Poutō Peninsula

Kahuparere (Poutō), NRC Lake No. 384.

Kahuparere showing pasture in the foreground, and pine forest behind kanuka scrub on sand dunes in the distance. Photo Lisa Forester, NRC.

Summary	Kahuparere
Surveyed:	1985, 1988, 2001, 2005, 2007, 2012, 2015 and 2021.
Overall ranking:	**Outstanding**: Medium sized lake with native vegetation on the western fringe and associated wetland to the south. Fringed by dense emergent vegetation, with margins fenced. *Utricularia gibba* was not recorded in 2021 but has been recorded previously.
Threats:	Boat access restricted, but tall-growing native vegetation would be easily invaded by tall-growing exotic species. The lake edges are fenced but there are at least two places where the lake floods into the paddock creating pugging that could affect water quality in the lake.
Management recommendations:	Lake native biodiversity value monitoring every 5 years. Livestock have been excluded from the lake margins, with indicators showing improved water clarity and quality. Further adjustments could be made to the fence line to arrest grazing in areas where the lake edge extends into the paddock during winter.

Description

A small (9.4 ha) dune lake (1703875E, 5974465N) with a maximum depth of 7.9 m. The lake is situated on sand dunes in a mostly pastoral catchment, with pine forest fringed by kanuka scrub on the steep western dune face and wetland to the south. Access is across 2 km of private farmland, 4-WD access only and no trailer boat access. It has been fully fenced since 2009.

Wetland vegetation

The lake was ringed with emergent vegetation 10 to 15 m wide and dominated by *Schoenoplectus tabernaemontani* (growing to 1.5 m deep), *Typha orientalis* (growing to 1.5 m deep) and lesser amounts of *Eleocharis sphacelata, Machaerina articulata* and *Bolboschoenus fluviatilis*. Other

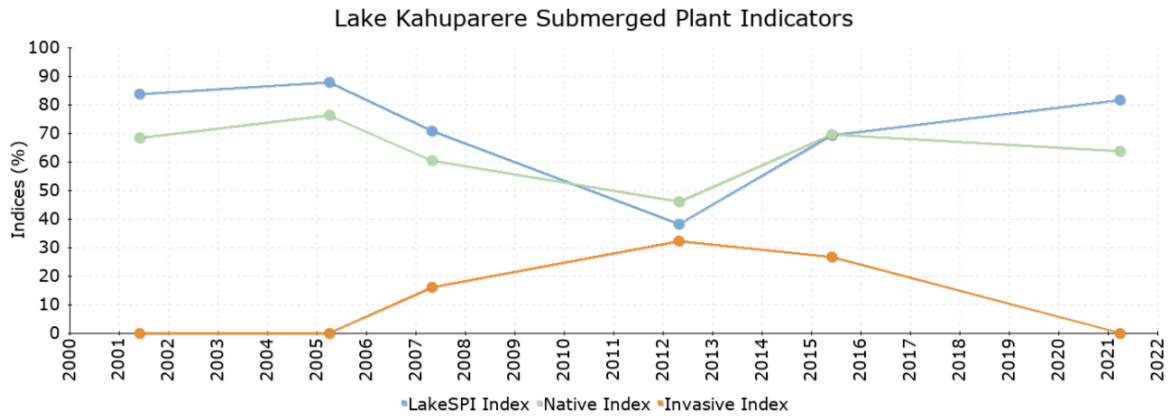
marginal species recorded in 2015 were *Carex secta, Cyperus ustulatus, Eleocharis acuta*, *Juncus pallidus*, *Persicaria decipiens* and the introduced *Ludwigia palustris.*

Submerged vegetation

In 2021, the submerged vegetation was dominated by charophyte meadows of *Chara australis* and *C. globularis* to a depth of 4.7 m deep. Additionally, *Myriophyllum triphyllum* and *Potamogeton cheesemanii* were recorded to a maximum depth of 4.3 m.

This differed markedly from 2015 when the submerged vegetation was dominated by dense *Potamogeton ochreatus* beds and meadows of *Chara australis* to a depth of 5.5 m. *Utricularia gibba* formed light covers to 3 m deep. Neither *P. ochreatus* nor *U. gibba* were recorded in 2021.

