# Dragons in your Garden

How to encourage amphibians and reptiles into your garden



amphibian and reptile conservation



Dragons in your Garden is a campaign, led by Amphibian and Reptile Conservation, to make the UK's gardens more attractive to frogs, toads, newts, snakes and lizards.

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Written, edited and designed by Amphibian and Reptile Conservation: John Baker, Lucy Benyon, Jules Howard.

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# Foreword: Dragons on the doorstep

**By Chris Baines** 

Author of the classic best seller "How to Make a Wildlife Garden"



Almost 60 years ago I helped my dad to make a garden pond. Together we introduced a clump of pondweed, a bucket of mud and a large dollop of frogspawn. All these years later my Mum still rings to let me know when the first of the new season's frogs appear. It happens every spring as if by magic and I have never found a more rewarding way to contribute to conservation. Anyone who's looking for a captivating way to make a lasting difference should just dig a pond and welcome frogs and toads and newts into their life.



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#### **Cold-blooded wonders**

# Amphibians and reptiles are highly charismatic creatures...

Amphibians and reptiles have a unique array of unusual behaviours and talents. Some jump, some crawl, some run and others slide. They can change colour, shed their tails and to top it off some have a fish-like tadpole stage before undergoing a full metamorphosis into a miniature adult form. They are truly unique parts of the UK's natural history.

#### Amphibians and reptiles are key parts of food webs.

It is estimated that only 5 of every 1,000 frog eggs survive to adulthood. The rest provide food for other wildlife. Amphibians and reptiles are themselves predators - so they really are a key element in food webs.

"Canaries in the Coalmine" for the health of our environment. Amphibians live partly in water, partly on land - so they're a good measure of the health of both aquatic and terrestrial habitats. Declines of amphibians around the world have raised concerns about the health of environments which we're all dependent upon.

They've been around a long time. Amphibians were the first back-boned animals to walk the Earth. Their survival up to now shows how perfectly they have evolved to fit within ecosystems, and how sorely they would be missed if they were allowed to disappear for ever.

They're inspiring and accessible. There's little to match the bright orange belly of a great crested newt or the fiery golden eyes of a common toad. On close inspection many of our amphibians and reptiles are intricately marked, with unexpected flashes of colour. Kids (and quite a few adults, let's admit it) love them. With the right conditions in your garden, you can get up close with these animals and, in the case of amphibians, watch one of nature's complex life cycles unfold right under your nose!





# We need your help and here's why...

Many of the places in which frogs, toads, newts, snakes and lizards thrive have disappeared. The intensification of agriculture and building development have caused the disappearance of ponds, hedgerows, heathland, dunes, grassland and scrub. But you can help...

# What you can do...

By making small- or large-scale changes to your garden you can encourage amphibians and reptiles to seek refuge there. Adding ponds (for amphibians) or compost heaps (for slow-worms and grass snakes) can even result in some species breeding in your garden. Plus, creating a Dragon Garden is a great way to teach others, particularly children, about the wonders of cold-blooded life.



# Common frog Rana temporaria

Resident in many gardens, common frogs grow up to 9cm. They're usually olive-green or brown with black/brown markings, however all sorts of variations occur, such as yellow, orange or albino, especially in gardens. Almost all common frogs have a dark patch behind the eye. They have smooth, moist skin and long legs which are usually striped. They lay 'clumps' of frogspawn in early spring.

Where to find them: Adult frogs return to ponds in early spring to breed. In summer, they often move away from the pond to damp areas of the garden, such as patches of long grass. At night they may be found foraging in flowerbeds.

Likes: Ponds with shallow edges, damp areas Dislikes: Concrete slabs/paving around ponds





# Common toad Bufo bufo

The common toad may breed in garden ponds, but often is only a visitor to gardens later in the spring and summer. Adults are usually 5-11cm and can be brown or brown-green with some darker markings. Toads differ from frogs by having dry, rough skin often described as 'warty'. Common toads have golden eyes and a horizontal pupil. Unlike frogs they walk or make small hops rather than long bounding jumps. Their spawn is produced as long strings.

