5. Waitakere's Biodiversity

Long term viability for the City's indigenous biodiversity

Habitat types currently within the district can be broadly grouped into:

- Forests and shrub lands
- Freshwater wetlands, lakes and streams
- Coastal wetlands, dunes, and estuarine tidal flats and channels
- Urban area.

The ecotones, or transition zones of one habitat type into another, and the corridors that link fragmented habitats are equally important.

Forests and shrub lands

There are many categories of forest types within Waitakere City, from the complex mature and regenerating forests of the Ranges to the lowland forest remnants and scrub. These are described in the Protected Natural Area Reports for the Waitakere Ranges and for the Lowlands, and illustrated in the guide for planting and restoring the City: Native to the West. Apart from the Waitakere Ranges, some of the more interesting habitats are Waikumete Cemetery with its remnant gumland scrub and native orchids, and Paremuka Stream which hosts clumps of *Astelia grandis.*

The forested areas of the Waitakere Ranges support species such as pied tit, shining cuckoo, long-tailed bat, Hochstetter's frog, kauri snail as well as the more common tui, kereru and fantail. There are some particular species that capture the public interest, whether or not they may be indicators of overall ecological health. Such species are kereru, tui, giant and banded kokopu, kauri and any rare species.

Kereru *(Hemiphagia novaeseelandiae novaeseelandiae)*

Bird counts in the Waitakere Ranges carried out by ARC over the past five years were established in order to monitor change in bird numbers as a result of Operation Forest Save, the possum control programme. There is insufficient data to statistically show a change although numbers of tui and kereru show an increase in 2001 compared with 1997 but may be just normal fluctuation.

It is known that possum out competes kereru for the same food resources, and kereru require substantial amounts of their fruit food source to maintain body weight. Kereru numbers are considerably higher per hectare on the gulf islands where possums are absent. Kereru numbers have also increased through successful nesting in areas where possums have been dramatically reduced, such as at Wenderholm Regional Park in Rodney District.

Tui *(Prosthemadera novaeseelandiae)*

Tui, like silvereye, tends to flock in winter and move over long distances in search of food (nectar and fruit). This explains why bird counts for these species are so variable. Tui maintains a home territory during summer breeding when nectar is in abundance and while their diet comprises a high intake of insects. During winter tui will move between the offshore islands and the mainland in search of food.

A favoured food source at the start of breeding is kowhai nectar. Tui will take advantage of the earlier flowering *Sophora microphylla var. microphylla* on the east coast (August/September) then move to the west coast to feed on *Sophora fulvida* in October/November.

During breeding (October–January) tui feed on nectar and insects. Their favourite tree for nesting sites and the nesting material is kanuka. Kanuka forest also harbours high insect numbers, needed to feed the nestlings with protein. Dense stands of kanuka also protect the nest and fledglings from being dislodged by high winds. The shelter of the bush, the right nesting sites, adequate source of nectar and insects is necessary for successful breeding.

Kaka *(Nestor meridionalis septentrionalis)*

Kaka are occasional visitors to the mainland including to the Waitakere Ranges. Visits usually occur during June-August. This may represent a remnant of the flocks that made the seasonal migration every year. There are records of traditional hunting of kaka during this migratory period by the Wai-o-hua, who moved into the Upper Harbour in March for shark fishing and then to the wooded gullies to catch kaka in snares called tumu.

Kaka visit the land around the Upper Harbour each winter, and in the summer of 2001 a pair nested at Campbell's Bay and produced one fledgling. It is conceivable that kaka could also breed in the Waitakere Ranges. There is some anecdotal evidence of a small flock of kaka at Te Henga.

Hochstetter's Frog *(Leiopelma hochstetteri)*

Hochstetter's frog occurs in the Waitakere Ranges and around the water reservoir areas. This species is regionally threatened and unusual for a frog in that there is no tadpole stage, progressing directly from egg to frog. A tunnel has been built beneath the scenic drive to provide a link between habitat areas where many of these frogs have previously been killed by vehicles.

Long-tailed bat *(Chalinolobus tuberculatus)*

There are still several small colonies of the long-tailed bat in the Waitakere Ranges and their eastern foothills. These bats are insect feeders and forage over large distances.

Waitakere Rock Hebe *(Hebe bishopiana)*

This plant is found in isolated locations and one population is vulnerable to destruction through weed removal for roadside maintenance. It is being grown by Techscape for revegetation projects according to the recovery plan.

