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New records and an updated list of the herpetofauna of Kastellorizo and the adjacent islet Psomi (Dodecanese, SE Greece)

Konstantinos Kalaentzis^{1,*}, Ilias Strachinis¹, Philippos Katsiyiannis², Peter Oefinger³, and Christos Kazilas¹

Abstract. Based on several recent herpetological surveys on the Kastellorizo archipelago in the Eastern Mediterranean, we present a review of the herpetofauna of the area. Active searching and visual encounter surveys on Kastellorizo confirmed the presence of two species of amphibians and thirteen species of reptiles, and in conjunction with the available literature data, brought the terrestrial herpetofauna of the island to a total of 17 species. In addition, during a one-day herpetological survey on Psomi islet, we encountered individuals of *Anatololacerta* sp. and *Mediodactylus* cf. *danilewskii*. Based on the analysis of the mitochondrial gene *cytb*, the recently discovered lizard population from the settlement of Megisti was identified as *Anatololacerta pelasgiana* (Mertens, 1959), while that of Psomi islet as *Anatololacerta budaki* (Eiselt and Schmidtler, 1986), a new addition to the herpetofauna of Greece. We reported on the extant herpetofauna of Kastellorizo and Psomi islet providing a species list that includes four new species records, namely *A. pelasgiana*, *A. budaki*, *Platyceps najadum* (Eichwald, 1831), and *Telescopus fallax* (Fleischmann, 1831). Our results expand our knowledge on the biogeography of the region and the insular distribution of the species. We also discuss the possible introduction ways of the non-native lizard *A. pelasgiana*, recent taxonomic revisions, and possible erroneous records.

Keywords. Megisti, herpetological survey, species identification, *Anatololacerta*, *cytb*, Bayesian inference

Introduction

Kastellorizo (also known as Megisti) is a small Greek island belonging to the Dodecanese and the Rhodes regional unit with an approximate area of 12 km², located 125 km east of Rhodes Island and about 2 km south of the nearest Turkish coast (Anatolian coastal town of Kaş). The archipelago composed of the islands Kastellorizo, Ro, Strongili, and numerous islets (Agrielia, Psomi, Psoradia, and others) represents the easternmost point of Greece (Fig. 1). It is a limestone island composed of karstic limestone with a highest elevation of 273 m above sea level (Vigla) and steep,

rocky coastlines. The island lacks springs and is mostly covered with phrygana vegetation, which surrounds the few cultivated areas (Paysant, 2005; Fig. 2A). There is only one settlement on the island, namely Megisti, with a population of 492 residents as per the 2011 census (Hellenic Statistical Authority, 2011). Psomi is a small islet in the archipelago of Kastellorizo with an approximate area of 0.003 km², located 1 km northeast of Megisti and around 3 km of the Turkish coast (Fig. 3A). It is composed of karstic limestone and is covered mostly with chasmophytic vegetation.

Most of the previous herpetological surveys on the island (e.g., Kiortsis et al., 1974; Tzannetatos-Polymeris, 1986; Veith et al., 2001) focused mainly on the study of *Lyciasalamandra luschani basoglui* (Baran and Atatür, 1980). Literature regarding the island's herpetofauna is restricted (Valakos and Papapanagiotou, 1985; Paysant, 1999, 2005). Early surveys (Valakos and Papapanagiotou, 1985) have led to the listing of nine reptile and one amphibian species on Kastellorizo. Later, Van Wingerde (1986) reported the presence of *Montivipera xanthina* (Gray, 1849) on the island,

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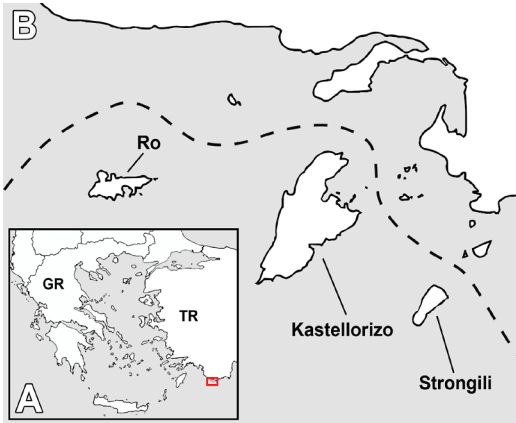


Figure 1. (A) Map showing the location of Kastellorizo Island, Greece. (B) A more focused view of the island group comprising Kastellorizo, Ro, and Strongili islands. The dotted line represents the national border between Greece and Turkey.

however with some doubts. More recent herpetological surveys (Paysant, 1999, 2005) revealed the occurrence of four additional species on the island, namely *Bufo viridis* (Laurenti, 1768), *Heremites auratus* (Linnaeus, 1758), *Xerotyphlops vermicularis* (Merrem, 1820), and *Dolichophis jugularis* (Linnaeus, 1758). Regarding the herpetofauna of Psomi islet, individuals of *Anatololacerta* sp. and *Mediodactylus* cf. *danilewskii* have been recorded by the Natural History Museum of Crete in 1996 (Petros Lymberakis, pers. comm.).

