

Colour Variation in British Reptiles & Amphibians

Article and photographs by

Barry Kemp

Both the Sussex Wildlife Trusts 'Wildcall' and the Sussex Amphibian & Reptile Group receive numerous calls from members of the public regarding unusually coloured amphibians. In most cases the enquiries turn out to be Common frogs. The Common frog is probably the most familiar amphibian in Britain. It belongs to the group of frogs known as "Brown frogs" because its background coloration is usually brown. Despite this, colour variation is diverse ranging from reddish to yellow. Increasingly orange coloured Common frogs are being recorded, particularly in southern England.

Common frogs have black or brown markings on their head and body. These markings are also very varied. Usually the rear legs have dark patches which when folded at rest resemble black vertical bars. This acts as a disruptive pattern which helps to disguise the outline of the frog from predators.

Common toads don't tend to be so diverse in colouration, with males being largely brown or

grey. Female Common toads can be more reddish and both sexes can have small patches of black or red. Albino Common toads have been recorded in the past. Worldwide, amphibians are very diverse in colour ranging from drab browns to vivid blues reds and yellows. Colour plays an important role in the survival of amphibians, often used either as a camouflage or as a warning to potential



Common Toads



Common Frog and ...



Common Frog

predators as to the presence of toxins. Amphibians owe their diverse coloration to specialized pigment-containing cells in the skin's lower layer called **chromatophores**. The colour and markings are caused by three different pigment cells, yellow, white and brown-black.

In the reptile world, Chameleons and a few other species of lizard can change colour dramatically. Most amphibians can also change their skin colour by concentrating or dispersing the various pigments in the chromatophores, but the process is usually much less dramatic. This behavior mainly acts as a camouflaging mechanism, helping them to escape predation by blending in with their

surroundings. Like reptiles, amphibians are cold blooded so by lightening or darkening their skin they can also adjust their body temperature. A light colour will reflect heat whilst a dark colour will absorb heat.

The toad in the photograph is extremely



unusual. Found on the Sussex/Kent border it is a juvenile Common toad. Approximately 50 other toads were recorded at the same site, all with the usual colouration. It is not known if this red coloured toad is a result of genetics, environmental effects or deficiencies in the chemical processes undertaken to produce the skin pigments.

Vivid colours, such as yellow, red, and orange, are generally known throughout nature to indicate toxicity to predatory animals, this is known as **aposematism**. Rather than using coloration to blend in with their surroundings, some non-toxic amphibians use coloration to mimic toxic species in their range. A good example of this is the American Red salamander, whose vivid red coloration is a form of anti-predatory mimicry of the highly toxic Red spotted newt.

In the case of this red toad it seems unlikely that its colour will act as a deterrent to predators as no other similar coloured amphibian exists in Britain. Unless this toad is capable of colour change it may not survive very long due to predation.

Many amphibians have a combination of cryptic and aposematic coloration. This is common in several newt species, including the Great crested newt. Great crested newts are cryptically coloured on top, being black or very

dark brown, but if caught by a predator will adopt a position where the vivid orange underside of the tail, chin and belly are exposed.



To a degree all of the reptiles species found in Sussex have a varied colour range, including Slow worms, Grass snakes and particularly Adders.

Black Adders are not uncommon in Sussex. This condition, known as **melanism** is caused by an overproduction of colour pigment.



Melanistic snakes have an advantage over normally coloured snakes as they can absorb solar radiation more effectively, allowing them to be active on days that would normally be too cold for other snakes. This can often mean that melanistic Adders are larger than normal. However, the disadvantage is that they are more vulnerable to predation than the usual cryptically coloured Adders.

Black Slow Worm



Female Slow Worm