwards in a failed attempt to control rats. The owls survived and are now in much higher densities than occur on the mainland. Although the owls do take rats and mice, they also kill many species of native birds including the Lord Howe Woodhen *Gallirallus sylvestris*, Providence Petrel, Black-winged Petrel and White Tern. Shooting has been used intermittently to control the owl population, and studies are currently underway to determine the feasibility of eradication.

Harvesting of seabirds and their eggs helped the settlers augment their restricted diet. Muttonbirding (the harvesting of shearwater chicks) and eggng (the harvesting of seabird eggs) became important seasonal cultural events. The main species targeted were Flesh-footed Shearwater and Wedge-tailed Shearwater for chicks, and Sooty Tern for eggs, although chicks of the Providence Petrel (known locally as the Big-Hill Muttonbird) were probably also taken. Masked Boobies nesting in easily accessible sites are also likely to have been targeted.

It was almost 200 years after discovery before the extraordinary collection of flora and fauna within the Lord Howe Group was formally recognised, and legislation implemented to safeguard it. In 1982, in recognition of its outstanding natural beauty and its exceptional biodiversity, the entire Lord Howe Group, along with the surrounding waters and associated coral reefs (a total area of 1463 km<sup>2</sup>), was placed on the World Heritage List.

*“The Lord Howe Group is an outstanding example of oceanic islands of volcanic origin containing a unique biota of plants and animals, as well as the world’s most southerly true coral reef. It is an area of spectacular and scenic landscapes encapsulated within a small land area, and provides important breeding grounds for colonies of seabirds as well as significant natural habitat for the conservation of threatened species.”*

*“Lord Howe Island is considered to be an outstanding example of an island ecosystem developed from submarine volcanic activity, having a rare diversity of landscapes, flora and fauna (both marine and terrestrial). The high proportion of endemic species provides a superb illustration of independent evolutionary processes at work.”*

Today, tourism is the major commercial activity on the island and the economic lifeblood of the local community. Many tourists visit the island specifically to view its unique wildlife, with seabirds often providing the most spectacular and memorable experiences. Approximately two thirds of the main island and all the surrounding islets are managed as a Permanent Park Preserve, which has similar status to that of a national park. The surrounding waters, extending three nautical miles out to sea, were declared a New South Wales Marine Park in 1999. Commonwealth waters between three and 12 nautical miles out (3005 km<sup>2</sup>) were declared a marine park in 2000. In 2012, the former Lord Howe Island Commonwealth Marine Park was incorporated into the new Lord Howe Commonwealth Marine Reserve, which covers an area of more than 110 000 square kilometres.

Iconic species of the Lord Howe Group include endemics such as the flightless Woodhen (once regarded as one of the rarest birds in the world), and the Lord Howe Phasmid *Dryococelus australis* (a large stick-insect that was feared extinct until live specimens were discovered on Balls Pyramid in 2001).

The Woodhen had undergone a prolonged decline and by the 1970s had been reduced to small remnant populations on the summit of each of the two southern mountains—Mount Gower (875 m) and Mount Lidgbird (777 m). The larger of the two populations, just 22 individuals, was on Mount Gower. Pigs, feral cats and goats were the principal causes of decline. Pigs were eradicated in 1976, cats in 1982, and goats in 1999. Aided by a successful captive breeding program, the Woodhen population has increased dramatically, and now numbers in excess of 250 individuals.



• Juvenile Masked Booby.

Photo: I. Hutton

The Lord Howe Phasmid was once common on the main island but no longer occurs there. Fortunately, a small population, focused on a single bush, still survives tenuously on Balls Pyramid. To safeguard the species from extinction, captive populations have been established at Melbourne Zoo and elsewhere. Despite some initial challenges, the captive population is now flourishing. Reintroduction to the main island, however, will not be feasible until rats and mice have been removed.

Following the successful eradication of pigs and cats four seabird species have increased their populations on the main island—Sooty Tern, Black-winged Petrel, Wedge-tailed Shearwater and Providence Petrel. The Little Shearwater has recolonised the main island since 1990. Two additional species—Black Noddy and White Tern—have also colonised Lord Howe Island. The noddy was suspected of previously breeding on Balls Pyramid and the arrival of the tern appears to be related to the presence of plantings of Norfolk Island Pine *Araucaria heterophylla*.

The White-bellied Storm-petrel and Kermadec Petrel formerly bred on the main island but are now restricted to the offshore islets. These species are highly sensitive to predation by rodents. The diminutive Storm-petrel is no match for a rat, which is capable of dispatching both adults and young. Unlike other Procellariiformes on Lord Howe Island, the Kermadec Petrel nests on the surface rather than in burrows, where its young are fully exposed and vulnerable to attacks from rats. These two seabirds are likely to return to breed on the main island once rats and mice have been eradicated. Planning for the eradication of exotic rodents is currently underway, with both rats and mice likely to be removed within the next few years. The resultant reduction in predation of eggs, chicks and adults will benefit seabirds and land birds alike.

Suppression of seabird numbers, whether by rats or some other threatening process, causes a significant reduction in the influx of marine-derived nutrients in the form of faeces, regurgitations, failed eggs and corpses. Such changes can profoundly affect the health and condition of forest ecosystems, as has occurred on Norfolk Island following the extirpation of the Providence Petrel. Restoration of seabird populations on Lord Howe Island will not only benefit the seabirds themselves, but it will also improve the ecological health of the island's plant communities and increase their resilience to other stressors.

Regardless of the recovery of many seabird populations on Lord Howe Island, the smaller surrounding islets retain their importance as safe, secure breeding sites for some species. Despite their significance, most islets within the Lord Howe Group have seldom been visited, and most of the seabirds breeding there have never before been surveyed. The surveys reported in this volume of *Corella* provide the first comprehensive account of the diversity, distribution and abundance of seabirds breeding on islets within the Lord Howe Group. Two islets—Balls Pyramid and Gower Island (off the southern tip of Mount Gower)—were omitted from the recent surveys due to safety considerations. As always, the accessibility of islands is highly dependant on weather and sea conditions. Hopefully, others will take up the challenge to visit these islets to address gaps in our knowledge.



• Australasian Seabird Group loading equipment on Mutton Bird Island.

Photo: I. Hutton

Funding for the surveys was provided by the Australian Government through a grant aimed primarily at assessing the potential threats present on each vegetated islet within the Lord Howe Group. Surveys to identify the presence of weeds and rodents were extended to include estimates of seabird distribution and abundance. The seabird surveys were undertaken in collaboration with the Australasian Seabird Group (ASG) of BirdLife Australia. The ASG has worked with various government agencies to develop a cost-effective means of conducting scientifically robust surveys of seabirds in difficult environments. This collaboration has provided island managers with sound baseline data from which future changes in seabird populations, vegetation communities and emerging threats can be assessed. It is hoped that similar collaborations can be developed in all Australian states and territories.

### Further Reading:

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