

Koi Herpesvirus – Protecting your fishery

Environment Agency advice note

Koi Herpesvirus disease

Koi Herpesvirus (KHV) is a very damaging and easily spread virus that affects common carp and carp varieties such as koi carp. Outbreaks of the disease occur in summer, when water temperatures are high, and can kill between 20% and 100% of carp in a fishery.

The disease is most likely to be spread when fish are stocked. But it is also possible that the virus could be moved on fishing tackle. To protect your fishery, or the place you fish, there are practical steps you can take.

If your fishery has an outbreak of the disease, there are also actions you can take to reduce the losses and ensure that the fishery can recover as quickly as possible. You can also take action to prevent problems in the future.

Protecting your fishery

Following this 10 point guide will reduce the risk of a KHV outbreak occurring on your site:

1. Always think very carefully before stocking new fish. Ask yourself if the fish are really needed, or if the fishery could be improved in other ways? Do you know what fish are already in there? Do you know how many fish your water can hold? Have a stocking plan for the fishery and always take advice. Know what you want to achieve by stocking and be patient in reaching this target. This will help protect your fishery and save you money on unnecessary stock.
2. If you do stock fish, always ensure that you have consent from the Environment Agency. This will ensure that you are not buying fish from somewhere with a known disease problem. Never stock fish without consent as it could be harmful to your fishery and would be an offence.
3. Always stock fish from the same source and ensure the fish are health checked. You can greatly reduce the risk of getting a serious fish disease by not mixing your sources of fish. Know where your fish are coming from. Fish from hatchery reared fish farms will have a known health history and poses a lower risk than wild cropped fish.

4. Never stock ornamental fish. Species like koi carp may add some novelty value to your fishery, but KHV has been a major problem in the ornamental trade so these fish should not be put in your fishery.
5. Is there good habitat in your fishery? This can affect stocking levels and suitability of the fishery to certain fish species. Good quality habitat will help reduce the stress on the fish. This will mean they are much less likely to suffer from disease. Features such as variations in depth, aquatic and marginal plants and trees will all be beneficial.
6. Have a mix of fish species in your fishery. Fisheries dominated by a single fish species can be more susceptible to disease problems.
7. If you have a high stock level in your water make sure you take action to protect your fish and minimise stress. The use of unhooking mats are essential when handling large fish, and keepnet limits at match waters should always be enforced. In very warm weather, good handling is critical and fish should not be retained. Keep a close watch on oxygen levels and take steps to oxygenate the water before problems occur. Supplemental feeding with a high quality carp feed can also help maintain good nutrition, but keep an eye on ammonia levels.
8. Do you know the water quality of your fishery? If not, get it checked regularly, particularly during warmer months when fish will be most active. Take advice from your local Environment Agency fishery officer on how to do this and what the results mean.
9. Dirty and wet fishing tackle (nets and unhooking mats) could spread diseases, including KHV. There are two main ways of disinfecting fishing tackle. The first is to thoroughly dry equipment after fishing, preferably in direct sunlight. If this is not practical, then a chemical disinfectant can be used. These include iodine-based disinfectants (iodophores), or Virkon[®] S. For advice on disinfectants talk to the Environment Agency.
10. Net dips can be used on site to disinfect nets, but make sure the chemicals used are fresh and anglers use them correctly. Be careful not to allow disinfectant to be spilt into the fishery. For the best possible protection from disease only allow anglers to use nets, weigh slings or unhooking mats supplied by the fishery.

What to do if fish are dying

What should you do if you suspect a fish disease problem on your fishery?

- Stop fishing! If the fish are suffering from a disease or are in poor condition you should stop fishing. This will reduce stress, help fish recover and will reduce the total number of fish that may die. Fishing should only start again when fish have stopped dying and all the remaining fish are healthy.
- Report it as soon as possible! If you have a problem on your fishery you should always report it to the Environment Agency. The

Environment Agency will investigate the outbreak along with Cefas and tell you what the cause is and how you can prevent it happening again. There are many causes of fish disease, not just KHV. Knowing what killed your fish can help minimise losses and will help in the future management of the fishery.

- Never stock! Never add more fish to a water with a fish disease problem. It may be illegal, but could increase fish deaths and cost you money.
- Protect others! When fishing restarts you can help to protect other fisheries by asking anglers to dip nets and other tackle when they leave. You could also ask them to ensure they dry their nets completely before fishing anywhere else.

Life after Koi Herpesvirus

If KHV is confirmed there is no reason why you should not continue to run a successful fishery on that water. A few simple actions will help protect you from future outbreaks. If you have been affected by KHV you should:

1. Carry out a full review of the management of the fishery. KHV outbreaks are often affected by fishery management, in particular stress in the resident fish. In the review, think about what might be causing stress to the fish in your water and how these can be minimised. Things to consider include:
 - Were there too many fish?
 - What is the quality of the water?
 - What habitat features are there for the fish?
 - Is there a mixture of fish species?
 - Can you reduce the risk of anglers bringing diseases on to the site?
2. If you are unsure about any of this, or what steps to take get professional advice.
3. Do not overstock your fishery. Too many fish in a water enables diseases to spread quickly and can cause fish to be stressed. Reducing stock levels can greatly reduce the risk of disease problems.
4. Before restocking after a KHV outbreak, always make sure that you really need to. In many cases, large numbers of fish can survive outbreaks and fisheries can still produce good catches for anglers. Do not restock unless you really need to.
5. If you need to restock after a KHV outbreak always wait until fish deaths have stopped completely and water temperatures are below 15°C. It is very difficult to predict if and when KHV may re-occur within a fishery. In many cases, sensible stocking has not caused additional outbreaks of the disease. However, it is important to follow the guidelines on stocking outlined in the 'Protecting your fishery' section.

These will help reduce the likelihood of re-infection, but will never provide a guarantee.

6. If a KHV outbreak kills a large proportion of the fish in your water it may be worth removing the rest of the fish, draining and disinfecting the site and starting the fishery from the beginning. This could completely remove the risk of KHV outbreaks occurring again.
7. If in doubt, get advice. Environment Agency officers and other fisheries professionals will be able to advise you on all of the aspects covered in this document. If you have any doubts about what you should, or should not do, then get professional help.

How to contact the Environment Agency

General enquiries (National Customer Contact Centre)	08708 506 506
Emergency hotline	0800 80 70 60
Fish Health, Ageing and Species Team	01480 483 802
Fisheries Permitting and Enforcement	01480 483 968