What is Whakaora Te Waihora?

- A joint programme of work between Te Rūnanga o Ngāi Tahu, Environment Canterbury, and the Ministry of the Environment, with Selwyn District Council joining the co-governance in 2014
- Shared commitment to the restoration and rejuvenation of Te Waihora mauri and ecosystem health

Whakaora Te Waihora

What does Whakaora Te Waihora do?

- Biodiversity: willow control, and riparian planting
- Engineering: re-battering drains to reduce erosion
- Extension: farm environment plans, and field-days
- Cultural: mahinga kai investigations
- Communication: articles and social media
- Science investigations…

Whakaora Te Waihora

Waihora fishery sustainability study

NIWA
Taihoro Nukurangi

Identifying the factors limiting mahinga kai recruitment

Prepared for Whakaora Te Waihora Partners

July 2015

http://tewaihora.org/publications/

- Monitoring fish recruitment for two seasons
- Identifying limiting factors on mahinga kai species
- Assess effectiveness of kohanga area of lake

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Waihora fishery

- Commercial catch data
  - Tuna catch set at 122 t/yr since 2000
  - Major variability in flounder catch
    - Life cycle and openings influence far greater

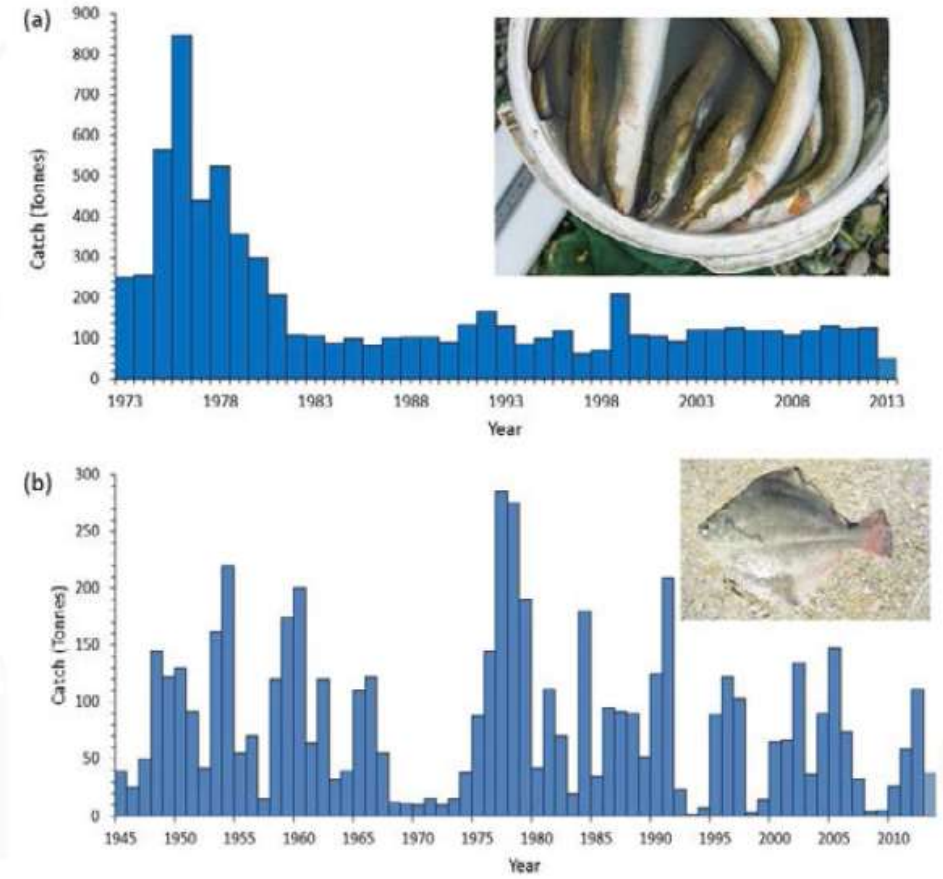

Figure 7.1: Annual commercial catch of eels (a) and flatfish (b) from Te Waihora: Note that the commercial fisheries differ in total duration and that the 2013 fishing year was still in progress when these figures were produced. Data from MPI.

