MISSION REPORT

April, 26th to May 2rd 2024

PIM expedition to the Greek Saronic small islands - 2024

Herpetology

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GENERAL DATA

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Abstract / Résumé

RESUME: Du 26 avril au 2 mai 2024, une mission PIM a été organisée en Grèce sur une dizaine d'îlots du Golfe Saronique, permettant d'améliorer les connaissances de ces îles sur différents compartiments biologiques: herpétologie, botanique, avifaune et inverterbrés. Cette mission a notamment permis de signaler pour la première fois la présence de reptiles pour certains îlots inexplorés.

Mots-clés: Reptiles, Flore, Avifaune, Entomologie, Méditerranée, Îles Ioniennes, Grèce.

ABSTRACT: From the 26th of April to the 2nd of May, a PIM naturalist mission was organised in the Saronic gulf in Greece, enabling knowledge improvement of these islands in terms of various biological compartments: herpetology, botany, avifauna and invertebrates. In particular, this mission enabled the presence of reptiles to be reported for the first time on certain unexplored islets.

Key-words: Reptiles, Flora, Avifauna, Entomology, Mediterranean, Ionian Islands,

CONTEXT

L'Initiative pour les Petites Iles de Méditerranée

Initiated in 2006 by the French Conservatoire du Littoral, PIM Initiative coordinates an international program to promote and assist in the management of Mediterranean and macaronesian small islands. PIM Initiative is an international NGO whose aim is to preserve Mediterranean islands of less than 1,000 hectares by implementing practical conservation measures on the ground. As refuges for many endangered species in ecosystems that are sensitive to global change, these small islands are at the heart of the challenge of safeguarding biodiversity. PIM's teams draw on a large network of experts and managers from all over the Mediterranean to support the creation and development of island protected areas, using an integrated approach that promotes:

- Improving knowledge of island ecosystems
- Setting up co-management systems for protected sites
- Capacity-building for managers
- Ecological restoration of degraded natural environments
- Communication and advocacy for better protection of these areas.

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Introduction

While the flora and fauna of the larger Greek Saronic Gulf islands is comparatively well known, there is almost complete absence of biological information regarding the numerous islets in the region. The objective of the Mission PIM - Greece 2024 was to improve knowledge of the flora and fauna of the small islands located in an area between western Attika and the coast of Northeastern Peloponnese (Map 1). Given the high biological value of these small islets, in conjunction with the general lack of knowledge regarding their species communities, resulted in us almost completely sidestepping the larger islands of the region (Aegina, Salamina, Angistri).

Map 1 - Study area Mission PIM - Greece 2024, Saronic islands.

Methods

We quantified the herpetofauna of the focal islands during targeted field surveys conducted by expedition members in the period of April 26-May 02 2024. We utilized the Visual Encounter Survey (VES) technique (Crump & Scott, 1994) which involves time-constrained visual surveys focusing on species-appropriate reptile refugia. Whenever possible, presence of a species was documented through photographs. While the we focused on detection of live individuals, occasionally indirect evidence was used to also document species presence, including calls (geckos, anurans) or sloughted snake skins.

Occasional samples (e.g. snake sloughs) were collected under authorization from the Greek government (see general mission report) and deposited in the National & Kapodistrian University of Athens collections.

Results

The expedition commenced on April 26 from the marina of Nea Peramos (W. Attika) under good weather conditions (sunny, 3-4Bf winds). While sailing to the study area we passed by Salamina island and associated islets (e.g. Makronisos (Fig. 1), Revythousa (Fig. 2), Kanakia) without stopping. Our first surveys focused instead on the Lagophytonissia islet cluster between Aegina and Salamina. Our first stop was Lagousaki islet (Fig. 3–4), north of Aegina. During our stay (approx. 70 minutes) we were able to document *Chalcides ocellatus* (7 individuals) (Fig. 5), as well as *Mediodactylus kotschyi* (32) (Fig. 6).

Fig. 1. The unsurveyed islet of Makronisos, off the coasts of Attika and Salamina

Fig. 2. Revythousa Island is nearly completely occupied by natural gas storage facilities and was not surveyed

Fig. 3. Lagousaki Islet

Fig. 4. Lagousaki Islet-view of the central plateau with *Pistacea lentiscus* thickets

Fig. 5. Adult *Chalcides ocellatus* on Lagousaki Islet

Fig. 6. Adult *Mediodactylus kotschyi* on Lagousaki Islet

The next site visited was tiny islet of Gaidaros (Fig. 7–8) for about 25 minutes, which however produced no records.

Fig. 7. Gaidaros Islet-Overview

Fig. 8. Gaidaros. The central plateau of the islet

The third islet we visited was Lagousa (Fig. 9–10), for about 90 minutes, with *Chalcides ocellatus* (11 indiv.) (Fig. 11) and *Mediodactylus kotschyi* (4 indiv.) (Fig. 12) encountered there.

