

First report on the herpetofauna of Palaio Trikeri island (Pagasetic gulf, Greece)

Stamatios Kalogiannis^{1*}, *Platon Stefanopoulos*²

¹ - Alonissos, Magnesia, 37005, GREECE

² - Filothei, Attiki, 15237, GREECE

*Corresponding author: stamatiskalog@gmail.com

Abstract. Palaio Trikeri is a small 2.5 km² island in the Pagasetic gulf. We conducted the first herpetological survey on the island and confirmed the presence of 5 reptile species, specifically 4 species of lizards and 1 species of snake. Brief observations on other fauna were also made and are mentioned in the discussion. The identity of green lizards on Palaio Trikeri needs to be investigated, while further fieldwork could be carried out in the future in order to uncover the potential presence of additional species.

Key words: Palaio Trikeri, herpetofauna, *Malpolon insignitus*, Magnesia, Greece.

Introduction

The herpetofauna of the Greek islands has been studied very extensively throughout the years in a number of herpetological excursions by both Greek and foreign researchers, with the earliest literature reports dating back to the 19th century (Lymberakis et al., 2018). However, several smaller islands have been overlooked by herpetologists and were only recently visited for the first time (e.g. Strachinis, 2022; Tzoras et al., 2019). Palaio Trikeri or Kikynithos in ancient Greek is a small, hilly island in the Pagasetic gulf. The island covers a total area of 2.5 km² and has a maximum elevation of 109 m. It is inhabited with a population of 59 residents according to the 2011 census. The island is hilly and mainly covered by olive orchards. Due to a complete lack of grazing by livestock, much of the island is covered by largely uninterrupted rock rose thicket. Other areas, especially those situated outside olive groves, are characterized by an abundance of lentiscs, kermes oaks, sages, and

other evergreen shrubs, that form a taller maquis. Some of the humid coastal areas are also covered by thick bramble and tall Poaceae grasses that provide dense vegetation cover. There are no wetlands or perennial streams on Palaio Trikeri, although there are ephemeral watercourses that were dry at the time of the visit. The island is situated between Alogoporos bay in the Pelion peninsula and the smaller Pythos islet. Maximum sea depth from the mainland reaches approximately 50 m. Apart from 2 tractors, there are no vehicles on Palaio Trikeri and the island can be reached via a marine taxi that makes regular trips from Alogoporos. The main village and harbor are located at the southwest part of Palaio Trikeri, with scattered residences across other areas, especially in Agia Sophia and Agios Georgios. There is also a monastery at the central part of the island. A literature search revealed no published herpetological reports from the island or the surrounding areas, and no other records were detected online.

Materials and Methods

We carried out one herpetological survey on the island on 15-19 May 2023. The weather was mainly sunny, with occasional clouds and light rainfall. Temperatures ranged from 19 to 24°C. Observations were mainly made by crossing ideal habitat on foot, as well as by lifting potential cover. In addition to four day surveys, we also conducted two night surveys. All individuals found were counted and

left at their exact finding spot. Coordinates, measurements and voucher photographs were also collected. The map of the study area was generated with QGIS 3.28 and the taxonomy mentioned below is in agreement with Speybroeck et al. (2020). In order to avoid the risk of poaching and due to the small size of the island, we prefer not to mention the exact coordinates of findings, but they are available for research purposes upon request.

