

First observations on the herpetological and theriological fauna of Alimia Island (Rhodes Archipelago, Aegean Sea)

Mauro Grano^{1*}, Cristina Cattaneo² & Augusto Cattaneo³

¹Via Valcenischia 24, 00141 Roma, Italy; e-mail: elaphe58@yahoo.it

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

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

*Corresponding author

ABSTRACT This note is a preliminary study on the herpetological and theriological fauna of Alimia Island (Rhodes Archipelago, Aegean Sea). Are described seven species of reptiles and three of micromammals. Is also provided a short botanical characterization of the island.

KEY WORDS Alimia; Dodecanese; Aegean island; Rhodes.

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INTRODUCTION

Currently there is no scientific literature regarding herpetological and theriological fauna of Alimia Island (Rhodes Archipelago, Aegean Sea), and the following reported data are completely new.

MATERIAL AND METHODS

Alimia Island has been the subject of a partial survey in August 2014. Since this island is uninhabited, the authors stayed in the nearby island of Chalki.

Due to the great difficulties in reaching Alimia, surveys were carried out only in two days, and, for the discontinuity and precariousness of the connections, the authors of this paper, in the study of theriological fauna, could not use live-traps (Sherman) and photo-traps. Therefore were carried out exclusively field research, by examining osteological remains and inspecting glass bottles found *in situ*.

Study area

Alimia is a small island essentially calcareous, located in the Aegean Sea, north of Chalki and west of Rhodes and is one of the 163 islands that compose the Dodecanese Archipelago (Sokratis, 2006). It is part of Peripheral Unit of Rhodes and administratively belongs to the Municipality of Chalki. Its geographical coordinates are: longitude 27°42'24.11" E; latitude 36°16'26.26" N. The island has an area of 7.42 km², a coastline of 21 km and a maximum height of 274 m above sea level (Fig. 1). Alimia is provided of two large creeks: Imborios and Agios Georgios. Just for the presence of these two natural harbors, in ancient times Alimia was called Eulimna (from Greek limen = harbor) (Blackman et al., 2014).

The island is split in two unequal parts by a fail (Stefanini & Desio, 1928). In southern part a narrow strip of land connects the peninsula of Tigani to the rest of the island (Rackham & Vernicos, 1991). Alimia lacks superficial hydrography; there's only a small retrodunal pond of brackish water in

the bay of Agios Georgios (Fig. 2). Together with the surrounding small islands and Chalki, it's included in the European Network "Natura 2000" as SPA, Special Protection Area, with GR4210026 code. Moreover, with the Official Gazette 991 GG/B of 27 May 1999, Alimia was officially declared archaeological site of national interest for the presence of remains belonging to the Neolithic, such as the Paleochristian Basilica in the bay of Imborios and the Post-Byzantine church of Agios Georgios. The uncontaminated nature of the coasts is testified by the presence in this island of the now rare monk seal, *Monachus monachus* (Di Turo, 1984; Marchessaux & Duguy, 1977). Currently the island is uninhabited and is used by the inhabitants of Chalki, as in the past, for sheep and goats grazing (Iliadis, 1950). Regular connections either with Chalki or with Rhodes are not provided, indeed, Alimia knows only a sporadic tourism made by private boats.

Botanical aspects. Alimia is characterized by wide low shrubs in which *Juniperus phoenicea* L. and *Pistacia lentiscus* L. are the most distinctive elements. These species have pulvinate aspect, especially near the coast. In places where shrubs become more thin and open, thrives a phrygana almost exclusively characterized by *Thymbra capitata* (L.) Cav., to which sometimes is associated *Teucrium capitatum* L. and more sporadically *Salvia fruticosa* Mill.; *Origanum onites* L. and *Sarcopoterium spinosum* (L.) Spach were infrequently observed. The scarcity of the arboreal element is highlighted by the presence of scarce and localized clusters of *Pinus brutia* Ten. The steepest zones of Alimia have terraces once used for olive growing, now hardly visible as covered by the current vegetation. Iliadis (1950) informs that once this island was used not only as grazing land, but also for the production of fodder plants, grain, oil and figs (Cattaneo & Grano, in press).

RESULTS

REPTILIA

Hemidactylus turcicus turcicus (Linnaeus, 1758)

This gecko has a Mediterranean chorotype (Sindaco & Jeremčenko, 2008). Populations intro-

duced by humans are also known for some states in United States and South America. Essentially nocturnal species, is often visible in trophic activity during evening hours. The few individuals observed at Alimia were found among the ruins of Ag. Georgios village, under wood planks in shaded sites with relative humidity. Due to the lack of electricity in the island, the species could not be observed near light sources.

