

Ministerial Briefing Paper: A review of water temperatures in the Marlborough Sounds and the resulting implications for farming salmon.

This paper has been prepared 26 June 2018 by the McGuinness Institute with assistance from Hanneke Kroon and Andrew Caddie from the Kenepuru & Central Sounds Residents Association (KCSRA) in advance of a meeting to be held on Friday 29 June 2018 between Minister Stuart Nash and Wendy McGuinness (McGuinness Institute).

Background

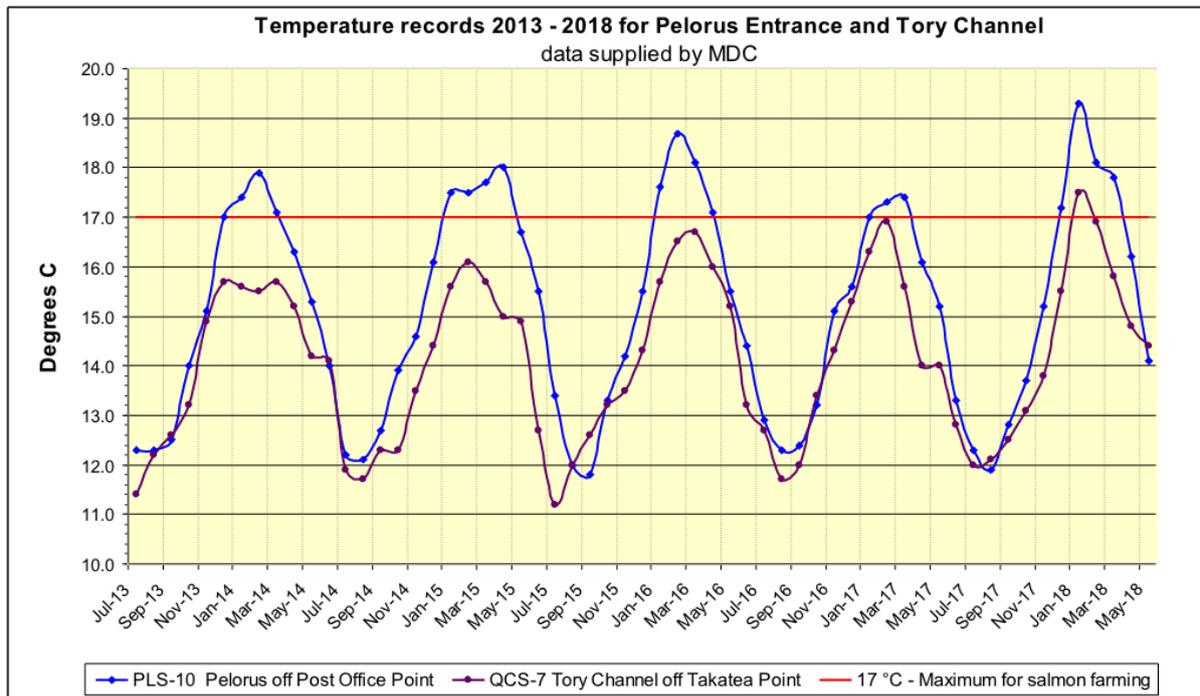
The 2012 Board of Inquiry (BOI) was convened following New Zealand King Salmon’s (NZKS) request to have the Marlborough Sounds Resource Management Plan changed to allow up to nine new salmon farms in areas then off limits to aquaculture. At the BOI a senior NZKS staffer identified water temperatures of between 12 and 17 degrees centigrade as one of three critical elements for successful farming of King Salmon.

Where temperatures exceed 17 degrees for extended periods the fish became stressed and mortalities significantly increase as stressed fish become more susceptible to disease pathogens. So how does the Marlborough Sounds measure up against this critical requirement?

The data

The following temperature data has been collected and supplied by the Marlborough District Council (MDC).

Figure 1: Temperature records 2013–2018 for Pelorus Entrance and Tory Channel



The data shows that for extended periods over the summer months, water temperatures in the Pelorus Sound are outside the appropriate range for farming salmon.

As outlined in the background section, the temperature increases correlate to significant mortality spikes at NZKS salmon farms. At the time of the 2012 BOI inquiry, media reports emerged of mass salmon mortalities in NZKS Pelorus Sound farms. In 2015 another mortality spike was reported. In the summer of 2017/2018 there was yet another significant mortality event.

Table 1: Percentage of fish that died during the summer months (1st February to 1st May) across the six main New Zealand King Salmon production sites from 2010 to 2016.¹

Farm	Year						
	2010	2011	2012	2013	2014	2015	2016
Waihinau – P	Destocked	Destocked	21.8%	n/a	32.5%	66.5%	Destocked
Forsyth – P	6%	15.9%	Destocked	48.1%	Destocked	Destocked	Destocked
Ruakaka – QC	3.3%	5.4%	7.5%	7.6%	6%	20.2%	16.7%
Otanerau – QC	Destocked	Destocked	Destocked	Destocked	Destocked	Destocked	10.7%
Clay Point – T	3%	3.7%	5.3%	14.4%	7.4%	7.3%	5%
Te Pangu – T	8.6%	9.8%	11.8%	13.3%	12.9%	8.9%	2.7%

(P = Pelorus Sound, QC = Queen Charlotte Sound, T = Tory Channel)

High water temperatures and disease

After the 2015 mortality spike and following significant pressure from concerned community groups, the Ministry for Primary Industries (MPI) convened a technical advisory group and produced a summary Intelligence Report (May 2017). The report revealed two types of bacteria previously not thought to be present in New Zealand: a *Rickettsia-like* organism (RLO) and *Tenacibaculum maritimum*, complicating previous theories that the mortalities were purely the result of thermal stress.²

