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FIRST RECORD OF THE ROUGH-TAILED AGAMA *STELLAGAMA STELLIO* (LINNAEUS, 1758) (REPTILIA, AGAMIDAE) FROM KARPATHOS ISLAND (DODECANESE, GREECE)

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Abstract

The presence of *Stellagama stellio* (Linnaeus, 1758) from the island of Karpathos (Dodecanese, Greece) is reported for the first time. Two well-established subpopulations of this species, spaced few kilometers from each other have been discovered on the island.

Keywords: Karpathos, *Stellagama stellio*, Rough-tailed Agama, Dodecanese, SE Aegean, Greece.

Introduction

Karpathos is the second largest Dodecanese island after Rhodes and lies in the SE Aegean Sea, halfway between Crete and Rhodes (39 nm from Crete and 25 nm from Rhodes). The island is 49 km long and 15 km wide and covers an area of 302.15 square kilometers. Together with Kasos and Armathia in the southwest, the nearby Saria in the north and several offshore islets, Karpathos forms the Karpathos Archipelago and is a constituent part of the S Aegean island Arc (Greuter et al. 1983). The three larger islands contain widespread mountainous areas with some higher peaks, culminating on Karpathos in the Kali Limni (1215 m), on Kasos in the Megalo Prionas (601 m), and on Saria in the Pachy Vouno (629 m). On Karpathos the only flat areas are near Afiartis in the south, near Lastos in the centre, and Avlona in the north. Karpathos is built up of limestone and dolomitic limestone (Jurassic-Eocene) in the northernmost part, flysch (Eocene) in most of the northern and the southern part, Neogene deposit in the southernmost area, and of the Kalilimni Unit (Jurassic-Eocene) in correspondence of the Mt. Kali Limni and of the Menetes zone in the south (Cordey & Quillévéré 2019).

Karpathos is not particularly rich in surface water. There are many streams and underground water and it is mostly covered by a phryganic vegetation. The central and the northern part of the island are characterized by forest of *Pinus brutia* in pure stands. Thanks to its long isolation (Kokkalas & Doutsos, 2004) Karpathos hosts a very interesting herpetofauna, characterized by two endemic taxa: the Karpathos water frog *Pelophylax cerigensis* (Beerli et al. 1994) and the Karpathos lycian salamander

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Lyciasalamandra helverseni (Pieper, 1963). Also present are *Dolichophis caspius* (Gmelin, 1789), *Natrix natrix* Linnaeus, 1758, *Ablepharus kitaibelii fabichi* Štěpánek, 1937, *Chalcides ocellatus* (Forskål, 1775), *Hemidactylus turcicus* (Linnaeus, 1758) and *Mediodactylus oertzeni* (Boettger, 1888). In some websites the presence of *Ophisops elegans* Ménétries, 1832 is also reported for Karpathos, but it seems to be a mistake (D. Protopapas, P. Lymberakis and I. Strachinis pers. com.).

Materials and Methods

Our naturalistic research was carried out on Karpathos from 28 July to 17 August 2019. The island has been visited only on foot along roads, paths, and streams. To investigate the whole island in the best way, we have settled in the south at Pigadia, and in the north at Diafani. In the southern part has been investigated the area close Pigadia reaching places like Vrondis, Paliokastro, Plaitsoura and Lakki. Continuing towards the western coast we visited Menetes, Arkasa, Finiki, Adia with the Flaskia Gorge, Lefkos and the western side of Mt. Kali Limni. In the central part we moved to Aperi, Volada, the eastern slopes of Mt. Kolla, Lastos and the eastern slopes of Mt. Kali Limni. Following the eastern coast, we reached the Limniotis cave, Kyra Panaghia and Myrtonas. The northern part of Karpathos has been crossed from Aghia Ekaterini - Tristomo (NE) until Olympos and from Vroukounda (NW) until Avlona. From Diafani we have gone along the south-eastern coast towards Spoa reaching Nati bay and Forokli. On the opposite coast we reached Argoni.

Results and Discussion

These extensive researches have allowed to observe all the taxa that represent the herpetological fauna of Karpathos except for *Natrix natrix* and *Lyciasalamandra helverseni*. Moreover, a short excursion on Saria Island confirmed the presence of *Mediodactylus oertzeni* and *Hemidactylus turcicus*. In Karpathos several dead specimens of *Dolichophis caspius* have been detected on the roads, victims of vehicular traffic. *Chalcides ocellatus*, as reported also by the previous authors (Ghigi 1929; Wettstein 1953; Cattaneo 2010), has been observed only at Pigadia. *Ablepharus k. fabichi* has been found in the southern and in the northern part of the island in the litter of pine forest. *Mediodactylus oertzeni* is resulted quite common, above all between limestone and schistous rocks. Juvenile specimens of this taxon showed orange-red tail. This feature in the juvenile specimens of *Ablepharus kitaibelii* of Astypalea has also been observed (Grano & Cattaneo 2019) and most probably it is an aposematic expression. *Hemidactylus turcicus* has been detected under stones and well covers. *Pelophylax cerigensis*, not unlike what is reported in the literature (Pafilis et al. 2019), has been found only in two sites (Nati and Argoni), confirming the rarity and criticality of this species. In addition to these taxa, two subpopulations of *Stellagama stellio* have been discovered in the island (Fig.1). The first was observed at Vrondis, on rocky walls that run along the road that leads from Pigadia to Aperi (35˚31′57″N - 27˚11′32″E). This locality lies about 3 kilometers from the port of Pigadia, which is the main port of the island where ships arrive from Crete and from several island of the Dodecanese Archipelago including Rhodes. The area is partially degraded due to the presence of

Fig. 1. *Stellagama stellio*, Karpathos

some mechanical workshops that manage waste in the rear part of the buildings. The first Rough-tailed Agama, has been noted right in the proximity of these workshops. Carefully observing the rocky walls, several specimens of *S. stellio* have been sighted. The animals were very cautious. The second subpopulation instead was observed at Plaitsoura near Ammopi, about 2 kilometers from Pigadia (35˚29′21″N - 27˚12′13″E). This area is also partially degraded. It is worth noting a foodstuff storage present nearby. In this place foodstuffs from other islands are unloaded by trucks. The lizards of this second subpopulation have also proved to be cautious and immediately ready to escape. The specimens observed in both the groups of *S. stellio* contained all age classes. It is therefore plausible that these subpopulations constitute reproductive groups belonging to the island biota. Most probably the Rough-tailed Agama specimens from Karpathos belong to *S. s. daani* for biogeographic reasons, since this subspecies inhabits the areas of the south Dodecanese (Crochet et al. 2006; Spaneli & Lymberakis 2014).

Conclusion

Numerous field trips during the last two decades were carried out to study the island's herpetofauna (Broggi 1994; Adamantopoulou et al. 1999; Eleftherakos et al. 2007; Cattaneo 2010; Bogaerds et al. 2018; Pafilis et al. 2019), but the presence of this large lizard has never been reported. This suggests that the introduction of the Rough-tailed Agama in the island has recently taken place, most probably due to unintentional human translocation. In fact, in both areas where *S. stellio* has been observed, there are situations where periodically supplies and vehicles arrive from neighboring islands. Karpathos is a stop-over on commercial routes, that touch different islands where this species occurs as Rhodes, Chalki, Tilos, Symi and Crete. As regard the latter island, a population of *Stellagama stellio* has been recently discovered near the airport of Sitia (Spaneli & Lymberakis 2014). The populations in Karpathos are well established and their presence is due most probably to intentional or unintentional human translocation.

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