Fig. 9. Lagousa Islet

Fig. 10. Lagousa Islet

Fig. 11. Adult *Chalcides ocellatus* on Lagousa Islet

Fig. 12. Adult *Mediodactylus kotschyi* on Lagousa Islet *in situ*

The last islet for the first day where visited at late evening was Makronisi (Fig. 13–14) for about 60 minutes. Makronissi is a flat, low, longish island, without much elevational profile, and coverd by a mat of dense halophilous vegetation. There we were able to document *Chalcides ocellatus* (2 indiv.) as well as *Mediodactylus kotschyi* (7 indiv.) (Fig. 15–16). Following the completion of field surveys we returned to Aegina where we spend the night in the main port.

Fig. 13. Makronisi Islet

Fig. 14. Makronisi Islet

Fig. 15. Adult *Mediodactylus kotschyi* on Makronisi Islet

Fig. 16. Adult *Mediodactylus kotschyi* on Makronisi Islet *in situ*

On April 27 in the morning we visited the islet of Metopi (Fig. 17–22), located between Aegina and Angistri, for about 2,5 hours. Metopi is a largish, very flat, low island consisting of sedimentary rocks that has never been visited before by herpetologists. The islet is covered mainly by ruderal vegetation on abadoned grain fields, coastal heath and elements of maquis, as well as multiple old, mostly damaged structures (dry stone walls, chapel, cisterns and houses); on the west side there is a small lagoon with associated salt marsh areas. Reptile species observed on the island were *Chalcides ocellatus* (13 indiv.) (Fig. 23), *Hemidactylus turcicus* (4 indiv.) (Fig. 24); also, one a dead *Caretta caretta* (Fig. 25) was observed on the beach, as well as several snake sloughs. Based on scalation characters we concluded that two of the sloughs belonged to *Platyceps najadum* (Fig. 26) and four to *Hierophis gemonensis*. – however these records require additional confirmation for this island. All snake sloughs were collected for future studies.

Fig. 17. Metopi Islet

Fig. 18. Halophytic coastal heath on Metopi Islet

Fig. 19. Saltmarsh on Metopi Islet

Fig. 20. The south coast of Metopi Islet

Fig. 21. Abadoned old buildings on Metopi Islet

Fig. 22. Low dry-stone wall on Metopi Islet

Fig. 23. Adult *Chalcides ocellatus* on Metopi Islet *in situ*

Fig. 24. Adult *Hemidactylus turcicus* on Metopi Islet *in situ*

Fig. 25. A dead *Caretta caretta* on Metopi Islet

Fig. 26. A snake slough on Metopi Islet

While sailing to the next survey site (Plateia Porou) we passed by the Petrokaravo rocks (Fig. 27), unfortunately without being able to stop. Plateia was a smallish, flat rocky island with a dense seabird colony and covered by nitrophilous vegetation. Once on Plateia, we surveyed the islet (Fig. 28–29) for about 50 minutes. The island was notable for its dense population of *Mediodactylus kotschyi* (54 indiv.) (Fig. 30–31); *Ablepharus kitaibelii* (2 indiv.) was also present.

Fig. 27. Petrokaravo Rocks

Fig. 28. Plateia Islet, Poros

Fig. 29. Plateia Islet, Poros

Fig. 30. Adult *Mediodactylus kotschyi* on Plateia Islet, Poros

Fig. 31. Adult *Mediodactylus kotschyi* on Plateia Islet, Poros

In the afternoon we visited the islet of Mpisti (Fig. 32–33) just NE of larger Poros Island where we stayed for about 60 minutes. There we surprisingly observed two *Ophiomorus punctatissimus* (Fig. 34), a greek endemic skink species. In addition, 15 *Mediodactylus kotschyi* (Fig. 35) and possibly *Lacerta trilineata* (2–3 indiv.) were also encountered.

In the evening, we arrived at the port of Poros where we spent four nights, due to strong winds and inclement seas. As a result, over the next few days we were only able to visit Poros (3 surveys) as well as several small nearby islets situated in the protected narrows between Poros port and the Peloponnesian mainland.

Fig. 32. Mpisti Islet

Fig. 33. Mpisti Islet

Fig. 34. Adult *Ophiomorus punctatissimus* on Mpisti Islet

Fig. 35. Adult *Mediodactylus kotschyi* on Mpisti Islet

On the morning of the April 28 we had time to survey only two islets. The first islet was the Galenthi (Fig. 36–37), a tiny but so dense-vegetated island, on which we were stayed for 45 minutes. During this visit, only three individuals of *Hemidactylus turcicus* were found. The second surveyed islet of the same day was Lazareto (Fig. 38–39), a very small but so interesting island since on it we found four lizard species. During the 50 minutes we spent on the islet, we recorded nine individuals of *Mediodactylus kotschyi* (Fig. 40), two *Hemidactylus turcicus*, two *Chalcides ocellatus* (Fig. 41) and the big surprize is one *Ophiomorus punctatissimus*, the second record in this expedition. Then, the approach and attempt to jumped on Modi Islet failed (Fig. 42).

