Do beavers benefit Scottish wild salmon?

August 8 2012

This is a beaver dam. Credit: University of Southampton

Reintroduced European beavers could have an overall positive impact on wild salmon populations in Scotland, according to a study by the University of Southampton.

Representatives of recreational fisheries interests north and south of the border are concerned that beavers can harm economically important fish stocks due to their dam building activities and potential to block migratory life phases. However, results of a study conducted by scientists at the University of Southampton, funded by Scottish Natural Heritage, indicate that beavers can also have substantial beneficial effects which may outweigh those that are negative.

The study's findings highlight that while the activities of beavers can result in localised and often temporary negative impacts on fish,

primarily due to dams impeding their movements and reducing the availability of suitable spawning habitat, these can be at least off-set by the benefits of increased habitat diversity and resulting abundance and productivity of fish, including salmon.

Dr Paul Kemp, a researcher in freshwater fish ecology and fisheries management from the University's International Centre for Ecohydraulics Research, who lesd the study comments that, "the positive findings were more frequently based on quantitative evidence, while discussion of negative impacts was often speculative."

Dr Kemp and his colleagues were surprised that the "weight of evidence" tended to indicate an overall positive effect considering the background of those who participated in the survey. "Most participants were from a fisheries background and whom you might expect would tend to side with the fish, but based on their experience of beaver and fish interactions tended to be positive towards beaver," he says.

Beaver reintroduction has been a contentious issue in Scotland ever since a total of 16 individuals from Norway were released in Argyll in 2009 and 2010 as part of a scientific trial conducted by the Scottish Wildlife Trust, The Royal Zoological Society of Scotland, and the host partners, the Forestry Commission Scotland.

Even more controversy surrounds the establishment of a breeding population of escaped beavers on the River Tay. This has had ramifications south of the border as the Angling Trust has written to Richard Benyon, the UK minister for Fisheries and the Natural Environment, requesting that trapping and destruction of the beavers be urgently undertaken to prevent their spread to England where it is claimed they could damage fisheries.

Researchers carried out a critical view of over 100 sources of peer-

reviewed information in which benefits were cited 184 times compared to 119 for the negative effects. Analysis of existing literature indicates that beaver activity can have both positive and negative effects on fish. Negative effects relate to the construction of beaver dams which can temporarily impede the movement of some fish, particularly in narrow rivers and streams, while siltation can cause loss of spawning habitat immediately upstream of dams. But beavers can also have beneficial effects on fish by increasing the variety and area of habitats in streams, and due to the presence of dams and ponds by increasing the abundance of invertebrates, which form the main component of the diet of many stream-dwelling fish, and providing refuge during periods of high or low water flows.

The study, which was published in the leading international fisheries journal *Fish and Fisheries*, also reports the findings of an expert opinion survey of 49 fisheries managers, scientists, and beaver ecology experts, from Europe and North America, where most of the research has been conducted. More than half (58 per cent) of those who responded believed that the overall impact of beavers on fish populations was positive.

Professor Roger Wheater, the Chair of the Beaver-Salmonid Working Group, says: "I would be very surprised if biodiversity were not increased but our concern continues to be the impact on salmonid spawning areas and the management required to deal with situations where salmonids in any particular system are at risk."

Provided by University of Southampton