Mediodactylus kotschy (Steindachner, 1870)

This species, until a short time ago known as *Cyrtopodion kotschy*, has been recently subject of taxonomic review (Rösler, 2000). It has an E-Mediterranean chorotype (Sindaco & Jeremčenko, 2008). Are currently recognized 27 subspecies and in Chalki and Alimia should be present *Mediodactylus kotschy beutleri* (Baran et Gruber, 1981). This subspecies is typical of southwest Turkey and eastern Aegean islands. However, the validity of such subspecies could be under discussion by modern molecular genetic studies (Kasapidis et al., 2005). This gecko carries out semidiurnal activities, choosing stony and arid habitats. It is usually found on soil and on dry-stones walls (Beutler, 1981). At Alimia *Mediodactylus kotschy* was observed into Ag. Georgios village, on dry-stone walls used as enclosures for sheep and goats grazing.

Stellagama stellio daani (Beutler et Frör, 1980)

The chorotype of this reptile is Mediterranean/Arabian (Sindaco & Jeremčenko, 2008). The recent genus *Stellagama* is considered monospecific and includes the only species *S. stellio* (Baig et al., 2012). Seven subspecies are currently acknowledged, two of which are present in Greece: *S. stellio stellio* (Linnaeus, 1758) and *S. stellio daani*. The first one has been found in five Cyclades islands (Delos, Mikro Rhematiaris, Mykonos, Rinia and Tinos) and in the Ionian islands of Corfù and Paxi (Spaneli & Lymberakis, 2014); the second one was found in other Cyclades islands (Paros, Naxos, Despotico e Antiparos), in most of the eastern Aegean islands and in Thessaloniki, in the north of mainland Greece (Spaneli & Lymberakis, 2014). In Alimia *S. stellio daani* (Fig. 3) was found relatively frequent. Adult and young specimens have been observed during activity and thermoregulation

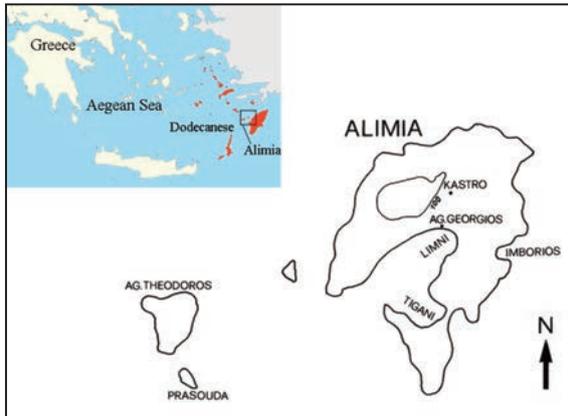


Figure 1. Alimia Island, Rhodes Archipelago, Aegean Sea.



Figure 2. Ag. Georgios village, Alimia Island.

between rocks and among the ruins of Ag. Georgios village.

Ablepharus kitaibelii kitaibelii (Bibron et Bory, 1833)

A single specimen of this lizard, with a Balcanic and W-Anatolic chorotype (Sindaco & Jeremčenko, 2008), was observed near a dry-stone wall, close Ag. Georgios beach. *Ablepharus kitaibelii* appears to be a mainly hygrophilous species (Cattaneo, 1998), as generally lives on wet soil and in under-wood bedding of conifers forest (Broggi, 2002; Wilson & Grillitsch, 2009). However, both to Alimia and to nearby Chalki island, *A. kitaibelii* has been found in extreme aridity. In Chalki indeed it has been very often observed on rocky and arid soil and also on stone walls inside Imborios village. In this latter case, however, the research by the above mentioned species of a degree of humidity inside the village is plausible.

Anatololacerta oertzeni pelasgiana (Mertens, 1959)

Anatololacerta oertzeni (Werner, 1904) is a lizard with a Mediterranean chorotype (Sindaco & Jeremčenko, 2008). It consists of six subspecies. At Rhodes and in the adjacent islands there's the subspecies *A. oertzeni pelasgiana* (Fig. 4). Like most Mediterranean reptiles, this lizard is particularly active in springtime, while in summer exposes oneself less frequently. However the young, very typical for the blue color of the tail (Fig. 5), are also

active in the summertime and in the hottest hours (Wilson & Grillitsch, 2009). Indeed, in Alimia the young specimens have been seen more frequently, especially observed up on the walls of the houses of Ag. Georgios village and on dry stone walls. On the contrary adults not exposed oneself to direct sunlight, but stayed inside abandoned houses in conditions of light and shadow.

Ophisops elegans (Ménétries, 1832)

Small lizard with Mediterranean/Iranian chorotype (Sindaco & Jeremčenko, 2008). Eight subspecies are currently recognized including one for Greece: *O. elegans macrodactylus* (Berthold, 1842). *Ophisops elegans* (Fig. 6) resulted the most common reptile in Alimia, generally observed on soil and especially at the basis of juniper bushes.

