

North Dargaville Lakes

Lake Te Riu (Waipoua), NRC Lake No. 201.



Lake Te Riu showing the main northern basin of the lake mostly surrounded by introduced species especially pampas, with pine plantation forestry in the surrounding consolidated dunes.

Summary	Lake Te Riu
Surveyed:	2006, 2011, 2015 and 2023 (recce)
Overall ranking:	Outstanding: An isolated small shallow lake with no invasive biota other than <i>Utricularia gibba</i> , which had a limited impact on the submerged vegetation. One of few Northland lakes with oligotrophic water quality (last measured 2009).
Threats:	Little risk of aquatic pest introductions. Water quality could be impacted by pine plantation management (logging, fertilisers).
Management recommendations:	Monitor water quality. Regular five-yearly ecological monitoring.

Description

Te Riu (1645095E, 6051723N) is 4.4 ha in area with a maximum depth of 4 m. It is accessible only by 4WD via forestry roads and a rough sandy track. It is long and narrow and open water is not contiguous between the north and smaller south basins. The catchment is pine plantation with some scrub and wetland.

Wetland vegetation

The lake is fringed with tall emergent species predominantly *Eleocharis sphacelata*, *Machaerina articulata* and *M. arthropylla*, with some *Schoenoplectus tabernaemontani*, *Typha orientalis*, *M. juncea*, *E. acuta*, *Carex virgata*, *Cyperus ustulatus* and *Apodasmia similis*. Associated sprawling emergent species included *Isachne globosa*, *Persicaria decipiens* and *Isolepis prolifera*.