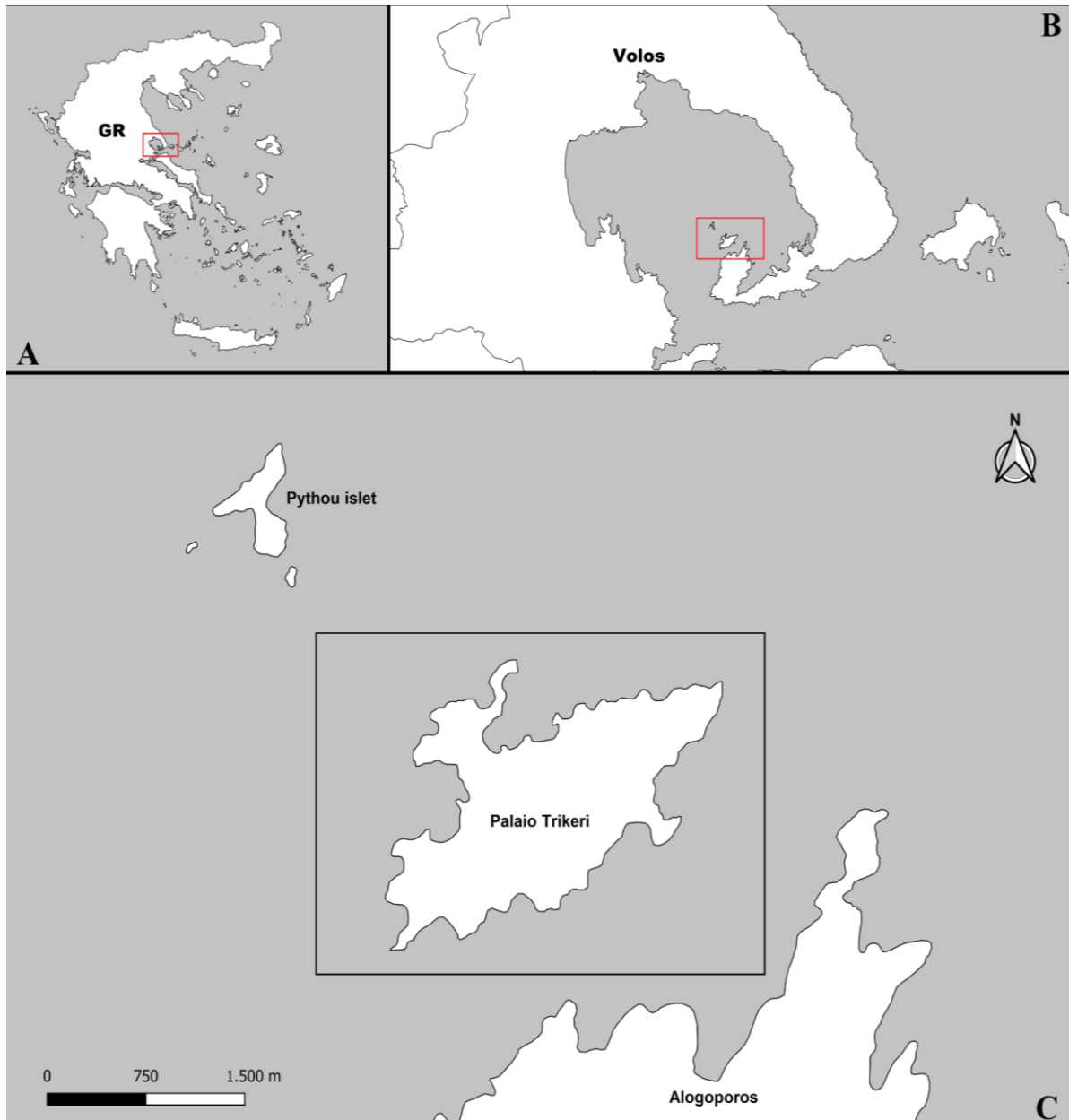


Fig. 1. A. Map of Greece showing the location of the Pagasetic gulf; B. Location of the study area in the Pagasetic gulf; C. Map of Palaio Trikeri island and adjacent areas.

Results

Snake-eyed skink, *Ablepharus kitaibelii* (Bibron & Bory, 1833) (Fig. 2D)

We found a total of 16 individuals across most surveyed localities on the island. It was observed moving or basking in olive groves and grassy, coastal areas, while about half of the observed individuals were found under rocks and artificial cover. An adult was also found trapped in a disposed plastic water bottle in an olive grove near Agios Georgios. It generally appeared to be somewhat scarce and usually active on cloudy conditions.

Kotschy's gecko, *Mediodactylus kotschyi* (Steindachner, 1870) (Fig. 2B)

We found 147 individuals in all habitat types and locations of the island. A large number of individuals were seen basking on olive trees and rocks during the day, while only two adults were found active during the night. Several examples were also found under

rocks and artificial cover such as garbage and roofing tiles. A few individuals were also found under lids and inside wells near the settlements. The Kotschy's gecko was found to be the most abundant reptile species, inhabiting most of the available habitat types on the island.