Fig. 36. Galenthi Islet

Fig. 37. Galenthi Islet

Fig. 38. Lazareto Islet

Fig. 39. Lazareto Islet

Fig. 40. Adult *Mediodactylus kotschyi* on Lazareto Islet *in situ*

Fig. 41. Adult *Chalcides ocellatus* on Lazareto Islet

Fig. 42. Modi Islet

The afternoon of the day we spent it in a three-hours survey in the central part of the island of Poros (port to Agios Efstathios chapel, Fousa and Ancient Kalavria) (Fig. 43–46). While walking towards the Ancient Kalavria, the following reptile species were observed: *Mediodactylus kotschyi* (15) (Fig. 47–48), *Hemidactylus turcicus* (2) (Fig. 49–50) and *Chalcides ocellatus* (4) (Fig. 51), as well as the only amphibian species of this expedition, one roadkill adult individual of *Bufotes viridis* (Fig. 52).

Fig. 43. The port of Poros Island

Fig. 44. Pine forest on Poros Island

Fig. 45. Terraced olive grove on Poros Island

Fig. 46. The ruins of the ancient city of Kalavria on Poros Island

Fig. 47. Adult *Mediodactylus kotschyi* on Poros Island *in situ*

Fig. 48. Adult *Mediodactylus kotschyi* on Poros Island *in situ*

Fig. 49. Adult *Hemidactylus turcicus* on Poros Island *in situ*

Fig. 50. Young *Hemidactylus turcicus* on Poros Island

Fig. 51. Adult *Chalcides ocellatus* on Poros Island

Fig. 52. Roadkill *Bufotes viridis* on Poros Island

The next morning, April 29, we achieved to jumped on only one islet as the wind started picking up early. We visited the Mpourtzi Islet (Fig. 53–55) and surveyed it for approximately 2 hours. On this small islet with a 19th century castle we found the following four lizard species: *Mediodactylus kotschyi* (22) (Fig. 56–57), *Hemidactylus turcicus* (2), *Chalcides ocellatus* (2) (Fig. 58) and possibly *Lacerta trilineata* (2). The most unexpected finding on this islet was the colour morph of *Lacerta trilineata*; two large dark grey lacertids were quickly hide in the castle walls without having time to confirm the species, we guess that these lizards belongs to this species because of the careful observation of their tails and big size.

Fig. 53. Mpourtzi Islet

Fig. 54. Mpourtzi Islet

Fig. 55. Mpourtzi Islet

Fig. 56. Adult *Mediodactylus kotschyi* on Mpourtzi Islet *in situ*

Fig. 57. Adult *Mediodactylus kotschyi* on Mpourtzi Islet *in situ*

Fig. 58. Adult *Chalcides ocellatus* on Mpourtzi Islet

The afternoon of the same day we spent it in a three-hours survey in the southern-central to eastern part of the island of Poros (port to Monastery of Zoodochos Pigi Monastery) (Fig. 59–60). While walking towards the Monastery seven individuals of *Mediodactylus kotschyi* and one individual of *Ablepharus kitaibelii* were observed.

Fig. 59. Riverine and maquis vegetation on Poros Island

Fig. 60. The Zoodochos Pigi Monastery surrounded by dense vegetation on Poros Island

On the next day, April 30, high prevailing winds were prohibitive for sailing and approaching any offshore islets. Instead, we conducted a 5-hour long survey, on the western part of Poros Island (port, Russian Dockyard, Biological Treatment of Waste Water to Foussa Plateau) (Fig. 61–64). While walking through several habitats five individuals of *Mediodactylus kotschyi* (Fig. 65) and one *Hemidactylus turcicus* were observed. Furthermore one *Chalcides ocellatus* (Fig. 66) and one *Platyceps najadum* (Fig. 67) were encountered dead on the road, while one nest with hatched eggs of *Testudo marginata* was also discovered (Fig. 68).

Fig. 61. Olive grove and maquis on SW Poros Island

Fig. 62. The Foussa Plateau on Poros Island

Fig. 63. Maquis with *Juniperus turbinata* vegetation on Poros Island

Fig. 64. *Pinus halepensis* forest on Poros Island

Fig. 65. Adult *Mediodactylus kotschyi* on Poros Island *in situ*

Fig. 66. Roadkill *Chalcides ocellatus* on Poros Island

Fig. 67. Roadkill *Platyceps najadum* on Poros Island

Fig. 68. Hatched egg of *Testudo marginata* on Poros Island

The next day, May 01, the wind diminished, and with calmer seas we were able to leave Poros and continue our mission towards nearby islets. First, a 15-minute-long morning visit was paid to the tiny islet of Daskalio (Fig. 69–71), located just 130 meters off the southwestern shore of Poros. The visit to this islet, dominated by the chapel of The Assumption of the Virgin Mary and a few planted pine trees, produced only two individuals of *Hemidactylus turcicus* (Fig. 72).

