



Sea Lice Report

2019

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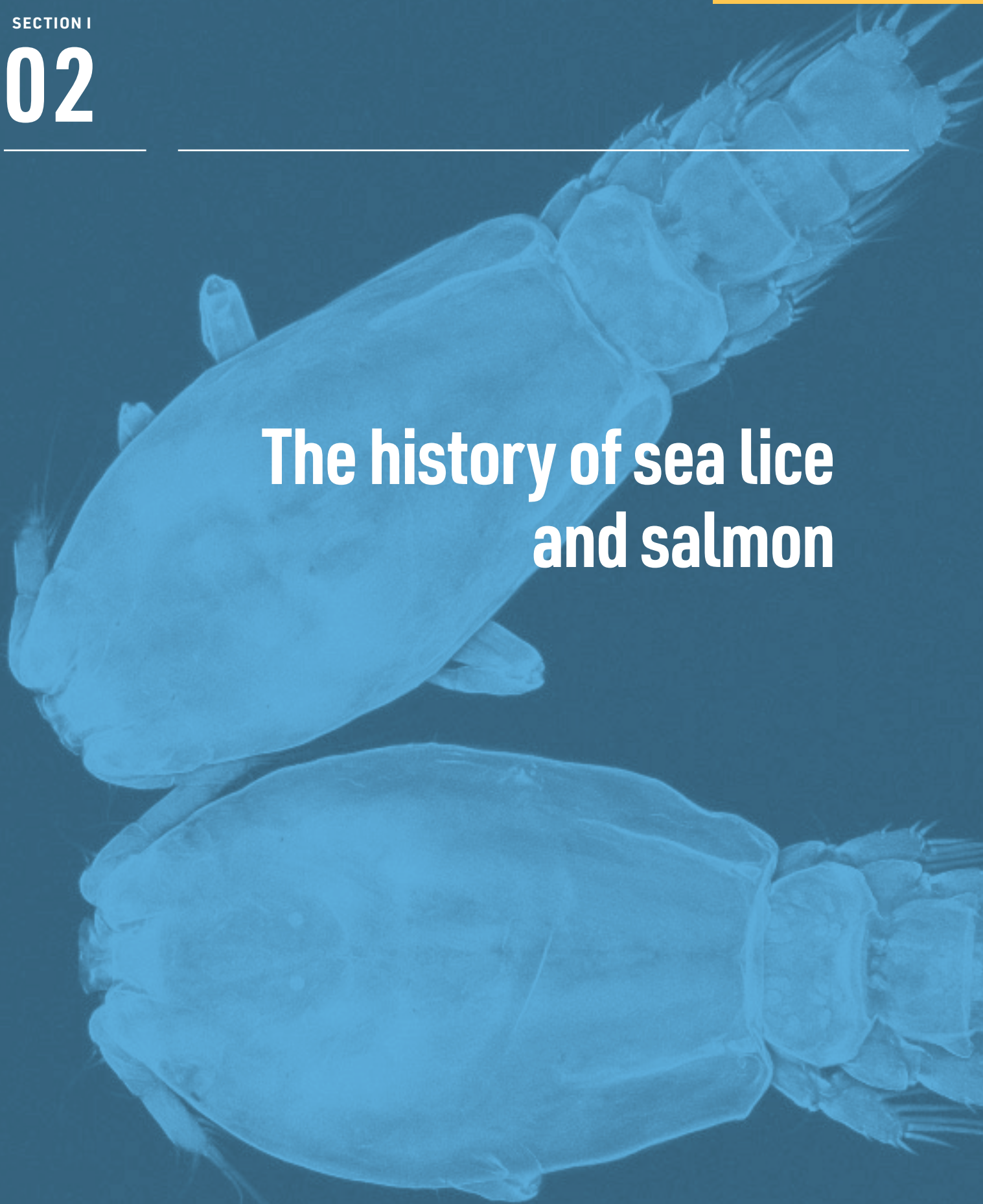


