

## First record of *Hierophis gemonensis* (Laurenti, 1768) (Reptilia Serpentes Colubridae) in the Aegean island of Tsougriá, Northern Sporades, Greece

Mauro Grano<sup>1\*</sup>, Cristina Cattaneo<sup>2</sup> & Augusto Cattaneo<sup>3</sup>

<sup>1</sup> Via Valcenischia 24 – 00141 Roma, Italy; e-mail: elaphe58@yahoo.it

<sup>2</sup> Via Eleonora d'Arborea 12 – 00162 Roma, Italy; e-mail: cristina.cattaneo76@libero.it

<sup>3</sup> Via Cola di Rienzo 162 – 00192 Roma, Italy; e-mail: augustocattaneo@hotmail.com

\*Corresponding author

### ABSTRACT

The presence of *Hierophis gemonensis* (Laurenti, 1768) (Reptilia Serpentes Colubridae) in Tsougriá, a small island of the Northern Sporades, Greece, is here recorded for the first time.

### KEY WORDS

Aegean islands; Balkan whip snake; *Hierophis gemonensis*; Northern Sporades; Tsougriá.

Received 05.11.2013; accepted 02.12.2013; printed 30.12.2013

### INTRODUCTION

The Balkan whip snake, *Hierophis gemonensis* (Laurenti, 1768) (Reptilia Serpentes Colubridae), is widespread along the coastal areas of Slovenia, Croatia, Bosnia-Erzegovina, Montenegro, Albania and Greece (Vanni et al., 2011). The basic colour is silver gray to dark green with some spots only on one third of the body, tending to regular stripes on the tail. Melanistic specimens are also known (Dimitropoulos, 1986; Schimmenti & Fabris, 2000). The total length is usually less than 130 cm, with males larger than females (Vanni et al., 2011).

Regarding the Aegean islands, this species has an irregular distribution, therefore its presence in this area can be defined discontinuous (Clark, 1989). *H. gemonensis* has been found on these islands:

Northern Sporades

Aspróniso (= Aspro): Buchholz & Schultze-Westrum, 1964; Kock, 1979.

Euboea: Werner, 1933; Kock, 1979.

Argo-Saronic islands

Aegina: Werner, 1937; Wettstein, 1953; Kock, 1979; Clark, 1989.

Psili: Clark, 1973, 1989; Kock, 1979.  
Tolon: Clark, 1973, 1989; Kock, 1979.  
Stavronissos, Dhokos, Trikeri (archipelago of Hydra): Clark, 1989.  
Kythera: Boulenger, 1893; Kock, 1979.  
Crete: Boettger, 1888; Sowig, 1985.  
Cretan islets  
Gramvousa: Wettstein, 1953; Kock, 1979.  
Gavdos: Wettstein, 1953; Kock, 1979.  
Gianyssada: Wettstein, 1953; Kock, 1979.  
Dia: Raulin, 1869; Kock, 1979.  
Theodori: Wettstein, 1953.  
Karpathos: Broggi, 1994.

The population of the island of Gyaros (Cyclades), previously assigned to *H. (Coluber) gemonensis* (Mertens, 1968), and successively considered an endemic species, *H. gyarosensis* (Mertens, 1968), by Schätti (1988) and Böhme (1993), is actually referred to *H. viridiflavus carbonarius* (Bonaparte, 1833) (Utiger & Schätti, 2004), on the bases of molecular and, in part, morphological data (the structure of the hemipenis is different). The western whip snake on Gyaros was introduced casually on the island in historical times.

In fact, the values of the ventral lepidosis (194–205), colour pattern (dark and without spots ventrally) and the geographical location of the island surrounded by other islands inhabited by *Dolichophis caspius* (Gmelin, 1789), as well, would lead to assign the ophidic population of Gyaros to *D. caspius*. Moreover, despite as stated by Schätt (1988), the melanotism is present in the micro insular Aegean populations of *D. caspius* (see Alonissos and, perhaps, Patmos) (Cattaneo, 1998, 2008; Broggi, 2010).

### Study area

Tsougríá is a small island off the SE coast of Skiathos (longitude: 23°29'58.63"E; latitude 39°07'20.17"N). (Fig. 1) The area of 1.14 km<sup>2</sup> and the altitude 90 m a.s.l. This small island, just like Skiathos and other nearby islets (except for Aspróniso, that consists of limestone), are composed of igneous and metamorphic rocks (Ferentinos, 1972). Two small ponds occur on the island behind the dunes of brackish water surrounded by a belt of *Juncus acutus* L.; during our visit to the island only one still contained water. Tsougríá is currently uninhabited, but there was human presence in the past. This is testified by the presence of small valleys in the western part of the island exploited for the cultivation of olive trees. These old olive trees are now mixed with a shrub vegetation consisting of *Erica manipuliflora* Salisb., *Cistus creticus* L. and *Dittrichia viscosa* (L.) Greuter. The rest of the island is covered by woodlands of *Pinus halepensis* Mill. (with undergrowth of *Erica arborea* L. and *Pistacia lentiscus* L.) alternated with

stretches of dense and intricate maquis where predominant elements are *Pistacia lentiscus*, *Quercus coccifera* L., *Phillyrea latifolia* L., *Olea europaea* subsp. *oleaster* Hoffmg. et Link. Remains of two rural buildings and information obtained from the inhabitants of Skiathos, indicate that the anthropic use of the island occurred until the 1970s of the last century. As sign of the activities carried out in the island, remain two groups of buildings actually crumbling. The first was used for processing oil, the other one was a farm with lodge on the upper floor and stalls on the lower one. The area in front of the farm provided a well for fresh water and some tanks for watering the animals.