Fig. 69. Daskalio Islet

Fig. 70. Daskalio Islet

Fig. 71. Daskalio Islet

Fig. 72. Adult *Hemidactylus turcicus* on Daskalio Islet *in situ*

The next visit (over 60 minutes) was to the islet of Dorousa (Fig. 73–78), located ca. 500m W of Agkistri Island (itself situated W of Aegina). The island has a relatively steep profile, consisting of rough limestone with only shallow soil layers and is covered by an open *P. lentiscus* and *J. turbinata* maquis. There are also a few pine trees as well as abandoned acricultural terraces and drystone walls. Despite the comparatively substantial size of the islet and the presence of several habitat types, the only reptile species we encountered were five individuals of *Chalcides ocellatus* (Fig. 79–80).

Fig. 73. Dorousa Islet

Fig. 74. Dorousa Islet

Fig. 75. Dorousa Islet

Fig. 76. Dorousa Islet

Fig. 77. Dorousa Islet

Fig. 78. Dorousa Islet

Fig. 79. Adult *Chalcides ocellatus* on Dorousa Islet *in situ*

Fig. 80. Young *Chalcides ocellatus* on Dorousa Islet

Next we visited Kyra Islet (Fig. 81–84) located ca. 4km W of Angistri, where we stayed on for 75 minutes. This larger island was ecologically similar to Doroussa consisting of a substrate of rough, fissured limestone. Vegetation cover was also open *Pistacea* and *Juniperus* maquis interspersed with patches of xerophytic phrygana, copses of *P. halepensis,* and abandoned terraced fields with collapsing drystone walls. Against expectations and despite the comparably large size of the islet, seemingly favorable atmospheric conditions, and careful search, no reptiles were observed.

Fig. 81. Kyra Islet

Fig. 82. Kyra Islet

Fig. 83. Kyra Islet

Fig. 84. Kyra Islet

Next the small islet of Spalathronisi (Fig. 85–87) was visited for about 60 minutes. This steep, limestone island, lacked substantial soil layers and was covered by open xerophytic vegetation cover of low bushes. During our visit, we were able to document only three individuls of *Mediodactylus kotschyi*.

Fig. 85. Spalathronisi Islet

Fig. 86. Spalathronisi Islet

Fig. 87. Spalathronisi Islet

In the afternoon we sailed north to the Diaporia island complex located between Salamina, Aegina and the peloponnesian mainland in the west. The first islet we surveyed was Ledou, the southernmost islet of the western Diaporia cluster (dominated by the larger Agios Ioannis and Agios Thomas islands) (Fig. 88–89). Ledu is a small, low, flat limestone island consisting of the eastern main section and a long, narrow ridge in the west connected by a low neck and forming a deep protected SE-facing bay. Ledou is covered by only an open, low *P. lentiscus* bushland, and since the island is ungrazed, these bushes are complemented by a dense interspersed cover of seasonal grasses. We encountered 24 individuals of *Mediodactylus kotschyi* (Fig. 90) within approx. 50 minutes indicative of a high population density for this species.

Fig. 88. Ledou Islet - SE-facing bay. In the foreground fossil beach as the result of eustatic sea level change

Fig. 89. Ledou Islet. P*. lentiscus* bushes with interspersed ungrazed grassland

Fig. 90. Adult *Mediodactylus kotschyi* on Ledou Islet

The team spent the night off Tragonisi islet, located just south of the larger isle of Agios Thomas, so we took advantage of this proximity and the last hours of daylight to survey Agios Thomas (Fig. 91–94) for approx. 75 minutes. Agios Thomas is one of the largest islets in the Saronic Gulf, consisting of hard limestone substrate and vegetated predominately by tall *P. lentiscus* and *J. turbinata* maquis. However the vegetation has also many openings including abadoned agricultural land and associated decaying human structures. These include various collapsing drystone terraces, as well as abandoned buildings, cisterns and an old chapel, all in various stages of disrepair. The island is used as a nesting site by hundred of pairs of *Larus michahellis* but is also grazed by many feral goats. During our survey, we encountered only *Mediodactylus kotschyi,* documented by four individuals (Fig. 95–96). However, we expect that further surveys will document additional reptile taxa, including snakes, living on this island.

Fig. 91. Agios Thomas - View from the east, with the Peloponnesian mainland in the background

Fig. 92. Agios Thomas. Limestone coastline, showing the inhibitory effects of salt spray on the vegetation

Fig. 93. Agios Thomas – view of the central plateau used by hundreds of *Larus michahellis* gulls

Fig. 94. Agios Thomas – tall *Juniperus turbinata* maquis

Fig. 95. Adult *Mediodactylus kotschyi* on Agios Thomas Islet *in situ*

Fig. 96. Adult *Mediodactylus kotschyi* on Agios Thomas

On May 02, the last day of the expedition, we started in the early morning with a 35 minute-long survey on the islet of Tragonisi (Fig. 97–99) near which we had spent the night before. The island consists of a raised central block of hard, rough, white limestone, flanked on the N side by two eroding skirts of alluvial material that had been modified through terracing for agricultural use in the past. Much of the taller vegetation is restricted to the cooler, N-facing slope and consists of sparse but tall, tree-like *J. turbinata*. We were able to document about 21 adult individuals of *Mediodactylus kotschyi* (Fig. 100–101), as well as 2 adult individuals of *Hierophis gemonensis* (Fig. 102–103), almost all of them encountered basking.

