Top tips for spotting amphibians and reptiles

Based on an online workshop at the 2024 ARG AGM on 16.07.24, with around 60 participants drawn from across the UK, we've produced some of our surveyors' 'top tips' for spotting amphibians and reptiles, which may be helpful for those starting out on their herpetological journey.

1. Think like an amphibian or reptile

Think like an amphibian or reptile! Try to get into the mind of the animal and understand when and why they may need to bask/forage/shelter or breed. This will help you to read the landscape, and spot likely places where they might prefer to be. If you were a reptile, when and where would you bask or hide to warm up, away from cool winds and predators. For an amphibian where could be a safe, damp spot to forage, perhaps near a suitable pond.

2. When is a good time to go out to look for amphibians and reptiles

Reptiles

- Sunny weather with no strong winds, mild weather immediately after rain (or a cool/overcast period), temperatures between 10-20 ^{o}C
- One contributor observed - 18 ^{o}C and humid is the sweet spot for reptiles
- Early season (spring) start mid-morning getting earlier as the season progresses, then surveying later in the day again towards the end of summer and moving into autumn. On warm days, early mornings and late afternoon are optimum.
- On cooler days reptiles can be spotted even in the middle of the day. Animals may use artificial refugia even on a warm rainy day!
- Sometimes slightly cloudy or overcast muggy days can be better than full hot sun as reptiles warm up more slowly when there is more cloud cover.

Spring (March-May)

- **Emergence from hibernation**: A good time to observe reptiles is just after they emerge from hibernation (also referred to as brumation), during the early spring. This can be as early as February in some parts of the country. Look for basking reptiles, who are trying to build up their reserves after the winter and for successful mating. Animals are likely to be relatively sluggish (especially pre slough), and less likely to be hidden in dense vegetation. Many animals can be spotted basking near their hibernation sites, but are also extremely vulnerable at this time of year, so extra care needs to be taken not to overly disturb them. Some temporal differences, for example male adders emerge a few weeks before females, common lizards can be spotted more easily as the weather starts to warm.

- **Breeding Season**: Once the breeding season gets under way from April onwards, there is often an increase in activity and range as many reptiles start to search for mates.

Summer (June-August)

- **Peak Activity**: Warm temperatures lead to high activity levels in adults, juveniles, and hatchlings (in July - early September). Animals can be seen basking, foraging, and generally moving around. One drawback of this time of year is that vegetation is at its most dense, and if animals are mosaic basking (in sun/semi-shade) they can be very hard to spot.
- **Egg-laying and Births**: Late-spring and summer is a key time for observing egg-laying/birthing and the appearance of young reptiles.

Autumn (September-October)

- **Pre-hibernation Activity**: Reptiles are often still very active in September/early October (if the weather remains warm), feeding, and preparing for hibernation. Juveniles from late broods can still be observed.
- **Decreasing Activity**: Cooler temperatures lead to reduced activity, but can still be a productive time for surveying.

Winter (November-February)

- **Hibernation**: Most reptiles are in hibernation, making it a less ideal time for surveys. However, you can study hibernation sites and behaviour, and on warm days some reptiles can be observed basking near their hibernation sites.

Specific Considerations for Life Stages

- **Adults**: Active from spring to autumn, with peak visibility in spring/summer.
- **Juveniles**: Similar to adults, with good visibility in late summer and early autumn.
- **Eggs**: Late spring and early summer, depending on the species.
- **Hatchlings/Neonates**: Late summer and early autumn.

Amphibians

A good time to spot adult amphibians is just after dusk in the early spring, particularly on warm (> 5^{o}C) wet nights, or immediately after rain. Use a torch to spot them.

Common Frog (Rana temporaria) and Common Toad (Bufo bufo)

Eggs: Early spring (from Jan - February) you can start to spot common frogs and newts. Common toads often emerge a little later, from mid February onwards. Often this is when

they mass migrate to ancestral breeding ponds, and this is an important time for toad patrolling (to prevent road mortality).

