



Grass snake © Ian McIntosh CC BY SA 3.0

Amphibians & reptiles

Amphibians and reptiles are highly charismatic creatures and an important part of Britain's natural and cultural history. Over recent decades, changes in land use have resulted in population declines of all Britain's amphibians and reptiles. Pond loss has been a particular problem for amphibians, while reptile populations have become isolated and vulnerable; hibernation areas have been destroyed or sunny basking areas shaded out. Creating and managing habitats for most amphibians and reptiles can be complementary to broader conservation management on farmland.

Key points

- Amphibians and reptiles are charismatic creatures that have suffered population declines
- Amphibians need good quality ponds, especially warm ones
- Reptiles require open areas for warmth and more vegetated areas for shelter.
- Suitable areas of habitat, linked across the landscape, are particularly important for reptiles

Amphibians & reptiles



A young common toad in the palm of a hand © TJ Blackwell CC BY NC 2.0

Amphibians

There are seven species of amphibian native to Great Britain: the common frog, natterjack toad, common toad, smooth newt, palmate newt, great crested newt and northern pool frog. Despite being widely distributed, the great crested newt and common toad are listed as priorities under the UK Biodiversity Action Plan (BAP) due to their declining numbers. The other three widespread species, smooth newt, palmate newt and common frog, have also experienced declines.



The great crested newt has suffered severe declines across Europe © Fred Holmes

The remaining two native species, the natterjack toad and northern pool frog, are conservation priorities due to their rarity. The natterjack toad is confined to fewer than 60 locations, while the pool frog has only relatively recently been recognised as a native species - coinciding with its extinction in the wild. Pool frogs have been reintroduced, from Sweden, to a single site in England.

Amphibians have complex life cycles and are all dependent on suitable terrestrial as well as aquatic habitats. British amphibians breed primarily in standing water, especially ponds, where the eggs (spawn) and the larval (tadpole) stages can often be seen (Box 25). After metamorphosis, juvenile and adult amphibians spend long periods, often several years, living on land. High quality habitats are important: common toads, for example, require access to wooded areas, tussocky grassland, scrub or hedgerows, for hibernation sites, feeding and shelter.



Spawn of common frog and toad © Fred Holmes

The great crested newt is believed to have declined more rapidly than other widespread amphibian species and has particularly suffered from the degradation of rural ponds due to agricultural intensification. Great crested newts prefer to breed in deep ponds that contain plenty of aquatic vegetation and they do not range far from their breeding pond. At the other end of the spectrum is the common toad, the most terrestrial of the widespread amphibians. Outside its breeding season it may move up to three kilometres from water, although distances of 400-1500m are more typical. The common toad is more tolerant of dry conditions than the other amphibians, except for the natterjack toad.



Common frog and spawn © Richard Burkmar



Rough grassland and scrub provide important areas for amphibians to feed, shelter and hibernate © Chris Gleed-Owen

Pond creation and management is crucial for amphibian conservation. The principles for creating good wildlife ponds also apply to amphibian breeding sites (see Chapter: Ponds). One feature that is particularly important for amphibians is warmth. Warm ponds are favourable for amphibian growth and development, so new ponds should be positioned in sunny locations. A belt of trees or scrub several metres to the north of a pond can act as a windbreak and create a warm microclimate around the pond. Management over the longer term should incorporate measures to control scrub and trees to avoid excessive shading, and the southern pond edge is best completely unshaded.

Telling a frog from a toad

Common toads often breed in the same water as the common frog and may be confused with them. At 8-13cm the toad is larger than the frog (6-9cm) which prefers to hop, whereas the toad generally walks. The toad has a rounder snout than frogs when viewed from above and the much more warty skin of the toad distinguishes it from frogs. Frogspawn is laid in large clumps, while toads lay spawn in strings.



Common frog © Steve Hiner/Natural England



Common toad © Rosie Salazar

There are two toad species in the UK, the common toad and the natterjack toad. The natterjack toad is a conservation priority and a habitat specialist with very different ecological requirements to the other native amphibians. It is a rare and elusive creature with a distinctive yellow dorsal stripe, and is almost exclusively confined to coastal sand dunes, coastal grazing marshes and sandy heaths.