### RESULTS AND CONCLUSIONS

Six records of *H. gemonensis* were found in the island of Tsougríá in August 2013: four pieces of exuvia, one carcass and a live specimen. Two of the four pieces of exuvia were rather dark. The live specimen was a young adult of 60 cm total length (tail 19 cm). It was found in front of the farm, under an iron sheets set in the shade, near a dry stone wall (Fig. 2) The soil covered by the sheet was wet despite the dry spell. Colour and pattern were typical of the species (Figs. 3, 4)

At Tsougríá were also found *Hemidactylus turcicus* Linnaeus, 1758 and *Lacerta trilineata* Bedriaga, 1878. *H. turcicus* has been frequently observed under wooden tables and iron sheet near the two groups of buildings and around the little Church of Aghios Floros. *L. trilineata* instead, has been observed within the rushes. In this island, as indeed in Skiathos, the Northern Sporades lizard, *Podarcis erhardii ruthveni* (Werner, 1930), is absent (Wettstein, 1953; Gruber & Schultze-Westrum, 1971; Cattaneo, 1997). Only Bergman (1995) observed specimen of *P. erhardii* in Skiathos, nearby the main town where it was probably introduced by boats that connect Skiathos to nearby islands. But this record has not been confirmed. On the other hand is documented its occurrence in the other surrounding islets, such as Repi, Aspróniso, Tsougríáki, Arkos, Maragós. In both Skiathos and Tsougríá *P. erhardii* is lacking, but *L. trilineata* occurs (Gruber & Schultze-Westrum, 1971). This has raised many questions among herpetologists leading to more or less plausible hypotheses. It was assumed that *P. erhardii* forming part



Figure 1. Study area.



Figure 2. Tsougríá island: the place of discovery of the *Hierophis gemonensis*.  
Figures 3, 4. *Hierophis gemonensis* from Tsougríá island.

in the pabulum of *L. trilineata* (Gruber & Schultze-Westrum, 1971), would have suffered a selective pressure by the latter species with the result of an extinction on both above mentioned islands and possibility of existence only in the surrounding islets, where *L. trilineata* is absent. However it seems not confirmed by the case of Arkonissi, a small island which is also part of Skiathos archipelago, where the two species are sympatric (however in the absence of ophidic saurophagous species).

The same could regard *H. gemonensis*. The plausible competitive interaction with *Malpolon monspessulanus* Hermann, 1804 also present at Skiathos (Buchholz & Schultze-Westrum, 1964; Cattaneo, 1997) could be a relevant factor in the distribution of *H. gemonensis* in the Northern Sporades (as well as in the islands of the Argo-Saronic

archipelago: Clark, 1989). In fact, the exclusive presence of *H. gemonensis* in Aspróniso and Tsougríá, could be a consequence of the selective pressure operated by *M. monspessulanus*, that would allow the Balkan whip snake to survive only in these two small islands surrounding Skiathos. Considering the ophiophagy and the aggressive behavior of this large snake, it could have played an important role to obstacle the coexistence between the two species. Also in the Argo-Saronic islands usually these two snakes are not sympatric (Clark, 1989). The first report of *H. gemonensis* for the Northern Sporades is related to one specimen found in the island of Aspróniso, very close to Skiathos (Buchholz & Schultze-Westrum, 1964). In this paper is given the first record for the island of Tsougríá and the second for the Northern Sporades archipelago and

confirmed the occurrence on some of the small islands around Skiathos of this species, whose relict presence on the main island could possibly be detected in the future (in 1994 the third author frequently sighted in Skiathos snakes perhaps attributable to this species).

