

# Argulus in stillwater trout fisheries

## Argulus in trout fisheries

Argulus is a crustacean parasite, commonly known as the “fish louse”. In trout fisheries heavy infections cause a rapid loss of condition and even death. Even moderate Argulus infections can reduce rod catches, cause distress to the trout and threaten the economic viability of fisheries.

This fact-sheet explains why Argulus is so damaging to trout fisheries and what steps a fishery manager can take to prevent or manage the parasite.



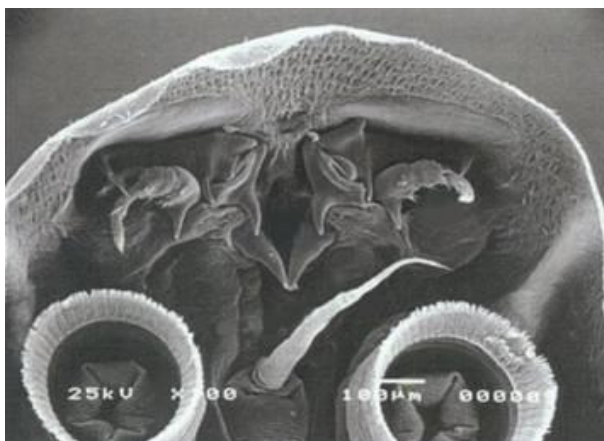
*A close up of Argulus foliaceus*

## What is Argulus?

Argulus are common ectoparasites (external parasites) of freshwater fish. They are found in fisheries throughout the UK. Currently, three species of Argulus have been recorded in the UK – *A. japonicus*, *A. coregoni* and *A. foliaceus*, which is the most common. Adult parasites are flat, round and light green-brown in colour. They are often described as jelly-like, and are approximately 0.5-1.0cm in diameter. Argulus attach firmly to the skin and fins of their host with a pair of characteristic round suckers. The parasites’ small black eyespots are also distinctive features.

## How do Argulus affect trout?

Argulus can cause considerable damage to trout through their aggressive attachment and feeding behaviour. They feed by inserting a long spine-like structure (the stylet) into the skin, which breaks down tissues through the secretion of enzymes. The repeated puncturing of the skin, combined with activity of the parasites’ serrated mouth-parts, can cause substantial damage and irritation.