Where to find them: Common toads are more particular about the ponds in which they breed, often migrating back to ancestral breeding ponds (typically larger ponds than found in most gardens). In gardens they can be found underneath plant pots, compost bags, logs and within compost heaps. At night they might be found making hunting forays around the garden.

Likes: Deep ponds, compost heaps, log piles

Dislikes: Barriers to their migration route - such as fences and roads

## Introducing amphibians & reptiles



# Great crested newt Triturus cristatus

The great crested newt is the largest of the three native species, with adults reaching 16cm in length. These newts are dark brown or black in colour and their skin is rough or granular. They have a bright orange belly with irregular black blotches, and orange and black striped toes. During the breeding season the males develop a large jagged crest along the back, giving them their name (the crest is much smaller throughout the rest of the year). Males also have a silvery-white 'flash' along the tail.

Where to find newts: In spring, adult newts of all three species return to ponds to breed and often choose to stay in the water until summer to feed on tadpoles and other pond life. Shining a torch into a pond after dark on a warm evening in spring is a great way to find newts. You might see females carefully laying individual eggs on the stems and leaves of pond plants, wrapping them up for protection. Great crested newts are a conservation priority species and strictly protected by law from disturbance or capture.







# Smooth newt (top)

#### Lissotriton vulgaris

This is the most widespread newt in the UK. Smooth newts are usually brown. Like great crested newts, they have an orange belly and males develop a crest during the breeding season, though it is wavy rather than jagged. Adults grow to approximately 10cm. Their skin is smooth when seen in water but this changes to a velvet-like appearance when the newts are on land.

# Palmate newt (bottom left)

#### Lissotriton helveticus

During the breeding season male palmate newts develop a low ridge-like crest, webbed back feet and a filament on the end of the tail. Other than this, palmate newts are similar in appearance to smooth newts and can be difficult to distinguish. Adults can reach 9cm. They are usually browngreen with dark spots and have a pale yellow/orange belly sometimes with a few small black spots. Unlike smooth newts, the throat is unspotted.

Likes: The leaves of aquatic plants for egg-laying (the bottom right photo compares a great crested newt egg (top left) with smaller smooth newt eggs (bottom and right)).

Dislikes: Fish in the pond.

# Introducing amphibians & reptiles





## Slow-worm

#### Anguis fragilis

The slow-worm (the reptile most likely to be seen in gardens) can reach 40cm and is usually brown or grey with a shiny, metallic or 'polished' appearance. Females and juveniles have dark flanks and a dark stripe along the back; males occasionally have blue spots. Although sometimes mistaken for snakes, slow-worms are in fact legless lizards. Unlike snakes slow-worms can shed their tail and are able to blink. In urban areas slow-worms sometimes fall prey to domestic cats.

Where to find them: Slow-worms feed largely on slugs and spend a lot of time hiding in compost heaps, under paving slabs or in undisturbed areas of the garden. Females incubate the eggs inside themselves and 'give birth' in late summer.

Likes: Compost heaps, slugs

**Dislikes:** Cats

### Grass snake

#### Natrix natrix

Grass snakes are the longest UK snake, sometimes reaching over 90cm. They're usually green, grey or brown, almost always with a distinctive yellow, cream or white collar behind the head, bordered to the rear by contrasting black markings.

Where to find them: The grass snake is an excellent swimmer and may visit garden ponds looking for amphibians and fish. It's the only native snake to lay eggs and sometimes makes use of large compost heaps as egg-laying sites.

Likes: Ponds, compost heaps Dislikes: Netting over ponds



# Common lizard

#### Zootoca vivipara

Generally, common lizards are brown but they can be green. They have darker coloured markings, usually spots in the male but also stripes in the female. The belly is cream, yellow or orange, brighter in males. They tend to be less than 16cm long. Common lizards feed on a variety of insects and spiders.