In response to the detection of the RLO (an unwanted organism), MPI issued a notice dated 12 October 2015 under s 43 of the Biosecurity Act 1993 to NZKS requiring them to provide information related to the presence of an unwanted organism, including data on daily mortalities.³ The report ‘clearly signalled the need for NZKS to review and improve their biosecurity management planning and practices’.⁴ The 2017 Relocation Advisory Panel avoided this issue, saying

Whether the holder of existing consents has conducted itself in exemplary fashion or otherwise is not a question which touches at all upon the suitability of proposed new sites for the same activity. Rather it is a matter for the consent holder itself, and perhaps more importantly, the regulators to focus upon.⁵

¹ Adapted from Ministry for Primary Industries (MPI). (2017). *Intelligence report: NZ-RLO & T. maritimum 2015 response*, p. 17. Retrieved 26 June 2018 from www.mpi.govt.nz/dmsdocument/18253-nz-rlo-and-t-maritimum-2015-intelligence-report.

² Ministry for Primary Industries (MPI). (2017). *Intelligence report: NZ-RLO & T. maritimum 2015 response*, p. 2. Retrieved 26 June 2018 from www.mpi.govt.nz/dmsdocument/18253-nz-rlo-and-t-maritimum-2015-intelligence-report.

³ Ministry for Primary Industries (MPI). (2017). *Intelligence report: NZ-RLO & T. maritimum 2015 response*, p. 21. Retrieved 26 June 2018 from www.mpi.govt.nz/dmsdocument/18253-nz-rlo-and-t-maritimum-2015-intelligence-report.

⁴ Ministry for Primary Industries (MPI). (2017). *Intelligence report: NZ-RLO & T. maritimum 2015 response*, p. 27. Retrieved 26 June 2018 from www.mpi.govt.nz/dmsdocument/18253-nz-rlo-and-t-maritimum-2015-intelligence-report.

⁵ Marlborough Salmon Farm Relocation Advisory Panel. (2017). *Report and Recommendations of the Marlborough Salmon Farm Relocation Advisory Panel*, pp. 86–87. Retrieved 26 June 2018 from www.mpi.govt.nz/dmsdocument/27447-report-and-recommendations-of-the-marlborough-salmon-farm-relocation-advisory-panel.

What is happening at the new NZKS sites?

We need to look at the 2017/2018 summer mortalities at the three new sites that NZKS gained from the BOI process. As we understand, all three have been running for well over a year and were stocked over last summer.

As a listed company, NZKS now has higher disclosure and reporting requirements. The mortality figures released to the stock exchange all suggest significantly elevated levels of mortality over last summer.

As forecast in our interim results announcement on 1 March 2018, the summer has been particularly challenging for fish survival due to extremely warm water temperatures. Since then, temperatures have fallen back to normal, cooler levels following the arrival of autumn. Fish performance metrics have been consistent with the forecast noted in our interim results announcement. Fish harvest volumes expected for FY19 therefore remain in line with the previously advised level at around 8,000mt.⁶

However, to date there has been no specific disclosure from NZKS as to how its new farms fared.

Further, MPI has refused to disclose the NZKS mortality data it now holds on the grounds of commercial sensitivity.⁷ The refusal to that request, made by Hanneke Kroon (KCSRA), is currently before the Ombudsman.

How did the 2017 Relocation Advisory Panel report handle this issue?

The 2017 Salmon Farm Relocation Advisory Panel side-stepped the issue of temperature data and resultant unacceptable mortalities by discussing the cause of the temperatures:

In respect of Policy 3(2) many comments stressed that climate change may well cause sea temperatures in the long term to rise above those that can provide a relatively stress-free environment for NZ King Salmon which ideally should be reared in waters below 17 degrees Celsius. **Whether climate change does cause those significant longterm temperature rises in Pelorus Sound has yet to be shown empirically, so we do not consider the Plan Change Proposal can be refused on that ground.**

However, what is clear from an overall appreciation of the effects of this industry is that its long-term effects, particularly on a far-field basis, do remain uncertain, and at present unknown.⁸

The statement above is surprising given the evidence of climate change and the effects of rising water temperatures (see Figure 1) on salmon mortality (see Table 1), as acknowledged by all other parties including NZKS. Rising water temperatures are leading to more pollution in the form of mortalities, which in turn raises ecological concerns about the disposal of the fish waste and its impact on the Marlborough Sounds environment. An RNZ article notes '1000 tonnes of "mortalities" – fish that have died in captivity or during transfer – go to the Bluegums landfill each year... [and] 2000 tonnes of fish faeces, which [NZKS] was working to have removed from the seabed floor of the Marlborough Sounds, would also have to go to landfill'.⁹ Given this recent data, we question whether the Minister should make a decision that will allow more fish to be farmed in the Marlborough Sounds without up-to-date data and expert advice.

⁶ NZKS. (2018). *NZK fish performance update*. Retrieved 26 June 2018 from www.nzx.com/announcements/317732.

⁷ Personal communication with MPI. OIA request 16-0540 (2016, 29 September).

⁸ Marlborough Salmon Farm Relocation Advisory Panel. (2017). *Report and Recommendations of the Marlborough Salmon Farm Relocation Advisory Panel*, p. 119. Retrieved 26 June 2018 from www.mpi.govt.nz/dmsdocument/27447-report-and-recommendations-of-the-marlborough-salmon-farm-relocation-advisory-panel. Bold added.

⁹ Hatton, E. (2018). *Thousand tonnes of dead fish poses problem for King Salmon*. Retrieved 26 June 2018 from www.radionz.co.nz/news/national/357367/thousand-tonnes-of-dead-fish-poses-problem-for-king-salmon.