North of Dargaville

Black Lake (Kai Iwi Lakes), NRC Lake No. 226.

Black Lake. Divers record submerged and emergent vegetation data in Black Lake, with regenerating forest seen in the catchment. (Photo: Susie Elcock, September 2018).

Summary	Lake name
Surveyed:	2018.
Overall ranking:	**High**: A small, fully fenced lake, with extensive wetland and regenerating forest catchment, surrounded by raupo (*Typha orientalis*) and other emergent vegetation, with a predominantly native submerged vegetation. The lake is naturally heavily stained reducing the depth potential of submerged vegetation.
Threats:	Few threats as lake is on private property with limited access, despite its proximity to the Kai Iwi lakes.
Management recommendations:	Further monitoring including water quality and a fish survey (potential black mudfish (*Neochanna diversus*) habitat). Manage gambusia present in drains on the property. Undertake 5 yearly ecological monitoring.

Description

A small (1.5 ha) lake (1656385E, 6038510N), with a maximum depth of 19.8 m. The water was heavily stained orange/brown resulting from the dense wetland marginal vegetation, with a marked thermocline at 3 m depth. The lake was surrounded by a recently fenced wetland (0.86 ha), with over 2 ha of regenerating forest in the catchment, the remainder is grazed by cattle. Access is across private farmland, with no boat access to the lake.

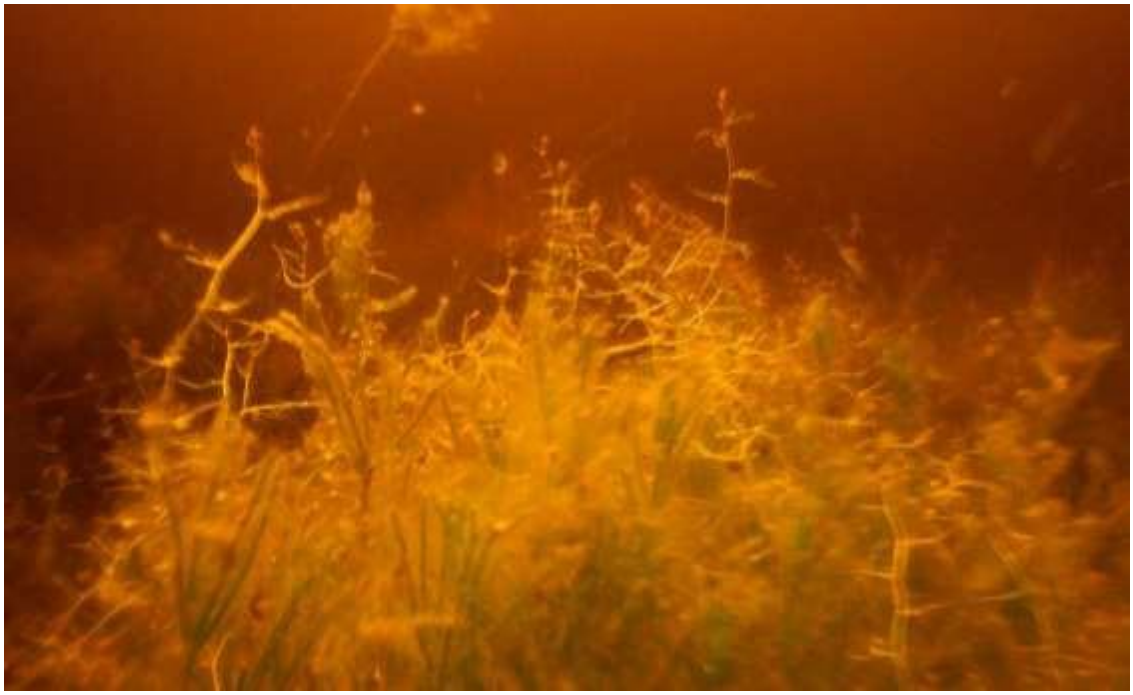

Figure 3-2: Black Lake. Photo showing the brown-stained water, with submerged *Chara australis* and *Utricularia gibba*. (Photo: Tracey Burton 18 September 2018).

Wetland vegetation

Raupo (*Typha orientalis*) was the dominant emergent vegetation, with associated harakeke (*Phormium tenax*), *Machaerina rubiginosa, Isolepis prolifera, Persicaria decipiens, Ranunculus amphitrichus* and *Isachne globosa*. This vegetation formed a complete almost 20 m band surrounding the lake, to a depth of 1.5 m. The wetland further away from the emergent vegetation was dominated by *Juncus* rushland, with four species noted including *Juncus pauciflorus*.

Submerged vegetation

The submerged vegetation was dominated by *Chara australis* and *Nitella* sp. aff. *cristata*, both forming high covers from 1.0 to a maximum depth of 4.9 and 6.7 m respectively. *Potamogeton ochreatus* was common in the submerged vegetation, with *P. cheesemanii* also found on one profile. The invasive *Utricularia gibba* was common attached to raupo roots and sprawling over the other submerged species to a maximum depth of 3.9 m.

LakeSPI

LakeSPI results for Black Lake. LakeSPI Indices expressed as a percentage of lake maximum potential.

Survey Date	Status	LakeSPI %	Native Condition %	Invasive Impact %
September 2018	High	52%	48%	36%

Black Lake is categorised as being in high ecological condition with a LakeSPI Index of 52%.

Water birds

No waterfowl were recorded during the visit.

Fish

No fish including the invasive *Gambusia affinis* (abundant in the adjacent Kai Iwi lakes) were seen during the visit. Several introduced Australian golden bell frog (*Ranoidea aurea*) were observed on the lake margin.

Aquatic invertebrates

Freshwater sponges were noted on submerged vegetation and the roots of raupo. A single leech (*Richardsonianus mauianus*) was observed on the lake margin.

Endangered species

Juncus pauciflorus is rated as Nationally Vulnerable in the 2017 threat assessment. This plant was the least abundant of the rushes noted at Black Lake.

Lake Ecological Value

An ecological value rating of "12-high" was calculated for Black Lake based on the largely indigenous catchment, entire emergent fringe and submerged charophyte meadows, also including a nationally threatened species.

Threats

Few threats are identified for Black Lake as it is situated on private property with limited access, despite its proximity to the Kai Iwi lakes. The risk of gambusia entering the lake from Lake Waikare is rated as high, with efforts to block drains between the two water bodies being supported.

Management recommendations

Conduct fish surveys (targeting mudfish) and assessment of water quality. Manage the gambusia present in drains (either infill these and/or kill gambusia) on the property. Undertake 5 yearly ecological monitoring.