Here, we present an updated list of the herpetofauna of Kastellorizo and Psomi, based on six herpetological surveys conducted over a period of nine years (2009–2017) and available literature data, including four new species records, namely *Anatololacerta pelagiana* (Mertens, 1959), *Anatololacerta budaki* (Eiselt & Schmidtler, 1986), *Platyceps najadum* (Eichwald, 1831), and *Telescopus fallax* (Fleischmann, 1831).

Materials and Methods

Systematic surveys were conducted during the past years, namely in September 2009 (3 d), March 2011 (3 d), April 2015 (4 d), March 2017 (3 d), May 2017 (5 d), and August 2017 (9 d). Psomi islet was surveyed on 3 May 2017 (1d).

Observations were made by visual encounter surveys and active searching during day and night, in a variety of habitats and climatic conditions, as well as by identifying

road-killed specimens. Individuals of all the observed amphibian and reptile species were photographed using digital SLR cameras and in some cases specimens were collected. In specific, specimens of *Anatololacerta* sp. and *Mediodactylus* cf. *danilewskii* from Psomi islet, as well as one specimen of *Anatololacerta* sp. from the settlement of Megisti, were collected. Voucher specimens and photographic vouchers were deposited at the Herpetological Collection of the Natural History Museum of Crete, Greece (NHMC). All of the specimens were collected under the Greek Presidential Decree 67/81.

Muscle tissue of the *Anatololacerta* specimens from Kastellorizo and Psomi islet was obtained. Whole genome DNA was extracted following the method described by Hillis *et al.* (1996), based on cetyltrimethylammonium bromide (CTAB) reagent. Polymerase Chain Reactions (PCR) were performed for the amplification of a partial sequence (420bp) of the mitochondrial protein-coding cytochrome b gene (*cytb*), using the forward primer GLUDG-L (Kocher *et al.*, 1989) and the reverse primer CB2-H (Palumbi, 1996). PCR consisted of an initial activation step of 10 min at 95°C, 40 cycles of steps a) 94°C for 1 min, b) 48.5°C for 1 min and c) 72°C for 1 min, and then 10 min at 72°C. Subsequently, PCR products were purified using the NucleoSpin Gel and PCR Clean-up kit (Macherey-Nagel), and Sanger sequencing was performed by Genewiz Inc. Chromatograms were checked using Geneious v10.2.3 (Biomatters Ltd.). *Cytb* sequences of the *Anatololacerta* species group and two outgroup species, i.e. *Hellenolacerta graeca* (Bedriaga, 1886) and *Parvilacerta parva* (Boulenger, 1887) were retrieved from the nucleotide database of NCBI (GenBank).

The sequences were aligned using ClustalW (Thomson *et al.*, 1994) and phylogenetic trees were constructed using Maximum Likelihood (ML) and Bayesian Inference (BI) methods. The model selection was based on the Bayesian Information Criterion (BIC; Schwarz, 1978) using jModelTest v2.1.10 (Posada, 2008; Darriba *et al.*, 2012). ML analysis was performed in MEGA v7.0.26 (Kumar *et al.*, 2016), and the confidence of each node of the best ML tree was examined with a bootstrap analysis of 1000 pseudo-replicates (Felsenstein, 1985). BI analysis was performed in MrBayes v3.2.6 (Ronquist *et al.*, 2012) for 10^6 generations, and the current tree was saved to file every 500 generations. The first 25% of the trees were discarded by default, to avoid the possibility of including random sub-optimal trees. The obtained sequences of *Anatololacerta* specimens from Kastellorizo and Psomi islet were deposited in

