

## *Hierophis viridiflavus* (Lacépède, 1789) feigning death when handled

GUILLAUME GOMARD

Alberichstrasse 34, 68199, Mannheim, Germany

Author Email: g.gomard@orange.fr

Feigning death, often referred to as thanatosis, has been reported for many snake species and is described as a passive defensive behaviour. It involves reduced responsiveness to external stimuli, and is thought to have an anti-predator function, some benefits of which have been proposed by Gregory et al., (2007). With the exception of *Rhinechis scalaris*, thanatosis has been observed in all other colubrid species of metropolitan France e.g. *Natrix natrix* (Gregory et al., 2007); *N. maura* (Fernández-Guiberteau, 2016); *N. tessellata* (Sterijovski et al., 2011); *Coronella austriaca* (Jelić & Vilaj, 2011); *C. girondica* (de Castro-Expósito et al., 2017); *Zamenis longissimus* (Lifttime & Lifttime, 2014); *Malpolon monspessulanus* (Sannolo et al., 2014); and lastly *Hierophis viridiflavus* (Rugiero, 1999). However, while thanatosis is common among snakes of the genus *Natrix*, it has rarely been observed in the western whip snake (*H. viridiflavus*), which usually flees rapidly from predators and may inflict defensive bites. Rugiero (1999) mentions three cases of tonic immobility in *H. viridiflavus* during handling for morphometric measurements. These three individuals stayed motionless for a few minutes but did not display any other behaviour specific to feigning death. In this note a new observation of thanatosis in *H. viridiflavus*, involving voluntary supination (Gregory & Gregory, 2006), is reported.

The present observation was made close to the village of Chasnaix (Vendée, western France, 46°27'N; 1°53'W) on August 5, 2017 at 08.20h (air temperature around 16 °C). An *H. viridiflavus* (see Fig.1) was approached while basking with the body fully exposed. Upon capture, it bit twice on the hands. After two minutes of handling just above the ground, the snake switched from an aggressive behaviour to feigning death. Its muscles relaxed, it became motionless, and then promptly flipped onto its back (Fig. 2) with the exception of its head, which remained prone and partly concealed in grass. Furthermore, its pupils were slightly oriented downward. Other behaviours associated with thanatosis, as described by de Castro-Expósito et al. (2017), were not observed. During thanatosis, the snake did not attempt to bite, even when handled, and kept its mouth closed. In total, the snake feigned death for around five minutes, which included three minutes with physical contact, and two minutes of observation without contact. It then departed suddenly in the direction of the hedgerow where it had been first located.



**Figure 1.** *H. viridiflavus* photographed before thanatosis



**Figure 2.** Same individual feigning death after being handled. Photograph taken four minutes after the beginning of thanatosis. Note that unlike the body the head remains prone but is partly hidden under grass.

It is interesting to note that of more than one hundred *H. viridiflavus* encountered by the author in France (with roughly half of them handled), this is the first time thanatosis has been observed. This is consistent with previous reports (Rugiero, 1999) and indicates that thanatosis is a rare defensive behaviour in *H. viridiflavus*.

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