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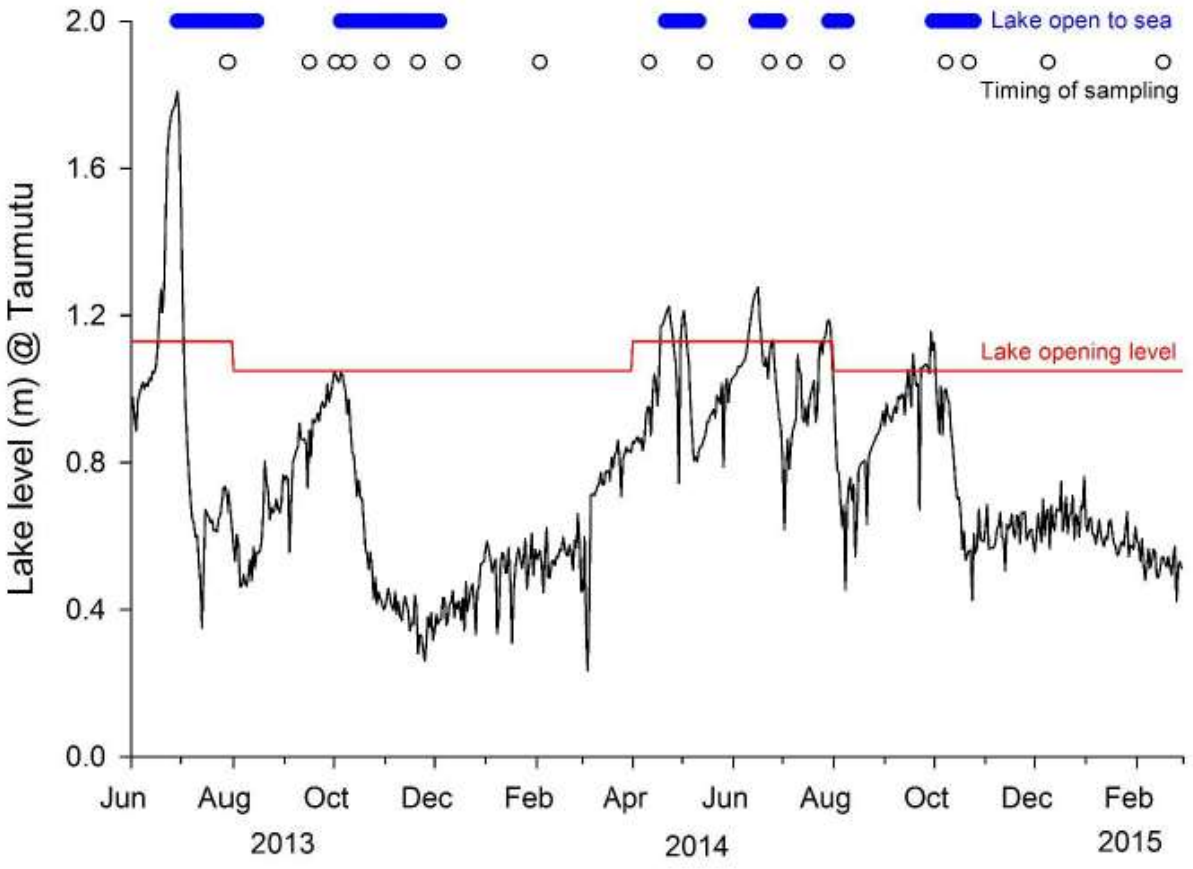
Fish recruitment study

- 3 sites near mouth
  - Monitored 18 times between July 2013 & Feb 2015
  - Used both seine and fine-meshed fyke nets (at night)
- 67% higher in 2013 than 2014
  - 45,501 fish caught
  - 15 species



