

Insight into fish disease to help protect farmed fish stocks

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Researchers funded by the Biotechnology and Biological Sciences Research Council (BBSRC) have gained a key insight into a disease that is devastating the UK's fish farming industry. The researchers have discovered that fish can harbour and spread proliferative kidney disease (PKD), a cause of major stock losses on fish farms, as well as being affected by the infection.

The discovery now paves the way for research to develop effective ways to combat the disease. The research was conducted by Professor Sandra Adams and Dr David Morris at the University of Stirling's Institute of Aquaculture and is reported in the latest edition of *BBSRC Business* magazine.

PKD is a debilitating condition for affected [fish](#), leading to severe inflammation of the kidneys. PKD can cause major losses of newly introduced fish on infected farms - the estimated annual cost to the UK trout industry alone is £2.5M. Despite the impact of the disease and the importance of aquaculture to the UK food chain details about how PKD spread have been scarce.

Researchers had previously discovered the parasite in freshwater bryozoa, which are colony-forming animals that feed on microscopic algae. Some species of the bryozoa resemble plants and can fragment to form new colonies that could spread the disease.

Prof Adams and Dr Morris have now shown for the first time that [native](#)

[fish](#) can also spread PKD, rather than being simply dead-end hosts.

Prof Adams said: "We were able to show that the parasite that causes deadly PKD in fish could cycle between brown trout and bryozoa indefinitely".

The researchers have also developed a working model in the lab for studying the lifecycle of the parasite, which will be critical for developing new control measures against the disease.

Their early results suggest that although brown trout are hosts of PKD they are not very susceptible to the disease, whereas farmed rainbow trout in the UK have a severe immune response to PKD that can kill the fish.

But, as Prof Adams explains: "In their native environment in the USA, rainbow trout are more resilient to PKD. This suggests that there are at least two strains of this particular parasite: one adapted to North American species and one adapted to European species. Therefore, rainbow trout introduced to European waters are likely to be infected with the wrong strain of the parasite, which explains the severe immune response and subsequent disease".

There have been recent reports of PKD affecting wild salmon in Europe and North America, indicating that it is an emerging threat to these ecologically and economically important fisheries.

Prof Janet Allen, Director of Research at BBSRC, said: "Farmed fish are a crucial part of the food chain, providing nutritious and affordable food for many people. They are also economically important in many areas. When a disease such as this threatens fish farming it is vital that we provide the science to understand the problem and its source and deliver the research to tackle it."

Source: Biotechnology and Biological Sciences Research Council ([news : web](#))

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