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Contact: Alex Chalupa 8207 7900

Fish Kills in South Australia

Frequently Asked Questions

What is a 'fish kill'?

A fish kill is a sudden and unexpected mass mortality of wild or cultured fish. Fish kills can generate considerable public and media interest and concern as they are often perceived to be the result of water pollution. However, there are many causes of fish kills and often they are caused by natural events.



How many fish kills occur in SA each year?

Since many smaller kills go unnoticed and others remain unreported, the number of kills is uncertain. However, increasing community awareness and improved reporting arrangements are likely to result in less fish kills going unreported and will also assist Biosecurity SA and Fisheries and Aquaculture to gather more information on the extent and causes of fish kills in SA.

What species of fish are affected?

The species most frequently observed and reported as being affected by kills include European Carp and Bony Bream. There have also been large fish kills of sardines.

Hardy species such as Bony Bream and Carp appear to be susceptible to fish kill events (these are noticed almost on an annual basis because they often occupy marginal habitats that are periodically subject to environmental influences which exceed the tolerance limits of these species). However **all** species of fish can be affected by fish kills.

Where do fish kills occur?

Fish kills can occur anywhere in SA waters.

When do fish kills occur?

Fish kills can occur at any time of the day and in any month of the year. However, fish kills are more likely to occur in summer during the months of January and February. This is likely to be due to the generally higher water temperatures (and consequently lower dissolved oxygen levels), more frequent severe and sudden storm/flood events, and generally lower water levels in freshwater river systems during these months.

What causes fish kills?

There are a range of causes of fish kills. Fish kills are generally associated with water quality changes, pollution, and infection, associated directly with human activities or a combination of causes. However, in almost half of all reported fish kill events, the cause is unknown.

Three main factors play a major role in fish kills:

- Environmental factors (e.g. salinity, temperature, acidity levels, dissolved oxygen levels),
- Toxicants/pollutants; and
- Infection with disease pathogens.

Fish kills can be due to a single factor acting alone, or two or more of these factors interacting together.

Fish kills are usually the result of sudden events or changes in the local environment. As far as possible, fish will avoid adverse environmental conditions and swim to another area to avoid harm. However, if the entire or a large proportion of the waterway is affected, or the adverse conditions appear very rapidly, then fish are unable to relocate and a fish kill often results. Fish are therefore generally more susceptible to fish kills in smaller sized waterways (such as dams, isolated ponds, residual pools or smaller creeks). Tides and prevailing winds and currents can also isolate and concentrate fish populations in parts of estuaries and larger waterways which may expose them to higher risk of fish kills when conditions deteriorate.

Depletion of dissolved oxygen in water can lead to a fish kill. However, the actual cause

of the fish kill is the factor/s which caused the depletion of the oxygen levels in the water in the first place. Often low DO is due to the increased use of the dissolved oxygen in the water column by living organisms other than fish (e.g. aquatic plants, algae, bacteria). Overcrowding of fish will also deplete the dissolved oxygen levels.

Who is responsible for managing and responding to fish kills?

Biosecurity SA is the lead agency for coordinating the response to fish kill incidents in SA.

PIRSA Fisheries and Aquaculture may also be involved in reacting to a fish kill.

The reasons why fish kills are investigated and where possible a cause determined include:

- There may be public health risks associated with a fish kill, especially where a disease is present within the fish population, or there has been contamination with some form of pollutant
- A fish kill may be a sign of a fundamental problem with catchment health which needs to be addressed
- There may be legal implications for individuals or organisations for polluting a waterway
- The kill may be due to a new disease organism and there is a need to implement quarantine measures or other treatments; and
- Understanding the cause of a kill may help prevent or reduce the chance of a recurrence. This is especially relevant in an aquaculture situation or where threatened species are involved.

Who do I contact to report a fish kill?

Fish kills in the wild should be reported:

- The FISHWATCH 24 hour hotline **1800 065 522**; or
- Your local Fisheries office, and ask to speak to a Fisheries Officer.

What information should I provide when reporting a fish kill?

If possible, it is useful to provide the following information when reporting fish kills:

- Name of waterway (e.g. lake, river, creek) and catchment
- Precise location in waterway (name nearby roads or other landmarks)
- Area affected by the kill (e.g. estimated length of waterway in metres or area hectares)
- Numbers of fish affected (e.g. 10s, 100s, 1,000s)
- Condition and location of fish (e.g. dead, dying, gasping, on water's edge, floating in waterway, on bottom of waterway)
- Size of fish (estimate in centimetres) and whether sizes vary or are of similar size

- Species of fish (if known)
- Type of habitat (e.g. marine, estuary, freshwater)
- Weather conditions before kill (e.g. temperature, wet or dry, windy)
- Date and time when kill first observed
- Any other general observations (odours, look and colour of the water, any other wildlife affected e.g. birds, frogs etc.)
- Suspected cause (if possible to estimate).

Don't forget to leave your name and contact phone number so an investigating officer can contact you again if required.

For larger fish kills (over 50 fish) it is also useful to take photographs or video of dead/dying fish so that the species can be identified.

If possible, include a measuring reference in the photo (place a ruler, measuring tape, coin etc. next to some of the fish – ideally the largest and smallest specimen) to show sizes affected. If you can, also take photos/video of the waterway to show extent of kill (in area) and general condition of water and habitat in the vicinity.

What happens when fish kills are reported?

Generally, site inspections would occur when large numbers of fish are affected and the fish deaths are continuing, pollution or contamination of the waterway is suspected, rare or threatened species have been killed, and/or the site has high public usage.

Can I collect and use the dead fish?

It is important to use a commonsense approach to fish kills. It is not advisable to handle or consume unhealthy looking fish which are gasping, sluggish, dying or already dead when you find them. Consumption or handling of discoloured or unhealthy looking fish may be a health risk due to their poor condition, possible disease or contamination.

Should the dead fish from a fish kill be cleaned up?

As many fish kills are natural events there is usually no need for the dead fish to be removed or cleaned up and the decaying bodies should be left to provide food for other organisms. In most cases the carcasses will be gone within a few days.

SA does not currently have a legislated lead agency or department that deals with the cleanup of large fish kills, which impact water quality or amenity of waterways. In cases where significant numbers of dead fish cause a public health or amenity nuisance, Councils have in the past undertaken cleanup and disposal of the dead fish.

Information in this publication can be provided on request in an alternative format or another language by contacting Biosecurity SA on 8207 7900.

This document was developed in conjunction with information produced by NSW Department of Fisheries.