BATS (CHIROPTERA) OF SCHINIAS - MARATHON NATIONAL PARK, GREECE

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Abstract

Bats (Chiroptera) were studied in Schinias - Marathon National Park (Attica, Greece) in the years 2016-2017, as part of a project from Schinias - Marathon National Park Management Body. In total, 9 species of bats were recorded belonging to the Families Rhinolophidae (1), Vespertilionidae (6), Miniopteridae (1) and Molossidae (1), plus another species based on a previous unpublished record (10 species in total).

Introduction

The bats (Chiroptera) are a very interesting group of mammals from a conservation point of view, with 12 of the species that can be found in Greece being included in Annex II of the Habitats Directive and the rest placed in Annex IV. They are the second most numerous mammalian order (after rodents), and the only ones capable of powered flight. Many species are considered threatened, mainly due to habitat degradation, disturbance at roosts, pesticides and wind turbines (Findley 1995, Hundt 2012, Dietz & Kiefer 2016).

The Schinias - Marathon National Park is an Important Bird Area, as well as Site of Community Interest (Portolou et al. 2009, Stavrakas 2009). Although there are many data on the fauna and flora of the area, there is no published information on the bats of the Schinias wetland area, although at least some old data exist only for the wider area (Attica) (Hanák et al. 2001).

Study area and methods

The Schinias - Marathon National Park (38°8’ 44.04”N, 24°1’ 38.43”E), consists of a coastal freshwater wetland, coastal pine forest, maquis and farmland (Portolou et al. 2009) (Fig. 1). The Cynosure peninsula, in the southeastern part of the study area, includes mainly maquis and rocky areas.

Bats were recorded with the following methods: a) Recording of bat ultrasounds with bat recorders and analyzing these sounds to identify the species. We used two Batcorder 3 by ecoObs for point
sampling and a Batlogger M by Elekon AG for transects. The latter was also used for the collection of reference calls from the bats captured in the nets. Sequences were analyzed using bcAnalyze 2.0 and BatExplorer 2.0. b) Catching of bats with special nets, particularly near water. c) Search in caves and other potential bat roosts (including search around Cynosure peninsula by boat). Fieldwork was conducted in the following days: 26/10/2016, 29/01/2017, 11/04/2017, 30/06/2017, 7/07/2017, 19/07/2017, 5/08/2017 & 8/09/2017. In total, 9 species of bats were recorded during the study. To these can be added another species recorded previously by the senior author.

Results

List of the species

**Family Rhinolophidae**

1. *Rhinolophus ferrumequinum* (Schreber, 1774) (Greater Horseshoe Bat)
   This species is one of the commonest bats of Greece, occurring throughout the mainland and in many islands. It roosts in caves and other underground sites throughout the year, but nursery colonies are often in buildings as well. It forages in woodland as well as in pastures and even wetlands. In the study area 6 individuals were captured in mist nets, 4 were recorded in caves and there were 7 records by bat recorders. All 6 captured individuals were female and all 5 that were captured in April were pregnant.

**Family Vespertilionidae**

2. *Myotis capaccinii* (Bonaparte, 1837) (Long-fingered Bat)
   This species is widely distributed in Greece, in the mainland and the largest islands. It roosts in caves and abandoned mines. It forages usually by flying low over water (lakes, lagoons, marshes) in lowland areas. In the study area there were only 5 records by the bat recorders.

3. *Myotis aurascens* (Kuzjakin, 1935) (Steppe Whiskered Bat)
   This species (Fig. 2a) is apparently widespread in Greece. The only reliable way to distinguish this species from the related *Myotis mystacinus* is through genetic studies. The specimens from Greece that have been identified up to now are almost exclusively *M. aurascens*, so this is considered the species present throughout most of Greece (Mertzanis et al. 2015). It roosts mainly in rock crevices and under bridges. It forages in lowlands, often near water. In the study area it was identified from 3 captured individuals (all males), although 16 ultrasound records assigned to *M. aurascens/ M. mystacinus/ M. brandtii* group probably involve this species.

4. *Myotis nattereri* (Kuhl, 1817) (Natterer’s Bat)
   The species is fairly widespread in Greece, although records are scattered. It roosts in trees, less in...
buildings and caves. It forages mainly in forests. One individual was captured in mist net in summer 2001 (Alivizatos unpublished).