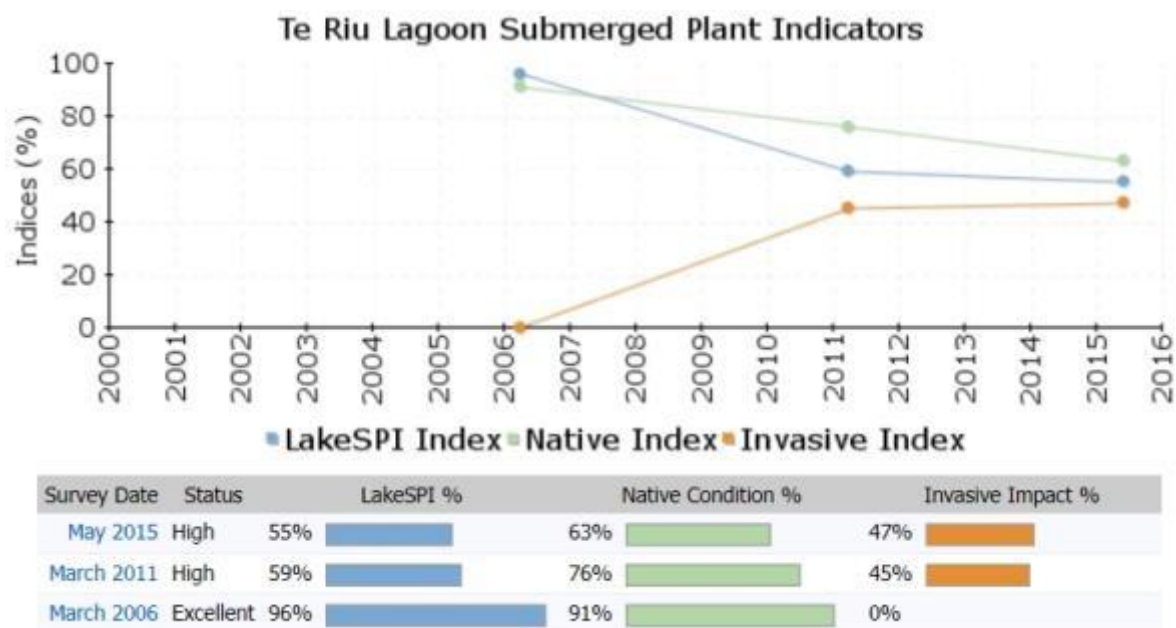
Submerged vegetation

In 2023, a dense meadow of *Chara australis* extended out from the outer edge of emergent sedges (1.5 m) to a maximum depth of 3 m, with 100% cover and an average height of 1 m. Other native submerged species included *C. fibrosa*, *Potamogeton cheesemanii* and *Myriophyllum propinquum*, all occurring at covers <5%. The invasive *Utricularia gibba* was locally abundant at the southern end of the water body but was otherwise sparse, only associated with emergent sedges.

In 2015, dense mats of the invasive *Utricularia gibba* comprised the dominant vegetation, sprawling over meadows of the native *Chara australis* to a maximum depth of 3.1 m.

In 2006 and 2011, the native bladderwort *Utricularia australis* was common in the submerged vegetation but it had not been seen since that time. The invasive *Utricularia gibba* was absent from Lake Te Riu in 2006, co-existing with *U. australis* in 2011, with the native bladderwort much reduced in abundance at that time.

LakeSPI



LakeSPI Index for Lake Te Riu as % of potential score since 2006. Native Condition Index, and Invasive Impact Index are also shown.

No LakeSPI Index was generated in 2023, although it is likely that this has improved from 2011 and 2015, when *Utricularia gibba* severely impacted the submerged vegetation, whereas its impact was very localised in 2023. The 2006 assessment was preliminary, based on three sites only.

Water birds

Dabchick (*Poliiocephalus rufopectus*), hybrid mallard grey duck (*Anas superciliosa* x *A. platyrhynchos*), little shag (*Phalacrocorax melanoleucos brevirostris*) and little black shag (*Phalacrocorax sulcirostris*) were seen in 2023, along with fernbird (*Bowdleria punctata vealeae*) heard in marginal vegetation.

Fish

Shortfin eel (*Anguilla australis*) were seen and longfin eel (*Anguilla dieffenbachii*) have been reported by Rowe and Chisnall (1997). Common bullies (*Gobiomorphus cotidianus*) were caught by Gee minnow trap in 2023, some specimens had distended abdomens symptomatic of an intestinal endoparasitic cestode or trematode species (only previously observed in Lake Karaka). Dune lakes galaxias sourced from the Kai Iwi lakes were released by DOC into this lake (Amy MacDonald, DOC Northland pers. comm.), but none were noted despite extensive searching.

Aquatic invertebrates

Freshwater sponges were abundant in 2023 and the gastropod *Physa* was occasional.

Endangered species

The Nationally Critical *Utricularia australis* was present in the submerged vegetation in 2006 and 2011 but was not found in 2015 or 2023, possibly displaced by the dense smothering growths of *U. gibba*.

The At-Risk Declining longfin eel are reported from Lake Te Riu.

The Nationally Threatened – Increasing dabchick was recorded in 2023, along with At-Risk: Declining fernbird, At-Risk Relict little shag and At-Risk Naturally Uncommon little black shag.

Lake Ecological Value

In 2023, an Outstanding Lake Ecological Value score of 13 was calculated for Lake Te Riu. This compared with previous assessments of Moderate in 2011 and High in 2015. The increased score between 2011 and 2015 was related to the inclusion of water quality data showing the lake to be oligotrophic. Despite the apparent loss of the endangered *Utricularia australis*, increased buffering and aquatic species richness and submerged vegetation integrity score has led to the improved Lake Ecological Value.

Threats

Access is difficult and so aquatic pest introductions are unlikely but could displace the native vegetation if this occurred.

Forestry activities such as fertiliser application and logging within the catchment can markedly affect the nutrient status of the lake, with the regionally rare oligotrophic status of Lake Te Riu at risk of eutrophication.

Management recommendations

Repeat water quality monitoring to assess trophic status.

Regular five yearly ecological assessments are advocated.