***Dolichophis* sp.**

Regarding snakes only a partial exuvia was found at the basis of a dry stone wall bordering the abandoned Ag. Georgios village. Structural and chromatic features of the specimen (dark scales with a light middle strip) assign it unequivocally to the genus *Dolichophis* Gistel, 1868. Even if was impossible to make a more detailed meristic examination of the specimen (being the exuvia incomplete), however, for exclusive biogeographic considerations, we can assume that the exuvia is attributable to *D. jugularis* and more precisely to *D. jugularis zinneri* Cattaneo, 2012. This subspecies is indeed present in Rhodes and in the islands of its ar-

chipelago, such as Chalki, Simi and Tilos (Cattaneo, 2012). Therefore the presence of *D. jugularis zinneri* also at Alimia could be argued with good probability.

MAMMALIA

Rattus sp.

In the immediate surroundings of the big boulders which form the basis of Kastro (180 m s.l.m.) have been found two long bones of *Rattus* sp.: a femur and a tibia. The failure to find other osteological remains didn't allow the distinction between *Rattus*

rattus Linnaeus, 1758 and *R. norvegicus* Berkenhout, 1769. Both species live in Rhodes and *R. rattus* is present also in the nearby islands of Chalki (Masetti, 2012). In the Dodecanese area is reported the presence of *R. norvegicus* for Kos and *R. rattus* for Tilos, Karpathos, Kos and Astypalaia (Angelici et al., 1992; Masetti & Sarà, 2002).

Mus musculus Schwarz et Schwarz, 1943

Mus musculus commonly called house mouse, is an anthropocore and highly invasive regarded species. This species native of Asia, is present in all continents, except Antarctica (Masetti, 2012).



Figures 3–6. Reptiles from Alimia Island. Figure 3. *Stellagama stellio daani*. Figure 4. *Anatololacerta oertzeni pelasgiana* (adult). Figure 5. *A. oertzeni pelasgiana* (young). Figure 6. *Ophisops elegans*.

Mus musculus is included in the list, compiled by IUCN, of 100 world's worst invasive alien species (Lowe et al., 2000). This small rodent can live in very diversified habitat due to the presence of human's commensals populations so-called "indoor" and wild populations called "outdoor" (Amori et al., 2008). The osteological remains related to this species, which consist of the skull, a hemimandible, a scapula, some vertebrae and some ribs, were found inside a dark glass bottle of beer among the ruins of the Ag. Georgios village. Some peculiar features, such as the presence of the notch on the external side of the upper incisors, the presence of only two rows of tubercles on the molars of the hemimandible and of a single root in the upper molar and, moreover, the dimension of various finds, the appearance and the reduced sizes of the braincase, have allowed the attribution of these finds to the species *M. musculus* (Toschi, 1965; Amori et al., 2008).

Suncus etruscus Savi, 1822

Suncus etruscus is the smallest living terrestrial mammal, characterized by a weight of about 2 g and by a length which rarely reaches to 5 cm (excluding tail). It is a typical species of Mediterranean bio-climatic zones, where it lives in environments characterized by dry stone walls and rocks (Amori et al., 2008), situation which moreover has also been found at Alimia. The distribution range of this species includes countries of the Mediterranean basin and extends to Pakistan and India. In the African continent reaches Natal and Tanzania. Has been found a single find of this small mammal, a hemimandible, in the same bottle where the remains relating to *Mus musculus* were found. The shape and size of hemimandible and the height mandibular coronoid, less than 3.2 mm, were the distinctive features for the attribution to the species *S. etruscus* (Amori et al., 2008).

CONCLUSIONS

As already noted, due to difficulties in reaching Alimia, the survey on the island may not have been capillary. It seems that because the arid nature and lack of active watercourses of this island, Amphibians are totally absent. A comparable situation is also in the nearby island of Chalki, which has very

similar environmental features (Buttle, 1995; Cattaneo, 2009). All specimens of various species of reptiles were found in Ag. Georgios bay, among the ruins of the abandoned village. Some specimens of *S. stellio* and *A. oertzeni* have also been observed in close proximity of a group of military buildings abandoned in the peninsula of Tigani. The herpetofauna of Alimia has proved to be interesting anyway and, considering the small size of the island, substantially consistent. The species that hosts are clearly of Rhodian matrix; includes two taxa more than the nearby and much bigger (about six times) island of Chalki (*A. oertzeni* and *Ophisops elegans*) (Buttle, 1995; Cattaneo, 2007, 2009), but the latter is more distant from Rhodes. The coexistence of seven species of reptiles in this small island, dry and without human presence, represents a perfect model of sympatry and of optimal utilization of resources.

It is also worth noting that the dense interactive network of the island (to whom contribute four species of lizard and at least three of micromammals) could also allow the survival to a second ophidic species. In this regard is worth remembering that Boettger (1888) reported the news, provided by von Oertzen, about the possibility of the existence of *Montivipera xanthina* in Chalki. Researches carried by us and by others (Joger & Nilson, 2005) have ruled out this possibility, but fact remains that the indication of von Oertzen could refer to another nearby island (in this instance Alimia), assimilated to Chalki or confused with this, following a *lapsus linguae*. Besides the authority and reliability of the German author don't put doubts about the authenticity of the news. So that's why is desirable in the future that researches are carried out in this direction, in order to clarify the enigma.

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