

## Poutō Peninsula

Lake Tutaki (Poutō), NRC Lake No. 344



**Figure: Lake Tutaki.** Photo taken from the centre of the lake looking north. (Photo: Daniel Clements, 12 August 2022).

Summary	Lake Tutaki
<b>Surveyed:</b>	Recce June 2020, 2022
<b>Overall ranking:</b>	<b>Moderate:</b> A small lake formerly dominated by hornwort ( <i>Ceratophyllum demersum</i> ) with small amounts of egeria ( <i>Egeria densa</i> ). Native submerged species are establishing in the lake, but one fragment of hornwort was noted in September 2022.
<b>Threats:</b>	<p>Eradication of hornwort and egeria is the management goal as these are a threat to other nearby waterbodies and will also eventually cause collapse of this lake if left to grow.</p> <p>This lake is adjacent to a cleared area which is used for camping. There is also a small jetty. Public access to this lake represents a risk to other lakes in the area through spread of fragments of weed on clothing and gear.</p>
<b>Management recommendations:</b>	<p>Control was undertaken using diquat, with endothall applied in March 2022 resulting in a major reduction in these species. Ensure regular surveys are undertaken for hornwort (and egeria) fragments and either remove by hand weeding or another application of herbicide if there is widespread regrowth.</p> <p>Identify lake users and inform them of the risks associated with dispersal of these highly invasive weeds. Removal of the jetty will help discourage public use of the lake.</p>

## Description

Lake Tutaki (1692191E, 5983210N) is a ~2.85ha dune lake in a deflation hollow in Holocene sands, with a maximum depth of 6.6 m. There is a small associated pond of around 50 m<sup>2</sup> approximately 80 m to the north and a shallow pond 250 m to the south of the main lake. The catchment is largely a natural dune system. An inflow stream running along the base of older dunes to the east feeding into the north-eastern margin, was dry during the survey. Access to the lake is difficult from the beach across raw dunes, wetlands and shrubland. To the east is an escarpment which marks the base of older Pinaki dunes and areas of grass, shrubland and pine forest also offering access to the lake. Vehicles can get close to the lake and small boats can be launched from the northern lake edge and jetty.

Water clarity appeared to be much better than the waterbodies to the north and south. Potentially this lake could be perched and disconnected with the aquifer at the junction between Holocene and Pinaki sands that appears to influence most western lakes on Poutō.

## Wetland vegetation

The lake is surrounded by a narrow fringe of emergent species dominated by raupō (*Typha orientalis*). Other species recorded on the lake margin include *Machaerina articulata*, *M. arthrophylla*, *M. juncea*, *Schoenoplectus tabernaemontani*, *Carex maorica*, *C. virgata*, *Cyperus ustulatus*, swamp millet (*Isachne globosa*), kiokio (*Parablechnum novae-zelandiae*), *Thelypteris confluens* and the introduced *Lotus pedunculatus*.

To the south is a 10 ha wetland with an area of around 0.35 ha open water in a turbid devegetated state. The wetland vegetation appeared to be dominated by a mix of raupō, kuta (*Eleocharis sphacelata*) and *Machaerina* spp. An area treated with endothall in July 2021 was inspected on 12 August 2022. Regrowth of all woody species (kānuka and mānuka), raupō, sedges the grass *Isachne globosa* was noted in the treated areas, with the ferns *Blechnum minus* and *Hiya* (formerly *Hypolepis*) *distans* showing the most impact from herbicide application. Regrowth of both species was noted but there were patches of both species where no recovery was apparent. Winter die-off of raupō and *I. globosa* was also noted in the untreated plots, with percentage of dead to living foliage of these species similar in treated and untreated plots.



**Lake Tutaki wetland** treated with endothall in July 2021. (Photo Paul Champion 12 August 2022).

### Submerged vegetation

In 2022, the submerged vegetation was surveyed using snorkelling, rake and sonar. Underwater visibility was good, estimated at 4 m. No hornwort (*Ceratophyllum demersum*) was detected during ~2 hours of investigation of the main lake, with no hornwort found in the northern pond either. The only submerged species found was the indigenous charophyte *Chara australis* found at a maximum depth of 3.2 m with an average cover of < 5% at all three transect sites, with a maximum cover between 5 and 25% at each site.



**High cover (>70%) of *Chara australis* in Lake Tutaki** (Photo: Daniel Clements 12 August 2022).

Additionally, a Scuba survey was undertaken in September 2022 by Marine Environmental Field Services (MEFS) which found one 20 cm shoot of hornwort in the southeastern end of the lake (Sutton 2022). The survey reported *Chara australis* throughout all parts of the lake surveyed up to 80% cover and also observed *Potamogeton ochreatus* at 3 to 4 m depth.

In June 2020, submerged vegetation in Lake Tutaki was dominated by an approximately 95% cover of the invasive plant pest hornwort growing to the surface over an estimated 20% of the lake. Very little of the pest oxygen weed egeria was observed from the lake, with several floating fragments near the jetty but less than 10 plants were observed in the lake vegetation. No hornwort or egeria were seen in the inlet stream. Hornwort was present in a small pond of around 50 m<sup>2</sup> approximately 80 m to the north of the main lake and in the southern pond, approximately 250 m south of the lake.

## LakeSPI

A LakeSPI assessment has not been undertaken for Lake Tutaki.

## Water birds

The lake, adjacent wetland and emergent margins provide water bird habitat. At least one pair of black swan (*Cygnus atratus*) and two pair of dabchicks (*Poliiocephalus rufopectus*). Sutton (2022) recorded shag, dabchick, and mallard at the lake.

## Fish

Shortfin eel (*Anguilla australis*) were seen.

## Aquatic invertebrates

No aquatic invertebrates were noted.

## Endangered species

The rare fern *Thelypteris confluens* (At Risk Naturally Uncommon) and New Zealand dabchick (At Risk Recovering) were found at Lake Tutaki.

## Lake Ecological Value

The Lake Ecological Value score for 2022 was assessed as 8 “High to Moderate”, situated in a predominantly natural catchment, with some rare species and an apparently re-establishing native submerged vegetation could see future improvement in the lake’s ecology.

## Threats

The lake is accessible by 4wd to the public from the beach and the grassed area next to the lake is used for casual camping. The hornwort introduction represents a threat to other lakes nearby if anyone accesses the lake e.g., for duck hunting, swimming, or eel fishing, and accidentally transfers fragments of the plant on equipment.

## Management recommendations

Eradication of hornwort and egeria in this lake is recommended to protect other water bodies from incursion of this species. Ensure regular surveys are undertaken for hornwort (and egeria) fragments and either remove by hand weeding or another application of herbicide if there is widespread regrowth. It is also recommended that lake users are identified and informed of the risks associated with the dispersal of these highly invasive

weeds. If possible, the jetty should be removed to discourage lake use.

## References

Sutton, B. (2022) Lake Tutaki hornwort delimitation. MEFS Memo: 9 September 2022.