Where to find them: The common lizard prefers well-drained habitats with plenty of spots for basking. On summer days you might see them around rockeries or exposed logpiles, though they run away quickly if disturbed.

Likes: Rockeries, open spots

**Dislikes:** Disturbance

# Not in my backyard? Why not?

There are other species of reptile and amphibian native to the UK but you are unlikely to see these in your garden due to their specific habitat requirements or rarity. Of the rare species natteriack toads and sand lizards are restricted almost entirely to heath and coastal dunes, while the smooth snake is confined to a small number of heathland sites in southern England. The pool frog became extinct in the UK but has since been reintroduced at a single site in East Anglia. Adders are the UK's only venomous snake and as such are a cause of concern to some. In reality they rarely stray into gardens and prefer more 'natural' habitats: in most areas they're restricted to wellknown sites. Adders have a thick, dark zigzag running along the length of the back with a background colour of grev or brown; they grow to around 60cm in length. They use their venom for catching prey, which consists mainly of small mammals; unless antagonised, they pose little risk to humans.



hris Glaad-Owa

## **Enhancing your garden**

A pond is the perfect addition to your Dragon Garden - amphibians will be attracted to spawn and grass snakes may visit to hunt.

Amphibians need ponds in which to lay their eggs, so if you want to attract frogs, toads and newts the best thing you can do is put in a pond.

# Top tips for digging a pond:

- Choose a sunny position, away from overhanging trees and shrubs.
- Include a shallow area around the pond which will help aquatic plants grow and help frogs to get in and metamorphosing froglets to get out.
- Make sure you have a section at least 60cm deep so that resident frogs are not frozen in icy periods - some male frogs like to sit out the winter on the pond bottom.
- Avoid surrounding the pond with paving slabs as emerging froglets can stick to these and die in hot weather. If you're using slabs make sure there is also planting right up to the edge of the pond to create cool and damp areas.
- If you're using tap water to fill your pond, then allow it to stand for a day or two first. If you have a water butt in your garden then fill the pond with rain water; you can also use this to top up the pond in very hot weather.
- Stock the pond with a mixture of native aquatic plants; avoid non-native species at all costs -

many are invasive and potentially damaging. Choose a selection of floating, submerged and marginal plants.

If you're not keen on a full-size pond, how about a bog garden instead? These damp, marshy areas are invaluto animals during hot weather. They're very simple to ridig a hole to a depth of around 30cm and line with a choutyl liner. Place the removed soil back over the liner at then pierce it with a garden fork to allow some drainag Choose native marsh plants from your local garden ce







**Amphibians** need damp areas and ponds, reptiles require open spots where they can be warmed by the sun. However, both groups need cover and habitats that support their food - in most cases invertebrates.

#### Compost heap

Placed in a sunny south-facing position, compost heaps or bins make excellent reptile habitats particularly for slowworms. They are often found buried within them, feeding on the numerous slugs and ants found there. Amphibians may also forage or hibernate in them.

Grass snakes sometimes make use of compost heaps to lay their eggs. The bottom of the heap keeps a good, constant temperature allowing the eggs to incubate over the summer whilst being well-protected from predators. The eggs are white, leathery in texture and measure around 2.5cm. Generally there are between 10 and 25 eggs in a clutch, though there can be up to 40. Several females may use the same site to incubate their eggs.

If the compost heap is covered with an old carpet or tarpaulin this may encourage the grass snakes or slowworms to hang around a little longer. Checking under the cover can be a great way to get a closer look at the creatures living in your garden.

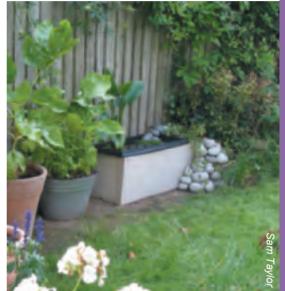
#### Rockery

South-facing rockeries might attract nearby common lizards and other reptiles into gardens. The nooks and crannies mean they can quickly escape if disturbed. You could use the soil excavated after digging your pond to create a sunny bank.