Natterjack toad © Neil Pike/Natural England

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© Chris Gleed-Owen
The slow-worm (above) and the common lizard (below) are both declining



© Steve Hiner/Natural England



Grass snakes can be found on farmland
© Simon Collinson CC BY NC ND 2.0

Reptiles

Six reptiles are found in the British Isles: sand lizard, common lizard, slow-worm, smooth snake, grass snake and adder. All of Britain's reptiles have suffered population declines and all six species are now listed as priorities in the UK Biodiversity Action Plan (BAP).

The slow-worm (a lizard) is the commonest reptile in the British Isles but, like the others, it has suffered

declines in recent decades due to loss of suitable habitat. Slow-worms require dense vegetation, coupled with sunny areas to allow thermoregulation and, preferably, loose soil into which to burrow. The rarest reptile in Britain is the sand lizard, restricted to just a few heathland sites in southern England and Merseyside. On farmland, the reptile most likely to be encountered is the grass snake. This beautiful snake is a good swimmer and may often be found close to fresh water, basking or hunting on pond edges and ditch banks.

Reptiles are ectothermic, meaning that they need external warmth to raise their body temperature to levels sufficient for optimal activity. They thus require warm, relatively open habitats, with a high degree of structural diversity of vegetation, to provide the conditions needed for basking and shelter under a range of ambient temperatures. On farmland, hedgerows, ditches and ditch banks, stone walls, meadows, orchards, field margins, ponds and manure heaps can all provide habitat for the widespread reptiles (Box 26). Field margins should be managed as rough grassland or scrub, and grassland areas should be maintained by winter cutting every one to three years. A scattered scrub habitat (a mix of rough grassland and scrub), and scrub growth along the edges of hedgerows and woodland, are particularly beneficial.



Rank grass and brambles will benefit grass snakes
© Chris Gleed-Owen



Manure heaps and rotting hay bales are good for reptiles
© Chris Gleed-Owen



Field margins and hedgerows are important corridors for reptiles © Chris Gleed-Owen

During the winter, reptiles will hibernate, either singly or communally. Old animal burrows, rotted tree stumps, or under debris or fallen logs are examples of suitable hibernation sites; sites will nearly always be south-facing, in full or partial sun, and must be free from flooding. As well as hibernation sites, Britain's only egg-laying snake, the grass snake, needs decomposing material such as manure or compost heaps in which to lay its eggs. The other British reptiles incubate their eggs internally.

Enough of the right sort of habitat must always be present, especially on isolated sites. Reptiles have limited dispersal abilities so, if management such as scrub removal or intensive grazing affects the whole of a site at the same time, they may be unable either to escape the harmful impacts of these operations or to recolonise isolated sites at a later date. Linking patches of suitable habitat by favourable management of intervening habitat, either as continuous blocks, or as corridors such as hedgerows, field margins, boundary banks and forest rides, is especially important. For example, sympathetically managed hedgerow edges and sunny field margins will help provide linked habitat networks for reptiles and other wildlife.

As relatively sedentary predators, the presence of reptile populations indicates favourable management for a range of other species. All British reptiles consume animal prey: slow-worms eat soft-bodied invertebrates such as slugs and worms, legged lizards favour insects and spiders, while grass snakes feed primarily on amphibians and fish. If reptiles can thrive on a site, then so too will many other creatures requiring warm microhabitats or living within the diverse vegetation structures needed by reptiles. Managing habitats for reptiles will help increase overall biodiversity.



Common toads © Rosie Salazar

Toads in the Upper Thames region

Adult toads visit water bodies such as ponds, lakes and even slow flowing streams or rivers for just a few days or weeks during spring to mate and deposit toad spawn. For the rest of the year toads are almost exclusively terrestrial, typically dispersing 400-1500m from their breeding pond.

During spring 2010, more than 20 sites (incorporating around 75 water bodies across the Upper Thames catchment) were visited and surveyed for toads, toad tadpoles or toad spawn. The ponds were searched using direct visual observation or binoculars as required (during daytime) and by torchlight (at night). Potential terrestrial refugia in the vicinity of ponds, such as logs or substantial litter (e.g. carpets, tyres, metal sheeting etc.) were also examined.

