

## Te Hiku

### Waitahora Lagoon NRC Lake No. 4.



**East end of Waitahora Lagoon:** Left showing a saline influenced wetland dominated by the green oioi (*Apodasmia similis*) and brown sea rush (*Juncus kraussii* var. *australiensis*) (2007). Right: 2009 showing the same area but with oioi impacted by saltwater intrusion (2009).

| Summary                            | Waitahora Lagoon   |
|------------------------------------|--|
| <b>Surveyed:</b>                   | 2007, 2009, 2014 and 2021  |
| <b>Overall ranking:</b>            | <b>High:</b> Pristine wetland complex with both saline and freshwater components, secure populations of numerous endangered biota, and a catchment of indigenous vegetation. |
| <b>Threats:</b>                    | Low risk of introduction of invasive pests.<br><br>The isolated nature of these lakes and the surrounding indigenous vegetation indicate few immediate threats to this site. |
| <b>Management recommendations:</b> | Five year ecological condition monitoring.<br><br>Fish survey in saline and freshwater parts of the Waitahora wetland complex. Plant survey of freshwater pools.             |

## Description

Waitahora Lagoon (NZMG 2493880E, 6749715N) is a large (20.7 ha) coastal lagoon surrounded by indigenous vegetation. In 2014, it was linked to the sea at the western end and most of the lagoon was saline. The catchment was primarily scrub although a large wetland (Paranoa Swamp) was present around the Waitahora Stream with other unnamed streams at the east end of the lagoon. This section of the lagoon links with smaller freshwater lakes (NRC #3). The lagoon is accessed from the Cape Reinga Walkway some 6 km west of the Kapowairua Campground. It can be accessed through a locked gate under Ngati Kuri control and a 4 WD track.

## Wetland vegetation

The western half of Waitahora Lagoon is situated between scrub on the southern side and dunes to the north, lacking significant wetland margins. Dune vegetation included the rare grass *Poa billardierei* (previously named *Austrofestuca littoralis*).

The east half of the lagoon was surrounded by an extensive wetland dominated by oioi (*Apodasmia similis*), sea rush (*Juncus kraussii* var. *australiensis*), the invasive introduced saltwater paspalum (*Paspalum vaginatum*) and smaller salt meadow species. Marginal areas contained *Machaerina juncea*, *Cyperus ustulatus* and *Hibiscus diversifolius*. *Typha orientalis* and *Schoenoplectus tabernaemontani* dominated freshwater areas where the Paranoa Stream discharges into the lagoon. The rare fern *Cyclosorus interruptus* was recorded in marginal wetland vegetation for the first time in 2021.

In 2014, a storm surge during cyclone Lusi inundated much of the lower wetlands. Sea water caused desiccation of saltmarsh, oioi and sea rush to around 1 m above their normal minimum elevation (see Plate B). Re-growth of salt meadow species *Lilaeopsis novaezealandiae*, *Thyridia* (formerly *Mimulus*) *repens* and *Selliera radicans* were noted, forming large beds amongst the stubble of dead taller vegetation.



**Saltwater intrusion has desiccated saline intolerant plants in 2014.**

## Submerged vegetation

Most of the lagoon was saline with no submerged vegetation apart from the red alga *Gracilaria chilensis*. However, some sparse vegetation (5 - 25% cover class) was noted in 2007 in the upper channels. Species present included *Ruppia polycarpa*, *Triglochin striata*, *Thyridia repens* and the

charophyte *Lamprothamnium macropogon*. All these species are typically from brackish areas, although the first of these plants is also relatively common in freshwater lakes.

In 2009, this habitat was devoid of vegetation, but a channel closer to the freshwater wetland supported *Utricularia australis* growing over dead rushes / sedges.

In 2014, *L. macropogon* was found in saline pools in the area formerly supporting *U. australis*.

In 2021, *L. macropogon* was locally abundant in saline water, with submerged *Thyridia repens*, *Selliera repens*, *Triglochin striata* and *Ruppia polycarpa*.

## LakeSPI

There was insufficient submerged vegetation to generate a LakeSPI score for this lagoon.

## Water birds

Extensive emergent vegetation and the relatively undisturbed nature of this lake provides a good habitat for water birds. The regionally significant fernbird (*Bowdleria punctata vealeae*) was heard in the wetland areas at the east end of Waitahora Lagoon. OSNZ records from this locality include the nationally endangered brown teal (*Anas chlorotis*) and one of the few Northland records of marsh crake (*Porzana pusilla*).

## Fish

A school about 40 grey mullet (*Mugil cephalus*) up to 30 cm long was observed in the clear waters of the lagoon in 2007. There are no NIWA FBIS records of fish from this location.

## Aquatic invertebrates

No invertebrates were noted.

## Endangered species

Waitahora Lagoon supports very healthy populations of a range of threatened species including the Nationally Critical *Hibiscus diversifolius* (largest known population), Nationally Vulnerable *Lamprothamnium papulosum* (only site in northern half of the North Island) and Naturally Uncommon *Thyridia repens* (largest Northland population).

*Hibiscus diversifolius* dominated a narrow fringe of wetland vegetation between saltmarsh and dunes or scrub. The estimated area of occupancy exceeded 1 ha and was therefore likely to be the largest New Zealand population of this plant. Another Nationally Critical *Hibiscus*, the endemic *H. richardsonii*, was present adjacent to this plant near the boardwalk crossing the lagoon.

Prior to its discovery here in 2007, *Lamprothamnium macropogon* was recorded from the southern North Island, the South Island and Chatham (Rekohu) Island, with the northernmost record from the Whakaki Lagoon near Wairoa (Hawkes Bay). Mature plants were seen in 2014 and it likely that this species will persist at the site, re-growing from the seed-bank when growth conditions are suitable. It is provisionally classified as Nationally Vulnerable.

*Thyridia repens* is a rare plant in Northland, with only two other sites known. The Waitahora Lagoon site comprises the largest and least vulnerable population for the species. Saline intrusion and death of taller saltmarsh rushes had increased available habitat for this and other salt meadow species.

The At Risk Declining grass *Poa billardiarei* was common on the dunes between the lagoon and Spirits Bay.

No *Utricularia australis* plants were found in 2014 (commonly found in 2009 in an eastern arm of the lagoon) but pools within less accessible parts of the Waitahora wetland complex may still support this species.

Fernbird (*Bowdleria punctata vealeae*) is classified as At Risk Declining, with 20,000–100,000 mature individuals globally and a predicted decline of 10–50%.

### Lake Ecological Value

Waitahora Lagoon was rated as “11 - High” using the lake ecological value rating. However, it should be included in the group of “Northlands Outstanding water bodies” as it provides an almost unique example of a pristine New Zealand marine contact lake (certainly unique in the North Island).

### Threats

The isolated nature of this lagoon (with locked gate) and the surrounding indigenous vegetation indicates little immediate threats to this site. Periods of saline inflow when the western end of the sand bar is open (as was the case in 2009 and 2014) along with periods where the lagoon is dominated by freshwater results in a highly dynamic habitat.

### Management recommendations

Carry out 5 year ecological condition monitoring.

A fish survey is advocated to determine the fauna of the saline and freshwater parts of the Waitahora wetland complex.

No open water habitats in the freshwater portion of the wetland complex are now easily accessible from the access track. A detailed vegetation survey of ponded areas seen in aerial photographs of the area is required.

It is recommended that reports for Waitahora Lagoon and Lakes (Lake Nos 3 and 4) be amalgamated in the future.