#### Mini-pond

Ponds don't necessarily need to be big to attract wildlife so another way to introduce water into the garden is to create a mini-pond. These may be used by amphibians to cool off in during the summer. All you need is a container (large tub, old sink, half-barrel) which you can fill with water and a few aquatic plants. Your minipond can be sunk into the ground or, with safety in mind, left standing; if this is the case make sure there are plenty of pebbles, logs and plants in and around the pond to provide access for wildlife.



#### Log Pile

Placing logs in piles around your garden can provide excellent daytime refuges for foraging amphibians. As well as providing cover from the sun, dead wood attracts invertebrates on which amphibians and lizards can feed. Log piles can also provide common lizards with basking spots.





#### Mix it up

Creating a 'mosaic' of vegetation heights provides excellent habitat for amphibians and reptiles. Densely planted, low-growing vegetation provides shelter, while more open areas provide places for reptiles to bask, in easy reach of cover. Various other species of wildlife will also be attracted to the different 'microhabitats' created. The structure provided by vegetation is just as important as the types of plants used. Plants that are attractive to insects are generally helpful but cover for amphibians and reptiles

can be provided by densely planted garden plants, or areas of lawn allowed to develop into a mini-meadow. Control of trees and scrubby vegetation may be needed to stop the garden becoming too shaded but remember shrubs and hedges are also important habitats.

## Reptile refuges

To help get a closer look at the reptiles in your garden you could use 'refuges'. These are flat objects placed on the ground in sunny spots, creating a warm 'refuge', attractive to slow-worms, common lizards or grass

snakes. A sheet of corrugated iron, or a piece of roofing felt would do the job where space allows, but slate roof tiles are less obtrusive in smaller gardens.

# Wintering sites

You could make a 'hibernaculum', where amphibians and reptiles can see out the winter frosts. To do this lay down some old logs, brick-rubble or similar, pack the spaces loosely with wood chips and cover with excavated soil. Make sure your wintering site is located where the soil drains well.

#### Access all areas

Creating a Dragon Garden will be of real benefit to the amphibians and reptiles in your local area - providing they can get there in the first place. Linking up suitable habitats with 'wildlife corridors' is very important for making sure populations don't become isolated. Once you've used the information in this booklet pass it on to your friends and neighbours and make sure amphibians, reptiles and other wildlife have the freedom to roam around your local patch.

If your garden is isolated - by roads or new housing - you may be tempted to import some animals or spawn from elsewhere. There are several reasons why this is not a good idea, the main one being that you may accidentally introduce disease or undesirable animals or plants into the pond which could be very detrimental. Also, there could be other reasons why they are not in your garden in the first place.



### **Amphibians & reptiles throughout the year**

The needs of amphibians and reptiles change through the seasons. In spring, it's all about breeding, whilst in summer their behaviour is about finding food...

### Spring

If you have a pond, the arrival of breeding amphibians and the first blobs of frogspawn signal the start of spring. Spring is a fantastic time of year to see what's going on in your pond after dark, with the use of a torch. Throughout these months you could see female newts serenely laying their eggs on the pond's submerged pond plants and later on the newt larvae with their dragon-like frill of gills behind their heads

For reptiles, sunny spring mornings can be an excellent time to watch them bask. Slow-worms may hibernate in gardens and could be found basking near to these areas. Reptiles rely on the sun's warmth to give them energy, so early in the morning they slowly search out places to bask. Once they've had a chance to warm up they move around very quickly.

