## Poutō Peninsula

### Rotopouua (Poutō), NRC Lake No. 348.

**Rotopouua.** Photo showing the pasture catchment to the east (foreground) with native scrub and pine forest to the east. (Photo: Tracey Burton 21 September 2018).

| Summary | Rotopouua |
|---|---|
| **Surveyed:** | 2008, 2012 and 2018. |
| **Overall ranking:** | **High**: a small dammed lake with a well buffered margin and well-developed submerged vegetation community, with minor invasive species impact. |
| **Threats:** | The restricted access to this lake reduces the threat of introduction of pest plants. Water quality continues to be poorer than expected, considering the intact submerged vegetation present in the lake. Several extensive pugged wetland areas were noted on the northern side of the lake that would contribute to deteriorating water quality. |
| **Management recommendations:** | 5 yearly assessment of lake native biodiversity value is recommended. Analysis of nutrient sources to the lake would allow mitigation of ongoing eutrophication. Fencing and potentially planting of wetland areas to intercept nutrient rich runoff is suggested. |

## Description

Lake Rotopouua (1699531E, 590047N) is a small (<5 ha) lake with a maximum depth c. 9 m. The lake is ponded between dunes to the west and weathered hill country, with heavy clay soils, to the east. The lake is dammed, with an outlet pipe noted at the eastern edge of the lake, with water flowing towards Lake Humuhumu via a large wetland. The catchment is primarily plantation pine forestry manuka/kanuka scrub and fenced pasture. Access is across farmland from the Ari Road and the lake has limited boat access as it is fenced off from stock.

## Wetland vegetation

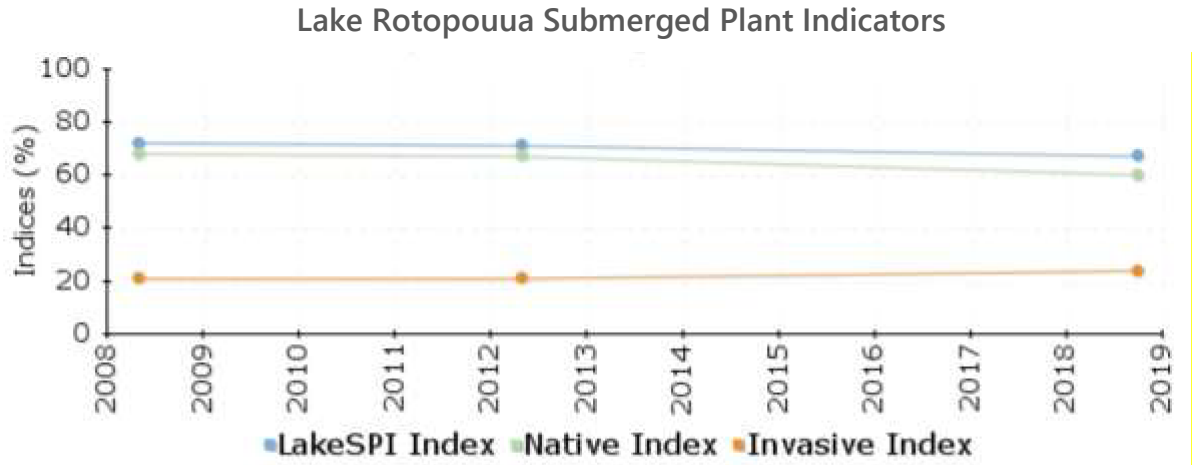
The lake is completely fringed with emergent species to a depth of 1 m. The dominant emergent species are *Eleocharis sphacelata, Typha orientalis, Machaerina juncea, M. articulata, Schoenoplectus tabernaemontani* and *Carex secta*. The marsh fern (*Thelypteris confluens*) was common growing amongst emergent sedges, especially *M. juncea*.