Fig. 97. Tragonisi Islet. The lower brown areas along the coast denote the alluvial material

Fig. 98. Tragonisi Islet -view of the central limestone core of the island

Fig. 99. Tragonisi Islet. - *J. turbinata* bushes with dead lower branches indicative of damage by past lifestock overgrazing

Fig. 100. A well-camouflaged adult *Mediodactylus kotschyi* on Tragonisi Islet *in situ*

Fig. 101. Adult *Mediodactylus kotschyi* on Tragonisi Islet *in situ*

Fig. 102. Adult *Hierophis gemonensis* on Tragonisi Islet *in situ*

Fig. 103. Adult *Hierophis gemonensis* on Tragonisi Islet *in situ*

Then, after sailing around the islets of Agios Ioannis (Fig. 104–105) and Prasou (Fig. 106) without stopping, we landed on the small islet of Moladi (Fig. 107–108). This flat, sedimentary rock islet rises gently from north to south where it terminates in a steep drop-off. The vegetation is low and consists predominantely of a dense halophytic heath. During a 30 minute survey we encountered two individuals of *Mediodactylus kotschyi,* as well as three *Chalcides ocellatus* (Fig. 109).

Fig. 104. Agios Ioannis Islet

Fig. 105. Agios Ioannis Islet

Fig. 106. Prasou Islet. The islet is being used by an aquaculture operation

Fig. 107. Moladi Islet

Fig. 108. Moladi Islet. Landing party surveying the islet

Fig. 109. Young *Chalcides ocellatus* on Moladi Islet

Following Molaid, we continued sailing towards the east and approached an another small islet cluster of four islets of which we visited three (Little Kourmoulou, Anagnostis, Ypsili); Large Kourmoulou (Fig. 110) was the islet we skipped due to lack of time. All of these islands were ecologically very similar, consisting of hard, fissured limestone substrate and general lack of substantial soil cover. Vegetation across the islets was also similar, with sparse, low, xerophytic, summer deciduous cover interspersed with low, evergreen, *P. lentiscus* mats. On Little Kourmoulou, the first islet we visited (Fig. 111–112), we searched for reptiles for 30 minutes. The search produced thirteen individuals of *Mediodactylus kotschyi* (Fig. 113), as well as five *Chalcides ocellatus*.

Fig. 110. Large Kourmoulou Islet

Fig. 111. Little Kourmoulou Islet

Fig. 112. Little Kourmoulou Islet

Fig. 113. Adult *Mediodactylus kotschyi* on Little Kourmoulou Islet *in situ*

We then continued to the adjcent islet of Anagnostis (Fig. 114–116) which we visited for 25 minutes and where only two individuals of *Mediodactylus kotschyi* (Fig. 117) were observed. Lastly, we visited Ypsili, the biggest islet of this insular cluster (Fig. 118–119). The survey on Ypsili lasted about 40 minutes, producing three individuals of *Mediodactylus kotschyi* and one *Chalcides ocellatus*.

Fig. 114. Anagnostis Islet

Fig. 115. Anagnostis Islet

Fig. 116. Anagnostis Islet

Fig. 117. Adult *Mediodactylus kotschyi* on Anagnostis Islet *in situ*

Fig. 118. Ypsili Islet

Fig. 119. Ypsili Islet

Following the survey of the Ypsili cluster, we travelled to Plateia (Diaporia), the last island to be surveyed before the end of the expedition. On the way there, we passed Stachtoroi Islet, which was not surveyed due to lack of time (Fig. 120–121) (Fig. 122–123). Upon landing on Plateia (Diaporia) we surveyed the island's habitats, which were unusually sparse for approx. 40 minutes. We encountered predominately *Chalcides ocellatus* (13 individuals) (Fig. 124–125) primarily found under varius refugia, while *Mediodactylus kotschyi*, much less abundant (2 indiv.), were found only under stones. Last but not least, we also discovered on the beach a dead adult individual of *Caretta caretta* (Fig. 126).

Fig. 120. Stachtoroi Islet. View from the NE

Fig. 121. Stachtoroi Islet. View from the NW

Fig. 122. Plateia (Diaporia complex) Islet

Fig. 123. Plateia (Diaporia complex) Islet

Fig. 124. Young *Chalcides ocellatus* on Plateia (Diaporia complex) Islet. Close-up of the head

Fig. 125. Young *Chalcides ocellatus* on Plateia (Diaporia complex) Islet. Dorsal view

Fig. 126. A dead *Caretta caretta* on Plateia (Diaporia complex) Islet

After the visit to Plateia Islet (Diaporia), we passed by Kordeliaris Islet (in the Lagouses cluster) (Fig. 127) without stopping, and we sailed to return to the starting point, at the marina of Nea Peramos where this mission came to an end.

