

Boat electrofishing in the Ohau Channel in December 2009

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



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Objectives and results summary

- To investigate the longitudinal pattern in densities of common smelt and common bullies along the Ohau Channel
- Fish NIWA smelt trapping sites to provide an independent estimate of smelt densities
- Length fished 2.72 km at a total of 10 sites, 10 min shots
- Assuming 1-m radius around anodes, width fished was 4 m
- Area fished 10,884 m² (1.088 ha)
- Caught 353 fish - and two introduced fish species (776 in 2008)
- Three native fish species - common smelt, common bully, longfin eel
- Two introduced species - rainbow trout, goldfish
- Half as many smelt in 2009 compared to 2007, 1/3 as many bullies
- CBER Contract Report No. 112

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Ohau Channel – Lake Rotorua end

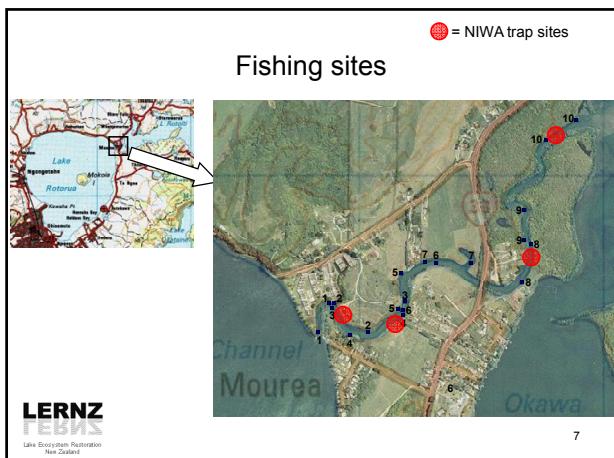


Ohau Channel – middle



Ohau Channel – Lake Rotoiti end





Site	Habitat	Number of fish per site					
		Common bully	Common smelt	Goldfish	Longfin eel	Juvenile rainbow trout	Adult rainbow trout
1	Edge habitat below weir	29	7	0	1	3	5
2	Edge habitat by net site 1	7	44	0	0	1	4
3	Mid channel habitat by net site 1	0	8	0	0	8	5
4	Edge habitat by net site 2	34	29	0	0	1	2
5	Edge habitat	6	11	0	0	0	0
6	Mid channel habitat	0	0	0	0	5	7
7	Edge habitat with artificial enlargement	9	50	3	0	0	0
8	Edge habitat by net site 3	27	0	0	0	1	0
9	Willow edge	5	1	0	0	0	0
10	Edge habitat by net site 4	32	2	5	0	0	1
Total		353	149	152	8	19	24

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Density and biomass

Site	Habitat	Total distance fished (m)	Area (m ²)	Bully density (fish 100 m ⁻²)	Smelt density (fish 100 m ⁻²)	Bully biomass (g 100 m ⁻²)	Smelt biomass (g 100 m ⁻²)
1	Left bank edge habitat immediately below weir	154	616	3.7	16.9	1.70	17.31
2	Left bank edge habitat by trap site 1	180	228	3.8	4.5	1.01	3.89
3	Mid channel habitat by trap site 1	393	1573	0.0	0.2	0.00	0.25
4	Right bank edge habitat by trap site 2	235	940	11.1	15.4	9.99	9.80
5	Right bank edge habitat	137	548	14.2	0.5	8.89	0.55
6	Mid channel habitat	306	1224	0.0	0.0	0.00	0.00
7	Left bank edge habitat with side channel	191	764	13.6	0.1	8.65	0.17
8	Right bank edge habitat by trap site 3	170	680	7.9	0.4	22.75	0.28
9	Left bank willow edge	109	436	3.9	0.7	6.38	0.73
10	Left bank edge habitat by trap site 4	158	803	0.1	0.8	3.22	3.53

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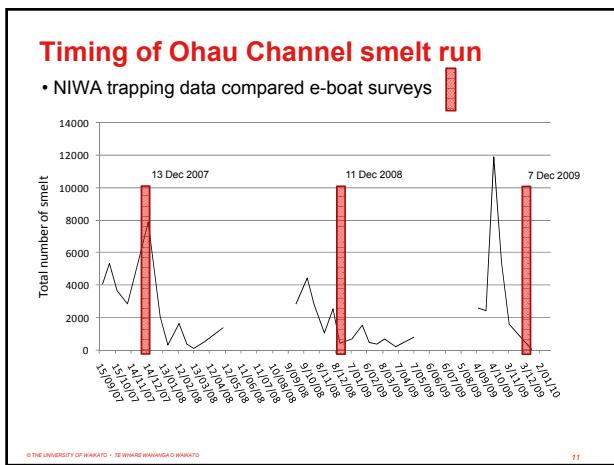
Comparison with NIWA trapping data

NIWA data from smelt monitoring reports

Date	NIWA trap site				Total
	1	2	3	4	
NIWA trapping data					
3/12/2007	5947	62	124	62	6195
17/12/2007	6001	553	632	711	7897
3/12/2008	1889	25	604	0	2518
17/12/2008	286	0	123	0	409
17/12/2009	49	4	0	2	55
Boat electrofishing data					
11/12/2007	37	37	10	1	85
13/12/2008	47	145	3	2	197
7/12/2009	44	29	0	2	75

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Conclusions

- Seasonal peak of the smelt run within the Sep-May NIWA sampling is unpredictable
- Boat electrofishing with hand-held dip nets at a single point in the year do not reflect trap catches very well
- The first survey (2007) showed a reasonable relative relationship with NIWA trap results (reduced smelt catches from upstream to downstream)
- Could trial our newly developed smelt trawls to see if this improves CPUE

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Smelt trawls



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References

- Brijs, J., Hicks, B.J., and D.G. Bell. 2008. Boat electrofishing survey of common smelt and common bullies in the Ohau Channel. *CBER Contract Report No. 66*.
- Brijs, J., Hicks, B.J., and D.G. Bell. 2009. Boat electrofishing survey of common smelt and common bullies in the Ohau Channel in December 2008. *CBER Contract Report No. 97*.
- Brijs, J., B.J. Hicks, and D.G. Bell. 2010. Boat electrofishing survey of common smelt and common bully in the Ohau Channel in December 2009. *CBER Contract Report No. 112*.

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Acknowledgments

- Field and lab assistance from Jeroen Brijs, Dudley Bell, Jennifer Blair and Grant Tempero
- Jeroen Brijs – analysis of data and report preparation
- Project funded provided by EBOP contract

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