Kauri Snails *(Paryphanta busbyi)*

The range of kauri snails coincides with the historic range of kauri forests. Kauri snails were traditionally found in the large clumps of dense vegetation that grew as epiphytes on the kauri, their eggs being laid at the foot of these large trees. These habitats associated with old kauri forests have been destroyed along with the ancient trees. Colonies of the kauri snail *(P. busbyi)* still survive in several areas of the Waitakere Ranges, in thick, damp patches of scrub and fern. These snails are highly mobile and are carnivorous, feeding mainly on worms. The heavy shell of the large kauri snails gives them protection from birds and rats, but not from pigs.

Green gecko *(Nautilinus elegans)*

The green gecko is found in manuka and kanuka stands and is a very striking green with a bright blue tongue. Geckos feed on nectar, fruit and insects.

Freshwater wetlands, lakes and streams

Waitakere City still has a good network of intact streams, regionally significant wetlands at Te Henga and Whatipu, and dune impounded lakes.

Te Henga Wetland

The largest freshwater wetland in the region (80 hectares) and home to a wide range of wetland species including fernbird, bittern, marsh crake, spotless crake and banded rail.



Whatipu wetlands

These freshwater wetlands lie within the Scientific Reserve, which also incorporates the unconsolidated sand areas. This is an important nesting site for the white-fronted tern and feeding area for the Caspian tern and blue reef heron. Whatipu now forms part of the regional park and is administered by ARC.

Lakes Kawaupaka and Waimanu

These are impounded freshwater dune lakes and provide habitat for little black shag, bittern and spotless crake.

Streams

Many stream systems in Waitakere City are still in a natural state with good riparian vegetation. Intact stream systems right from the estuarine areas to the headwaters are important for migratory species of native fish, such as inanga and other galaxids (banded and giant kokopu). The juvenile forms of these species make up the whitebait swarms on their spring migration from the sea to live in streams until they are about one year old. The adults then migrate downstream to the estuarine areas where they spawn in autumn among streamside vegetation. On the high spring tides the hatched larval fish are washed out to sea where they spend five to six months growing into the whitebait that migrate back to the adult freshwater habitats in the spring, often found living right up in the headwaters. The region's whitebait population depend upon small inland, bush-covered streams remaining navigable from the coast to inland headwaters.

The Council will continue to advocate retaining streams in a natural state with riparian vegetation cover, and fully accessible to migratory fish species, and the restoration of these areas where appropriate and feasible. Council is aware of the effects that hydrological changes and stormwater from impervious surfaces have on species. Council is looking at stormwater source control and stormwater treatment devices to mitigate these adverse effects.

Waitakere City Council has spent a considerable amount of time and effort educating Waitakere City residents about the value of riparian margins. In particular, urban riparian margins are often degraded and their importance overlooked by both homeowners and developers alike. The District Plan provides for the protection of riparian margins because of the benefits they offer to both landowners and the stream environment. Riparian margins act as a buffer against the potential effects of land use as they:

- Provide habitat on the banks and in the stream for wildlife
- Allow a range of native species to establish
- Shade the stream maintaining a more even temperature critical for native fish
- Provide food for in stream fauna
- Retain run-off and helps remove sediment and contaminants from water entering the stream
- Prevent the growth of weed species both in the water and on the banks
- Reduce the potential for erosion
- Reduce flooding
- Maintain ground water and soil condition

The Green Network Community Assistance Programme ranks streams on private land as highest priority for assistance with weed removal and replanting.

The function of vegetated riparian margins is sufficiently critical to the health of the stream and its aquatic life that it is considered more important to retain whatever vegetation exists, and only gradually replaces exotic species with native species, rather than undertake weed removal that exposes the stream banks to sun and wind.

Project Twin Streams is a major riparian restoration project in partnership with the community that aims to restore some of the major streams in the city: Oratia, Opanuku, Swanson, Waikumete Streams, Henderson Creek as well as a minor tributary – Pixie Stream. It involves removal of weeds and rubbish, restoration of riparian margins, introduction of environmentally friendly stormwater solutions, and increased community ownership, understanding and participation. The project is intended to provide long-term solutions to riparian and stormwater issues. The catchments included in Project Twin Streams cover more than 10,000 ha of Waitakere's foothills and urban land.

Native Fish Species

The most common native fish species found in streams in the Auckland Region are short-finned eel, long-finned eel, common bully, banded kokopu, inanga, redfin bully and common smelt. Uncommon species are Crans bully and giant kokopu.