Fig. 127. Kordeliaris Islet

Discussion

In total we visited and surveyed for their herpetofauna 23 Saronic Gulf islands, including one larger island (Poros) and 22 islets (Lagousaki, Gaidaros, Lagousa, Makronisi, Metopi, Plateia Porou, Mpisti, Galenthi, Lazareto, Mpourtzi, Daskalio, Dorousa, Kyra, Spalathronisi, Ledou, Agios Thomas, Tragonisi, Moladi, Little Kourmoulou, Anagnostis, Ypsili, Plateia Diaporia). With the exception of Poros, which had been visited before, the PIM Mission represented the first time these islands were surveyed formally. The visit resulted in the documentation of new species occurrences for all islands except Gaidaros and Kyra, which were found to be devoid of herpetofauna (Table 1). As such, the PIM mission represented a critical step towards elucidating the composition and establishing baseline knowledge of the herpetofauna of the Saronic Gulf islands. In total we recorded 11 herpetofauna species (1 anuran amphibian, 1 turtle, 1 tortoise, 2 geckoes, 1 lacertid, 3 skinks and 2 colubrids).

On the large island of Poros, three surveys documented a total of seven herpetofauna species (one anuran amphibian and six reptiles). Six of these species had already been known for the island through the work of previous researches (Werner, 1938; Wettstein, 1953; Clark, 1967; Clark, 1968; Clark, 1970; Clark, 1972; Clark, 1989) and we confirmed their presence, while *Hemidactylus turcicus* was a new record for the island. The total number of confirmed reptiles present on Poros Island thus increases from eight to nine taxa. Previously known herpetofauna species of the island of Poros which we did not encounter during the PIM survey are the following: *Pelophylax kurtmuelleri*, *Lacerta trilineata*, *Zamenis situla* and *Malpolon insignitus* (Clark, 1967; Clark, 1968; Clark, 1970; Clark, 1989), as well as *Elaphe quatuorlineata* whose presence is conjectured but which has never been confirmed.

Excluding the herpetofauna of Poros that has been previously studied, as well as the marine taxon of *Caretta caretta*, a total of eight species were observed for the first time on the 20 islets harboring herps. Arguably the most surprising and important records were the skink species *Ophiomorus punctatissimus* which was found on two islets (Mpisti, Lazareto). This skink is a greek steno-endemic species, that is thinly distributed across parts of the Peloponnese and the offshore islands of Elafonisos, Dokos and Kythera (Valakos et al., 2008; Pafilis and Maragou, 2020). Our observations constitute the first records of the species in Saronikos Gulf islands. The other seven species encountered are common and distributed over most of the country. The colubrid snake *Hierophis gemonensis* is newly confirmed on Tragonisi Islet, while remaining unconfirmed in Metopi Islet. The distribution of the species was previously known only from the largest Saronic islands (Valakos et al., 2008; Pafilis and Maragou, 2020). Similarly, the second colubrid species,

Platyceps najadum, also remains unconfirmed on Metopi Islet, while its distribution in the region has previously been established only for the very largest Saronic islands (Valakos et al., 2008; Pafilis and Maragou, 2020). The lacertid lizard *Lacerta trilineata* was possibly observed on two islets (Mpisti, Mpourtzi) without however having sufficient time to confirm the species with certainty due to its rapid escape into ground cover. The distribution of the species is also known from the largest Saronic islands (Valakos et al., 2008; Pafilis and Maragou, 2020). The skink species *Ablepharus kitaibelii* was recorded only in one islet (Plateia Porou). The species is generally very common, is distributed throughout the Greece, and was previously known from the largest Saronic islands (Valakos et al., 2008; Pafilis and Maragou, 2020). The gecko H*emidactylus turcicus* was the third most common species recorded on islets. It was found on five islets (Metopi, Galenthi, Lazareto, Mpourtzi, Daskalio) with 2 to 4 individuals encountered on each of them. The species is generally common and widespread, being distributed throughout the Greece and is previously known from the largest Saronic islands (Valakos et al., 2008; Pafilis and Maragou, 2020).

The two most common species of the islets were *Mediodactylus kotschyi* and *Chalcides ocellatus*, with presence rates of 80% and 55% respectively on the total of the islets. Both species are widespread in many mainland and insular areas of Greece with the first species more distributed and the second limited to the southern Greece and several islands, as well as both are known from the largest Saronic islands (Valakos et al., 2008; Pafilis and Maragou, 2020).

We found the gecko *Mediodactylus kotschyi* in 16 islets (Lagousaki, Lagousa, Makronisi, Plateia Porou, Mpisti, Lazareto, Mpourtzi, Spalathronisi, Ledou, Agios Thomas, Tragonisi, Moladi, Little Kourmoulou, Anagnostis, Ypsili, Plateia Diaporia) in populations ranging from 2 to 54 individuals ($\bar{x}$=14). The largest populations were found on the islets of Plateia Porou, Lagousaki, Ledou, Mpourtzi, and Tragonisi, with 54, 32, 27, 24, 22, and 21 individuals respectively, while in Metopi and Dorousa islets the species was no found. With 244 individuals counted in all islands, *Mediodactylus kotschyi* it was the most common reptile species of the expedition.

