

Evolutionary genetic approaches for the management and conservation of Europe's largest Atlantic salmon river

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The salmon population of the Teno river, in Northernmost Europe, harbours Europe's largest salmon population with 30,000-120,000 individuals ascending to spawn annually. It is especially valuable from a biodiversity perspective as there is huge variation in life history strategies in different sections of the river as well as variation in spawning migration time. It is also of commercial importance, providing up to 22% (120-200 tonnes) of Europe's annual riverine salmon catch in addition to supporting a huge tourism industry with up to 15,000 recreational angler visiting the river each year during the three month fishing season. Despite this commercial importance, and the fact that 50-60% of ascending spawners are harvested annually, the management practices applied to sustain the population are relatively coarse grained, focusing mainly on maintaining census sizes at the whole river level, without consideration for tributary specific population dynamics.

However, since 1972 catch statistics and scale samples have been actively collected from a number of sites in the river system. As DNA for genetic analyses can be extracted from scales, such long term temporal sampling provides a valuable resource for estimating evolutionary genetic parameters important for further developing management strategies such as: effective population size (N_e); migration rates and for assessing the temporal stability of genetic structure. In my seminar, I will present the results of evolutionary and landscape genetics approaches we have applied aimed at proving information which can be used to 'fine tune' the management strategies of the Teno salmon system including:

- Detailed characterisation of population genetic structure within the river system and assessment of its temporal stability;
- Identification of landscape and life-history characteristics associated with genetic diversity;
- Investigation the likelihood of sub-populations within the Teno system being adapted to their local environment.