## Submerged vegetation

Turf communities were not recorded due to lack of suitable habitat with extensive and dense emergent vegetation beds present around the lake. The submerged vegetation (80% median cover) was dominated by *Potamogeon ochreatus* and *Chara australis* from the edge of emergent vegetation to 5.8 m. Other species with lower covers included *Nitella* sp. aff. *cristata, Myriophyllum triphyllum* (one site only) and *the* introduced *Potamogeton crispus* (two sites). No *Utricularia gibba* was found in the lake.

Apart from the lack of *U. gibba*, a similar vegetation was described in previous surveys.

## LakeSPI




| Survey Date | Status | LakeSPI % | Native Condition % | Invasive Impact % |
|---|---|---|---|---|
| September 2018 | High | 67% | 60% | 24% |
| April 2012 | High | 71% | 67% | 21% |
| April 2008 | High | 72% | 68% | 21% |

**LakeSPI results for Rotopouua.** LakeSPI Indices expressed as a percentage of lake maximum potential.

Lake Rotopouua is categorised as being in high ecological condition with a LakeSPI Index of 67% and has remained relatively stable over the three surveys.

## Water birds

Extensive emergent vegetation and a relatively isolated lake provide good habitat for water birds, with dabchick (*Poliocephalus rufopectus*), black swan (*Cygnus atratus*), mallard duck (*Anas platyrhynchus*), NZ scaup (*Aythya novaeseelandiae*) and little black shag (*Phalacrocorax sulcirostris*) seen in 2018. A bittern (*Botaurus poiciloptilus*) and a spotless crake (*Porzana tabuensis plumbea*) were observed at the lake margin in 2012.

## Fish

Abundant common bullies (*Gobiomorphus cotidianus*), were observed during vegetation surveys. Īnanga (*Galaxias maculatus*) were reported as common in this lake, but a thorough search by DOC Northland Conservancy staff could not relocate this species.

## Aquatic invertebrates

Previously only dead shells of the freshwater mussels (*Echyridella menziesii*) were found in the lake. However, in 2018, living mussels were located at two of the four transects. Snails, *Potamopyrgus antipodarum*, as well as freshwater sponges and hydra were common.

## Endangered species

At Risk Declining freshwater mussels (*Echyridella menziesii*) were found in 2018. After only finding empty shells in 2008 and 2012, it was suspected that this species had been extirpated by bottom water anoxia. The At Risk Naturally Uncommon marsh fern (*Thelypteris confluens*) was common, growing perched on emergent vegetation at the lake edge. Threatened birds seen in 2018 included the At Risk Recovering dabchick and At Risk Naturally Uncommon little black shag.

## Lake Ecological Value

An ecological value rating of 11 “High” was assigned to Rotopouua, a small lake with a well buffered margin and well-developed submerged vegetation, with minor invasive species impact.

## Threats

The restricted access to this lake reduces the threat of introduction of pest plants. Should invasive species be introduced to the lake it is likely that they would displace much of the current native vegetation.

Water quality continues to be poorer than expected, considering the intact submerged vegetation present in the lake. The heavy rainfall prior to and during the 2018 survey allowed investigation of point sources of nutrients running off from farmland. Several extensive pugged wetland areas were noted on the northern side of the lake that would contribute to deteriorating water quality. These were compared with a fenced inlet at the western end of the lake which was completely vegetated allowing processing of nutrients.

**Unfenced inflow to Rotopouua.** (Photo: Paul Champion 21 September 2018).

**Fenced inflow into Rotopouua.** (Photo: Paul Champion 21 September 2018).

## Management recommendations

An assessment of lake native biodiversity value at 5 yearly intervals is recommended.

Analysis of annual monitoring of water quality should be undertaken to determine the extent of nutrient enrichment and consideration of sources of nutrients to the lake. This analysis may find a means of mitigating the nutrient enrichment threat from inflows and drains. Fencing and potentially planting of wetland areas to intercept nutrient rich runoff is suggested.