The second most common species, *Chalcides ocellatus*, was found in 11 islets (Lagousaki, Lagousa, Makronisi, Metopi, Lazareto, Mpourtzi, Dorousa, Moladi, Little Kourmoulou, Ypsili, Plateia Diaporia) in populations ranging from 1 to 13 individuals ($\bar{x}$=5,75). The largest populations were found on the islets of Metopi, Plateia Diaporia, and Lagousa, with 13, 13, and 11 individuals respectively, while in Plateia Porou, Mpisti, Spalathronisi, Ledou, Agios Thomas, Tragonisi and Anagnostis islets the species was no found. With 69 individuals counted in all islands, *Chalcides ocellatus* it was the second most common reptile species of the expedition.

Taking a first look at the populations and the presence of the two more common species of the islands (Chart 1), it becomes clear that there is a correlation between them which is probably due to their interspecific interactions.

The two species were found in sympatry on ten islets (Lagousaki, Lagousa, Makronisi, Lazareto, Poros, Mpourtzi, Moladi, Little Kourmoulou, Ypsili, Plateia Diaporia). With a focused look it becomes obvious how large populations of *Mediodactylus kotschyi* exist on islets where *Chalcides ocellatus* is absent or has low populations, while on the contrary, islets where *Chalcides ocellatus* are numerous, *Mediodactylus kotschyi* has low populations or is absent. This fact leads us to the conclusion that *Chalcides ocellatus* maybe is a predator of *Mediodactylus kotschyi*. If the observed pattern of presence–absence and population density between the two species on the islets is due to the predator–prey relationship, then further research is needed to confirm it, as well as more focused research on the relationships of other sympatry species.

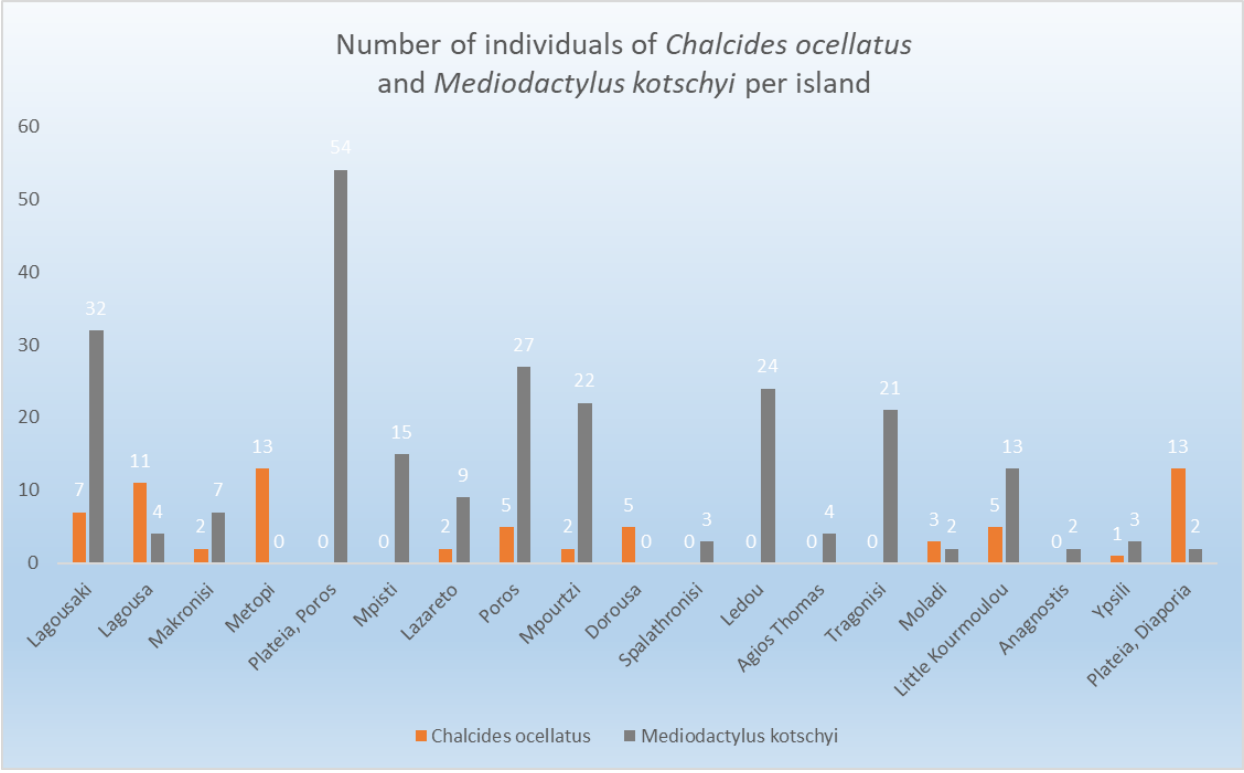

Chart 1. Number of individuals of the two most distributed and numerous species per islet

The islands with the most terrestrial herpetofauna species were Poros (seven species), Metopi (four species), Mpourtzi (four species), Lazareto (four species), and Mpisti (three species), while two species were found on nine islets and one species were found on seven islets; lastly, two islets failed to support any herps.