## REFERENCES

- Bergman J., 1995. Neues zur Herpetofauna der Insel Skiathos, Nördliche Sporaden, Griechenland. *Herpetofauna*, 17: 26–28.
- Boettger O., 1888. Verzeichnis der von Herrn E. von Oerzen aus Griechenland und aus Kleinasiens mitgebrachten Batrachier und Reptilien. *Sitzungsberichte der königlich preussischen Akademie der Wissenschaften zu Berlin*, 5: 139–186.
- Böhme W., 1993. *Coluber gyarosensis* Mertens, 1968 - Gyaros-Pfeilnatter. - In: Böhme W. (Ed.), *Handbuch der Reptilien und Amphibien Europas*, 3/I, Schlangen (Serpentes). Aula, Wiesbaden, 111–114.
- Boulenger G.A., 1893. Catalogue of the snakes in the British Museum (Natural History). Containing the families Typhlopidae, Glauconiidae, Boidae, Ilysiidae, Uropeltidae, Xenopeltidae, and Colubridae Aglyphae, part. Trustees, London, 440 pp.
- Broggi M.F., 1994. Feldherpetologischen Beobachtungen und Bemerkungen zu schützenswerten Biotopen auf griechischen Insel (Amphibia; Reptilia; Griechenland). *Herpetozoa*, 7: 29–34.
- Broggi M.F., 2010. The herpetofauna of Alonissos (Northern Sporades, Greece) (Amphibia, Reptilia). *Herpetozoa*, 23: 71–78.
- Buchholz K.F. & Schultze-Westrum T., 1964. Zur Kenntnis der Schlangenfauna der Nördlichen Sporaden. *Zoologischer Anzeiger*, 173: 127–136.
- Cattaneo A., 1997. L'erpetofauna dell'isola greca di Skiathos (Sporadi settentrionali). Atti della Società Italiana di Scienze Naturali e del Museo Civico di Storia Naturale di Milano, 136: 145–156.
- Cattaneo A., 1998. Gli Anfibi e i Rettili delle isole greche di Skyros, Skopelos e Alonissos (Sporadi settentrionali). Atti della Società Italiana di Scienze Naturali e del Museo Civico di Storia Naturale di Milano, 139: 127–149.
- Cattaneo A., 2008. Osservazioni sull'ofidiofauna delle isole egee di Leros e Patmos (Dodecaneso) (Reptilia Serpentes). *Il Naturalista siciliano*, 32: 201–219.
- Clark R.J., 1973. New locality records for Greek reptiles. *British Journal of Herpetology*, 4: 311–312.
- Clark R.J., 1989. A checklist of the herpetofauna of the Argo-Saronic gulf District, Greece. *British Herpetological Society Bulletin*, 28: 8–24.
- Dimitropoulos A., 1986. Some notes on the colour and pattern variation of the Greek snake fauna in relation to geographic distribution. *Biologia Gallo-hellenica*, 12: 463–471.
- Ferentinos G.C., 1972. The geology-petrology of the island of Skiathos. PhD thesis, University of Patras.
- Gruber U. & Schultze-Westrum T., 1971. Zur Taxonomie und Ökologie der Cycladen Eidechse (*Lacerta erhardii*) von den Nördlichen Sporaden. *Bonner Zoologische Beiträge*, 22: 101–130.
- Kock D., 1979. Zwei Schlangen neu für Kephallinia, Ionische Inseln, Griechenland (Reptilia: Serpentes, Colubridae). *Senckenbergiana biologica*, 60: 7–11.
- Mertens R., 1968. Eine schwarze Zornnatter von den Cycladen: *Coluber gemonensis gyarosensis* n. subsp. *Senckenbergiana biologica*, 49: 181–189.
- Raulin V., 1869. Description physiologique de l'île de Crète. *Zoologie. Actes de la Société Linnéenne de Bordeaux*, 24: 691–692.
- Schätti B., 1988. Systematik und Evolution der Schlangengattung *Hierophis* Fitzinger, 1843. Zürich, Inaugural-Dissertation, 50 pp.
- Schimmenti G. & Fabris V., 2000. Note sull'erpetofauna dell'isola di Krk (Croazia nordoccidentale). *Atti del I Congresso Nazionale della Societas Herpetologica Italica. Museo Regionale Scienze naturali di Torino*: 643–652.
- Sowig P., 1985. Beiträge zur Kenntnis der Verbreitung und Ökologie der Amphibien und Reptilien Kretas. *Salamandra*, 21: 252–262.
- Utiger U. & Schätti B., 2004. Morphology and phylogenetic relationships of the *Cyprus racer*, *Hierophis cypriensis*, and the systematic status of *Coluber gemonensis gyarosensis* Mertens (Reptilia: Squamata: Colubridae). *Revue Suisse de Zoologie*, 111: 225–238.
- Vanni S., Nistri A., Lanza B. & Bressi N., 2011. *Hierophis gemonensis* (Laurenti, 1768). In: Corti C., Capula M., Luiselli L., Razzetti E., Sindaco R. (Eds), *Fauna d'Italia: Reptilia*, Vol. XLV. Edizioni Calderini de Il Sole 24 ORE, Editoria Specializzata S.r.l., Bologna: 505–509.
- Werner F., 1933. Ergebnisse einer zoologischen Studien und Sammelreise nach den Inseln des Ägäischen Meeres. I. Reptilien und Amphibien. *Sitzungsberichte/Akademie der Wissenschaften in Wien, Mathematisch-Naturwissenschaftliche Klasse Abteilung*, 142: 103–133.
- Werner F., 1937. Beiträge zur Kenntnis der Tierwelt des Peloponnes, der Inseln Kythira und Euböa sowie der kleinen Inseln im Saronischen Golf. *Sitzungsberichte/Akademie der Wissenschaften in Wien, Mathematisch-Naturwissenschaftliche Klasse Abteilung*, 146: 135–153.
- Wettstein O., 1953. Herpetologia aegaea. *Sitzungsberichte/Österreichische Akademie der Wissenschaften, Mathematisch-Naturwissenschaftliche Klasse Abteilung*, 162: 651–833.