LakeSPI



Survey Date	Status	LakeSPI %	Native Condition %	Invasive Impact %
March 2021	Excellent	81.5%	63.8%	0.0%
May 2015	High	69.3%	69.5%	26.7%
April 2012	Moderate	38.2%	46.0%	32.1%
April 2007	High	70.7%	60.3%	16.0%
March 2005	Excellent	87.8%	76.2%	0.0%
May 2001	Excellent	83.7%	68.3%	0.0%
January 1985	Excellent	82.9%	66.7%	0.0%

LakeSPI for Kahuparere. Seven LakeSPI surveys are recorded between 1985 and 2021.

Kahuparere is categorised as being in excellent Ecological condition with a LakeSPI Index of 82%. The lake has steadily improved since 2012 (Moderate) when the invasive impact of *Utricularia gibba* affected scores. Despite a slightly shallower bottom limit in 2021, increased charophyte abundance and lack of *U. gibba* has improved LakeSPI similar to those prior to invasion of that species in 2007.

Water birds

The dense emergent beds on the western side of the lake along with marginal scrub provide good habitat for waterbirds. Pukeko (*Porphyrio melanotus*), little black shag (*Phalacrocorax sulcirostris*), dabchick (*Poliocephalus rufopectus*), white-faced heron (*Egretta novaehollandiae*), grey duck (*Anas superciliosa*) paradise shelduck (*Tadorna variegata*), black swan (*Cygnus atratus*) and kingfisher (*Todiramphus sanctus*) were seen and Australasian bittern (*Botaurus poiciloptilus*) and fernbird (*Bowdleria punctata vealeae*) heard in 2015. DoC SSBI reports Caspian tern (*Sterna caspia*), scaup

(*Aythya novaezeelandiae*) and spotless crake (*Porzana tabuensis*). The migrant Eastern little tern (*Sterna albifrons sinensis*) was noted in 2007.

Fish

The extensive emergent beds and tall submerged vegetation provide suitable habitat for various fish and NIWA FBIS records include the rare īnanga (*Galaxias maculatus*), whilst common bully (*Gobiomorphus cotidianus*) were noted during the vegetation sampling.

Aquatic invertebrates

Kewai / freshwater crayfish (*Paranephrops planifrons*) were recorded in 2007 and torowai / freshwater mussels (*Echyridella menziesii*) were noted in the 2001 survey, but neither have been seen since that time. The native snail *Glyptophysa variabilis* was seen in 2007.

Endangered species

The At Risk Declining īnanga (*Galaxias maculatus*) have been found in Kahuparere. Threatened birds included the Nationally Critical grey duck and Australasian bittern, the At Risk Declining fernbird, the At Risk Naturally Uncommon little black shag and At Risk Recovering dabchick.

Lake Ecological Value

Based on the 2012 survey, a Lake Ecological Value score of 13 (Outstanding) was calculated. The endangered species and key species scores have dropped due to the loss of torowai (not seen since 2001) and reduced species threat status assessment of dwarf īnanga (now not recognised as distinct from īnanga). This is offset by an increase in buffering score (now a maximum score of 3) and increases in aquatic vegetation diversity and integrity scores. Water quality trends showed improvement in TLI indicating an almost mesotrophic status (10-year median of 4.01 and most recent 5-year median of 3.94) in 2019, although water clarity was poor in 2021.

Threats

Currently, no pest species are present with the apparent loss of the invasive *Utricularia gibba*. Access is through 2 km of private farmland so the risk of introduction is low. The lake would be very susceptible to invasion.

Fencing of the margin was done in 2009 and which led to improved marginal, emergent and submerged vegetation. However, poor water clarity and algal mats were recorded in 2021.

Management recommendations

Ensure the owner maintains an awareness of the threats posed by introduced weeds and their mode of introduction on contaminated fishing nets to the owner.

Work with landowner to adjust marginal fence line to accommodate high lake levels and alleviate pugging on the lake margin.

Carry out lake biodiversity monitoring every 5 years.