

17 Conclusions

Summary of Status of Knowledge of Biota

Great Barrier Island is a nationally significant island. It is the fourth largest island in New Zealand and the biggest land mass free of possums, mustelids, hedgehogs, deer and feral goats. Unlike most of the remainder of New Zealand, the forests have never been browsed by possum and deer.

This Chapter starts with tabular summaries of knowledge of biota (Tables 17.1 and 17.2) and points out current trends. These tables collectively illustrate that, in groups where the information is available, a significant percentage of native species on Great Barrier Island are nationally endangered or rare. They also demonstrate that for many groups our knowledge of the species present is very poor.

Table 17.1 Summary of status of knowledge for native terrestrial animals of Great Barrier Island: Number of species in different groups.

Category	Native (a)	Percent (a) endangered or rare
Terrestrial birds	57	39
Marine birds	24	58
Reptiles	13	61
Terrestrial mammals (bats)	1	100
Freshwater fishes	11	45
Amphibians	1	100
Terrestrial molluscs	74	10
Other Invertebrates	>991	not known
Totals	1964 known	43% ⁽¹⁾

(1) Average % endangered or rare excludes the 100% values for amphibians (Hochstetter's frog) and bats, where only a single species is represented.

Table 17.2 Summary of status of knowledge for native plants on Great Barrier Island: Number of species in different groups.

Category	Native (a)	Percent (a) endangered or rare
Flowering Plants	455	13
Conifers	13	15
Ferns and Fern Allies	123	6.5
Mosses and Liverworts	>170	>3.0
Marine Macro Algae	136	not known
Fresh Water Algae	not known	not known
Lichens	247	not known
Fungi	est. 3000 (82 known)	not known
Totals	1226 known	9.4%

For the terrestrial groups which have been studied in most detail - vascular plants, lichens and birds, Great Barrier Island carries about a quarter of the New Zealand total! These results indicate the extraordinary richness of the biota of this small Island, probably reflecting its position close to the boundary between the 'sub-tropical' north and the temperate south of the North Island.

The same appears to apply in the marine habitat, with at least 6 marine mammals, 160 species of marine fishes and 626 marine molluscs. The richness of the marine molluscs is stressed by Morley & Hayward (in press)ⁱ; the Great Barrier Island total is probably about 1/5th of the New Zealand total. In the case of seaweeds the proportion may be nearer to a third of the total.

This richness of native species is perhaps all the more remarkable when we consider that a significant number have probably been lost since European arrival. While we know this is the case for birds and a few plants, it is almost certainly also true for forest dwelling invertebrates with limited mobility. Species such as snails may have been lost during the logging era, when extensive stream scouring and bush fires could have greatly reduced their habitat.

The addition of species – introduced accidentally or intentionally from other parts of the world – may appear to have balanced the numerical equation in some cases, but introduced plants, birds and mammals also present huge risks for the remaining native biotaⁱⁱ. Introduced mammals in particular are currently influencing all aspects of all ecosystems on Great Barrier Island. Without on-going management several bird species are likely to be exterminated from Great Barrier Island by a combination of predation by rats and feral cats, habitat degradation by pigs and feral cattle, and (possibly) competition from introduced birds.

Another important feature, not evident from the bare figures in Tables 17.1 and 17.2, is that we have very little idea of the status of species populations in many groups. The organism may have been collected, but we have no idea how many there are, nor where they are situated, so we cannot judge whether they are endangered species or not. Again, judging from the information available from the better-known groups, it seems likely that a significant proportion (> 10%) are endangered. With the recently collected groups (such as the insects) we know that the collection does not adequately reflect the diversity, because specialised collecting techniques are needed for some types. It seems safe to say that, for the terrestrial and freshwater invertebrates, the freshwater algae, and the fungi, the numbers recorded represent only the tip of the iceberg.



Fig 17.6. Myna (*Acridotheres tristis*) in a flame tree.

Both are recent arrivals on Great Barrier.

