

Common smelt abundance and trout production in Lake Rotoiti

Jennifer Blair



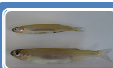

Supervisors: Brendan Hicks,
Nick Ling, Rob Pitkethley

THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

Presentation to the EBOP Rotorua Lakes
Fisheries Panel Meeting,
16 August 2010, Rotorua

OCBER
University of Waikato
Centre for Biodiversity and Ecosystem Research

PhD objectives

-  1. To determine the dynamics of the abundance of common smelt
-  2. To determine the relationship between smelt production and trout production
-  3. To determine the factors that control smelt production
-  4. To recommend how to enhance smelt populations and mitigate against potential detrimental effects of the wall installation

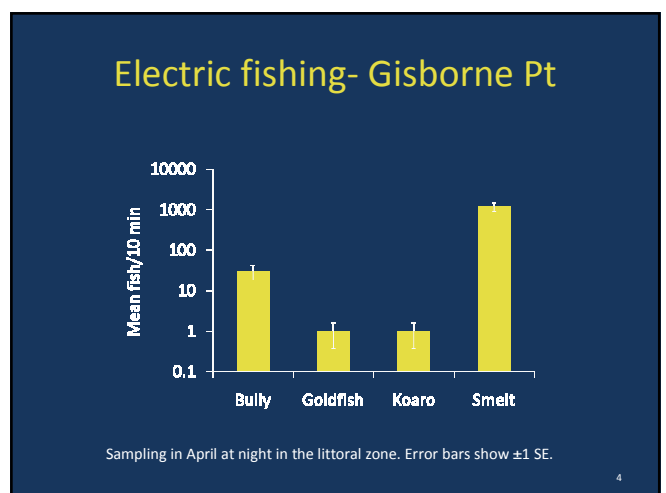
2

Smelt dynamics

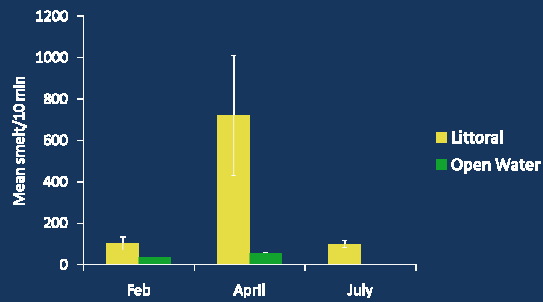
Objective 1. To determine the dynamics of the abundance of common smelt




3



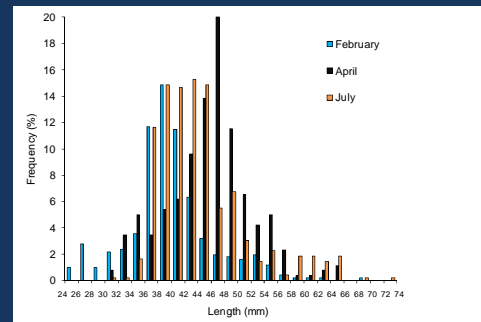
Seasonal changes in smelt catch at Gisborne Pt



Night fishing only. Error bars show ± 1 SE.

5

Smelt length frequency



6

Comparison with other methods

Method	Mean # smelt	Mean length (mm)
Boat EF- Littoral, Day	2.1	38
Boat EF- Littoral, Night	694	44
Boat EF- Limnetic, Day	0.0	39
Boat EF- Limnetic, Night	48	41
Push nets (current off)- Littoral, Night	158	43
Drop net- Limnetic, Day	3.1	24
Purse seine- Limnetic, Night	4.8	34
Beach seine- Littoral, Day	52	47

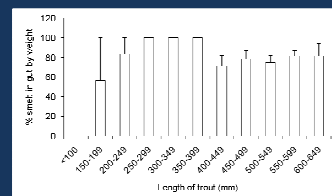
7



Trout diet

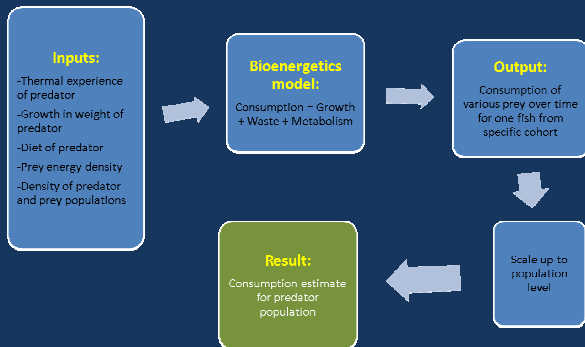


Objective 2. To determine the relationship between smelt production and trout production



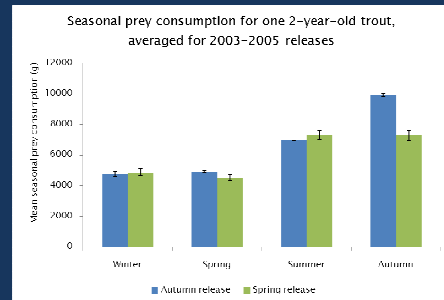
8

Bioenergetics modelling process



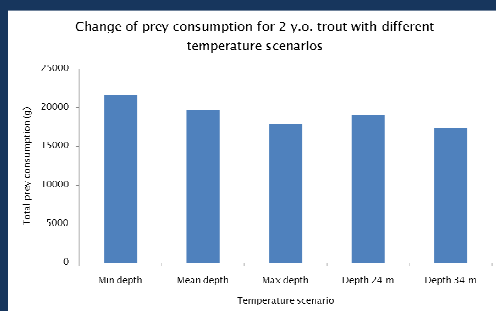
9

Seasonal prey consumption



10

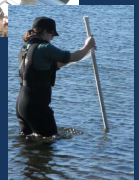
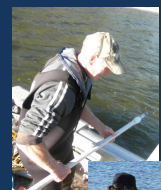
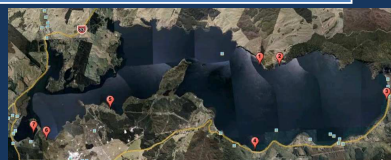
Effects of temperature



11

Smelt spawning and production

Objective 3. To determine the factors that control smelt production



12

Acknowledgements

- Eddie Bowman, Matt Osborne, Gerald Inskeep, Fish and Game staff
- Dudley Bell, Michael Pingram, Rebecca Eivers
- Dave Rowe
- Funding- Environment Bay of Plenty, FoRST Contract UoWX0505, The University of Waikato

