

Coccidian parasites

What are coccidian parasites?

Coccidians are tiny parasites that infect individual cells of animals. They are protists, which are single-celled organisms. Coccidians have a very complex life cycle, which occurs within the cells of the fish. They can infect a wide range of fish species including cyprinid species such as carp, roach, barbel and gudgeon. Some coccidian species can cause disease, especially in younger fish.

The common coccidian parasites of fish

There are many different species of coccidians present in fish around the world and some are found naturally in the British Isles. The most common ones are:

- Eimeria species – these cause a disease known as eimeriosis. A few species can be found in the gut (such as *Eimeria anguillae* in eel), while some infect other organs (such as *Eimeria rutili*, which is found in the kidney, spleen and muscle of roach);
- *Goussia carpelli* and *Goussia subepithelialis* – these are found in the epithelial cells of the gut wall of carp. There are several species of *Goussia* and fish can have more than one species in their gut at the same time.

What do coccidian parasites do?

Infections of *Eimeria* species do not generally cause disease outbreaks. However, there are a few cases where infection in common carp has caused serious disease. Generally, infected fish show a wide range of symptoms, including weight loss, sluggish behaviour (known as lethargy) and other general signs of poor health, such as gasping at the surface or jumping out of the water.

Fish with heavy infections of coccidians may have white patches visible in the gut wall. These infections can also result in a build-up of fluid within the gut, causing swelling and necrosis (when the cells in the tissue die). The faeces of the fish may also be lighter than normal in colour.

When coccidians infect the organs of fish, they destroy the cells of the tissues. Infections in the gut can also reduce its surface area, making it harder for fish to digest food properly and gain the essential



The typical signs of eimeriosis in the gut of a bream. White patches on the gut wall are visible (arrow).

nutrients they need. A heavy infection can therefore stop the organs from functioning normally. In some species this damage is caused by the way the parasites feed. Some produce chemical enzymes that break down the tissues of the fish, allowing them to be absorbed and used by the parasites.

Minimising the problems linked with coccidian parasites

Though these parasites rarely cause disease outbreaks, infected fish may lose condition. This makes them more likely to become infected by other, more harmful parasites and diseases (pathogens). The best way to reduce problems occurring is through good fisheries management, including:

Reducing stress within the fish population

When fish are stressed, it is easier for parasites to infect them. Stress can be caused by high stock densities, poor habitat and poor water quality.

Carefully managing stock levels

High stock densities are a common cause of parasite problems in fisheries. It makes it more likely that other fish will ingest the infective stages of the parasite, so helping spread infection.

Regularly monitoring water quality

This can help you detect problems before they occur. Problems with water quality can make fish more likely to become infected by parasites and other pathogens, leading to heavier levels of infection.

Maintaining good fishery habitat

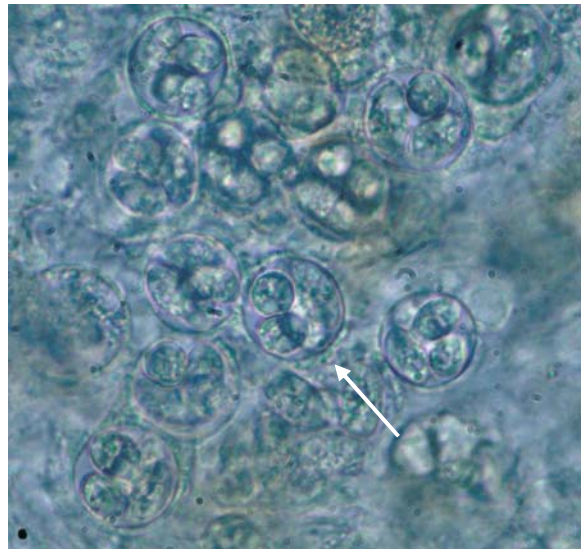
This can reduce the stress levels in fish by providing suitable cover and food. It can also help improve water quality.

For more information on good fisheries management see the 'Fish stocking density', 'Water quality' and 'Fishery habitat' fact sheets in this series.

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A typical coccidian parasite (arrow) within the tissues of a fish, viewed under a microscope.

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