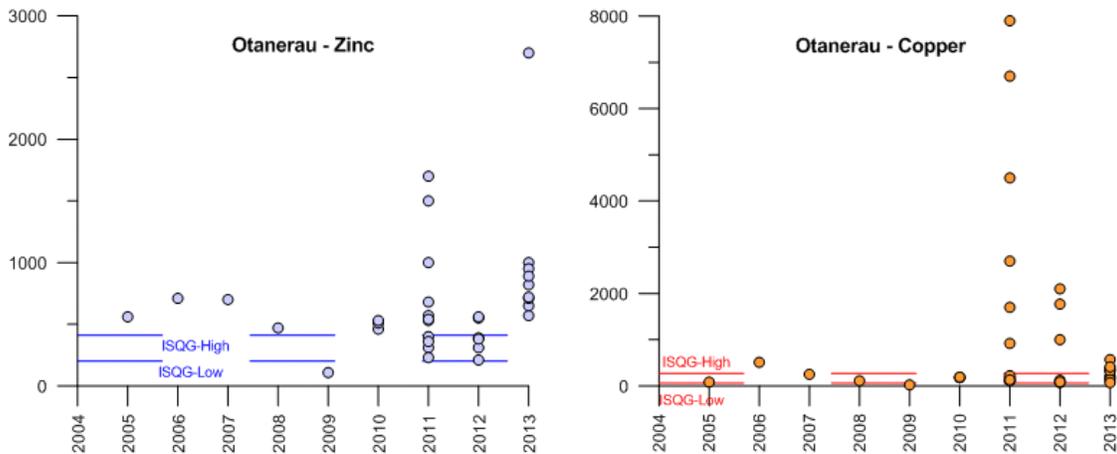


Zinc and copper levels at Otanerau & Ruakaka

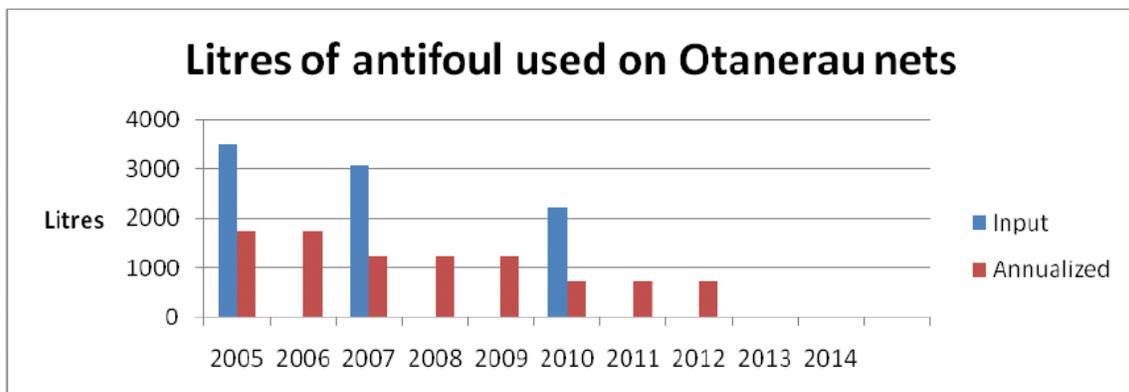
Background

High zinc and copper levels were recorded at Otanerau during the annual seabed monitoring carried out by Cawthron in November, 2013.

OTANERAU FARM: COPPER AND ZINC RECORD



The only two inputs of copper and zinc into the salmon farms are via feed (zinc and copper are essential micronutrients to support salmon growth) and antifouling (high concentrations form an effective biocide) that was historically used on the predator nets. Feed input for the 2012 year was 1252mT and the 2013 year was 1020mT. Antifoul was last used at Otanerau in 2010.



Methods

Samples of pred net were taken at Otanerau. These samples were acid digested using the in-house method at the Cawthron Institute. Samples were analysed for total copper and total zinc.

Feed samples were also taken from catalogued feed storage which was fed out during each year. These were analysed for total zinc using the above method.

Results

The average copper concentration of the pred net was 98mg/kg of dry weight net, however the range was between 17-290mg/kg. It was likely this was extremely variable, due to the age since last antifouled, as well as the variation introduced by net cleaning. Feed samples were analysed for zinc and it showed a slight increase in the zinc from 2012 to 2013 in the selected samples.

	2012 calendar year	2013 calendar year
Zinc (mg/kg of salmon food)	96 ± 4mg/kg	98.6 ± 9.9mg/kg
Total zinc fed in feed at Otanerau	120kg	100kg

Summary

Given the decrease in zinc from feed between calendar years, it is likely the high recording during the 2013 monitoring occurred through a change in practice of predator net management. Nets were washed *in situ*, so any zinc or copper already impregnated in nets from previous antifouling, was washed off and accumulated in the benthos.

As NZ King Salmon are no longer using antifouling, it is expected that zinc and copper levels at the farm sites will slowly decrease as both metals become bio-available and are taken up by other organisms which move off-site.

It is recommended that the 2014 sample results are reviewed to determine whether a downward trend exists, if not then more sampling and remedial action will be required.

Mark Preece

5 May 2014