Presently, confirmation of preliminary observation made here is needed for all snake species on Metopi Islet, for the presence of *Lacerta trilineata* on Mpisti Islet, and for the colouration pattern of *Lacerta trilineata* on Mpourtzi Islet.

Additional surveys are required for the islets of Dorousa and Agios Thomas as they were comparatively large and diverse, and where further field effort it needed to investigate all habitats adequately. Similarly, for Kyra Islet, where surprisingly, no reptiles were observed, additional surveys are needed. Priority for careful survey should also be given to those islets which we were unable to visit including Modi, Petrokaravo, Agios Petros (Petronisi), Trachili, Kordeliaris, Agios Ioannis, Large Kourmoulou, Stachtoroi and Prasou as well as the western islands of Ovrios and Plateia Korinthou.

In addition, for Poros specifically, targeted surveys for expected, but not yet reported, species need to focus on *Ophiomorus punctatissimus* and *Hierophis gemonensis*.

Table 1. List of Islands for which new data are available after the Mission PIM – Greece 2024.

Island	Species	PIM Mission
Lagousaki	*Chalcides ocellatus* *Mediodactylus kotschyi*	First time records
Gaidaros	-	No species of herpetofauna found
Lagousa	*Chalcides ocellatus* *Mediodactylus kotschyi*	First time records
Makronisi	*Chalcides ocellatus* *Mediodactylus kotschyi*	First time records
Metopi	*Chalcides ocellatus* *Hemidactylus turcicus* *Platyceps najadum* ? *Hierophis gemonensis* ? *Caretta caretta*	First time records
Plateia Porou	*Mediodactylus kotschyi* *Ablepharus kitaibelii*	First time records
Mpisti	*Mediodactylus kotschyi* *Ophiomorus punctatissimus* *Lacerta trilineata* ?	First time records
Galenthi	*Hemidactylus turcicus*	First time records
Lazareto	*Chalcides ocellatus* *Ophiomorus punctatissimus* *Mediodactylus kotschyi* *Hemidactylus turcicus*	First time records
Poros	*Bufotes viridis* *Chalcides ocellatus* *Ablepharus kitaibelii* *Mediodactylus kotschyi* *Hemidactylus turcicus* *Platyceps najadum* *Testudo marginata*	*Hemidactylus turcicus* was recorded here for the first time for Poros
Mpourtzi	*Chalcides ocellatus* *Mediodactylus kotschyi* *Hemidactylus turcicus* *Lacerta trilineata* ?	First time records
Daskalio	*Hemidactylus turcicus*	First time record
Dorousa	*Chalcides ocellatus*	First time record
Kyra	-	No reptile/amphibian species encountered
Spalathronisi	*Mediodactylus kotschyi*	First time record

Ledou	*Mediodactylus kotschyi*	First time record
Agios Thomas	*Mediodactylus kotschyi*	First time record
Tragonisi	*Mediodactylus kotschyi* *Hierophis gemonensis*	First time record
Moladi	*Chalcides ocellatus* *Mediodactylus kotschyi*	First time record
Little Kourmoulou	*Chalcides ocellatus* *Mediodactylus kotschyi*	First time record
Anagnostis	*Mediodactylus kotschyi*	First time record
Ypsili	*Chalcides ocellatus* *Mediodactylus kotschyi*	First time record
Plateia, Diaporia	*Chalcides ocellatus* *Mediodactylus kotschyi* *Caretta caretta*	First time record

Clark, R. J. (1967): Herpetofauna of the islands of the Argo-Saronic Gulf, Greece. ***Proceedings of the California Academy of Sciences*** **(Ser. 4) 35: 23–36. California Academy of Sciences 35: 23–35.**

Clark, R. J. (1968): A collection of snakes from Greece*. British Journal of Herpetology* 4(3): 45–48.

Clark, R. J. (1970): A further contribution to the herpetofauna of the islands of the Argo-Saronic Gulf, Greece. ***British Journal of Herpetology*** **4: 185–188.**

Clark, R. J. (1972): New locality records for Greek reptiles. ***British Journal of Herpetology*** **4(11): 311–312.**

Clark, R. J. (1989): A check list of the herpetofauna of the Argo-saronic Gulf district, Greece. ***British Herpetological Society Bulletin*** **28: 8–24.**

Pafilis, P, Maragou, P. (2020): Atlas of Amphibian and Reptiles of Greece. Broken Hill Publishers Ltd, Nicosia, 231 pp.

Valakos, E. D., Pafilis, P., Sotiropoulos, K., Lymberakis, P., Maragou, P., Foufopoulos, J. (2008): ***The Amphibians and Reptiles of Greece*****. Edition Chimaira, Frankfurt am Main, Germany, 482 pp.**

Werner, F. (1938): Die Amphibien und Reptilien Griechenlands. – ***Zoologica*** **35: 1–117.**

Wettstein, O.v. (1953): Herpetologia aegaea. ***Sitzungsberichte der Österreichischen Akademie der Wissenschaften*****. 162: 651–833.**

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