

(*Alternanthera philoxeroides*) at the lake at Ohaka Head and bladderwort (*Utricularia gibba*) in a dune lagoon. A historical record of water hyacinth (*Eichhornia crassipes*) is also known from this area.

1.1.17 Hunua reservoirs

In 1990 the Hunua reservoirs (Cosseys, Upper Mangatawhiri, Waroa and Mangatangi) had a native dominated vegetation of charophytes (*Nitella* aff. *cristata*, *N. pseudoflabellata*), pondweeds (*Potamogeton ochreatus*, *P. cheesemanii*) and the milfoil (*Myriophyllum propinquum*) that extended to between 4.5 and 8 m depth. Alien species included *Ludwigia palustris* and swamp lily (*Ottelia ovalifolia*). The Acheson Stream below the Upper Mangatawhiri dam contained *Lagarosiphon major* and *Myriophyllum variifolium*.

Previously in 1982, the vegetation recorded at the reservoirs was much the same although depths tended to be shallower at this time, which is likely to reflect different operating levels at the times of these two surveys. *Juncus bulbosus* was also recorded from Cosseys Reservoir.

FBIS records the presence of reed sweet grass (*Glyceria maxima*) in the Lilburne arm of the Upper Mangatawhiri Reservoir.

FBIS also records the presence of perch and rudd at Cosseys Reservoir.

As with the Waitakare Reservoirs the chances of weed introduction to these reservoirs are slight. However lagarosiphon is present within the catchment and poses the most immediate introduction threat.

1.1.18 Pehiakura Lakes

In 2005 these two small lakes were dominated by egeria to a depth of c. 5 m. Native milfoil (*Myriophyllum triphyllum*), *Glossostigma submersum* and the charophyte *Nitella hyalina* were also recorded in shallow water (<1.5 m) in the smaller lake. Marginal emergents were widespread in the larger lake and formed isolated clumps around the smaller lake (Figure 6). Filamentous alga was noted around the margin of the smaller lake and a dead catfish was found, confirming the FBIS record for Pehiakura Lake.

Figure 6:

The Pehiakura lakes.



1.1.19 Lake Pokorua

In 2005 egeria was only present in a few restricted areas with <75% cover clumps to 3 m depth. Most of the lake was dominated by the native species with charophytes, *Chara australis* and *Nitella* aff. *cristata*, together with an open canopy of *Potamogeton ochreatus*. Vegetation grew to 3.3 m depth, although visibility was poor (< 0.5 m).

Stock access was fenced off as part of a Landcare project (Chris Katterns, ARC pers comm.) and there were wide wetland edges (Figure 7) where numerous marginal species were recorded. Pest plant species included gypsywort (*Lycopus europaeus*), primrose willow, reed sweet grass, and parrot's feather.

In 1988 egeria was more abundant and formed high cover (>75%) beds from 2 m to 3.8 m depth. Other native plants including *Potamogeton ochreatus*, *Chara australis* and *Nitella* aff. *cristata* were less abundant, or more restricted in depth range. Primrose willow was also recorded.

In 1950 (Cunningham et al. 1953) found *Potamogeton ochreatus* to a depth not exceeding 6 m, with *Chara australis* also recorded in shallower areas.

Figure 7:
Pokorua Lake.



1.1.20 Lake Whatihua (Thompsons)

In 2005 egeria grew as a wide band to 6.8 m depth with tall, dense beds to 3 m and elodea commonly co-dominated as a deeper band between 3 and 7 m. In some places a charophyte bed of *Nitella* aff. *cristata* was recorded between 7 and 7.2 m, whilst *Chara globularis* was common in the shallow zone of 0.5 to 1.5 m. The native milfoil, *Myriophyllum triphyllum* and pondweed, *Potamogeton ochreatus*, were also common. Emergent beds of *Eleocharis sphacelata* and *Schoenoplectus tabernaemontani* were frequent but had been grazed on some shoreline edges (Figure 8). The water clarity at the time of the visit was good with in excess of 6 m visibility for divers.

In 1987 similar vegetation to 2005 was recorded at one site. Prior to this, in 1950 (Cunningham et al. 1953) the lake vegetation was native, comprising charophytes growing in dense clumps where there was organic sediment. *Chara australis* grew to between 6 and 8 m depth, *C. globularis* to 6 m, and *C. fibrosa* was also present.

Figure 8:

Lake Whatihua, note grazing removal of accessible emergent vegetation.



Auckland drain surveys

A total of 47 waterways intercepting the three roads (see Figures 9 to 11) were investigated for presence of pest plants.

Figure 9:

Map showing location of waterways sampled along State Highway 16 and South Head Road.