Mediterranean house gecko, *Hemidactylus turcicus* (Linnaeus, 1758) (Fig. 2C)

A total of 110 individuals were found. The species seems to inhabit most habitat types on the island, although it is most abundant near settlements and abandoned buildings. Most individuals were found under rocks and artificial cover, while a total of just 5 individuals were seen actively foraging on walls during the night. Several individuals were also found under lids and inside wells at the central part of the island. Generally, in syntopy with Kotschy's geckos, although the latter usually prevailed in habitats far from inhabited areas.



Fig. 2. Reptile species photographed on Palaio Trikeri. **A)** Eastern montpellier snake, *Malpolon insignitus*; **B)** Kotschy's gecko, *Mediodactylus kotschyi*; **C)** Mediterranean house gecko, *Hemidactylus turcicus*; **D)** Snake-eyed skink, *Ablepharus kitaibelii*. Photographs by Stamatios Kalogiannis.

Green lizard, *Lacerta* sp.

A single adult lizard belonging to the genus *Lacerta* was briefly seen moving in a grassy meadow near Agia Sophia, but escaped before we were able to make a confident identification. On two occasions, we also heard movement in vegetation that could be attributed to large lizards. Locals also described the existence of large green lizards, although they reported that they were present in very small numbers. A thorough search for green lizards failed to provide further evidence of their presence on the island. It seems that lizards of this genus are rare and perhaps localized on Palaio Trikeri.

Eastern montpellier snake, *Malpolon insignitus* (Geoffroy De St-Hilaire, 1827)

We found a whole 185 cm shed skin of the species inside a shrub in a hilly olive grove about 350 m north of Pythos. The identification was made possible based on the grooved dorsal scales, the narrow frontal plate, the three contiguous scales between nasal and eye and the 17 rows of dorsal scales at mid-body (Di Nicola et al., 2022). We also captured an adult male under a piece of artificial cover near the same area. The specimen had a total length of 160 cm and was going through a shedding cycle (Fig. 2A). A further adult example was briefly seen moving in an olive grove near Agia Sophia, and another adult was seen next to the main road leading to the Monastery at the central part of the island.

Discussion

According to our observations, geckos are by far the most abundant reptiles on Palaio Trikeri. Despite the favorable weather conditions, characterized by ideal temperatures, humidity, sun exposure and occasional rainfall, we were unable to find more snake species or further individuals of *Lacerta* sp. The overall low population densities of large, diurnal reptiles can be explained by a number of threats that we observed on the island. Feral cats, ring-necked pheasants released for sport hunting and wild boars that colonized Palaio Trikeri from the nearby mainland are numerous on the island and are known to often have a negative effect on herpetofauna populations (Graitson & Taymans, 2022; Jolley et al., 2010; Li et al., 2014). In addition, Kotschy's geckos seem to adopt a highly arboreal

lifestyle on the island, perhaps in order to avoid the intense predation pressure. Only a very small number of individuals (< 5) were seen active at ground level, with the greater number of geckos seen basking or foraging high above the ground on olive trees. A similar phenomenon has been reported from the Lichadonia archipelago (Pafilis et al., 2020). Furthermore, the poor nocturnal activity of geckos can be attributed to the lower overnight air temperatures at the time of our survey. It is also worth mentioning that *Mediodactylus kotschy* was recently split into five species (Kotsakiozi et al., 2018). Based on geography, the geckos on Palaio Trikeri should belong to the western clade, *M. kotschy*.

The green lizards on Palaio Trikeri remain to be identified, since both *Lacerta trilineata* (Bedriaga, 1886) and *Lacerta viridis* (Laurenti, 1768) occur in the nearby Pelion peninsula (Valakos et al., 2008). Furthermore, locals mentioned the presence of an additional snake species, called ohiá (Greek: οχιά), which translates to viper and could correspond to *Vipera ammodytes* (Linnaeus, 1758). Moreover, no Testudines were observed during our survey, despite the seemingly suitable habitat and their presence on similar-sized islands in Greece (e.g. Tzoras et al., 2019). The reports by locals of the existence of tortoises on Palaio Trikeri varied and this disaccord could perhaps be attributed to isolated translocations rather than the presence of a breeding population. Last, no species of amphibians were found on the island, and no suitable habitats in the form of standing or flowing water were detected. Upon questioning the locals, they also denied having seen or heard of sightings of amphibians on Palaio Trikeri.

