

First reported outbreak of sleeping disease in Alsatian charr (*Salvelinus fontinalis* x *Salvelinus alpinus* hybrid)

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Abstract

In April 2017 two Bavarian fish farms suffered significant losses of Alsatian charr (brook trout and Arctic charr hybrid species; *Salvelinus fontinalis*, Mitchill x *Salvelinus alpinus* L.). Clinical signs and pathological changes resembled sleeping disease. Salmonid alphavirus (SAV) infection was confirmed by molecular methods and determined to be genotype 2 based on partial E2 sequencing and subsequent phylogenetic analysis. This is the first description of sleeping disease in Alsatian charr. The virus was also detected in a parasitic leech *Piscicola geometra* L. which has implications for biosecurity practices.

Introduction

Infection with salmonid alphavirus (SAV) (genus *Alphavirus*, family *Togaviridae*) can cause pancreas disease (PD) in Atlantic salmon (*Salmo salar* L.) or sleeping disease (SD) in rainbow trout (*Oncorhynchus mykiss*, Walbaum) and brown trout (*Salmo trutta* L.). Affected fish may show loss of appetite, abnormal swimming behaviour and an increase in faecal casts (McLoughlin and Graham, 2007). In regard to other salmonid species, SAV infection was recently reported in Arctic charr (*Salvelinus alpinus* L.) (Lewis et al. 2018) however the disease has not, to date, been reported in brook trout (*Salvelinus fontinalis*, Mitchill) or crossbreeds of these species, Alsatian charr (*S. fontinalis* x *S. alpinus*).

Over the past 25 years, Alsatian charr has become a very popular fish species for human consumption in Germany. Hybrids can occur naturally however this hybrid is particularly favourable to farmers due to the improved characteristics of the offspring compared to either parent species (Bartley et al., 2000). Compared to Arctic charr, Alsatian charr are more resistant to diseases such as furunculosis and in contrast to brook trout, the Alsatian charr build up gonads to a smaller percentage at the end of their breeding cycle. In Germany, only a few predominantly governmental hatcheries grow their own Arctic charr and brook trout brood fish to undertake crossbreeding on a small scale. The vast majority of ova are sourced from producers in neighbouring EU countries.

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