

Common frog (ARC)



## 6. Other Pond Species

### 6.1. Fish

Fish can be significant predators of amphibians. Large predatory fish such as pike may prey on adults but it is the impacts on the egg and larval stages which tend to be of greater significance to amphibian populations. Amphibian species vary in their abilities to co-exist with fish. In general species that breed in large, permanent water bodies have evolved to co-exist with fish, as fish are likely to colonise these larger ponds. Species breeding in temporary ponds may not survive so well with fish.

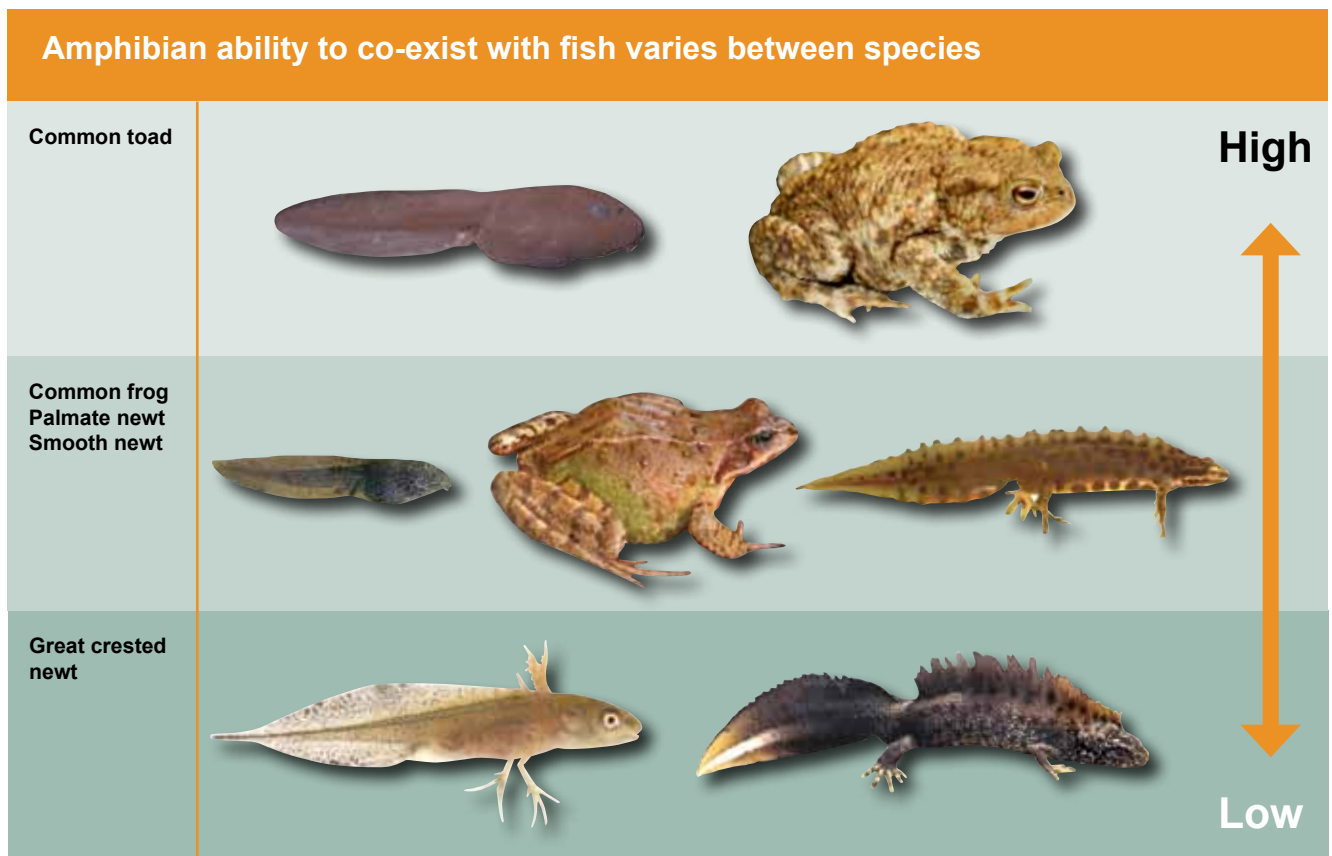
Native amphibians differ in their abilities to co-exist with fish. At one extreme the common toad is either distasteful or toxic to many predators, including fish. This defence mechanism is present at all stages of the toad's life cycle. Not only are common toads able to survive in ponds with fish, but fish may even be beneficial. Although common toad tadpoles are distasteful to fish, they are consumed by predatory invertebrates. Fish may reduce invertebrate numbers, lowering the impact of invertebrate predation on toad tadpoles. Common toads can breed successfully, even in well stocked angling ponds.