Of the 75 water bodies surveyed, only 9 (at 7 sites) contained adult toads, toad spawn or toad tadpoles (historical records and recent sightings of toads were reported for some of the other water bodies). This level of waterbody occupancy was comparable with findings from other contemporary studies in lowland farmland. The survey identified important toad breeding sites within the Upper Thames although the future for toad populations at some of these ponds is by no means certain.



Future work may show it is possible to identify individual toads from their wart and belly patterns © Rosie Salazar

Key results

- Ponds can be surveyed for toads in the spring, when they visit to breed
- In the Upper Thames, toads were recorded at only 9 out of 75 ponds
- This result is similar to other surveys of farmland ponds



Grass snake © Peter Wakely/Natural England

Use of ditches and hedgerows by amphibians and reptiles

Some agri-environment scheme management options have the potential to provide good habitat for reptiles, in the form of a mosaic of refuges and areas to forage and bask. Examples include field margins, ditches and hedgerows in arable fields. Amphibians may also benefit from these options, as well as those relating to buffering of ponds. Data on the use of farmland habitats by declining reptile and amphibian species is crucial for informing future management plans and remedial action.

We conducted a pilot study to look at the frequency with which amphibians and reptiles use different combinations of field boundaries, including ditches, field margins and hedgerows (focusing mainly on the common toad and grass snake). A total of 51 lines of refugia (pieces of carpet or roofing felt) were set along field boundaries and checked between May and October 2011, following guidelines set out by the National Amphibian and Reptile Recording Scheme.

There were 37 sightings of grass snake recorded, 24 common lizard, 10 of common toad and one adder adjacent to the refugia, providing good evidence that these farmland habitats are potentially very important for reptiles and amphibians. These data will be used to determine in more detail whether the presence or absence of hedgerows and ditches affect the frequency with which amphibians and reptiles use the refugia lines.



Common lizards were found on field margins © Rosie Salazar

Key results

- Knowledge of farmland habitat use is crucial for reptile and amphibian conservation
- Reptiles and amphibians can be surveyed using refugia (following guidelines)
- Grass snakes, lizards and toads were all found to use field boundary habitats

Amphibians & reptiles

Management summary		
	Key habitats	Key actions
Amphibians	<ul style="list-style-type: none"> • Ponds and ditches 	Follow guidelines for creation of good wildlife ponds and ditch management Ponds with warm, sunny aspects will especially benefit amphibians
	<ul style="list-style-type: none"> • Terrestrial habitats 	Areas of tussocky grasses, field and woodland edges, and linear features through the landscape, will help frogs, toads and newts
Reptiles	<ul style="list-style-type: none"> • Vegetation structure 	Manage for a variable structure with a mixture of vegetation heights, scrub, tangled areas, bare patches, lots of edges and good basking places
	<ul style="list-style-type: none"> • Aspect 	Sunny, sheltered locations are important
	<ul style="list-style-type: none"> • Connectivity 	Create and maintain continuous, linked, or close patches of suitable habitat

Options especially relevant for amphibians & reptiles		
Code	Countryside Stewardship options / capital items	Tier
BE3	Management of hedgerows	Mid
SW1	4-6m buffer strip on cultivated land	Mid
SW2	4-6m buffer strip on intensive grassland	Mid
WD3	Woodland edges on arable land	Mid
WD7	Management of successional areas and scrub	Mid
WD8	Creation of successional areas and scrub	Higher
WN5	Pond management - first 100 sq m	Mid
WN6	Pond management (areas more than 100 sq m)	Mid
WT1	Buffering in-field ponds and ditches in improved grassland	Mid
WT2	Buffering in-field ponds and ditches on arable land	Mid
WT3	Management of ditches of high environmental value	Higher
WT4	Pond management - first 100 sq m	Higher
WT5	Pond management (areas more than 100 sq m)	Higher

Find out more at:

www.arc-trust.org (Amphibian and Reptile Conservation)

www.narrs.org.uk (National Amphibian and Reptile Recording Scheme; also for submission of records)

www.freshwaterhabitats.org.uk