Streams will commonly support up to five species of native fish. There are two fish communities that indicate high diversity in streams. For shady streams it is shortfin eel/longfin eel/banded kokopu/redfin bully and for open lower gradient streams it is shortfin eel/longfin eel/common bully/inanga/redfin bully.

NIWA have identified 17 native fish species that are found in the Auckland region, although only a maximum of 8 of these are expected to be found in any one stream class or type. In Waitakere City, 1997-99, only 2-3 native fish species were found in the streams surveyed, with 4-6 species found in 2001. The native fish survey work for the 2003-04 season records a total of 11 native fish species at 29 survey sites, and that between 1 and 6 species, with an average of 3 species per site may be found.

Among the less frequent species found in urban Waitakere Streams are the freshwater crayfish or koura, the freshwater crab and giant kokopu. Recently, the regionally rare short-jawed kokopu was discovered in a stream in the Waitakere Ranges. Riparian vegetation restoration and removal of barriers to fish passage are the most effective methods of encouraging native fish species back to the streams.

Coastal wetlands, dunes and estuarine flats

Waitakere's coastal environment offers a variety of habitats from sheltered mangels, shell banks and mudflats of the Waitemata and Manukau Harbours to the rocky coast, islands and dune systems of the west coast.

Harbourview Orangihina, Te Atatu Peninsula

The reserve contains the largest area of salt marsh and complete ecotone from saline to brackish to freshwater wetland around the Waitemata Harbour. The foreshore of this reserve is a habitat for fernbird *(Bowdleria punctata vealeae).* This small population is split into two separate areas of rush-dominated vegetation.

Fernbirds prefer a two-tiered vegetation structure and it has been recommended that the areas between the fernbird habitats are reconnected by planting flax and *Olearia solandri*, both of which are present in the wetland. The expansion of a two-tiered vegetation structure to link the two occupied areas would enable the population to make more use of the wetland and increase the survival chances. The increase in residential development around the reserve will also result in an increase in domestic pets. It may be necessary in the near future to undertake pest management either through construction of a pest-proof fence around the fernbird habitat or intensive trapping.

Other species that may be attracted to an improved wetland habitat and protected from disturbance could be Australian bittern *(Botaurus poiciloptilus)* and banded rail *(Rallus philippensis).*

West coast dunes

These mobile sand dunes support pingao and provide nesting habitat for New Zealand dotterel and white-fronted tern where not disturbed.

Harbour margins

The tidal flats, sand bars and mangrove forests around the Waitemata Harbour and Manukau Harbour are all important feeding areas, roosting and nesting sites for a wide range of migratory and non-migratory birds, such as eastern bar-tailed godwit, lessor knot and pied stilt.

Urban area

The urban areas of Waitakere City are also important for biodiversity maintenance.

Urban gardens

Exotic plantings often provide additional food sources for birds and insects, particularly during winter when food is limited. Many flowering shrubs and trees from Australia and South Africa provide winter nectar for tui and insects, and the Himalayan Strawberry tree is a favourite for visiting kaka during winter.

The down side is that many exotic fruiting species attract birds (including tui and kereru) that then distribute the seeds in their droppings and seedlings establish and flourish in bush areas. *Acmena*, privet species, *Elaeagnus*, woolly nightshade and many other species come into this category.

Urban gardens can provide habitat for a rich variety of invertebrates, including weta species, skinks as well as birds. Choice of plant species and garden maintenance practices can dramatically influence the ecological value of your garden.

Reserves

Reserves, particularly bush reserves, function as wildlife refuges, breeding areas and seed source for the regeneration of native bush. For the bush area to support small bird species, such as fantail and grey warbler, as well as a rich variety of invertebrates there does need to be a dense under storey and good ground cover. However, a one or two tier canopy will still attract tui and other wider-ranging species. Size matters as well as species composition if it is to support breeding populations of some bird species.

It is important to recognise that older, decaying and dead trees are an important component of any forest and should be left to decay rather than be cleared away. Long-tailed bats are known to roost in hollows in large, old macrocarpa trees, and many species inhabit and rely on decaying wood serving a useful ecological purpose in nutrient recycling.

Streams

Intact stream systems provide ecological linkages from the sea to the headwaters. Vegetated riparian margins protect in-stream habitat for aquatic species and accessible water resources for terrestrial species.