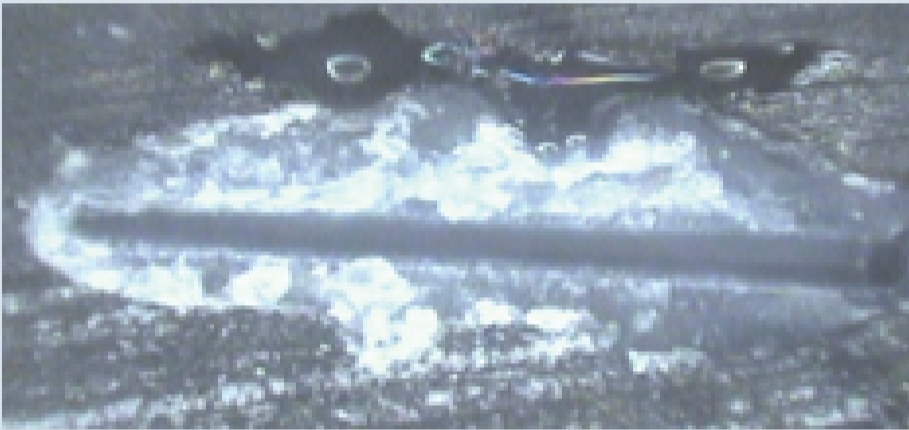


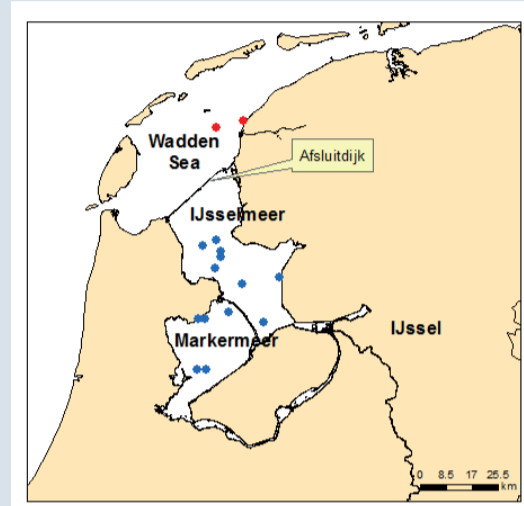
# The social network of smelt: connectivity between migrating and fresh water populations

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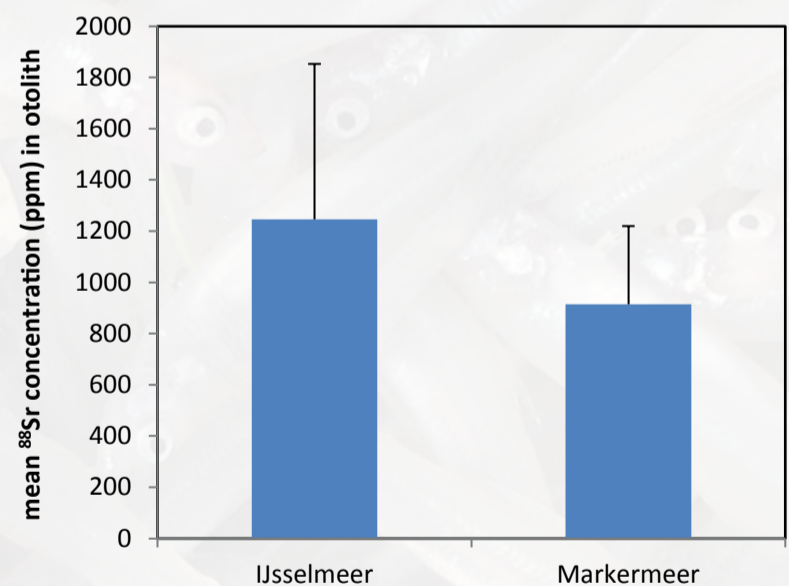
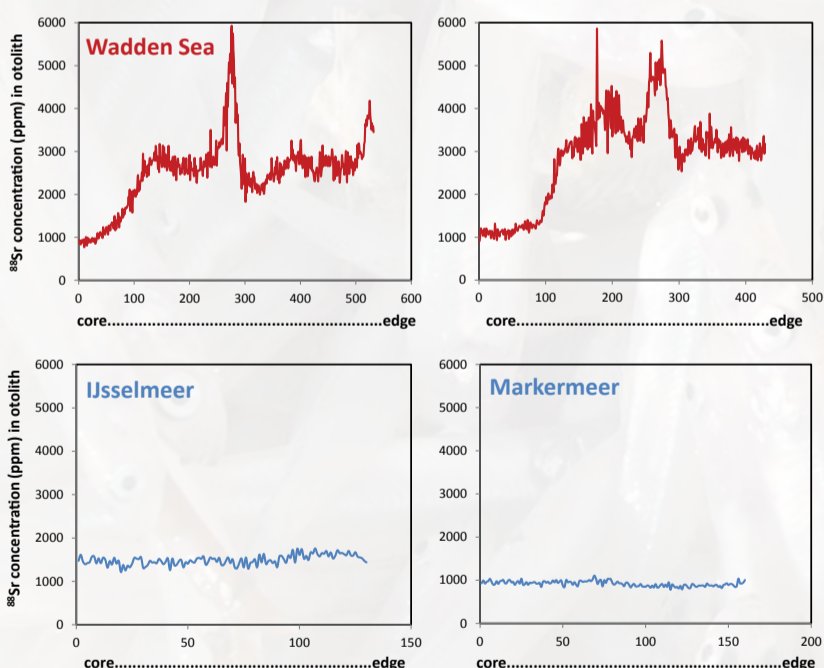
Dutch smelt has two different life history strategies. The migrating population inhabits the Wadden Sea and spawns in fresh water. After the closure of the Afsluitdijk in 1932 the IJsselmeer population became landlocked. Opportunities to enter the fresh water are limited to sluices. The smelt populations of IJsselmeer and Markermeer have been in severe decline since 1990. Does the migrating population still contribute to the dwindling landlocked population?



Photograph of a slide of a smelt otolith with the laser line of laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS)



The core-to-edge profiles of <sup>88</sup>Strontium concentrations in otoliths reflect the history of saline and fresh water stages. As a reference for salt water we used 9 smelt from the Wadden Sea. None of the 110 smelt collected during spawning in the fresh water area showed a saline signal. In fact the <sup>88</sup>Sr signals were completely flat in most fish, but were consistently higher in IJsselmeer than Markermeer.



There is currently no evidence for a contribution from the diadromous population to the spawning stock of the landlocked population. The fact that mean <sup>88</sup>Sr levels differ between the two lakes even suggests that smelt spawn in the lake where they were born. Only if passage potential is substantially improved, a contribution from the migratory population to the landlocked population can be expected.