



CORONELLA AUSTRIACA (Smooth snake): BEHAVIOUR. The Smooth snake is the rarest of the three British snakes, being restricted almost entirely to the heathlands and neighbouring habitats of southern England. Its cryptic behaviour and secretive lifestyle make it difficult to assess its distribution and status. It is not venomous, but engages in several defensive strategies, including biting with a chewing action that sometimes draws blood and appears to inhibit coagulation. The Smooth snake is often considered a specialist in reptile prey, but is known to take small mammals and other prey (Beebee & Griffiths, 2000; Goddard, 1984). A study by the Nature Conservancy Council (1983) of Smooth snake prey species found in faecal and regurgitated matter listed a diverse suite of reptile items totalling 60% of the prey, but also found that small mammals constituted 28% of prey, nestling birds 10%, and amphibians 2%.

On 18th May 2004, at Parley Common (SZ 08 99) in Dorset, UK, an adult female Smooth snake was captured for use (under licence) in a Herpetological Conservation Trust (HCT) training event. The weather was sunny with scattered

cloud, the air temperature was 20°C, there was a slight westerly breeze, and the several preceding days had been sunny. The time of capture was 18:25 (BST), and the snake was found coiled under a corrugated iron artificial refuge or 'tin'. It did not bite when handled, but flattened its head posteriorly and took up a striking position (a fairly common response in Smooth snakes) to mimic *Vipera berus* (Adder) (see photograph above). The evolution of this 'adder head' defence mechanism suggests that the Smooth snake has inhabited Europe syntopically (or at least sympatrically) with species that are wary of vipers, and presumably with vipers themselves, for a long time.

The snake was photographed (dorsal head and neck pattern) and measured (SVL = 480 mm, VTL = 100 mm) for subsequent entry onto the HCT's Rare Species Database. The snake displayed a slight bulge suggesting that it may have recently fed, but it was not considered a problem to keep the animal overnight. It was kept in a cloth sack for the next forty minutes, until transfer off-site to a plastic vivarium with water and vegetation for the following day's event.

The following day, due to an odour coming from the empty cloth sack, it became apparent that the snake had regurgitated the corpses of two small mammal neonates whilst held in the sack. The corpses were somewhat squashed but otherwise intact. They were later identified (by John Buckley of the HCT), using dental morphology, as either *Sorex minutus* (Pygmy shrew) or *Sorex araneus* (Common shrew). They were too young to be identified to species, being blind and hairless, and were clearly predated in the nest. These species of shrew make grass-woven nests below ground; therefore this smooth snake must have entered a shrew's nest and eaten the neonates underground and in darkness.

Smooth snake populations are notoriously difficult to monitor, and Breeds (1973) showed that even in intensively-studied populations, individuals can evade detection for extended periods (up to seven years) before re-appearing. The movement and home range of smooth snakes is also difficult to generalise upon, as some animals are virtually sedentary, whilst others move large distances (Gent, 1988; Gent & Spellerberg, 1993; Phelps, 1978, 2004). Phelps (pers. comm.) has found that males tend to be the most mobile, whilst females are more sedentary and can be detected in the same place for many years. It is known that Smooth snakes spend much of their time underground (Beebee & Griffiths, 2000), which accounts for their relative invisibility when compared to *Natrix natrix* (Grass snake) and Adders. The subterranean feeding habits described here corroborate this picture of a secretive lifestyle, and make it conceivable that some individuals in a study population may never be detected, even when artificial refugia are checked regularly and other individuals are captured repeatedly.

ACKNOWLEDGEMENTS

I am grateful to John Buckley for identifying the neonate shrews, and to Tony Phelps and Tony Gent for sharing their knowledge on Smooth snake behaviour and ecology.

REFERENCES

Beebee, T.J.C. & Griffiths, R.A. (2000). *Amphibians and Reptiles. A natural history of the British herpetofauna*. London: Harper Collins.

Breeds, J.M. (1973). *A study of the smooth snake (Coronella austriaca) in the Purbeck area*. Furzebrook: Nature Conservancy Council.

Gent, A.H. (1988). Movement and dispersion of the smooth snake (*Coronella austriaca* Laurenti) in relation to habitat. PhD thesis, University of Southampton.

Gent, A.H. & Spellerberg, I.F. (1993). Movement rates of the smooth snake *Coronella austriaca* (Colubridae): a radio-telemetric study. *Herpetol. J.* **3**, 140–146.

Goddard, P. (1984). Morphology, growth, food habits and population characteristics of the Smooth snake *Coronella austriaca* in Southern Britain. *J. Zool. Soc. London* **204**, 241–257.

Nature Conservancy Council. (1983). *The ecology and conservation of amphibian and reptile species endangered in Britain*. Nature Conservancy Council, London.

Phelps, T.E. (1978). Seasonal movement of the snakes *Coronella austriaca*, *Vipera berus* and *Natrix natrix* in southern England. *Br. J. Herpetol.* **5**, 755–761.

Phelps, T.E. (2004). Beyond hypothesis – a long-term study of British snakes. *Br. Wildl.* **15**(5), 319–327.

CHRIS GLEED-OWEN

The Herpetological Conservation Trust, 655A Christchurch Road, Boscombe, Bournemouth, Dorset, BH1 4AP, UK.

ZOOTOCA (LACERTA) VIVIPARA (Common or Viviparous lizard): MARKINGS AND COLOURATION. The Common lizard is well known for its variable upper body markings and colouration. Although they are typically brown in background colour, green colouration sometimes occurs (Beebee & Griffiths, 2000; Frazer, 1983; Palmer, 2005; Simms, 1970). Most green Common lizards seem to be a dull dark green, but Bowles (2000) reported turquoise Common lizards, and Frazer (1983) mentioned an olive phase. The dorsal, lateral and dorsolateral markings of Common lizards are highly variable, but do not normally form distinct ocelli (eye-shaped markings) like those in *Lacerta agilis* (Sand lizard). However, occasional very bold markings