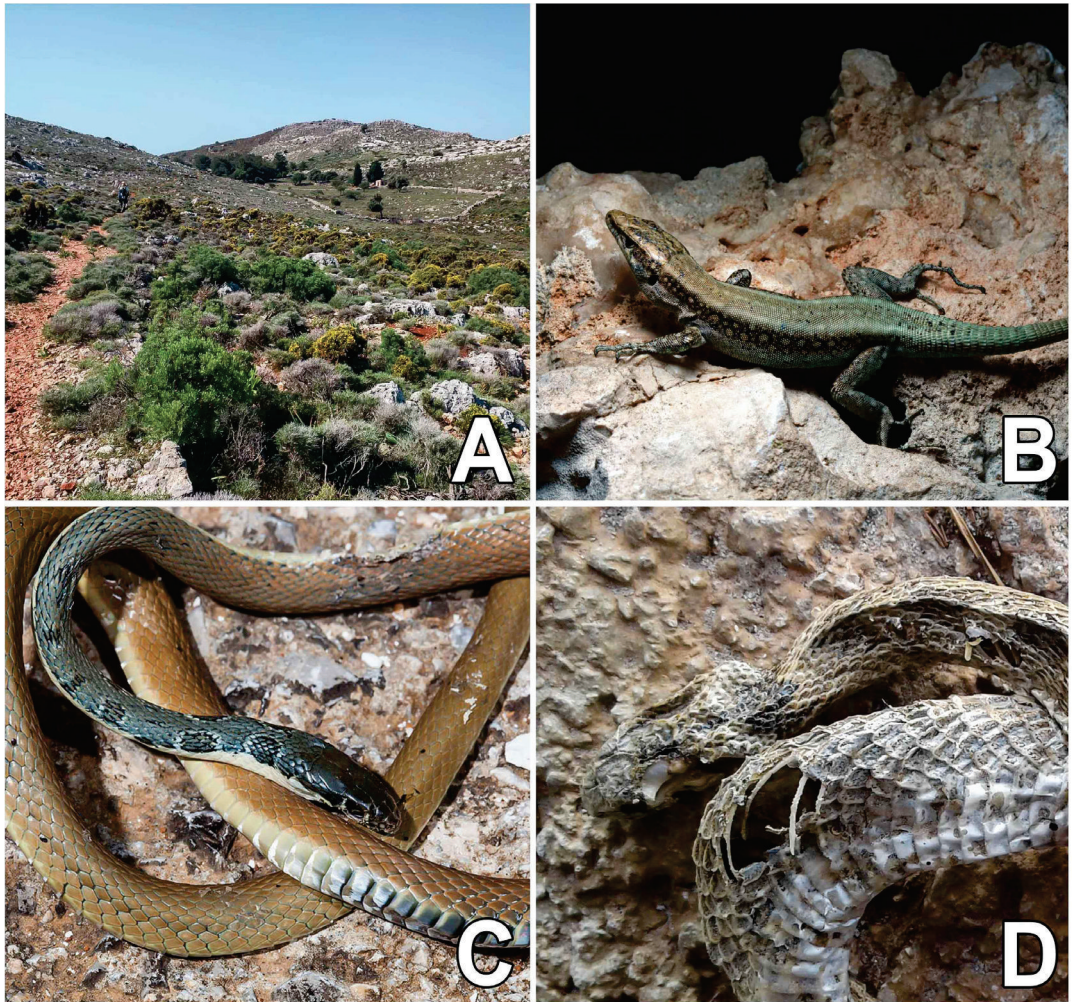


Figure 2. Typical landscape covered with phrygic vegetation on the central plateau of Kastellorizo (A) and the three new records from the island (B-D). (B) Pelasgian Rock Lizard (*Anatololacerta pelasgiana*) in the settlement of Megisti in May 2017. (C) A dead specimen of Dahl's Whip Snake (*Platyceps najadum*). (D) A dead specimen of European Cat Snake (*Telescopus fallax*). Photos by Ilias Strachinis (A, B), and Philippos Katsiyannis (C, D).

the GenBank nucleotide database with the accession numbers MH041496 and MH041497 respectively.

Results and Discussion

Kastellorizo

In total, two species of amphibians and thirteen species of terrestrial reptiles were observed and photographed by the authors on Kastellorizo Island during six field expeditions between September 2009 and August 2017 (Table 1).

Lyciasalamandra luschani (Steindachner, 1891), **Luschan's Salamander** (Fig. 4A).—The presence of this species on the island has already been reported several times (e.g., Kiortsis et al., 1974; Valakos and Papanagioutou, 1985; Tzannetidou-Polymeni, 1986; Paysant, 2005). Luschan's Salamander is a very common species that was found almost everywhere on the island. Large numbers of this species were observed in a variety of habitats during nocturnal surveys and even during daytime it was found under stones on humid substrate. Most observations were made at night.



