Bacteria in fisheries - why is it a problem?

Bacterial infections can cause disease in a wide range of fish species. These infections can lead to serious problems and reduce the value and performance of fisheries. Most of the bacteria that cause disease occur naturally in the environment and will only infect fish that are stressed or weakened by other factors. Identifying and understanding these is key to minimising losses and preventing problems from reoccurring in the future.

How do bacterial infections occur?

Figure 1. A typical A. salmonicida lesion on a carp

Most bacteria that cause disease in fish are secondary or opportunistic pathogens. This means that they infect fish that are stressed or weakened by other factors. Once fish become stressed they become far more susceptible to infection. There are many factors that can cause stress, including poor water quality, poor habitat, over-stocking and poor nutrition. Poor angling practices and excessive handling can result in physical damage that provides an easy route of entry for bacteria into the skin, fins or gills. Infections can be passed from fish to fish, through direct contact or from infected water. The more fish that are affected, the greater the chance that bacteria will spread and develop within a fishery.

When are bacterial infections most likely to occur?

Fish can develop bacterial infections at any time of year, but spring and summer can be particularly important times. Spawning in the spring is a very stressful period for fish and warmer water temperatures will aid the rapid growth of bacteria. Summer conditions can often lead to water quality problems which can quickly trigger bacterial infections. The introduction of new fish into a fishery can also trigger disease. Fish health should be closely monitored following a new introduction.

What are the symptoms of bacterial disease?

Different species of bacteria can cause different symptoms of disease. Common changes include the development of sores or 'lesions', and reddening on the skin and to the base of fins. Affected fish may also swim abnormally, appear lethargic and go off their feed.

Lesions are caused by the bacterial species Aeromonas, most commonly A. hydrophila and A. sobria. Aeromonas salmonicida is a particularly harmful pathogenic species that causes Furunculosis in salmon and a disease called Carp Erythrodermatitis (CE) in cyprinid fish.

In more severe cases, the internal organs of fish may become infected with bacteria, leading to what is known as a systemic infection. In such cases, fish may show signs of fluid retention (or dropsy), haemorrhaging and exophthalmia (bulging eyes). Bacteria can also infect the gills, which can be particularly damaging.

Can fish die from bacterial disease?

If fish have a weakened immune system, or are subjected to poor fishery conditions, bacterial disease can quickly develop within the population. In such cases infections will debilitate fish, slow their growth and affect their condition, which may eventually result in death. Losses from bacterial infections are usually low level and chronic, affecting fish over a long period of time. However, in extreme cases, large proportions of the population can be affected, leading to significant losses and a reduction in the long term performance of a fishery.

What can you do to help fish recover?

Individual fish with small, localised infections are usually seen as one-off cases within a fishery and should not be cause for concern. Healthy fish should be able to recover from bacterial infections if conditions are good. This relies on identifying problems quickly and reducing stress in the fish population through good fisheries management.

The following measures can help reduce the risk of disease developing and can help to put things right if problems do occur:

Reduce stress - Stress decreases the ability of the fish to manage challenges such as infections or wounds, allowing opportunistic bacteria to take hold. Physical damage (such as scale loss) as a result of high stock density or caused by extensive hooking, netting and handling from anglers can provide an easy entry route for bacterial infections.

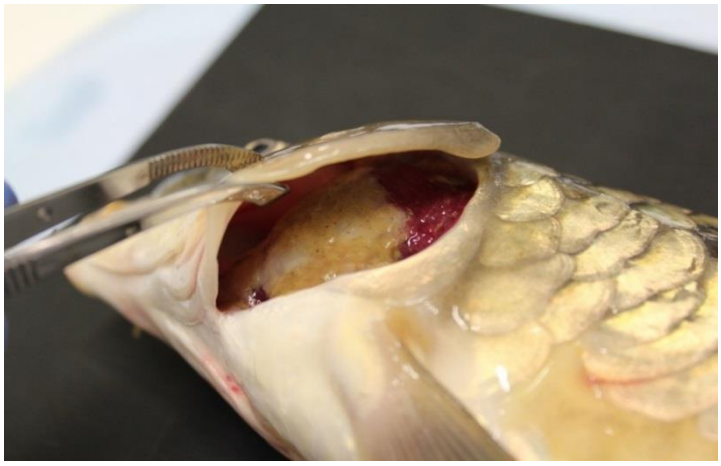

Figure 3. A typical bacterial infection in the gills of a carp

Monitor water quality regularly - Disease outbreaks are often related to poor or unfavourable environmental conditions that cause stress to the fish. Regular monitoring of water quality will help avoid problems occurring.

Take care when introducing new fish - Care should always be taken to limit stress to fish during stocking. Always get fish health checked prior to introduction, and if fish appear to be in poor condition, do not stock them. A fishery should be closely monitored following stocking of fish.

Be vigilant all year round and report problems early- Regular monitoring is essential as infections will often start in a small number of fish. Seek advice if fish start to develop signs of disease. Early detection and prompt investigations to confirm the cause of a problem can be crucial in avoiding losses.

Provide good nutrition and habitat - Healthy fish rely on good environmental conditions, provision of good habitat and adequate nutrition. Habitat variation can help reduce competition between fish for food and space. It will also provide areas of cover for fish to hide and recover.

This fact sheet has been produced by: National Fisheries Services - Fish Health, Ageing and Species team.
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