Photo: Department of Conservation

Preventing further extinctions

Great Barrier Island residents and rate-payers, and all the agencies involved with Great Barrier Island, place considerable value on the island's environment. This is clearly shown in the legislation and social research.

Unfortunately, acknowledging this value alone, without adequate knowledge or serious conservation action, is unlikely to prevent further degradation of the environment. The community and agency responses generally do not match the nature and scale of the problems. Breaking this down, and identifying and prioritising where action is needed, will be an important outcome from this Report.

The pressures set in motion by the historic transformation of the island environment, especially the arrival of rodents, could still result in a wave of further extinctions, even of species currently considered relatively common and iconic.

Economic opportunities

The historical transformations of the Island's environment may have had detrimental effects, but they have also created numerous opportunities. For example, ecological restoration and environmental education are both 'growth' areas elsewhere in New Zealand. Capitalising on these positive aspects of history and change, and enhancing the environment wherever possible, could stimulate the economy, especially through nature-orientated tourism. This could help improve the average island household income.

Creating niche interests to attract tourists throughout the year would assist to smooth out the intense bulge of tourists over a short summer season and spread the income from activities. Sea and land bird, lizard, and native plants are key areas of interest that could be more widely promoted. Tramping and walking are also growth areas for tourists in New Zealand and there is already development of a Great Barrier 'Great Walk' concept. The Department of Conservation has partially completed the building of a four day walk in the centre of the island to be promoted within the Hauraki Gulf Marine Park package of activities. A growing number of cruise ships now include Great Barrier Island on their NZ route. A wide range of eco-tourist activities could be promoted to this market.

The island offers a complete range of living landscapes – from the mountains to the sea with all types of habitats represented. All within a days walk.

The marine environment (Fig 17.8) also offers huge opportunities for fishing, diving, kayaking and surfing. There are a few local people engaged in fishing charters, kayak hire, and a summer surf school – all these areas have potential for growth.

There are other eco-tourism opportunities that could be realised immediately on Great Barrier Island. Currently all concessions to take people on guided walks into the public conservation estate are held by off-island operators meaning that the income derived from this activity barely benefits the island economy. Local people could be engaged and trained to promote this activity to tourists. Glenfern Sanctuary in Port FitzRoy offers guided walks and was voted one of the top 10 walks in NZ in a recent survey.

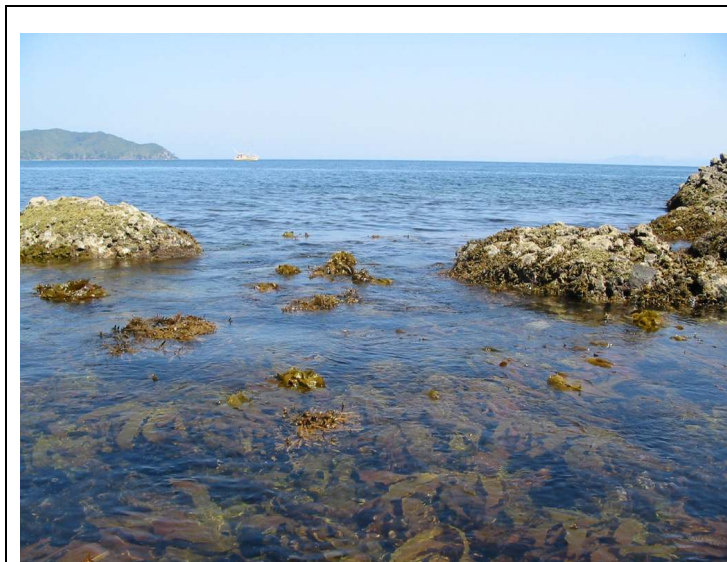


Fig 17.8 Marine environment of Great Barrier Island – “a place that offers huge opportunities for fishing, diving, kayaking and surfing”.

Photo: Fenella Christian

Cooperation

The data embodied in this Report is a first step towards a more holistic consideration of the Great Barrier Island environment. Inadequacies in the data point to projects which need doing. The whole is made up of many parts, many of which can be tackled by different organisations or even individuals.