Figure 3. (A) Psomi islet and the adjacent Turkish coast as seen from Megisti. (B) Mediterranean Thin-toed Gecko (*Mediodactylus* cf. *danilewskii*) collected from Psomi. (C) The specimen of Budak's Rock Lizard (*Anatololacerta budaki*) collected from Psomi. Photos by Peter Oefinger (A), Konstantinos Kalaentzis (B), and Ilias Strachinis (C).

However, during a rainy day in March 2017 numerous salamanders were found, at daytime, on the ground or climbing on walls. In a single night in May 2017 (17°C, humidity 88%, and calm wind), over 300 individuals, including many salamanders in amplexus position, were recorded on a 200 m distance track on a dirt road inside the settlement. Individuals of *L. luschani* were found around the settlement of Megisti, where the higher numbers were recorded, but also on the island's plateau and Acheres plain.

***Bufo viridis* (Laurenti, 1768), European Green Toad (Fig. 4B).**—The European Green Toad was first

mentioned on the island of Kastellorizo by Paysant (2005). During our expeditions, we observed few adult individuals of *B. viridis* around the settlement of Megisti, road-killed specimens on Acheres plain, and several tadpoles inside an old metal barrel on the island's plateau. Since their reproduction cycle is completed in water, toads of this species are dependent on the presence of water bodies. The main sites of water sources on the island consist of artificial reservoirs set to collect rainwater, temporary flooded fields on the island's plateau, and shallow limestone depressions. Apart from the scarcity of reproduction sites on the

Table 1. List of amphibian and reptile species of Kastellorizo and Psomi islet (Dodecanese, Greece) encountered during the herpetological surveys conducted by the authors (indicated with X). Numbers indicate the references that mention previous records, including 1—Valakos and Papapanagiotou (1985), 2a—Paysant (1999), and 2b—Paysant (2005). *Montivipera xanthina*, mentioned in Van Wingerde (1986) from Kastellorizo, is not included because we consider it unreliable (see Results and Discussion).

Class	Family	Species	Kastellorizo	Psomi islet
Amphibia	Salamandridae	<i>Lyciasalamandra luschani</i>	1, 2a, 2b, X	
	Bufo	<i>Bufo viridis</i>	2b, X	
Reptilia	Agamidae	<i>Stellagama stellio</i>	1, 2a, 2b, X	
	Gekkonidae	<i>Hemidactylus turcicus</i>	1, X	
		<i>Mediodactylus danilewskii</i>	1, X	X (new record)
	Lacertidae	<i>Anatololacerta pelasgiana</i>	X (new record)	
		<i>Anatololacerta budaki</i>		X (new record)
	Scincidae	<i>Ablepharus anaticus</i>	1, 2b, X	
		<i>Heremites auratus</i>	2b, X	
		<i>Ophiomorus kardesi</i>	1, X	
	Blaniidae	<i>Blanus strauchi</i>	1, 2b, X	
	Colubridae	<i>Dolichophis jugularis</i>	2a, X	
		<i>Eirenis modestus</i>	1, 2b, X	
		<i>Hemorrhoids nummifer</i>	1, 2b	
		<i>Platycephalus najadum</i>	X (new record)	
		<i>Telescopus fallax</i>	X (new record)	
		<i>Malpolon insignitus</i>	1	
	Typhlopidae	<i>Xerotyphlops vermicularis</i>	2a, 2b, X	

island, individuals of the species also face a threat while using the artificial water tanks as egg laying sites, since their vertical walls can prevent them from escaping (Paysant, 2005).

***Stellagama stellio* (Linnaeus, 1758), Starred Agama.**—This species is reported from Kastellorizo several times (e.g., Valakos and Papapanagiotou, 1985; Paysant, 1999, 2005). It seems to be quite common on the island, since we encountered numerous Starred Agamas in almost every site we visited.

***Hemidactylus turcicus* (Linnaeus, 1758), Turkish Gecko.**—The Turkish Gecko is a very common species in the Mediterranean region, especially around human settlements and dwellings. It is known from the settlement of Megisti (Valakos and Papapanagiotou, 1985). We observed the species in great numbers in Megisti during nighttime surveys, but also in several localities on the island's plateau at daytime, during our

expeditions in September 2009, as well as in May and August 2017.

