Rediscovery of the grass snake (*Natrix natrix*) on the island of Karpathos, Greece

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The grass snake, *Natrix natrix* (Linnaeus, 1758) has a broad Palearctic distribution stretching across Europe to Mongolia and the Middle East (Uetz et al., 2017). On the Greek mainland, *N. natrix* is widespread and one of the most common snakes (Valakos et al., 2008). The species is also found on several Ionian and Aegean islands (Chondropoulos, 1989) and may even occur on very small islets (Mossman et al., 2016). Karpathos is part of the Dodecanese islands and is situated between Crete and Rhodes. Thanks to its long isolation (Kokkalas and Doutsos, 2004) Karpathos hosts a very interesting herpetofauna characterized by several endemic taxa. Nevertheless, there is only a single record of *N. natrix* from Karpathos, dating back to the early sixties (15 April 1964; Pieper, 1970) regarding a specimen of about 70 cm, found between Spoa and Mertonas. Since then, numerous field trips during the last two decades failed to verify the presence of this species on the island (e. g. Broggi, 1994; Adamantopoulou et al., 1999; Cattaneo, 2010). As such, its current occurrence on the island remained uncertain for a long time. We here report three recent sightings of *N. natrix* from Karpathos.

The first sighting was on the 6th of March 2017 around 18 hrs, just before sunset. An adult male *N. natrix* (Fig. 1) was found under a piece of hardboard (35.7455 °N, 27.1767 °E). The animal was cold, but active, and had probably been basking as day temperatures rose above 22 degrees Celsius. The hardboard was part of a small rubbish tip at the border of the town Olympos. The tip is situated on a southeast-facing slope with the town of Olympos above and agricultural fields below. The presence of water is due to an old irrigation system created to water the fields which are now largely abandoned. The animal very quickly turned into defensive behaviour, producing yellow-brown excrement and after that turning backwards with an open beak, while protruding its tongue and rolling its eyes to a corner. There were no indications of recently consumed prey items. Total length of the snake was 66 cm (SVL 55 cm, TL 11cm).  The ground colour was greyish-brown. It did not show the typical yellow white markings that form a collar at the neck, although this particular region was lighter coloured. Small black bars with dark brown edges marked the lateral and dorsal sides, and small black markings were present on the head. The colour of the eye was similar to that of the body. Ventralia were not counted, dorsalia were 19 in mid body.

The second snake was recorded on video in July 2016 near Mertonas (35.5811°N, 27.1680°E). The animal was found accidently by a couple of irrigation workers. They, later, contacted one of us (Dinos Protopapas) and gave him a copy of the video. The snake was found close to a church and a small spring that irrigates the few scattered houses forming the village Mertonas at an east-facing slope.

The third observation was a juvenile snake found dead on 12 October 2017 on the way to Broukounda (a small church northwest of Avlonas, 35.7961°N, 27.1680°E). The picture (Fig. 2) of the animal send to us shows clearly the yellow coloration in the neck, which is almost absent in the adult individual found in March.

Our three findings, combined with the report of Pieper (1970), suggest grass snakes could be widespread on the island of Karpathos, but are probably rare as since Pieper (1970) no reports have been made until now. Similar to our specimens, the specimen described in Pieper (1970)
Figure 1. *Natrix natrix*, adult male, found under a piece of cardboard near Olympos (6 March 2017).

Figure 2. *Natrix natrix*, juvenile, found dead northwest of Avronas (12 October 2017).
lacked the typical stripes of the subspecies “persa”. However, on the nearby island of Rhodes also unstriped animals are found along the typical “persa” phenotype (Bader et al., 2009).

The diet of *N. natrix* is strongly based on amphibians (Kabisch, 1999; Hutinec and Mebert, 2011). The only amphibian with high population densities on the island is the endemic Karpathos Salamander (*Lyciasalamandra helverseni*) that probably comprises a main food item, since it co-occurs in Olympos and Mertonas, and probably also in Avlonas. The only other amphibian present is the Karpathos Water Frog (*Pelophylax cerigensis*) but this species has almost disappeared in Olympos where the first snake was found, apart from occasional sightings by local people (pers. comm.). Until the river bed was altered to an unpaved road some 25 years ago, a small permanent river flowed through Olympos, which supported a population of *P. cerigensis* (pers. obs. by Dinos Protopapas).

The aquatic habitats on the Aegean islands are under huge pressure because of overpumping and massive tourism (Catsadorakis and Pargamian, 2007; Broggi and Grillitsch, 2012). Thus, the insular populations of *N. natrix* are facing critical risks (Broggi, 2000). Further studies that will clarify the taxonomic status of the Karpathos population, and also propose measures for its conservation, are required.

References


Broggi, M.F. (1994): Herpetological Observation on Greek islands including some remarks on biotopes that deserve conservation (Amphibia; Reptilia; Greece). Herpetozoa 7: 29–34.

