

Saprolegnia in wild salmonids

Project update spring/summer 2017

June 2017

In the last few years we have received increased reports of salmon and sea trout exhibiting Saprolegnia infections. This natural, fungal-like condition occurs as secondary infections which can appear unsightly, with significant losses reported on some rivers. Little is currently known about the factors driving Saprolegnia infections and why we are seeing increased disease problems. We continue to monitor the situation on all our major salmon rivers and are working with partner organisations to progress our understanding of these infections.

Improving our understanding

In response to these incidents, National Fisheries Services (NFS), Bampton have been co-ordinating reports of Saprolegnia infections across England through our area teams, anglers and index river monitoring activities. We have also part-funded a project in collaboration with Cardiff University to improve understanding of Saprolegnia in our fisheries. This project is being run as a three year PhD with the following objectives:

1. To determine whether disease outbreaks are being caused by particular species or strains of Saprolegnia.
2. To understand how Saprolegnia obtained from different rivers and fish species behave under different environmental conditions and what factors are driving transmission in salmonid fish.
3. To use environmental data to see whether factors like temperature, river flow, pH, barriers to migration and UV could help explain why some rivers and years have been more badly affected than others.

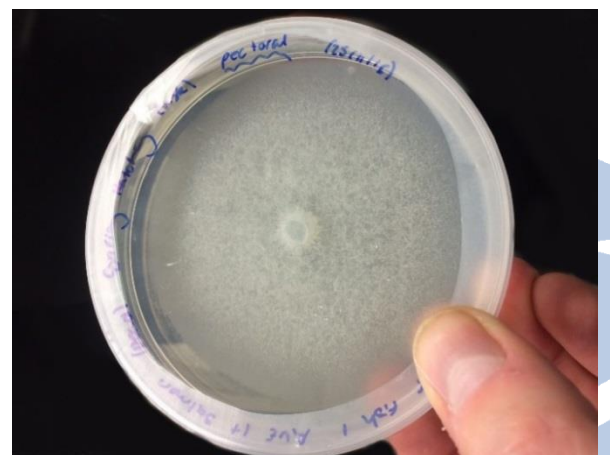


Partnership working to obtain samples

The success of this project relies on obtaining samples of Saprolegnia from as many rivers and fish species as possible. To achieve this NFS have been sending out field sampling kits to area officers in response to any reports of Saprolegnia we have received from within or outside of the EA. This allows area officers to quickly and simply collect Saprolegnia samples, which are subsequently sent to Cardiff University for culturing and archiving. We are still collecting samples this year, so please get in touch with us if you think you can help!

Sampling progress

To date NFS has sent out 220 sampling plates and obtained 56 isolates of Saprolegnia (right) from salmonid rivers across England and Wales. These include isolates from the following rivers: Axe, Exe, Yorkshire Esk, Coquet, North Tyne, South Tyne, Dart, Erme, Tamar, East Lyn and Meon. Saprolegnia samples have been collected by our staff during index river monitoring and through partnership organisations who have provided valuable support to this project. We have also collected some valuable samples during salmon and sea trout brood stock collections, which allowed closer scrutiny of infections within these spawning populations.



We are extremely grateful to all those who have helped so far and ask for you to please keep us informed on the incidence of Saprolegnia in your rivers.

Initial results of species & strains

Samples collected in the field were sent to Cardiff University (right) where they have been cultured and archived. Initial molecular analyses have confirmed that most of the isolates collected were *Saprolegnia parasitica*. However, isolates of *Saprolegnia ferax* were also confirmed. These samples are currently being analysed further to determine genetic variation between these organisms.



Laboratory testing is also underway to investigate whether isolates from different rivers differ in their virulence and environmental requirements. Samples are currently being exposed to different temperature regimes and fish species, to assess their reproductive activity and development. This will provide a valuable insight into the transmission of these infections and the environmental conditions that may lead to problems in our rivers.

Role of environmental variables

As part of this project we are also reviewing environmental data to identify factors that may help explain the increased Saprolegnia infections seen in some of our rivers. So far, we have collated data on flow rates, temperature, UV, precipitation, pH, barriers to migration and the run sizes of salmon and sea trout in catchments that have experienced elevated infections. Further work is needed to understand these complex interactions, but preliminary results suggest that temperature and flow may be particularly important in influencing spore activity and the transmission of Saprolegnia. Information from this work will be used to inform laboratory studies to progress our understanding of disease under controlled conditions.

Monitoring Saprolegnia in our rivers

We continue to monitor the status of these infections in all our major salmonid rivers. Nationally, 2016 was a quiet year for Saprolegnia infections in wild salmonid populations. Compared with previous years, infections of Saprolegnia were less prevalent in 2016, with only sporadic disease problems reported. In most cases, these were within expected levels and were not cause of serious concern. We have received reports of infections this spring and are closely monitoring the situation in light of the cool spring and low flows experienced in many parts of the country.



Ulcerative Dermal Necrosis (UDN)

As in previous years, we continue to receive occasional, unconfirmed reports of UDN. However, these are largely based on the presence of Saprolegnia on the head of salmonids and are not typical of this disease. Previous investigations conducted across England and Wales failed to detect this disease, which can only be confirmed through sacrificial sampling. As such, the current project continues to focus on Saprolegnia. Further updates on results and findings will be reported at the end of this year.

For further information on this project, or any fish health matter please contact the Fish Health Team on: 07825111723 or e-mail: fish.health@environment-agency.gov.uk For general information on these disease conditions please see our factsheets entitled 'UDN and other skin conditions of wild salmonids' and 'Saprolegnia infections in wild salmon and sea trout'

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