***Mediodactylus danilewskii* (Strauch, 1887), Mediterranean Thin-toed Gecko.**—Valakos and Papapanagiotou (1985) mentioned the presence of the species, then known as *Tenuidactylus kotschy* (Steindachner, 1870) from Agios Ioannis and Acheres. Kotsakiozi et al. (2018) based on a multilocus phylogenetic analysis proposed the recognition of five taxa as full species inside the *M. kotschy* species complex, namely *M. kotschy*, *M. orientalis* (Štěpánek, 1937), *M. danilewskii* (Strauch, 1887), *M. bartoni* (Štěpánek, 1934), and *M. oertzeni* (Boettger, 1888). In the aforementioned study, *Mediodactylus* populations from the island of Kastellorizo were classified as *M. danilewskii*. We observed individuals of the species on the island during our expeditions in March 2011, as well as in May and August 2017. According to our

observations and experience, it seems that this species is less common on Kastellorizo compared to other Dodecanese Islands (e.g., Karpathos, Symi).

***Anatololacerta pelasgiana* (Mertens, 1959), Pelasgian Rock Lizard.**—PO spotted one individual of *Anatololacerta* sp. at Agia Triada Monastery, near Megisti, in March 2011, without knowing at that time if this was a single individual or if there was an established population on the island. Later, in March 2017, the same author encountered three individuals of the species in the settlement. In May 2017, we observed at least five of these lizards in Megisti (Fig. 6A), photographed them and collected one specimen (NHMC 80.3.62.63; Fig. 2B). The rarity of these lizards on Kastellorizo, the fact that they have never been reported on the island before, and their proximity to the island's commercial port, possibly indicate that their arrival is recent, probably due to accidental introduction.

Our phylogenetic analysis agreed with this hypothesis, since the specimen from Megisti was grouped in the same subclade with three specimens of *A. pelasgiana* (Mertens, 1959) from Rhodes; this result was supported with significantly high posterior probabilities and bootstrap values (Fig. 5). Consequently, we consider the Kastellorizo population introduced, possibly from Rhodes. It could have arrived on the island by human-mediated transports, e.g. ferry boats, trade of plants, building material etc. It is worth mentioning that Rhodes is the primary supply and transportation hub of Kastellorizo. In addition, a similar recent finding of *A. pelasgiana* on another Dodecanese island (Kassos) supports the scenario of anthropogenic transportation (Kornilios and Thanou, 2016).

We follow the definition of *A. pelasgiana* proposed by Bellati *et al.* (2015), who elevated *A. oertzeni pelasgiana* to full species status. This is a new species record for Kastellorizo, as it has never been recorded on the island by previous herpetofaunal surveys (e.g., Valakos and Papapanagiotou, 1985; Paysant, 2005).

***Ablepharus anaticus* Schmidtler, 1997, Lycian Snake-eyed Skink (Fig. 4C).**—The species is already mentioned on the island as *Ablepharus kitaibelii* (Bibron and Bory St-Vincent, 1833), by previous investigators (Valakos and Papapanagiotou, 1985; Paysant, 2005). Poulakakis *et al.* (2005) showed that *A. kitaibelii* is not a monophyletic taxon, and that the population of the Kastellorizo island group is particularly distinct and deserves species status. A more recent phylogenetic analysis based on morphological features and genetic

markers (mtDNA, nuDNA) proposed the raise of *Ablepharus* populations from Kastellorizo island group and southwest Turkey to species level, namely *A. anaticus* (Skourtanioti *et al.*, 2016). The large ear opening is a common morphological trait the populations of *Ablepharus* from the island group of Kastellorizo and southern Anatolia share (Schmidtler, 1997; Poulakakis *et al.*, 2005; Fig. 4C). We observed this species in several localities, during our visits in March 2011, April 2015, as well as in March, May, and August 2017, mostly near abandoned dwellings around the town of Megisti. The species seems to occur in high densities in the area.

***Heremites auratus* (Linnaeus, 1758), Levant Skink.**—This species is known from the island by Paysant (2005), as *Euprepes auratus*. In 2016, Karin *et al.*, using molecular data, resurrected genus *Heremites* and grouped the Middle East species of *Trachylepis* within *Heremites*. In May 2017, we encountered six individuals in different localities throughout the island. More specifically, four individuals were found around the settlement and near the Acheres plain, while the other two were spotted basking by low stone walls on the island's plateau.

***Ophiomorus kardesi* (Kornilios *et al.*, 2018), Anatolian Limbless Skink (Fig. 4D).**—A very recent genetic analysis (Kornilios *et al.*, 2018) based on a multilocus DNA dataset, comprising of mitochondrial and nuclear genetic markers, described the *Ophiomorus* populations of Kastellorizo and SW Turkey as a new species, namely *O. kardesi*. The Anatolian Limbless Skink is mentioned by Valakos and Papapanagiotou (1985), who collected one specimen from the island's plateau. Several individuals of this species were found under stones, at daytime, during our surveys in March and May 2017.

