

Preparing salmon for a warmer future

by Mitchell Fleming

Atlantic salmon have complex lifecycles which include long migrations between rivers and oceans. Salmon are always on the move.

As juveniles, they travel from their upriver spawning grounds to the open oceans to feed and mature into adults. During their downstream migration Atlantic salmon go through significant changes which prepare them for life in seawater. These include changes in colour, behaviour and physiology, such as ion transport, which will allow them survive in salt water.

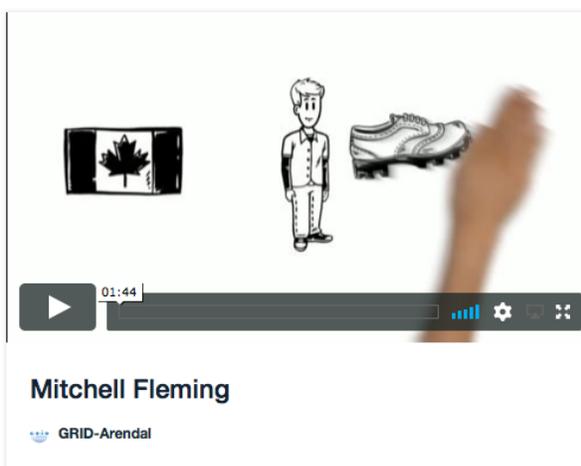
Regulated by the environment, these changes are crucial for survival. Water temperature and day length act as cues to the salmon's body to initiate changes. Due to global climate change, the environment is changing faster than the fish are able to adapt. Water temperature in rivers and streams are rising at alarming rates and thus Atlantic salmon are at risk of no longer being able to survive in their native habitats.

To help conserve wild salmon, I am carrying out experiments that follow the development of juveniles in conditions that mimic future river conditions. I raise salmon in large tanks in water slightly warmer than natural conditions and investigate the mechanisms that control the transformation of juvenile salmon into adults. These experiments reveal the challenges Atlantic salmon will face in a warmer future. Understanding these mechanisms early will allow conservation authorities to make plans and adjust stocking regimes in order to ensure Atlantic salmon survive far into the future.

Throughout my studies and experiences with Atlantic salmon research I have realized conservation is extremely complex. The challenges we face are multidisciplinary and will take effort and cooperation from all levels of society to resolve. Scientists can answer questions about the biology of a species but regulations must be implemented by government and accepted by society in order to have a lasting effect.

Humans have exploited rivers and streams at the expense of many species for decades. If we want a future rich in biodiversity we must learn how to develop our society alongside nature and not against it.

The work I do is part of an international program set out to answer many of the challenges facing three of the most iconic freshwater species in Europe. Together, 15 PhD students are investigating novel techniques and practices to help the conservation of the European sturgeon, European eel and Atlantic salmon. The wild populations of these three species have been severely affected by the growth of human populations and are at risk of disappearing forever. High quality scientific research along with well implemented regulations will help these very important species regain healthy populations throughout European waterways.



[Simpleshow video - https://vimeo.com/271433857](https://vimeo.com/271433857)