

## KHV information

Affects all varieties of common carp *Cyprinus carpio*, including varieties such as mirror, leather, koi, and ghost koi

Outbreaks occur between 15°C and 28°C

Can cause serious economic losses in ornamental and coarse fish

No treatment

Notifiable disease in the UK

Large scale mortalities up to 100%

Clinical signs include lethargic or erratic behaviour, loss of balance, loss of mucus resulting in dry, rough patches, sloughing of mucus, and sunken eyes. Gills are most frequently affected displaying necrotic patches of dead tissue, often with secondary infection of bacteria and fungi.



*Clinical signs of KHV in common carp*

# Koi Herpesvirus (KHV) Disease

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## Introduction

Koi Herpesvirus Disease is a viral disease of common carp *Cyprinus carpio*, including all its ornamental varieties such as koi, ghost koi etc. The virus is highly contagious and may cause up to 100% mortality. KHV has already caused severe fish losses to ornamental wholesalers, retailers and carp fishery owners and continues to pose a significant threat to anyone dealing with or keeping common carp.

Etiological agent: Koi Herpesvirus of the family Herpesviridae.

## Geographical distribution

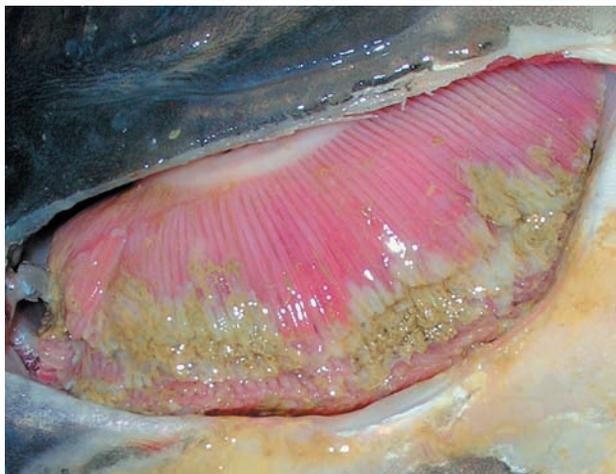
KHV Disease was first recorded in Israel in 1998 following large-scale mortalities in farmed fish. Further losses attributed to the virus were later found in Europe and the USA and have subsequently been reported throughout the world. In the UK, the virus has caused increasing numbers of mortalities in angling waters as well as in ornamental dealers and hobbyists fish stocks.

KHV Disease appears to be widespread in ornamental carp and it is possible that the disease is present in many more countries than have reported its presence to date.



**Mortalities resulting from a KHV outbreak**

## Treatment and control



**Necrotic gills in common carp**

There is no treatment for KHV and any fish that recover from the disease may carry the virus and act as a source of infection. From the 6th April 2007 the Diseases of Fish (England and Wales) Order 2007 came into effect adding KHV Disease to the list of notifiable diseases.

As a notifiable disease there is a legal obligation to report any suspicion of a clinical outbreak of Koi Herpesvirus Disease to the Fish Health Inspectorate (FHI). If the disease is found to be present the FHI will advise on the most appropriate methods of control.

A risk based approach will be used to determine the type of controls imposed dependent upon the water infected i.e whether it is a fishery or inland water, fish farm, fish dealer or retailer, aquaria or garden pond.

Controls may include applying a movement restriction to the site, culling of stocks and disinfection of the facility.

Investigations into the source of infection will be considered by the Fish Health Inspectorate on a case by case basis.

## Susceptible species

Currently, KHV infections have only been recorded in common carp *Cyprinus carpio* and its different varieties (mirror, leather, koi, ghost koi, etc).

## Epizootiology & clinical signs

The disease occurs at water temperatures between 15°C and 28°C. Within this temperature range acute mortalities are often observed. Mortalities are often highest at the mid-temperature range. There are a variety of clinical signs associated with KHV disease: infected fish may be lethargic and move away from the shoal. They may display erratic behaviour, often gathering at water inlets or points of oxygenation, show loss of balance, loss of mucus resulting in dry, rough patches, sloughing of mucus, and sunken eyes. The gills are frequently affected displaying necrotic patches of dead tissue. In addition to the clinical signs of the disease the effects of secondary infections by bacteria and fungi, the result of immunosuppressed infected fish, further complicate diagnosis.

The disease is transmitted by fish to fish contact and it is also possible that the disease can spread through contaminated water, nets and other equipment. Transmission of the virus through ova cannot be ruled out. The virus is thought to be shed through faeces, and urine, and also possibly via gills and skin. KHV may have the capacity to remain latent in its host for long periods of time before becoming active, stress is often the 'trigger' before an outbreak of the disease.

It is in the interests of owners and keepers of fish to ensure that the animals in their care are kept according to good husbandry practices.

Please note: The Animal Welfare Act 2006 makes owners and keepers responsible for ensuring that the welfare needs of their animals, including fish, are met. This includes protecting them from disease.