***Blanus strauchi* (Bedriaga, 1884), Anatolian Worm Lizard.**—Populations of Kastellorizo and SW Anatolia belong to the subspecies *B. strauchi bedriagae* Boulenger, 1884, according to Alexander (1966) and Sindaco *et al.* (2014). It has been mentioned from previous expeditions (e.g., Valakos and Papapanagiotou, 1985; Paysant, 2005). We also encountered it in March and May 2017. During our visit in May 2017 one of the four Anatolian Worm Lizards observed, presented piebald morphotype (Kazilas *et al.*, 2018).

***Xerotyphlops vermicularis* (Merrem, 1820), Eurasian Blind Snake (Fig. 4E).**—The species is

already mentioned from Kastellorizo (Paysant, 1999, 2005). We encountered several individuals in March and May 2017 in different localities around the settlement and on the island's plateau. Individuals of this species, due to their fossorial nature, were mostly found under stones, at daytime. However, we also spotted and photographed two active individuals on the surface at night near the settlement in May 2017.

***Dolichophis jugularis* (Linnaeus, 1758), Large Whip Snake.**—The species was first mentioned on the island by Paysant (1999). Both alive individuals and dead specimens were observed during our expeditions in March 2011 and May 2017, mostly near the settlement of Megisti.

***Eirenis modestus* (Martin, 1838), Ring-headed Dwarf Snake (Fig. 4F).**—Its presence on the island is known from previous expeditions (Valakos and Papapanagiotou, 1985; Paysant, 2005). It was encountered in April 2015, as well as in March and May 2017, during daytime searches under stones. We found specimens throughout the island including the vicinity of the settlement, the Acheres plain, and on the island's central plateau. It seems to be a very common species on Kastellorizo. Two of the individuals we encountered, one juvenile in April 2015 and one adult in May 2017, had unusual dark colourations resembling melanistic morphotypes (Kalaentzis et al., 2018).

***Hemorrhhois nummifer* (Reuss, 1834), Coin-marked Snake.**—The Coin-marked Snake is mentioned from literature: Valakos and Papapanagiotou (1985) collected two specimens from cultivated fields on the island's plateau and Paysant (2005) found one individual near the monastery of Saint George. We did not find it in any of our expeditions.

***Platyceps najadum* (Eichwald, 1831), Dahl's Whip Snake.**—During a visit in September 2009, KK observed and collected a specimen of *P. najadum* in the settlement of Megisti (NHMC 80.3.132.13), a new species record for the area. An additional dead, adult specimen was found in April 2015 (Fig. 2C). However, we failed to encounter the species in any of our further expeditions.

***Telescopus fallax* (Fleischmann, 1831), European Cat Snake.**—A road killed specimen of *T. fallax* was photographed near the settlement of Megisti, in August 2017 (Fig. 2D; NHMC 80.3.38.130). The identification was based on the shape of head, body, and tail, pholidosis characteristics of the head, the dark transverse bars on

the back of the body, and on the characteristic dark collar, which extended to the middle of the head. This is the first time this species is reported from the island. However, since there are no other records of the species on Kastellorizo, one cannot exclude an isolated event of accidental translocation and further investigation is required in order to confirm an established population on the island.

***Malpolon insignitus* (Geoffroy Saint-Hilaire, 1827), Eastern Montpellier Snake.**—There is a single report of this species from Kastellorizo by Valakos and Papapanagiotou (1985), who collected one specimen from Acheres plain. However, no individual of *M. insignitus* was encountered on the island during any of our surveys. We suggest that supplementary investigation is needed in order to confirm the presence of the species on the island.

***Montivipera xanthina* (Gray, 1849), Ottoman Viper.**—Van Wingerde (1986) suggested the possible occurrence of the Ottoman Viper on the island, based on a dubious observation of a fast moving, stout bodied snake with a black and off-white pattern. This doubtful record was later mentioned by Dimitropoulos (1986) and Dimitropoulos et al. (1988). The species was not observed by the authors, nor by other herpetologists (Valakos and Papapanagiotou, 1985; Paysant, 1999, 2005). For all the above and due to lack of any evidence on the presence of the species on the island (specimen or photographic vouchers), we propose that *M. xanthina* is not included in the island's herpetofauna list, until solid proof of its occurrence is presented.

Psomi

During a one-day expedition on Psomi islet (northeast of Megisti; Fig. 6A) in May 2017, two reptile species were observed and voucher specimens were collected (Table 1).