Sometimes amphibians die for no obvious reason. Mass mortalities (for example lots of frogs dying at the same time) can occur, especially in warmer, summer weather. These deaths may be caused by disease. For further information on amphibian disease, please see the ARC website www.arc-trust.org/advice/amphibian-disease

#### Summer

Ponds in summer are full of all sorts of emerging life, as newly metamorphosed frogs, toads and newts make their first tentative steps onto land. On some days hundreds may emerge at once, radiating out across nearby gardens where they will remain for almost two years (sometimes longer), before becoming breeding adults.

Toads can be found in some gardens in summer. At night they may slowly walk round the garden looking for beetles and slugs. During the day you might come across them under slabs, logs, bags of compost and plant pots.

Summer is the time you are most likely to see grass snakes, when they can be found make hunting forays into gardens, particularly where amphibians abound. In early summer (June/July) you might also find female grass snakes around compost heaps looking for warm places to lay their eggs. If this is the case, leave your compost heap largely untouched until late September by which time the eggs will have hatched.

Facing page:	1	2
1. Common frogs		
2. Common frogspawn	3	
3. Common lizard	1	
4. Grass snake	_	•













# ...in autumn and winter amphibians and reptiles need to find suitable places to see out the cold winter months.

#### Autumn

Gardens are quieter in autumn. Most tadpoles have metamorphosed and the year's crop of young amphibians is dispersing through gardens, looking for places to see out the winter months.

If you leave out slate tiles, or some other reptile refuge, then check underneath into the early autumn, to find this year's baby slow-worms and grass snakes.

Reptiles slow down their activity in autumn and begin finding places to hibernate. By mid-October, most activity has finished and reptiles will not appear again until spring.

Common toads begin migration back to wintering areas, which may be some distance away. Common frogs and the three newt species are more likely to spend the winter months in your garden.

Tadpoles usually develop into young amphibians and leave the pond in summer. More unusually, they may remain as tadpoles into the autumn and even through the winter, completing development the following spring. There are several factors that may lead to overwintering tadpoles. The pond may be so crowded that tadpoles run short of food. Or the pond may be relatively cold, perhaps due to steep-sided construction. od shading. Crowding should resolve itself in time. Shading vegitation could be cut back if this is identified as the cause.

#### Winter

Like reptiles, amphibians choose frostfree locations to spend the winter. They may dig themselves into loose soil, hide away in a compost heap or find refuge underneath a garden shed or decking or even in the cellars of buildings.

Some frogs, particularly males, spend the winter in the pond, as do small number of newts. They may be seen moving about on sunny winter days.

Amphibians can 'breathe' through their skins. Providing that there is sufficient oxygen in the water, they can survive for long periods beneath the ice of a frozen pond. Nevertheless, dead frogs are sometimes found after prolonged freezing. A grey, bloated appearance typifies these 'winterkills'. Such frogs have most likely died either when oxygen levels dropped critically low, or possibly due to a build-up of noxious gases within the pond. A traditional solution has been to create a hole in the ice to allow gas exchange with the air. But recent research suggests that this may be ineffective, and growth of plants and green algae may be more helpful, as these oxygenate water, even under ice. Clearing snow off a frozen pond may help, allowing more light to enter, hence increasing oxygen production from submerged plants and algae.

1	
2	
3	

Facing page

- 1. Young smooth newt
- 2. Female and young slow-worms
- 3. Frozen pond

# Help amphibians & reptiles near you

If you want to help amphibians and reptiles beyond the garden, there are plenty of other ways you can help...

#### Join an ARG

The Amphibian and Reptiles Groups of the UK (ARG UK) are a network of local volunteers concerned with conservation of the UK's amphibians and reptiles. Most counties have their own Amphibian and Reptile Group (ARG), with many carrying out local surveys and training. Find contact details of your local group at: www.arguk.org



#### Spread the word

Encourage local schools and wildlife groups to make their own Dragon Gardens by passing on the information in this booklet. School conservation areas are a great place for a pond. If you're keen to be more 'hands-on' contact local nature reserves or ARGs for information on volunteering. If you want to get younger people involved but don't have your own pond why not go along to pond-dipping events at local nature reserves or parks? Empty what you catch in your net into a plastic container to get a closer look but remember to tip everything back carefully when you've finished. Pond dipping is great fun for adults and kids!