At the other extreme, the great crested newt is the least able to co-exist with fish. Great crested newt larvae spend time high up in the water column rather than hidden on the pond bottom and it seems that this behaviour makes them particularly prone to fish predation.

The remaining widespread amphibian species are intermediate in their abilities to survive with fish. Although their larvae are consumed by fish, these species frequently breed successfully in ponds with fish. The nature of co-existence is not fully understood but the survival of amphibian larvae may depend on physical refuges from predation such as may be provided by aquatic vegetation.

Due to the sensitivity of great crested newts to fish predation, and because fish are predators of other amphibian species, fish should not be stocked in amphibian ponds.

Fish are often introduced to water bodies by unauthorised third parties. To minimise this risk the location of new ponds should be considered with respect to ease of public access (see 4.6 *Public access*).



Once fish become established in a pond it can be difficult to remove them. Fish control measures have been reviewed for the purposes of great crested newt conservation (Wright, 2010) but the removal of fish from ponds is tightly regulated. Legislation does not permit removal for the purposes of wildlife conservation so such operations are infrequent and most likely to be approved as an experimental method rather than as recognised operations acceptable under legislation controlling the movement of fish stocks.

## 6.2. Waterfowl

Waterfowl prey on adult amphibians and their eggs. This is natural and amphibian populations can withstand a degree of such predation. However, heavy usage of ponds by waterfowl is problematic. High densities of waterfowl can strip aquatic vegetation from a pond and its shoreline, reducing the basis of its biological diversity and removing refuge and egg-laying substrates for amphibians. Waterfowl also pollute water through defecation and continually stir up sediments, further reducing water quality. Hence waterfowl should not be stocked nor encouraged by providing food or by creating 'duck islands'.

At sites with frequent public access recreation may be a greater priority than amphibian conservation. In such situations the creation of additional ponds for wildlife, or redirecting public access, should be considered.

## 6.3. Non-native amphibians

There is a range of non-native amphibians that have become established in Britain with varying degrees of success. The most widespread of these are several species of water frogs (pool, edible and marsh frogs) and alpine newts. In most cases there is little evidence that these species have adverse effects on our native wildlife but this is not always the case. Non-native species may be vectors of amphibian diseases (7.1 Disease). In addition, the relatively large North American bullfrog has the potential to compete with or prey on native species.

The release of non-native species is illegal under the Wildlife and Countryside Act 1981. Control measures for existing populations of non-native species should be reviewed considering:

- Threat posed by non-native population.
- Cost of control measures.
- Likelihood of success of control.
- Practicality of control measures.

In many cases control or eradication proposals will be either impractical or not cost-effective. Exceptions

where control measures should be taken include the North American bullfrog and populations of other non-native species that may threaten ecologically sensitive sites.

The North American bullfrog is a pest species in many parts of the world. This frog is able to thrive when introduced to new areas and its relatively large size means that it can be a significant predator of native species. The ecological threat posed has led to a ban on importation into Europe. This frog is unlikely to be encountered in the wild in Great Britain, but two populations have become established in southern England since the import ban. It is important to maintain vigilance so that further introduced populations can be controlled before they become firmly established.



**Although now unlikely to be found, the North American bullfrog is a priority for control (ARC)**

Marsh frogs can grow to a large size and are sometimes mistaken for bullfrogs. Care should be taken to ensure the correct identification of non-native species.

Control of other non-native species may be deemed appropriate if, for example, a population is found near to a nature reserve. In such a case action should be taken promptly and is likely to be successful only if the population in question is recently established and relatively small.

In general, discouraging the further release of non-native species is the most practical action that can be taken.

Information on non-native species can be found on the [GB Non-Native Species Secretariat's website](#) or the [Alien Encounters](#) section of Amphibian and Reptile Conservation's website.

## 6.4. Terrapins

Several terrapin species can be found in ponds in Britain, originating as unwanted pets. They are incapable of successful breeding because summer temperatures are not warm enough to hatch eggs that are occasionally produced here.

Terrapins are most likely to be found in ponds in urban and suburban areas, especially in public parks. Non-breeding populations can build up due to people releasing former pets in ponds where other terrapins already occur.

There has been no study of the impact of terrapins on amphibians in Great Britain. Nevertheless, a few terrapins in a large pond are unlikely to have a great impact. The predatory nature of terrapins is sometimes exaggerated, especially in the media. Large red-eared terrapins, for example, feed mainly on plant material. Where terrapins occur in large numbers their impact may be great and removal should be considered.