***Mediodactylus* cf. *danilewskii* (Strauch, 1887), Mediterranean Thin-toed Gecko.**—The presence of this species on Psomi islet was already detected by a group of scientists from the NHMC (Petros Lymberakis, pers. comm.). We photographed and collected two specimens on the islet (NHMC 80.3.85.1937-8; Fig. 3B) during our visit in May 2017. Population density on Psomi islet seems to be higher than that on Kastellorizo. The population of this species on Psomi islet should possibly be attributed to *M. danilewskii* but further research is needed in order to confirm this.



Figure 4. Two amphibian and four reptile species of the total 15 observed on the island of Kastellorizo, during six herpetological surveys. (A) A female Luschan's Salamander (*Lyciasalamandra luschani basoglu*). (B) A female European Green Toad (*Bufo viridis*). (C) An adult Lycian Snake-eyed Skink (*Ablepharus anatolicus*). The main morphological trait of this species, a large ear opening, is denoted. (D) Anatolian Limbless Skink (*Ophiomorus kardesi*). (E) Eurasian Blind Snake (*Xerotyphlops vermicularis*). (F) An adult Ring-headed Dwarf Snake with rows of dark blotches in the first half of the body (*Eirenis modestus*) found on the island's plateau. Photos by Christos Kazilas (A, F), Konstantinos Kalaentzis (B, C, D), and Ilias Strachinis (E).

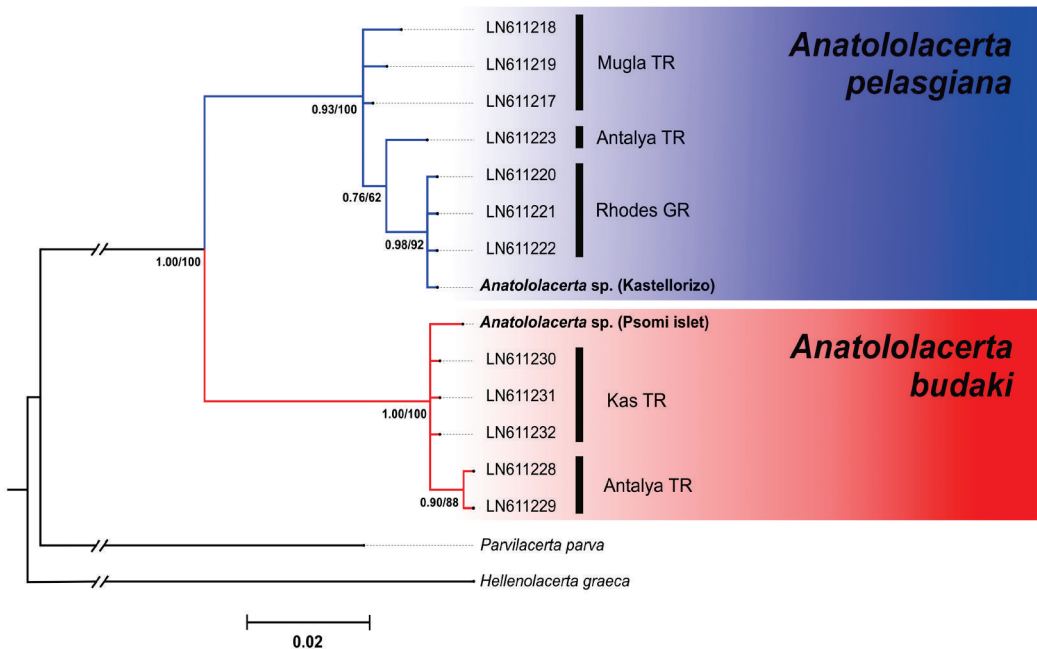


Figure 5. Bayesian Inference tree based on a 383 bp fragment of *cytb* focusing on the identification of the two *Anatololacerta* specimens collected from the Kastellorizo archipelago. The posterior probabilities (BI) and bootstrap support (ML) are given near the branches.

Anatololacerta budaki (Eiselt & Schmidtler, 1986), **Budak's Rock Lizard**.—A population of *Anatololacerta* sp. lizards was already known from an expedition of NHMC (Petros Lymberakis, pers. comm.). During our visit on the islet, we spotted numerous individuals and managed to collect one specimen (NHMC 80.3.62.64; Fig. 3C). We noticed that the colour of all the observed individuals was brownish and unusually dark compared to those from Kastellorizo and Rhodes.