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SECTION I

02

The history of sea lice and salmon





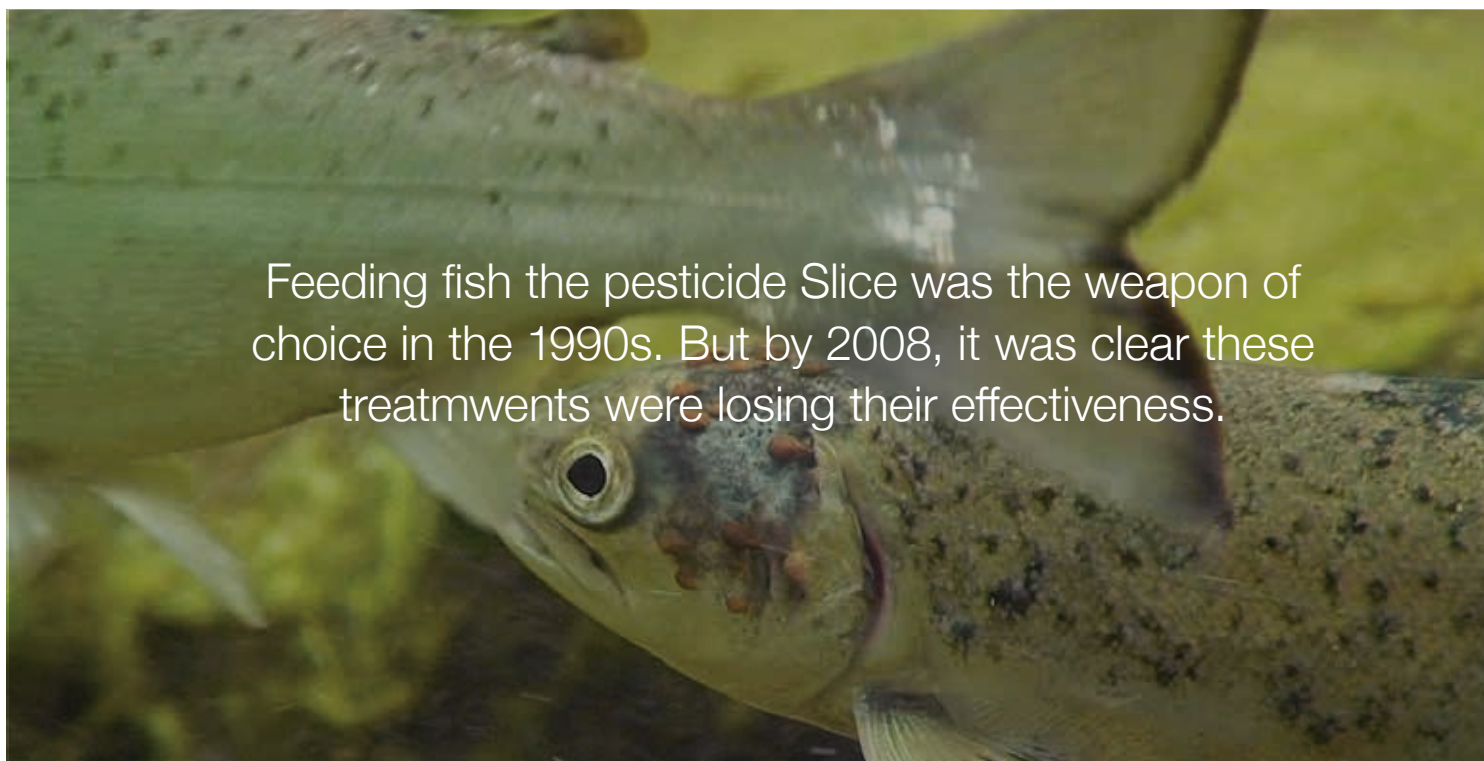
The history of sea lice and salmon

In European and Canadian salmon farming operations, *Lepeophtheirus salmonis* is the most common sea lice, and *Caligus rogercresseyi* is the most common species of the parasite in the Southern Hemisphere.

A third species, *Caligus elongatus*, is, to some degree, prevalent in Europe and Canada, affecting a variety of salmonid and non-salmonid species, but it is only sporadically subject to research because of its limited impact on fish mortality.

Despite the presence of sea lice, Atlantic salmon flourished in the wild down through the centuries, largely unaffected by lice. But as salmon farming – which restricts significant numbers of fish to a confined pen in the water – began to expand and flourish in '80s and '90s, so, too, did sea lice infestations

Feeding fish a pesticide known as Slice with the active ingredient of emamectin benzoate became the weapon of choice for the industry in the '90s and beyond in its battle to control sea lice. But by 2008 it became clear that sea lice treatments such as Slice no longer had their previous effectiveness. Treatments that had previously seen efficacy rates as high as 95 percent suddenly dropped to 70 percent. This led the industry to investigate whether treatment products were defective, or whether the parasites were starting to become resistant to common treatment methods.



Feeding fish the pesticide Slice was the weapon of choice in the 1990s. But by 2008, it was clear these treatments were losing their effectiveness.



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Estimated annual losses to Chile's salmon farming industry because of sea lice.

Bio assay methods developed in the early 2000s were used by researchers who, indeed, proved declining efficacy rates of treatments were due to resistance. One clue to this was the fact that salmon producers were applying treatments more frequently than previously to keep sea lice numbers down. While treatments still worked, sea lice returned at higher rates and at shorter intervals.

Before 2008, the Norwegian salmon producing industry, on average, undertook one treatment per farm each year. By 2014 this had risen to six treatments per farm on an annual basis. Since 2014, there has been a steady decline in chemical treatments in Norway because it is clear that simply stepping up the frequency of chemical treatments was becoming pointless, and the industry had to find alternative ways of combating the threat to its profitability.

"It does not mean that parasites have become less resistant, it's just that the methods for controlling them has changed," said Tor Horsberg, a professor at the Norwegian University of Life Sciences. "The industry's key mistake was reacting when the lice evolved to survive pesticides rather than getting ahead in the game," Jonathan Carr, executive director of research and environment with the Atlantic Salmon Federation, told the Associated Press in 2017.

In its conclusion to its 2016 sea lice surveillance program, Norway's Veterinary Institute highlighted the reduced effectiveness of emamectin benzoate, and pointed toward the next step in effectively treating the parasite. "Salmon lice management must, therefore, in the absence of new medicines, rely more on prevention and non-medicinal treatment alternatives."



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