

## Annex D: Key findings of the Kakahi monitoring project.

Kakahi Monitoring in Lake Horowhenua was undertaken as a part of the Te Mana o te Wai Cultural monitoring project.

Kakahi (freshwater mussel) monitoring was completed as a part of the cultural monitoring project of the Te Mana o Te Wai Project. The monitoring was undertaken by NIWA in November 2017 as a joint project between the Lake Trust, NIWA, and Horizons. This monitoring involved divers scuba diving within the lake along transect lines and recovering live kakahi (Photo 1) that they encountered. These were then counted, measured, visually inspected and then replaced in the Lake.

Preliminary evaluation of brood pouch status indicated that 43% were females brooding ripe larvae (glochidia). It was concluded that although adult kakahi are producing larvae in Lake Horowhenua recruitment failure is probably occurring with poor or no survival of either larvae and/or juveniles. A likely cause of recruitment failure is poor water quality, specifically elevated pH and ammonia concentrations during the summer larval release period. Other factors may be contributing including reduced populations of host fish and/or sedimentation in juvenile habitat.

In addition, the presence of many dead adult mussels *in situ* in the sediment suggests that adult survival is also decreasing in recent years. The adult mussels may simply be aging and reaching the end of their life span or they may be affected by multiple stressors in Lake Horowhenua, particularly degraded water quality and sedimentation. The results indicate that without in-lake interventions such as lake weed harvesting, the kakahi populations in Lake Horowhenua will eventually become extinct.

The Lake Accords interventions have targeted these potential causes of low recruitment including:

- The lake weed harvesting aiming to address the elevated pH and ammonia concentrations;
- Work to improve fish populations and diversity in the lake including the fish pass work and lake weed harvesting to address toxicity impacts on fish populations; and
- Work to target sediment reduction including installation of the sediment trap, work with Horticulture growers and the recent sediment study to inform sediment management.



**Photo 1:** Kakahi encountered from Lake Horowhenua during November 2017. Kakahi were returned to the water after measurement.