Our phylogenetic analysis showed a clear distinction between two main clades that was supported with significantly high values in both trees (Fig. 5). The first clade was comprised of *A. pelasgiana* specimens from Turkey and Rhodes, while the specimen from Psomi islet was grouped together in the second clade with specimens from the adjacent Turkish mainland, which belong to the former taxon *Anatololacerta oertzeni finikensis* (Eiselt and Schmidtler, 1986).

Bellati et al. (2015) investigated the relationships between the four species in the *Anatololacerta* species complex; of these *Anatololacerta budaki* (Eiselt and Schmidtler, 1986) includes the previous taxa *A. oertzeni budaki* (Eiselt and Schmidtler, 1986) and *A. oertzeni*

finikensis that both occur in SW Anatolia. Although the taxon of *A. budaki* is still a subject of discussion with regard to its geographical distribution and the taxonomic status of *A. oertzeni ibrahimi* (Eiselt and Schmidtler, 1986), we follow the definition of *A. budaki* proposed by Bellati et al. (2015). Previous to this finding, the species was unknown from Greece (Valakos et al., 2008). This is the first record of the species on Greek territory.

Conclusions

The current study reveals the presence of two amphibian and 13 reptile species on the island of Kastellorizo and, in conjunction with the available literature data from previous herpetofaunal expeditions, brings its terrestrial herpetofauna to a total of 17 species (Table 1). Regarding the species mentioned in the literature but not encountered in any of our surveys, namely *H. nummifer*, *M. insignitus*, and *M. xanthina*, only the latter is considered doubtful and thus is not included in the list of the island's herpetofauna (see Results and Discussion). In addition, our list includes three new species records for the island, of which the presence of *P. najadum* and *T. fallax* is of no surprise, since the

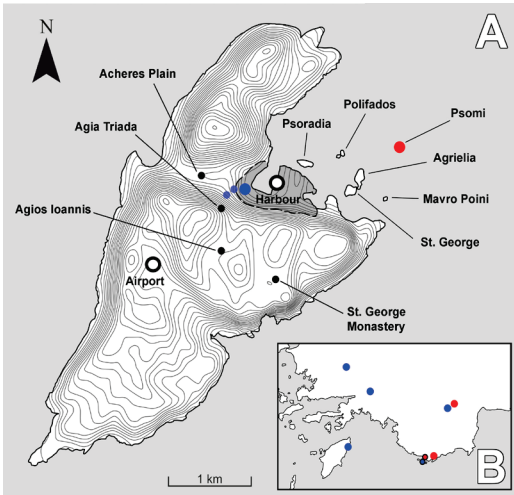


Figure 6. (A) Partial topographic map of the Kastellorizo archipelago showing the location of the islets surrounding Megisti. Sampling localities of *Anatololacerta budaki*, represented by red circle (Psomi islet), and *Anatololacerta pelagiana*, represented by blue circle (Megisti), are shown. Additional localities where individuals of *A. pelagiana* were also encountered during our expeditions are indicated with smaller, transparent, blue circles. The location of the island's harbour and airport are labelled. (B) Map of SE Aegean and SW Anatolia, displaying the sampling locations of every specimen that was used in our phylogenetic analysis, including those acquired from the nucleotide database of GenBank. *A. pelagiana* is represented by blue circles, while *A. budaki* by red.

surrounding area falls within the distribution range of both species. On the other hand, the *Anatololacerta* lizards from Kastellorizo seem to be introduced, since our phylogenetic analysis shows a clear clustering of the obtained sequence into a single clade with *A. pelagiana* specimens from Rhodes (Fig. 5).

On Psomi islet, we found two reptile species, including *Anatololacerta* lizards that were identified as *A. budaki* and represent the first record of this species on Greek territory. Since no herpetofaunal surveys have been conducted on the other islands (Ro, Strongili) or islets of the archipelago, this should be the focus of future surveys in the area.

The richness of amphibians and reptiles on the island of Kastellorizo is high considering its very small size. This can be explained mainly by the short distance of the island from the neighboring Anatolia and its recent

separation from it. Furthermore, human activities may account for the introduction of non-native species (e.g. ferry boats, trade of building material, vehicles etc.), though the short distance (only 2 km off the Turkish coast) does not exclude the possibility of natural transportations ("rafts"). Transmarine dispersal is not unusual and has been recently demonstrated for Crete (Kyriazi *et al.*, 2013).

Acknowledgements. We thank Petros Lymberakis (NHMC) for providing useful information, but also for his assistance and advice. We are grateful to Alexandros Triantafyllidis (AUTH) for allowing us to complete the present genetic analysis in his lab. We also thank Kostas Chousalas for his company and suggestions during our stay on the island.

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