

Vegetation map and likely black petrel habitat

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Methods:

Vegetation maps:

A wide-scale vegetation survey on Great Barrier Island (GBI) was undertaken by Colin Ogle and other personnel from the Department of Lands and Survey between 1975 and 1980. These surveys identified broad classifications of vegetation types (i.e. maritime, coastal scrub, grassland, mature kanuka/manuka forest, kauri stands, mixed broadleaf forest, etc.) as well as detailed studies into lichen, tree species and grasses. Shape-files for these early surveys were obtained from the Department of Conservation and used to produce Map 1. Shape-files from the Land Cover Database (Version 4) from Landcare Research were used to produce Map 2. Topographic information (i.e. contours shape-files) was obtained from Land Information NZ and was used in both maps. All maps were generated using the GIS-mapping system Manifold™. Two maps were produced to show the vegetation changes between the two survey periods.

Likely black petrel habitat:

Using the information from vegetation maps, published literature, ground surveys from certain areas on GBI (i.e. Cooper's Castle, Mt Heale, Matawhero, Glenfern Sanctuary, Mohunga Peninsula and Tataweka), observations from field visits to the study area at main colony location (Hirakimata/Mt Hobson) between 1995-2014, broad habitat stratification using the categories identified from the random transect surveys through the study area (i.e. using terrain (slope and aspect), vegetation (emergent tree species, dense or moderate canopy species and undergrowth species) and coverage (scrub, secondary growth, or primary forest)), locations of isolated black petrel burrows around GBI and altitude, the possible black petrel habitat across GBI was identified. It was split into three categories: (i) known habitat, (ii) high likelihood, and (iii) low likelihood. Areas with high ridges (and correspondingly higher altitudes), north/west facing slopes and remnant or recovering native forest are more likely to have black petrels present. However, given that burrows have been identified in low-lying modified or scrubland habitat, it should be recognised that black petrels could be found outside these areas. Non-petrel habitat is classified as roads, streams, estuaries, swamps, mangroves, exotic forest, grassland, mines, dwellings, urban parks, airfields and beaches and coastal slopes. Some of the identified areas have invasive mammals, including rats (*Rattus rattus* and *R. exulans*), feral pigs and feral cats which may alter the likelihood of black petrels being present or if petrels are there, restrict their numbers and breeding success and overall productivity. Protected areas on private land (such as Glenfern Sanctuary and Windy Hill Sanctuary) that have on-going predator control have resident black petrels.

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