Fish recruitment study

	Seine nets (%)	Super-fyke nets (%)	
Common smelt	63.5	27.6	
Common bully	29.6	53.6	
Short fin tuna (eel)	0.2	6.4	
Inanga	1.6	10.2	
Yellow belly flounder	2.7	0.2	
Yellow eye mullet	1	0.7	
Long fin tuna (eel)	0	0.1	

Interesting observations

- Longfin glass eels caught for first time near mouth
  - Sept-Oct recruitment time
  - cf shortfin Sept-Nov
  - Importance of new moon phase

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Torrentfish

- Torrentfish recruitment observed for first time
  - Mid-May to December recruitment time
  - Different from previous thoughts of spring and summer recruitment

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Importance of overwash

- Recruitment during period of closed lake reinforce view that species can cross gravel bar
  - 5-12% of recruitment during study may have come during wave overtopping

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Importance of opening length

- Exponential increase in amount of fish recruitment with length of opening

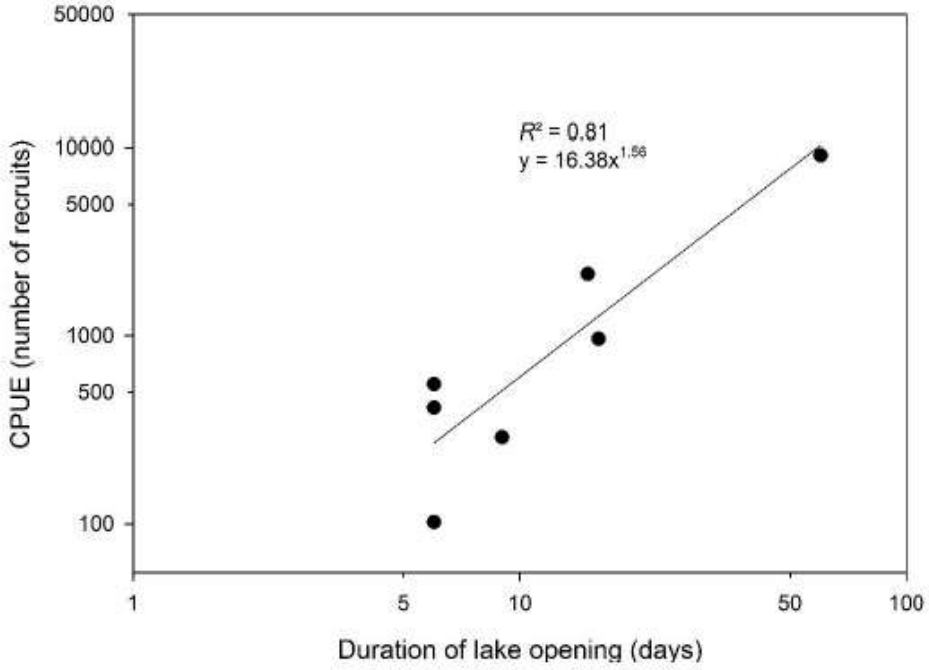

Figure 3-37: Relationship between the number of recruits and the number of days the lake was open to the sea. Both axes are on a logarithmic scale. It should be noted that CPUE is only a measure of relative abundance and not total fish recruitment. CPUE data have been used to make a relative comparison using pooled data from our sampling sites.

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Fishery and lake opening conclusions

- Timing and duration of openings is a critical part of fishery recruitment
  - Changing WCO and consent to accommodate fishery and mahinga kai is a positive step
  - Duration is to do with water velocity as well as amount of time open
- Keeping a low barrier is positive
  - Escape during heke time
  - Recruitment through overwash

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Inanga spawning mapping

- Mapped potential inanga spawning habitat for new protection rules in plan change for Canterbury

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Pointer to new study

Kakahi arranged on a fish measuring board

Adult koura

Photos of koura and kakahi courtesy of EOS Ecology

- Mapping distribution and abundance of kōura and kākahi throughout Canterbury
  - Asking for observations
  - See via WET website

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