

North of Dargaville

Freidrich's Lake (Baylys Beach), NRC Lake No. 282



Freidrich's Lake. Photo shows the artificially maintained area of open water evidenced by the straight line of emergent kuta (Photo: Paul Champion 4 May 2018).

Summary

Surveyed 2005 and 2018 (reconnaissance only).

Overall ranking

Moderate to low: A small, shallow, fully fenced lake, dominated by the emergent sedge kuta (*Eleocharis sphacelata*), which has been cleared to maintain an open water area.

Threats

Lake on private property with limited access, but the possible presence of eels may present a risk of future pest plant introductions. Alligator weed (*Alternanthera philoxeroides*) has limited impacts on the lake, after over ten years since its introduction.

Management recommendations

No regular ecological monitoring.

Description

A small (7.15 ha) dune lake (1668632E, 6022433N), with a maximum depth of 2 m. Pasture catchment grazed by cattle, now entirely fenced. No inflows or outflows. Access is across private farmland and can be reached by 2WD in dry weather.

Wetland vegetation

Kuta (*Eleocharis sphacelata*) was the dominant emergent vegetation and would entirely fill the lake if the owner did not maintain open water, presumably for duck shooting. Biodiversity has been enhanced by this action as it creates habitat for submerged species. The invasive alligator weed (*Alternanthera philoxeroides*) was well established amongst marginal kikuyu (*Cenchrus clandestinum*). The introduced spike sedge *Eleocharis* sp., previously noted on the floodplains of the Northern Wairoa and Kaihu Rivers, was found here for the first time in 2018.

Submerged vegetation

In 2005, the submerged vegetation was dominated by *Chara australis*, with small amounts of *Potamogeton cheesemanii* and *P. ochreatus*. Plants grew across the deepest parts of the lake. The exotic bladderwort *Utricularia gibba* was common in areas to 1 m deep where it sprawled over other vegetation. One shoot of the nationally endangered *Utricularia australis* was found.

In 2018, a low (0.1 m tall) meadow of *Chara australis* covered most of the open area, with lesser amounts of *Nitella* sp. aff. *cristata* and *N. pseudoflabellata*. *Potamogeton ochreatus* was also common. *Utricularia gibba* was less abundant than in 2005, with covers reducing from dense mats in shallow areas to scattered plants around 5% cover. No *U. australis* was located.

LakeSPI

In 2005, the moderately low LakeSPI score of 57% (68% Native Condition Index; 44% Invasive Impact Index) reflected a restricted development of native vegetation and the impact of dense mats of the invasive *Utricularia gibba*. No LakeSPI score was generated in 2018, but the reduced impact of *U. gibba* should decrease the Invasive Impact Index and increase LakeSPI score. As open water is artificially maintained through kuta control, LakeSPI is not considered to be an appropriate metric for this lake.

Water birds

The areas of emergent vegetation provide moderate waterfowl habitat, with black swans (*Cygnus atratus*) and mallard (*Anas platyrhynchos*) the only species seen. There are 1980's records of the nationally threatened bittern (*Botaurus poiciloptilus*) and regionally important dabchick (*Poliocephalus rufopectus*).

Fish

Several shortfin eels (*Anguilla australis*) were seen on both sampling occasions. The invasive *Gambusia affinis* was not seen on either sampling occasion.

Aquatic invertebrates

Freshwater sponges were noted on submerged vegetation. Back swimmers were noted in 2018.

Endangered species

No threatened species were observed in and around Freidrich's Lake in 2018.

Lake Ecological Value

Freidrich's Lake Ecological Value is assessed as 5 "Moderate to Low", a small, shallow dammed water body, dominated by the emergent sedge kuta, but with good native aquatic plant biodiversity. The lake has now been completely fenced to prevent livestock access to the water body.

Threats

Alligator weed (*Alternanthera philoxeroides*) has limited impacts on the lake, after over ten years since introduction. The shallow nature of the lake means that waterfowl have access to submerged vegetation throughout the open water area.

Tall-growing exotic pest plants have potential to invade this lake if introduced, but the risk of introduction is minimal, unless eel fishing is undertaken.

The lake is unsuitable for boating, but eel fishing and shooting activities are likely.

Management recommendations

No regular monitoring for lake native biodiversity value required.