Larvae (Tadpoles): Late spring to early summer (April to June)

Juveniles and Adults: Late summer to early autumn (July to September)

Newts (smooth, palmate, great crested)

Eggs: Spring (April to May)

Larvae: Late spring to summer (May to August)

Juveniles (Efts) and Adults: Summer to early autumn (June to September)

Best Overall Survey Times

- **Spring/early summer (January to May)**: Survey for eggs and breeding adults.
- **Summer (June to August)**: Survey for larvae, juveniles, and non-breeding adults.
- **Early Autumn (September to October)**: Surveying juveniles and adults before they enter hibernation.

3. What do you look for

- Seek out specific habitat types for spotting basking or sheltering animals: logs/timber piles, compost heaps/ heaps of grass cuttings and close cover. Reptile preferred basking spots include sunny spots at the edges of vegetation/rides/hedgerows. Reptiles often seek out micro-climates with less wind/more warmth, and can be found in sheltered yet sunny spots, often on damp moss or grass which retains its heat better.
- Flipping logs or large stones.
- Open areas with grass mounds and ant hills for reptiles.
- Habitats that provide a mosaic and multi-level of potential shelter/ hibernacula and basking areas, so that if they are disturbed/scared they can quickly move to a place of safety. Transitional areas between different habitats are favoured e.g. the edges of fields or paths.
- Keyhole openings within denser vegetation where the sun is able to penetrate through.
- In crevices e.g. inside a stone wall, old tree stumps, fissured rocks.
- South-facing slopes are ideal for creating basking spots for reptiles and other sun-loving animals. The southern exposure allows these creatures to take full advantage of the sun's warmth and light, making it a perfect area for them to regulate their body temperature and bask comfortably.

- Grass snakes have been spotted in open areas and also among the tangled branches of bramble bushes. Important to look for different colours and shapes that don't fit into the surroundings.
- Remember to thoroughly inspect wooden objects such as fence posts, rails, stumps and fallen trees for common lizards basking in the sun, especially newly born lizards.
- Artificial refugia – particularly for more cryptic species such as slow-worms. Animals will also bask under or on rubbish, plastic bags, road-side debris, old signs (etc).
- Look for a colour, texture or pattern that is different to the surrounding, area or a break in the lines of the vegetation. Sometimes the animals' eye or other shapes e.g. zig zag/diamonds (adder) and colours stand out (easier on sunny days). Look for curves within straight lines of vegetation.
- Movement in still environment, checking ecotones.
- Listen for sounds – rustles, water movement. With practice you can difference between the sound of a snake (long drawn out, steady rustle, vegetation movements) and a lizard (quick movement, short rustle). In water listen for newt tail flicks, or for animal gulping at the surface.
- Smell – some people can smell adders, or slow-worms; GCN smell like pea shoots.
- Ponds provide a habitat for egg laying, great crested newts typically prefer to lay their eggs on the larger leaves of aquatic vegetation. Smaller newts prefer small leaves, or grasses.
- Discarded plastic (in ponds) can also provide a surface for great crested newts to lay their eggs on.
- Areas of the ponds that receive a greater intensity of sunlight. Amphibians are amazingly good at discerning very small changes in temperature.
- Checking for presence in shallow water, or waiting to see them come up for air.
- For amphibians look higher in the grass in the evenings, especially when wet.

4. How do you identify what you've just seen?

General Tips for Identification

- **Markings and Colour**: Look for distinctive patterns, such as the adder's zigzag or the grass snake's collar.
- **Habitat**: Consider where you are; some species are quite habitat or region-specific
- **Behaviour**: Behaviours, e.g. basking habits and movements, can provide clues.

Helpful suggestions:

- Use an ID book or guide (e.g. FSC guides) into the field (also available online) and don't be afraid to ask!

- Take photos – can double check you when you get home or share with other ecologists
- Practice, repetition, developing mental search images – it gets easier with experience
- Photographic memory, remembering where you have seen things before, seasoned surveyors have seen the most likely locations and built up that picture. The more locations and situations you see them in the better.
- The eyes of each species are distinct and can serve as a valuable means of identification, especially when other distinguishing features are not readily apparent. Also head shape.

