

Tail movements by barred grass snakes *Natrix helvetica* while feigning death, with a link to video evidence

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The barred grass snake *Natrix helvetica* is a widespread, non-venomous species found throughout north-western Europe, including England and Wales (Kindler & Fritz, 2018). When threatened, it relies on defensive behaviours, such as hissing, striking with a closed mouth and thanatosis or feigning death (Gregory, 2008). Death-feigning is a widespread form of anti-predator behaviour that usually occurs in response to physical restraint, often imposed by a predator, and is considered a last resort employed by prey that are unable to evade capture (Cardoso & dos Santos Mendonça, 2019; Bjelica et al., 2024). This behaviour is a variant of tonic immobility and often involves an initial period of erratic movement followed by a behavioural state closely resembling death (Woodruff, 2025). In *N. helvetica*, this post-capture immobility can include intensive displays such as lying with an open mouth, exposing the ventral surface and discharge from the cloacal glands (Humphreys & Ruxton, 2018).

Between May 2019 and October 2021, a population of *N. helvetica* at Watermill Broad Nature Reserve, Norfolk, England (52.530460, 0.617198) was being monitored and individuals were being restrained for photography of their ventral surface, to facilitate individual identification. In 15 cases (1.3% of captures) the captured snakes feigned death and continued movement of their tails in response to being handled (BHS video, 2026). In three cases, the snakes displayed the tail movement after they had been released and while continuing to feign death. It seems probable that the snakes employed tail movement as a means of drawing the attention of predators away from the more vulnerable head (Gregory, 2008).

Evidence suggests that death feigning appears to involve cognitive processes, with prey maintaining constant surveillance of the predator to take advantage of an opportunity to escape. Gregory (2008) reported that small snakes subjected to more handling exhibited a higher frequency of death feigning behaviour. Conversely, larger snakes initially restrained by the tail were less likely to feign death, whereas those restrained by the head showed the highest incidence of death feigning, suggesting that increased perceived threat to vulnerable parts of the body elicit stronger immobility responses.

Bjelica et al. (2024) examined two populations of dice snakes *Natrix tessellata*, one from a dense island population free of mammal predators, and the other from a less dense mainland population, preyed upon by both bird and mammals. They found that faster individuals escaped quickly following release, whereas slower individuals utilised more passive

anti-predator behaviours such as death feigning. Additionally, immature snakes feigned death less often than mature individuals, and the snakes from the mammal-free island population exhibited a higher incidence of immobility and a slower sprint speed compared to their mainland counterparts.

Current documentation of these behaviours is limited, making it difficult to draw reliable conclusions, but detailed planned records of these behaviours during necessary handling could lead to a better understanding of what influences the behaviour.

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