7. Conclusions

This updated literature review of the Poor Knights Islands Marine Reserve has reviewed and interpreted over 60 new references relevant to the marine biota of the Poor Knights Islands since Kelly's 1983 bibliography. Significant new research has been conducted on fish abundance, fish diets, subtidal macroalgal communities, and vertical reef wall communities.

One hundred and eighty six species of fish have now been recorded from the Poor Knights Islands, 70 more than Kelly's tally of 116 species in 1983. Approximately 38% of the fish at the Poor Knights Islands are exotic, subtropical species, many of which are transient visitors or non-breeding species. Thus, the population size of these non-breeding species at the Poor Knights Islands varies greatly over time. Fish monitoring studies at the Poor Knights Islands show that fish abundances vary greatly on both temporal and spatial scales, and temporal patterns can span several years. Following the cessation of recreational fishing in the Poor Knights Islands Marine Reserve in 1998 the abundance of snapper in the marine reserve has increased by more than 1.8 times. The abundance of four other species, banded wrasse, crismon cleaner fish, butterfish, and pigfish decreased significantly, whilst the abundance of 19 other monitored species did not change significantly.

Ten marine mammal species and four turtle species have been recorded from waters around the Poor Knights Islands. The most common marine mammals at the Poor Knights Islands are the common dolphin and the bottlenose dolphin, which occur in pods of up to 200 individuals, and New Zealand fur seals, which haul out at the High Peak Rocks (Pinnacles) during winter.

One hundred and twenty one species of macroalgae have been recorded from the Poor Knights Islands, of which, 62 are intertidal species and 79 are subtidal species (20 species occur both intertidally and subtidally). However, the macroalge of the Poor Knights Islands has not been thoroughly studied and it is likely that this is a conservative estimate. Battershill recorded 102 algae species from the Poor Knights Islands in his 1986 study, but many of these species have subsequently been synomynised or their taxonomic status is unclear. A thorough taxonomic study of the macroalgae of the Poor Knights Islands would greatly benefit our understanding of the marine flora of the region.

Schiel (1984) initially identified five subtidal habitat types at the Poor Knights Islands in waters less than 30 m deep; vertical reef walls and caves, macroalgal reef habitats, coralline flats/echinoid-dominated reefs, broken rock, and sand. Current habitat

mapping studies conducted by NIWA at the Poor Knights Islands have identified two additional, deep water habitats; encrusting corallines, and Centro barrens. The vertical reef wall habitat and macroalgal reef habitat are the only two habitats that are well described in the literature.

The Poor Knights Islands Marine Reserve is a high value area of national significance and the unique marine assemblages present in the reserve need to be protected from modification by invasive pest organisms. To date, the only likely invasive species recorded at the Poor Knights Islands is the parchment tubeworm, *Chaetopterus* sp., though it is uncertain whether this polychaete is endemic or introduced to New Zealand. Biosecurity New Zealand has identified a number of invasive marine organisms that have the potential to cause large changes to native species assemblages, of which, the clubbed tunicate, *Styela clava*, has been detected closest to the Poor Knights Islands. Good management practices need to be put in place to prevent the introduction of invasive species to the Poor Knights Islands.

This report has reviewed five key information areas of the Poor Knights Islands marine ecosystem; the physical marine environment, marine vertebrates, marine macroalgae, subtidal habitats, and marine biosecurity. These areas were identified by the Department of Conservation Northland Conservancy to be the highest priority. Future work will review the biological marine environment, marine invertebrates, marine seabirds, and human use of the Poor Knights Islands Marine Reserve.