

North Dargaville Lakes

Te Riu (Waipoua), NRC Lake No. 200B.



Te Riu, both photos looking north, showing the northern part of the lagoon left and southern part on the right.

Summary

Survey dates 2006, 2011 and 2015.

Overall ranking

High: Isolated small shallow lake with no invasive biota other than *Utricularia gibba* which now dominates the submerged vegetation. The Nationally Critically Endangered *Utricularia australis* was formerly common but was not observed in 2015. One of few Northland lakes with oligotrophic water quality (last measured 2009).

Threats

Biosecurity, low risk of pest plant introduction but subsequent impact likely to be high.

Management recommendations

Monitor for the presence of *U. australis* in spring/early summer.

Description

Te Riu (2555191E, 6613202N) is 4.4 ha in area with a maximum depth of 4 m. It is accessible only by 4 WD via forestry roads and a rough sandy track. It is long and narrow and open water is not continuous between the north and smaller south basins. The catchment is pine plantation with some scrub and wetland.

Wetland vegetation

The lake is fringed with wetland plants, predominantly *Eleocharis sphacelata*, *Machaerina articulata*, *M. arthropylla* and some *Typha orientalis* and *Schoenoplectus tabernaemontani*.

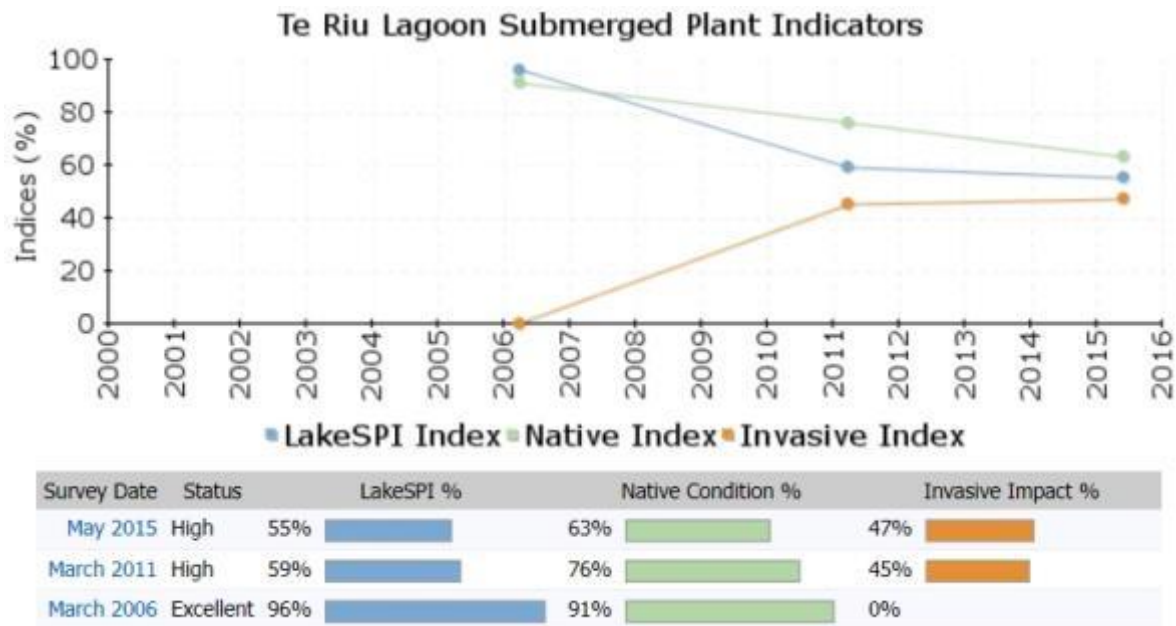
Submerged vegetation

Dense mats of the invasive bladderwort *Utricularia gibba* comprised the dominant vegetation in 2015 (Figure Error! No text of specified style in document.-1) sprawling over meadows of the native *Chara australis* to a maximum depth of 3.1 m.



Figure Error! No text of specified style in document.-1: Te Riu, the nationally critically endangered *Utricularia australis* co-existing with dense mats of the exotic *U. gibba* (ABOVE) in 2011; and *U. gibba* dominated vegetation with no *U. australis* found in 2015 (BELOW).

LakeSPI



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

The large reduction in LakeSPI index from an excellent 96% to a high 55%, and increase in invasive values to 47% (**Error! Reference source not found.**) highlight the significant impact that *U. gibba* has had in this lagoon.

Water birds

One black shag (*Phalacrocorax carbo novaehollandiae*) and a little black shag (*Phalacrocorax sulcirostris*) were seen in 2015, along with four fernbird (*Bowdleria punctata vealeae*) heard on the western side of the lake.

Fish

Shortfin eel (*Anguilla australis*) seen and longfin eel (*Anguilla dieffenbachii*) were reported by Rowe and Chisnall (1997). Bullies were abundant but many had distended abdomens symptomatic of an intestinal endoparasitic cestode or trematode species (only previously observed in Lake Karaka). Dwarf inanga were released by DOC into this lake (Amy MacDonald, DOC Northland pers. comm.), but none were noted despite extensive searching.

Aquatic invertebrates

No torowai / freshwater mussels or kawai / freshwater crayfish were noted, but *Physa* were abundant.

Endangered species

The At-Risk: Declining longfin eel are reported from Lake Te Riu. The Nationally Critical *Utricularia australis* was present in the submerged vegetation in 2006 and 2011 (Figure **Error! No text of specified style in document.-1**) but was not found in 2015, possibly displaced by the dense smothering growths of *U. gibba*. The At-Risk: Declining fernbird was heard in 2015. Both shag species recorded are assessed as At-Risk: Naturally Uncommon.

Lake Ecological Value

Based on the 2013 survey, a Lake Ecological Value score of 7 (rated Moderate) was calculated. The endangered species score has dropped due to the loss of *Utricularia australis*, but a reassessed aquatic vegetation integrity score and inclusion of water quality data from 2007 and 2009 equating to oligotrophic condition resulted in a revised score with a total Lake Ecological Value score of 11. The lake is now rated as High.

Changes in indicators

In 2006, most of the lake was vegetated, dominated by the native *Chara australis* which formed meadows to 3.3 m deep, with lesser amounts of tall growing *Potamogeton cheesemanii*. *Utricularia australis* was common sprawling over this submerged vegetation in 2006 and was still present in 2011 (Figure **Error! No text of specified style in document.**-1) but was smothered by entangling mats of *U. gibba*. *Utricularia australis* was not found in 2015 and the charophytes were less abundant.

There may be a seasonal component accounting for the apparent decline in submerged vegetation with the 2015 survey in late May compared with the earlier ones in March.

Threats

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

Management recommendations

Due to the much later date of inspection, the survival of *U. australis* cannot be discounted, although the density of *U. gibba* and associated epiphyton may have led to the extirpation of *U. australis* as has occurred in other Northland lakes. A survey should be conducted in spring/early summer. Repeat water quality monitoring to assess trophic status.