Kōura and kākahi monitoring in Lake Rotoiti Ohau Channel Diversion Wall



Ian Kusabs, Joe Butterworth, Willie Emery November 2014



- Ecologically important keystone species, "ecosystem engineers"
- Considered to be threatened and in decline
- Cultural significance taonga species



Koura monitoring



Kōura

- 3 sampling sites
- Seasonal sampling began in 2005 at Okere
- Tau kõura method In 2004 NIWA/Te Arawa joint research project



Traditional and modern day tau koura



10 fern bundles per tau koura







10 - 12 fern fronds per bundle



CPUE, size (OCL, mm), sex, soft shell, egg-bearing



Abundance of koura captured in Lake Rotoiti, 2005 - 2014



Possible reasons for decline in koura abundance

- Productivity TLI reduced from 4.4 in 2004 to 3.4 in 2014.
- Higher abundances, growth rates and fecundity in productive lakes.
- Water clarity increase from 4.6 m to 7.3m.
- Lake in Norway 50% decrease in crayfish abundance following establishment of Elodea



Koura size, % female and soft shells, 2005 - 14

Mean OCL of kōura - Te Ākau (29 mm), Hotpools (26) mm, Ōkere (16 mm)

Female to male ratio 50:50

Soft shells - Ökere 6%, Te Äkau 8%, Hotpools 11 %

53 mm OCL, 140 g, 15+ years old

Proportion of egg-bearing female koura in Lake Rotoiti, 2005 - 14



Kōura – summary

- Kōura are still abundant in the Ōkere Arm and Lake Rotoiti
- There has been a decline in abundance at Ōkere (treatment) and at Te Ākau (control)
- Possibly due to reduced lake productivity and/or increase in aquatic weeds



Kākahi

- Shallow water <1.2m deep designed by NIWA
- 40 m x 0.5 m transect
- Kākahi density, water & sediment depth, aquatic plants
- Seasonal sampling since 2005
- 5 monitoring sites





Kākahi abundance



Kākahi

- Fine silt build up inside the wall but this has been colonised by low growing turf species
- Kākahi remain abundant in the Ōkere Arm and Lake Rotoiti





Conclusion

 Koura and kakahi are still abundant in the Okere Arm and Lake Rotoiti 6 years after the installation of the diversion wall

However, habitat conditions for both species is constantly changing as water quality improves in Lake Rotoiti and Lake Rotorua (Ōkere Arm)

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Abundance of koura in 8 Te Arawa lakes and the Okere Arm



Size (OCL, mm) of koura in 8 Te Arawa lakes and the Okere Arm

