

# Fish, ponds & great crested newts

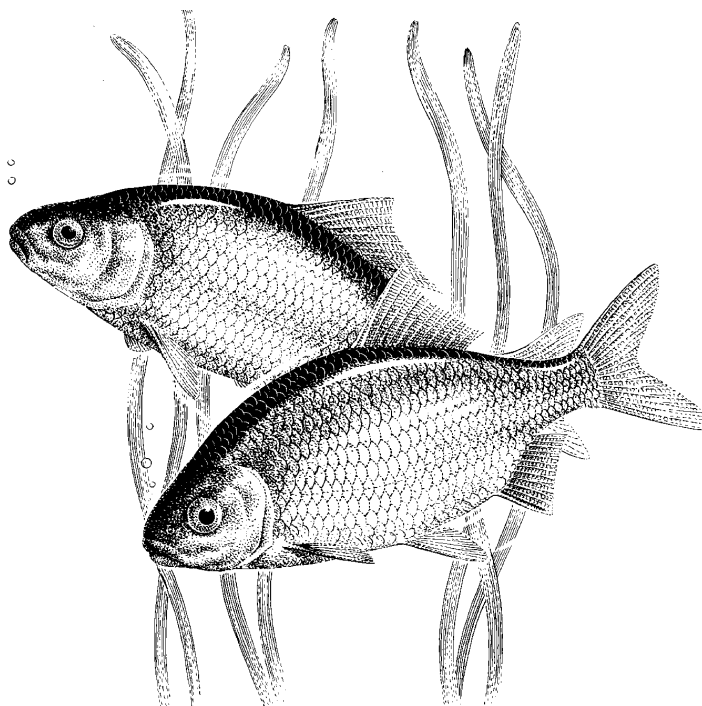
Analysis of Suffolk Wildlife Trust's pond survey data has re-inforced the message that fish – even small numbers of tiny stickleback – can significantly reduce the wildlife value of a pond. Data from over 900 ponds showed that 17% of Suffolk ponds contained fish. Different fish species affect amphibians, plants and insects in different ways.

## Predatory fish

Most fish, even if omnivorous, are also predatory eating insect larvae, worms, crustacean, molluscs, other fish, and the eggs and larvae of amphibians. However, some wildlife species are more sensitive and vulnerable than others. SWT pond data has shown that whilst smooth newts can survive and breed in healthy ponds with a few small fish (such as three-spined stickleback, goldfish, rudd and roach), the protected great crested newt rarely does so and the introduction of these fish can lead to population declines and extinction in great crested newts.

Invertebrate-feeding fish (bream, carp, pike, perch, trout) can deplete insect populations, such as dragonflies and daphnia that feed on algae, and lead to an increase in algae.

Both rudd and roach feed on filamentous algae, plant fragments and insects among the beds of aquatic plants (roach) and from the surface and mid-water (rudd). However, they hybridise between themselves in small ponds and over-breed creating large populations where there is a real pressure on all food items – including amphibian eggs and larvae.



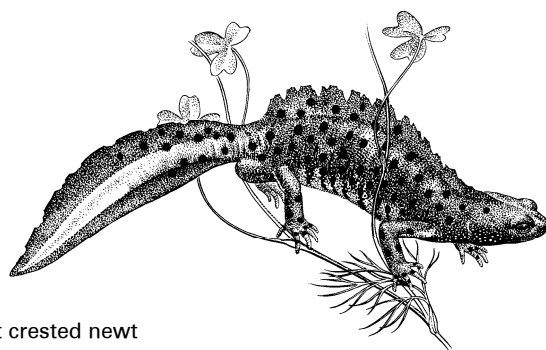
Roach

Natural England

Given the conservation priority and stronghold that the internationally protected great crested newts have in Suffolk, it is therefore undesirable to introduce fish to ponds where the newts may be breeding or have potential to colonise from nearby.