The aim is to halt or reduce environmental harm where-ever possible, with a view to leaving the Island in a better state for future generations.

The community as a whole are clearly committed to this, but prioritising actions, or proposing changing practices, can still generate opposition and create delays.

Leadership

The challenge here is to find the leadership required to amalgamate and draw together both the community groups and the various agencies. Debate and discussion will need to take place to decide the highest priority actions and obtain funding to carry them out.

Part of the reason for the very many studies/report on this island (Appendix 4), but a sad lack of follow up action, is the very small population trying to deal with a number of large local, regional and central government entities.

To get practical actions to happen, rather than simply more studies, will require a unity of purpose.

Unity can only be achieved by all parties talking to each other. What is needed is an effective task force, with some power to prioritise and direct agreed environmental initiatives. Such a body would initially need representatives from the Community Board, Auckland City and Regional Councils, Department of Conservation, Ngati Rehua and the Great Barrier Island Charitable Trust.

The research carried out for this report suggests that the following are the most important actions:

Actions needed (by agencies, the community and individuals)

- Write a technical feasibility study exploring the methods, issues, and cost/benefits of island wide eradication of rats and feral cats.
- Establish an improved waste recycling programme suitable for the island.
- Take consistent action on streams over safe levels of *E.Coli* for more accurate identification of sources of contamination.
- Add Kaitoke swamp and Hirakimata to the DOC Conservation Management Strategy (CMS) and develop management plans for these specific areas.
- Implement pest management to prevent further decline of black petrel, kakariki and tomtits.
- Support research on soil and air quality.
- Continue to fund private conservation projects with a focus on biodiversity and research.
- Continue to volunteer for environmental projects and research (bird counts, weed eradication, argentine ants.)
- Promote Great Barrier Island representation on the Hauraki Gulf Forum committee.
- Enact the Great Barrier Island vision statement as developed by CRESA (chapter 15.1).
- Inventory, and study the ecology of, those biota where data are deficient (eg reptiles, invertebrates, mosses, fungi).

Gaps identified

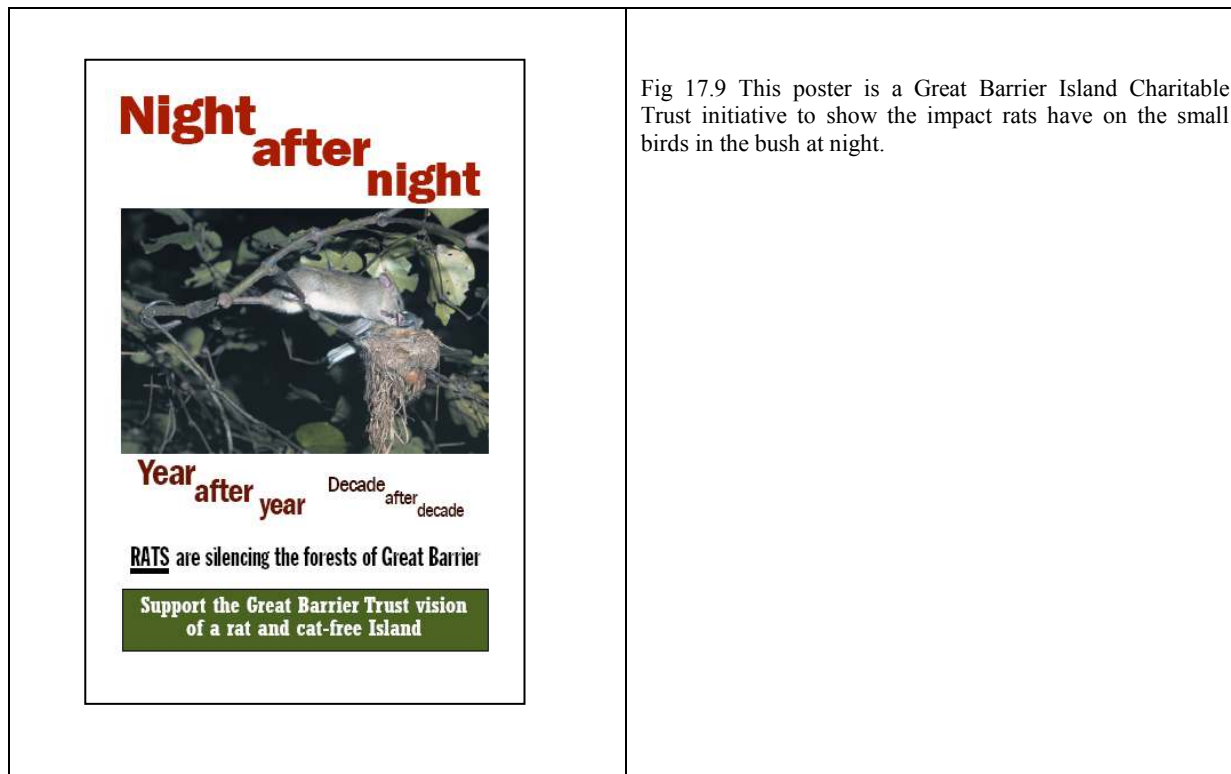
Carrying out research on the following gaps would help people to better understand, manage and change the environmental and economic outcomes for the Island.