Key features of reptiles

- Some species have specific identifiers e.g. yellow/cream collar on a grass snake, zigzag or diamonds for adders, occelations on sand lizards.
- Sexing adders, particularly during the early part of the season can be confusing, as pre-slough (shedding their skin after hibernation) males appear to have a dark zig zag on a brownish background. The distinguishing feature is that males always have a dark/black zig zag, whereas females have a brown dorsal zig zag. Other distinguishing features can be used – for example female adders (even melanistic individuals) have pale labial scales (the scales around the mouth), whereas males are darker. Females also tend to have a shorter, thinner tail.
- Grass snakes tend to be found near water – and are often spotted swimming in ponds, rivers, canals and lakes, where they hunt for favoured prey e.g. amphibians (but adders have also been recorded swimming – even in the sea). Adult grass snakes tend to be much bigger, reaching up to 1 m in length, but the main distinguishing feature is the yellow/white collar, and the round pupil. They are non-venomous, but emit an extremely unpleasant musk if handled.
- Slow-worms are frequently spotted in gardens and allotments, often sheltering under cover objects. Usually slimmer/shorter than our native snakes, with a much smoother scale pattern, and often brown or coppery in colour. Slow-worms are legless lizards, with blinking eyes, and a notched tongue. They are non-venomous, but are likely to drop their tails if startled or handled (autotomy) as a means of distracting a predator.
- Smooth snakes are confined to very specific heathland areas in Southern England, preferring mature stands of heather they are very secretive and rarely seen. Smooth snakes can be distinguished from adders not having the dorsal zig zag, but a dark ‘butterfly’ on the head.
- Common or viviparous lizards are known for their quick and agile movements, while newts tend to move at a much slower pace, sometimes appearing sluggish in comparison.

- Sand lizards are much larger and more stocky than common lizards, growing up to 20 cm (common lizards grow to a maximum of 15cm), with very distinctive dorsal eye spots or ocelli. Although the males develop spectacular bright green flanks during the breeding season, females, juveniles and non-breeding males are brownish in colour. Sand lizards are generally confined to specific locations, heathlands in Southern England, and coastal dunes in Wales and NW England.
- Male common lizards can be distinguished from females by the presence of a distinctive bump at the base of the tail, which is for the larger cloaca. Gravid (pregnant) female lizards can be identified by their rounded/bulgy abdomens.

Key features of amphibians

- Palmate newts are slightly smaller than the smooth newt, with a translucent pink chin, a filament at the end of the tail and tubercules (small pale projections) on the soles of their rear feet. During breeding males develop black webbing or 'gloves' on their back feet. Smooth newts have a creamy freckled chin (freckling is variable), no tail filament, and do not develop extensive foot webbing during the breeding system.
- Juvenile small newts can be distinguished by their vertebral stripe. Smooth newts have an orange stripe that begins at the head and ends just after the neck, while palmate newts have a long orange stripe that runs the full length from head to tail.
- Great crested newt – largest UK newt, reaching up to 17 cm in length (smaller newts are typically 8-10 cm). Very dark, rough, 'warty' skin, small white freckles, but no white on the belly. The crest is broken between the back and tail (male smooth newts have a continuous crest stretching along the back and tail). Males in breeding condition have a white tail flash, females/juveniles a continuous orange stripe along the underside of the tail.
- The non-native alpine newt is a similar size to the great crested newt but generally has a uniformly coloured bright orange belly, marbling on the back and an alternating yellow/orange and blue/black striped crest.
- Frogs and toads - frogs are more angular in shape with a smooth skin. Common frogs have a black mask behind the eye. Toads generally have a dry, bumpy skin, and a golden eye with a horizontal pupil.
- Male common frog and common toad develop keratinised dark nuptial pads on the fingers of their front feet. Males tend to have more muscular forearms (to help them grip the female during amplexus), and are generally smaller than the females. Male toads beep during the breeding season to warn other males away.
- Natterjack toad is slightly smaller than the common toad (6-8 cm) with a distinctive yellow dorsal stripe. Restricted range –from southern heathland areas and coastal areas (in N. Wales, The Solway estuary in NW England and Dumfries & Galloway, Scotland, NW coast of England, East Anglia, SW Ireland). Known as the running toad, as they walk or run rather than hop.