## Effect of fish on plant community

Several fish species can effectively kill off plant and animal communities by their feeding behaviour rather than by actually preying on the insects and amphibians directly. The cyprinids, especially the large carp, tench and bream, have an omnivorous feeding habit of sifting and stirring the bottom mud which causes turbidity which inhibits aquatic plant growth and destabilises the pond substrate to the point where the behaviour can completely eliminate aquatic plant growth. Once these macrophytes (larger plants) have been removed, so too is food, shelter and breeding habitat for invertebrates, molluscs and amphibians – thus adversely affecting the pond community.



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Great crested newt

## Common pond fish species and their bad habits

Fish	Summary lifestyle	Adverse impact on wildlife
Carp (Mirror, common)	Grow huge up to 40lb, live up to 30 yrs in dense weedy water with silty substrate feeding on inverts, worms, molluscs & vegetation; spawn in dense weed and bulrushes laying thousands of eggs	As well as directly feeding on invertebrates, they stir the water making it very muddy – too muddy for aquatic plants to grow, thus removing food, cover and egg-laying opportunities for many species.
Crucian carp	Rarely grow over 4lb; live up to 20yrs in ponds and lakes in dense weed, feeding on molluscs, crustacean, worms, spawn in dense weed laying thousands of eggs.	
Tench	Rarely grow over 12lb; live up to 14yrs in lakes (and rivers) in shallow still water, dense weed and silty substrate, feeding on zooplankton and benthic invertebrates such as molluscs	
Roach	Rarely grow over 3.5lb; live up to 18yrs in lakes, ponds (rivers and drains) in variable depth water; spawns in dense weed.	Mid-surface feeders so they stir the pond substrate less but when their shoals build up to large numbers, their impact on insect larvae must reduce general biodiversity in pond.
Rudd	Rarely grow over 4lb; live up to 17 yrs in lakes, ponds (and rivers) in shallow still water, reeds, sand or silt substrate, feeding on zooplankton, insect larvae and filamentous algae; spawns in common reed. Shoals in large numbers.	
3-spined stickleback	Rarely exceeds 8cm; lives up to 4yrs in ponds (and rivers) in shallow, dense weed, sand and silt substrate; feeding actively at dawn and dusk on zooplankton and insect larvae.	Voracious predators eating invertebrates and amphibian larvae inc great crested newt.

### General considerations

#### Fish-free ponds

- Avoid introducing fish to ponds where great crested newts are known to breed or to ponds that have no fish.
- For fish-free ponds next to footpaths that might be vulnerable to well-intentioned but misguided casual stocking with unwanted garden pond fish, consider putting up a sign informing people of the adverse effects on wildlife of fish in the pond.

#### Ponds with unwanted fish

- Deeper ponds are less likely to regularly dry out and kill off fish populations every few years so once introduced, fish can be very difficult to remove completely.
- Fish can be removed by draining the pond in early autumn, but permission from the Environment Agency may be required to do so.
- Fish can be removed by netting or electro-fishing – there are companies that will do so free as they sell on the fish to others.

#### Fish & wildlife compromise ponds

- Recognise that a compromise is difficult and possibly not appropriate where priority species such as great crested newt are in the area.

- In a farm situation where there are several ponds if a pond already has coarse fish try to keep any fish (and possibly duck) to one pond but leave other farm ponds fish-free.
- Create fish-free refuge zones such as faggots made from bundles of branches.
- Also try to establish some duck-resistant marginal vegetation such as the rhizomatous pond sedge, flag iris and reedmace which are normally quite invasive and help to protect pond margins and create small backwaters where a few invertebrates can escape.
- Periodically remove fish to reduce population build-up and thus the pressure on plants, invertebrates and amphibians.
- If fishing is not a priority, consider rudd and roach which are less damaging surface/mid-water feeders and can be seen (bottom feeders are more damaging and cannot be seen).

For further advice, contact Suffolk Wildlife Trust on:

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