Poutō Peninsula

Lake Tutaki (Poutō), NRC Lake No. 344

Figure: Lake Tutaki. Photo taken from the eastern side of the lake showing surface-reaching hornwort beds. (Photo: Lisa Forester NRC, March 2020).

Summary	Lake Tutaki
Surveyed:	Recce June 2020
Overall ranking:	**Moderate**: A small lake highly degraded by a 95% submerged cover of the invasive plant pest hornwort (*Ceratophyllum demersum*) forming surface-reaching beds over an estimated 20% of the lake. A second highly invasive oxygen weed egeria (*Egeria densa*) is present in low amounts. A small pond approximately 80 m to the north is also infested with hornwort.
Threats:	Public access to this lake represents a risk to other lakes in the area through spread of fragments of weed on clothing and gear. This lake is adjacent to a cleared area which is used for camping. There is also a small jetty. Thick covers of hornwort are currently supporting good water clarity. The hornwort is almost growing to the surface and is covering most of the lake floor. A collapse of submerged vegetation and switch to a turbid planktonic algal dominated state is possible.
Management recommendations:	Eradication of hornwort and egeria is recommended as these are a threat to other nearby waterbodies and will also eventually cause collapse of this lake if left to grow. It is recommended that lake users are identified and informed of the risks associated with dispersal of these highly invasive weeds. In the interim, removal of the jetty will help discourage public use of the lake.

Description

Lake Tutaki (1692191E, 5983210N) is a ~2.85ha dune lake in a deflation hollow in Holocene sands with a small associated pond of around 50 m^2 approximately 80 m to the north. The NIWA autonomous hydrone boat recorded a maximum depth of 5.4 m though dense beds of hornwort made it difficult to map the depths on the lakebed accurately. 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.

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*, 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.

Submerged vegetation

Submerged vegetation in Lake Tutaki is dominated by an approximately 95% cover of the invasive plant pest *Ceratophyllum demersum* (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^2 approximately 80 m to the north of the main lake but was not evident in the wetland pond to the south of the main waterbody.

LakeSPI

A LakeSPI assessment has not been undertaken for Lake Tutaki but is likely to be categorised as poor due to domination by hornwort.

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 (*Poliocephalus rufopectus*).

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 2020 is 6 “Moderate”, situated in a predominant natural catchment, with some rare species. However, the submerged vegetation is dominated by introduced invasive species.

Threats

The lake is choked with the serious weed hornwort with minor amounts of the pest oxygen weed, egeria. A collapse of submerged vegetation and switch to a turbid planktonic algal dominated state is possible. Hornwort was also present in a small pond of around 50 m^2 approximately 80 m to the north of the main lake. A low altitude aerial inspection was undertaken in June 2020 with no evidence of hornwort or other weeds being seen in the adjacent wetland pond or other nearby waterbodies, though a small farm lake (Northland Lake#335A) with hornwort was found 11 km to the southeast.

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 represents a threat to other lakes nearby if anyone accesses the lake e.g. for duck hunting, swimming or eel fishing, and accidently 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. 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. See Elcock et al. (2020) for detail of recommended actions[1].

Dense surface reaching beds of the pest plant, hornwort in Lake Tutaki. (Photo: NIWA March 2020)

[1] Elcock S, Clements D, Champion P 2020: Delimitation of hornwort in an unnamed Poutō Peninsula lake, Northland. Prepared for Department of Conservation April 2020. *NIWA Client Report 2020094HN*