To date, there are no published studies dealing with the fauna of the island. We were also able to observe mice of the genus *Apo-demus*, White-breasted hedgehogs *Erinaceus roumanicus* and a large variety of avifauna, including Long-eared owls *Asio otus*. Clearly, Palaio Trikeri is a terra incognita when it comes to its ecosystem and more interesting species could be recorded in the future.

Conclusions

We conducted the first herpetological survey on the island and confirmed the presence of 5 reptile species, specifically 4 species of lizards and 1 species of snake. The identity of green lizards on

Palaio Trikeri needs to be investigated, while further fieldwork could be carried out in the future in order to uncover the potential presence of additional species.

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References

- Di Nicola, M.R., Faraone, F.P., & Zabbia, T. (2022). An updated dichotomous key to the snakes of Europe. *Basic and Applied Herpetology*, 36, 47-64. doi: [10.11160/bah.238](https://doi.org/10.11160/bah.238)
- Graitson, E., & Taymans, J. (2022). Impacts des lâchers massifs de faisans de Colchide (*Phasianus colchicus* L.) sur les squamates (Reptilia Squamata). *Bulletin de la Société Herpétologique de France*, 180, 1-7. doi: [10.48716/bullshf.180-2](https://doi.org/10.48716/bullshf.180-2)
- Jolley, D.B., Ditchkoff, S.S., Sparklin, B.D., Hanson, L.B., Mitchell, M.S., & Grand, J.B. (2010). Estimate of herpetofauna depredation by a population of wild pigs. *Journal of Mammalogy*, 91(2), 519-524. doi: [10.1644/09-MAMM-A-129.1](https://doi.org/10.1644/09-MAMM-A-129.1)
- Kotsakiozi, P., Jablonski, D., Ilgaz, C., Kumlutaş, Y., Avcı, A., Meiri, S., Itescu, Y., Kukushkin, O., Gvoždík, V., Scillitani, G., Roussos, S.A., Jandzik, D., Kasapidis, P., Lymberakis, P., & Poulakakis, N. (2018). Multilocus phylogeny and coalescent species delimitation in Kotschy's gecko, *Mediodactylus kotschyi*: Hidden diversity and cryptic species. *Molecular Phylogenetics and Evolution*, 125, 177-187. doi: [10.1016/j.ympev.2018.03.022](https://doi.org/10.1016/j.ympev.2018.03.022)
- Lymberakis, P., Pafilis, P., Poulakakis, N., Sotiropoulos, K., & Valakos, E.D. (2018). *The Amphibians and Reptiles of the Aegean sea*. In: Biogeography and Biodiversity of the Aegean, Nicosia, Cyprus: Broken Hill Publishers.
- Li, B., Belasen, A., Pafilis, P., Bednekoff, P., & Foufopoulos, J. (2014). Effects of feral cats on the evolution of anti-predator behaviours in island reptiles: Insights from an ancient introduction. *Proceedings of the Royal Society. B*, 281, 20140339. doi: [10.1098/rspb.2014.0339](https://doi.org/10.1098/rspb.2014.0339)
- Pafilis, P., Triantis, K.A., Anastasiou, I., Proios, K., & Valakos, E.D. (2020). A Gecko archipelago: A herpetological survey on Lichadonisia, a small islet group in Greece. *Herpetology Notes*, 13, 25-28.
- Speybroeck, J., Beukema, W., Dufresnes, C., Fritz, U., Jablonski, D., Lymberakis, P., Martínez-Solano, I., Razzetti, E., Vamberger, M., & Vences, M. (2020). Species list of the European herpetofauna - 2020 update by the Taxonomic Committee of the Societas Europaea Herpetologica. *Amphibia-Reptilia*, 41, 139-189. doi: [10.1163/15685381-bja10010](https://doi.org/10.1163/15685381-bja10010)
- Strachinis, I. (2022). First Insights on the Herpetofauna of Ammouliani Island, Greece. *Ecologia Balkanica*, 14(2), 199-203.
- Tzoras, E., Panagiotopoulos, A., Bourdalas, A., & Drakopoulos, P. (2019). Herpetological notes of Trizonia island in Corinthian Gulf, Greece. *Butlletí de la Societat Catalana d'Herpetologia*, 27, 72-78.
- Valakos, E.D., Pafilis, P., Sotiropoulos, K., Lymberakis, P., Maragou, P., & Foufopoulos, J. (2008). *The Amphibians and Reptiles of Greece*. Frankfurt am Main, Germany: Chimaira.

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