- Reasons for population decline.
- Economic model for the island based on balancing conservation and/or tourism needs.
- Visitor survey data including intentions, motivations, source city, and money spent, and transport used, to better understand positive and negative impacts.
- Knowledge of population densities of some threatened or iconic island species – kaka, kereru, chevron skink, banded rail.
- Information on stream pollution, and implementation of ‘safe-streams’ policies.
- Information about energy use, both on and to and from the island.
- Knowledge of tangata whenua vision for Great Barrier Island environment.

Final comments

This report has highlighted key features of Great Barrier Island’s Environment: its low human population with extensive areas of natural or semi-natural vegetation, much of it under some form of protection; the absence of some (but not all) of the predators which have ravaged the native New Zealand fauna elsewhere, and the consequent survival of several otherwise endangered species; and the likely decline of these species without intensive predator control in future. Birds tend to feature in discussion of these facts, but as we have shown, similar arguments almost certainly apply to other components of the fauna and flora.

The human legacy of environmental impacts, from Maori occupation through early exploitation of natural resources by Europeans, to the present emphasis on holiday homes and tourism, is similar to other remote parts of New Zealand. In many subtle ways these human induced impacts are still evident, none more so than the effects of introduced mammals on the vegetation and bird life. Every night (Fig 17.9), rats continue to destroy tree seeds, seedlings, birds, reptiles and invertebrates, thus slowing the processes of ecosystem recovery.



However, Great Barrier Island is no longer remote – it is within a few hours by boat, or less by plane, from the large and wealthy city of Auckland, and thence to the rest of the world. As a consequence, the Island way of life is changing, with more outside influence. Increased offshore ownership and tourism could destroy the quiet, independent way of life of the residents, and the splendid coastal environment, as it has in some other places. Alternatively, with careful management, the island population could benefit from increased revenue, and the environment benefit from higher levels of protection required under legislation. There is a synergy between people’s enjoyment of their environment and its quality. Maintaining and enhancing that quality for future generations must be our primary goal.



Photo: John Kjargaard 2004

We hope that this document will be useful in future planning for environmental issues on Great Barrier Island and that individuals will be inspired to get involved to fill some of the knowledge gaps. Hopefully the ‘aroha’ and respect we all hold for Great Barrier Island will allow us to work together so that future generations will also call this place ‘paradise’

This version is also available online at www.greatbarriercharitabletrust.co.nz

i Morley, S.M. & Hayward, B.W. 2009 Marine mollusca of Great Barrier Island, New Zealand. Unpublished manuscript, Auckland Museum

ii Atkinson, I. A. E., 2006. Introduced mammals in a new environment. In: Allen, R. B. & Lee, W. G. (eds). *Biological Invasions in New Zealand*. Ecological Studies 26: 49-66. Springer. New York.