Terrapins can be humanely trapped and some wildlife rescue organisations capture and re-home them. Nevertheless, removal of terrapins can be a time-consuming operation and should be undertaken only where clear benefits are likely. Removal of terrapins from ponds on nature reserves may be desirable, to discourage further releases. Terrapins, however, tend to be found in ponds with easy public access and such ponds may experience a range of other impacts. For example, there is unlikely to be great benefit to amphibians in removing a terrapin from a pond that supports large numbers of fish. The impact of the terrapin in such a pond is likely to be relatively trivial.

## 6.5. Non-native invasive plants

Water bodies in Britain are now host to several non-native plants. Some of these are now so common that one in six plants found in ponds are non-native. Some of these are pernicious weeds which are difficult to control once established. Hence, steps should be taken to minimise the chance of their introduction to more ponds.

An example of a problematic, non-native plant is New Zealand pygmyweed or swamp stonecrop *Crassula helmsii*. This plant was very popular in the horticultural trade because it becomes established and grows rapidly. These traits have created a serious pest species in ponds outside the garden. In some cases *Crassula* co-exists with other plants but more commonly it outcompetes them and can form thick mats covering the whole pond and its margins. There does not seem to be any practical way of removing *Crassula* from a pond once it has become established.

*Crassula* is a weed species within aquatic nurseries and can propagate from small fragments. It is sometimes introduced into ponds unintentionally, with other plants. If ponds are not stocked with purchased plants it reduces the risk of contamination with non-native invasive species.

Unwanted plants are sometimes introduced by human visitors to ponds. For example, dumping the contents of the aquarium of no longer wanted pet fish or moving unwanted frogspawn from a garden pond to 'the countryside' runs the risk of contamination with pest pond plants. Hence public access issues should be considered as a means of minimising risks of establishment of non-native, pest plants.

Non-native, pest pond plants include:

- New Zealand pygmyweed *Crassula helmsii*
- Parrot's feather *Myriophyllum aquaticum*
- Floating pennywort *Hydrocotyle ranunculoides*
- Water fern *Azolla filiculoides*
- Waterweeds *Elodea* species
- Curly waterweed *Lagarosiphon major*

Guidance for the control of non-native aquatic plants is provided by the Centre for Ecology and Hydrology [www.ceh.ac.uk](http://www.ceh.ac.uk). Eradication of these plants is difficult and costly, hence the emphasis on minimising the risk of their introduction. Steps to minimise risks include:

- Avoid moving material or animals between ponds.
- Avoid stocking new ponds with plants.
- In situations where planting up is demanded, then take care in sourcing plants (e.g native species from nearby ponds).
- Monitor ponds and remove any non-native species before it becomes established.
- Consider measures to minimise easy public access to ponds.

## 6.6. Literature

Alien Encounters (website).

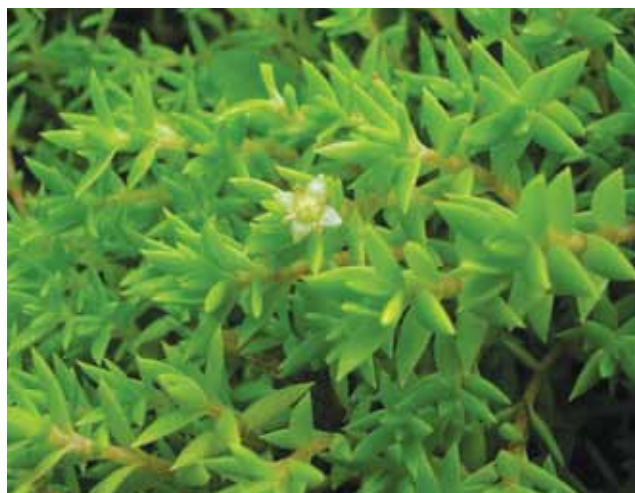
[www.aliencounters.arc-trust.org/](http://www.aliencounters.arc-trust.org/)

GB Non-Native Species Secretariat (website).

[www.secure.fera.defra.gov.uk/nonnativespecies/home/index.cfm](http://www.secure.fera.defra.gov.uk/nonnativespecies/home/index.cfm)

Webley, J. (2007). *Triturus cristatus* (Great crested newt): predation by birds. The Herpetological Bulletin, 100, 39-40.

Wright, D. (2010). Fish Control Methods for Great Crested Newt Conservation. Amphibian and Reptile Conservation, Bournemouth.



New Zealand pygmyweed, *Crassula* (ARC)



Floating pennywork (David Orchard)



Parrot's feather (ARC)



Blanket of water fern in autumn (ARC)