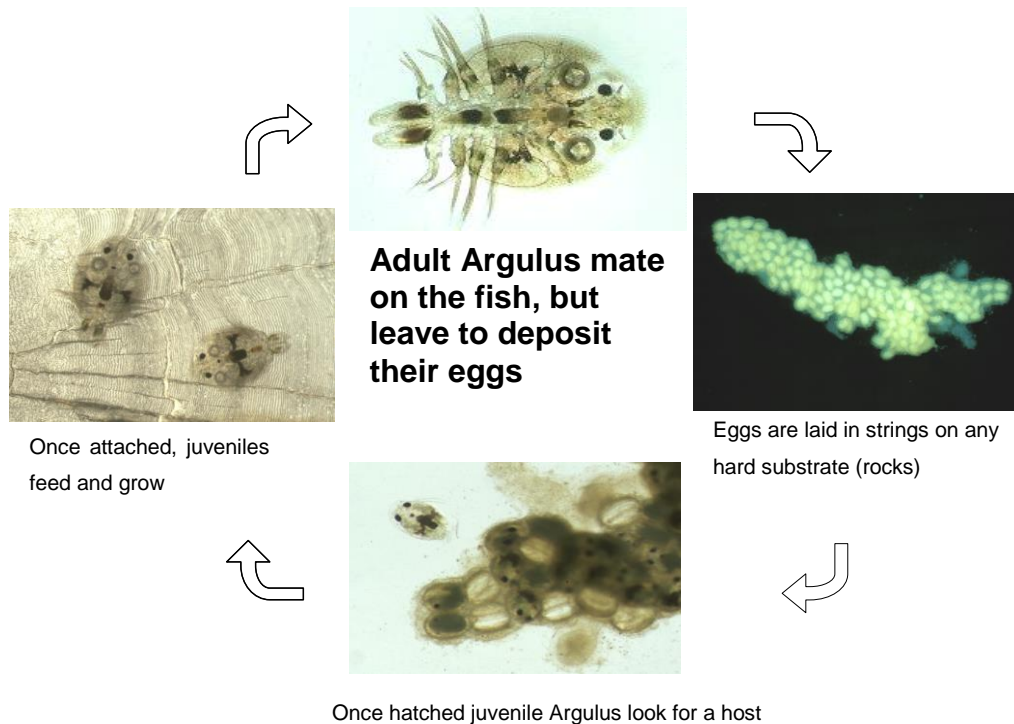


*An electron micrograph of the feeding and attachment organs of Argulus*

Healthy trout will tolerate light parasite burdens with few adverse effects. However, heavily infested fish can harbour many hundreds of parasites and quickly become debilitated. Trout suffering from Argulus infestations often show signs of irritation, such as repeated jumping. They may shoal tightly together or congregate at the fishery margins or in areas of high water movement, such as an inlet. Individuals may stop feeding, become lethargic, lose condition and darken in colour.

## How do Argulus reproduce within the fishery?

Argulus follow a seasonal cycle of reproduction and development. Egg laying usually begins when temperatures exceed 10°C and ceases during winter. Populations typically increase throughout the year, being at their greatest toward the end of the summer. Parasite numbers decline with the onset of winter, although all developmental stages (particularly the egg strings) can over-winter.



## How can argulus infections be managed?

A number of fishery management measures can help reduce the impact of the parasite and prevent the build-up of infections. The points below give the available options. The best options to take will depend on conditions in your fishery. If in doubt, get advice from your local Environment Agency fishery officer.

### Careful stock management

High stock densities increase the risk of Argulus problems. Careful management of the stock can reduce the risk of disease outbreaks.

### Maximise stock turnover

Rapid stock turnover reduces susceptibility to infection and limits parasite development. Monitor stock levels to maximise stock turnover.

### Trickle stocking

Trickle stocking, rather than batch stocking will increase stock turnover and minimise host parasite contact time.

### Stop or minimise catch and release

This is particularly important during the warmer summer months and will maximise stock turnover and reduce the risk of disease problems.

### **Minimise stock levels during winter**

Reducing stocks, including coarse fish, will reduce the survival of parasites over the winter period. It will also reduce the number of fish over-wintering, making it easier to monitor spring stocking. This will help reduce the build-up of parasites in spring on fish that may not have over-wintered very well.

### **Maintain low stock during hot periods**

Hot conditions are stressful to trout, but favour rapid parasite reproduction. Don't stock during these periods and carefully monitor health, water quality and parasite numbers.



*A heavy infection of Argulus on a rainbow trout*

### **Remove excess weed and increase depth**

Whilst these measures may not prevent infestations, they can reduce the risks of Argulus outbreaks. Shallow waters are prone to very warm temperatures, which favours early parasite activity and prolonged reproduction through the year.

### **Drain and de-stock**

In very extreme Argulus problems, the only option may be to drain and de-stock the fishery. However, this is a drastic measure and is very much a last resort. Management of infections is usually successful through other means.

### **Install artificial egg laying substrate**

This approach uses black plastic pipes placed vertically in the margins to act as an egg-laying site for Argulus. These pipes can then easily be removed from the water to break the life cycle of the parasite and prevent eggs from hatching. This method is most effective when used in combination with other management practices as detailed in this factsheet. Please see the factsheet 'Managing Argulus Infections' for more information on this method.

### **Remove obvious egg-laying substrate**

Conversely to adding artificial substrate, removing as much other substrate as possible will also help reduce the number of eggs hatching.



*Plastic pipe removed from a fishery with argulus eggs attached*



### **Drop water levels to expose egg strings**

Allowing water levels to drop will also help expose and kill parasite eggs laid on hard substrates. This can be particularly important in winter, reducing the survival of parasites through to the next spring.

### **Targeted use of treatments**

In most water bodies the administration of drugs can be problematic, illegal and potentially very harmful. However, when accompanied by good fisheries management, the targeted use of some drugs (such as SLICE®) can be used to help control parasite populations. It is possible to buy trout that have been treated on fish farms, giving them a degree of protection against Argulus. However, this does have limitations. Protection from infection is only temporary and the drug will not affect other stages of the parasite. Repeated use of drugs can also lead to resistance, which will mean that the drugs stop working. Treated fish should only be stocked at high risk times of the year (e.g. spring) and are not an alternative to good fishery management.

## **This fact sheet has been produced by:**

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