#### Take part in NARRS

The National Amphibian and Reptile Recording Scheme (NARRS) is led by Amphibian and Reptile Conservation (formerly the HCT) in partnership with ARG UK and several other organisations. NARRS is a national monitoring project to measure trends in the conservation status of the UK's amphibians and reptiles. Each surveyor monitors species in a set patch in their local area. For more information see www.narrs.org.uk

#### Send us your sightings

We'd welcome any casual sightings of amphibian and reptiles. You can enter these on our online recording site, the Record Pool www.recordpool.org.uk. This allows you to quickly and easily enter casual observations, and you can see your record instantly on a map alongside other people's sightings. The information is passed to local and national recording centres to help with conservation. For clarity, the NARRS surveys mentioned above involve more directed and intensive surveys of particular areas.

# Be good to the amphibians and reptiles in your garden...

Gardens can be hazardous places for amphibians and reptiles. Here are some tips on how to reduce the risk of harm to these animals:

Common frogs particularly like to sit in long grass in the summer months, so be very careful when mowing the lawn, especially if you have noticed froglets recently emerging from the pond. Carefully walk the area you are planning to mow before you start. Any amphibians or reptiles in your garden should be disturbed by your footfalls and will move on

Avoid the use of pond tonics and garden **chemicals** as the effects on amphibians are still unknown. Also, many amphibians, and slow-worms, are excellent natural pest-controllers and pesticides remove their prey.

Cats are a particular **predator** of amphibians and reptiles in urban areas. You can reduce the likelihood of them catching animals by increasing the number of hiding places in your garden: make sure there are cracks within rockeries, openings around your compost heap or add a pond for amphibians to flee into when startled.

Garden netting can trap and kill wildlife. Grass snakes in particular,



when going in and out of ponds, may become entangled in pond netting with a mesh size of less than 5cm. Please see the ARC website www.arc-trust. org/snakes-and-netting

Be wary of paving slabs near the pond during summer. On sunny days emerging amphibians can quickly dry out and die on hot paving slabs. You can stop this happening by covering these areas temporarily with a damp towel or a moist lawn roll, or making sure there is plenty of planting up to the edge of the pond.

# ... and out of your garden

Roads can stop animals moving freely across the landscape, as many creatures will not attempt to cross roads. However, for some creatures the migration instinct can override any sense of danger. Common toads tend to migrate to the same, often ancestral, breeding ponds each spring and if a road is constructed in their path they carry on regardless. The result can be horrific, with many toads killed by passing traffic. Ideally, new roads should be carefully located to avoid this problem. Toad tunnels under the road can sometimes help, though there are questions about their effectiveness. Where traffic is causing a major problem, groups of people sometimes form patrols to help the toads across the road. To find out more, please contact Amphibian and Reptile Conservation.

# conservation \*\*\*

Amphibian and Reptile Conservation is a national wildlife charity committed to the conservation of reptiles and amphibians and the habitats on which they depend. Amphibian and Reptile Conservation is a unified voice for conserving frogs, toads, newts, snakes and lizards - building on twenty five years of experience in the wildlife sector.

To find out more or to support Amphibian and Reptile Conservation contact:

#### **Bournemouth Office:**

a: 655A Christchurch Road, Boscombe, Bournemouth, Dorset BH1 4AP

t: 01202 391319

e: enquiries@arc-trust.org

# www.arc-trust.org

Working in partnership with:





#### Become a Friend!

Join Amphibian and Reptile Conservation today and help us give a voice to the UK's amphibians and reptiles - saving species, improving habitats and enhancing lives in the process. It costs as little as £15 a year.

Join online:

www.arc-trust.org/support

Or call: **01202 391319** (office hours, Monday-Friday)

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