5. *Nyctalus leisleri* (Kuhl, 1817) (Leisler’s Bat)
This migratory species is widespread in Greece. It roosts mainly in trees, occasionally also in buildings. It forages mainly in forests and wetlands. In Schinias it was recorded 13 times by bat recorders, mostly in June (indicating seasonal presence). A further 42 call sequences that were assigned to the group *Nyctalus/ Eptesicus/ Vespertilio* could involve this species or *Eptesicus serotinus*, but positive identification was not possible.

6. *Pipistrellus pipistrellus* (Schreber, 1774) (Pipistrelle Bat)
This species is common and widespread in Greece. It roosts in buildings and trees. It forages over a wide range of habitats, preferring woodland and wetlands. In Schinias there were 207 bat recorder records (and possibly many more among the 415 unidentified *Pipistrellus* spp. records).

Fig. 2. A. *Myotis aurascens*, B. *Pipistrellus kuhlii*, C. *Miniopterus schreibersii* (all photos by E. Shogolev).
Bats of Schinias - Marathon National Park

7. **Pipistrellus kuhlii** (Kuhl, 1817) (Kuhl’s Pipistrelle Bat)

This is a common and widespread species in Greece (Fig. 2b). It roosts mainly in buildings, but also on rock crevices. It forages mainly in towns and villages, farmland and nearby wetlands. With 858 ultrasound records (and possibly more among the 415 unidentified *Pipistrellus* spp. records), this was by far the most numerous bat species in the area. Also, 2 individuals were captured in mist nets.

8. **Hypsugo savii** (Bonaparte, 1837) (Savi’s Pipistrelle Bat)

This species occurs throughout Greece. It roosts mainly in cliff crevices, but also in buildings. It forages in open country, from the lowlands to the highest mountains. In Schinias there were 82 ultrasound records.

**Family Miniopteridae**

9. **Miniopterus schreibersii** (Kuhl, 1817) (Schreiber’s Bat)

This species (Fig. 2c) is widespread but rather local in Greece. Its presence depends on the caves on which it mainly roosts. It forages mainly in deciduous forests, but also in scrub and near water. There were 15 ultrasound records in Schinias, plus 2 captures in mist nets. An additional 61 sequences that could possibly be assigned to this species, showed a high degree of overlap with other species of the *Pipistrellus* group.

**Family Molossidae**

10. **Tadarida teniotis** (Rafinesque, 1814) (Free-tailed Bat)

This species is widespread in Greece. It roosts in crevices in high cliffs and buildings. It forages widely over forests, orchards, wetlands, cities, etc. There were 5 ultrasound records in the area and two visual observations.

**Discussion**

Several species of bat have been recorded in the wider area (Attica) in the past. These records are mainly from the central and southern parts of Attica, particularly Dekeleia and Kaisariani, mostly from caves (Hanák et al. 2001). The species recorded are: *Rhinolophus ferrumequinum*, *R. hipposideros* (Bechstein, 1800), *R. mehelyi* (Matschie, 1901), *R. blasii* (Peters, 1866), *Myotis blythii* (Tomes, 1857) (*M. oxygnathus* (Monticelli, 1885)), *M. myotis* (Burkhausen, 1797), *M. emarginatus* (Geoffroy, 1806), *Nyctalus leisleri*, *Eptesicus serotinus* (Schreber, 1774), *Pipistrellus pipistrellus*, *P. kuhlii*, *Hypsugo savii*, *Plecotus* sp., *Miniopterus schreibersii* and *Tadarida teniotis*. Thus, 3 species recorded by us are new for Attica: *Myotis capaccinii*, *M. nattereri* & *M. aurascens*. This brings the total number of bat species in Attica to 18. We must point out that the identification of bat species from their call characteristics is not always accurate because of the variability and the similarity of calls among species groups. Although we were conservative in the identification of call sequences with less than 60% of the collected material identified to species level, there is always a chance of local variation or other error sources during the identification procedure.

The species of bats recorded in Schinias area reflect the habitats available. The species *P. pipistrellus* and *P. kuhlii* are very common in mainland Greece but their abundance in the area can also be related to the proximity of built up areas, since these species are often roosting in crevices in buildings and feeding in neighboring rich habitats, such as wetlands. *M. capaccinii* and *M. aurascens* are associated with wetlands, while *M. nattereri*, as a forest species, was recorded in the pinewood. *H.
*savii* is associated with drier open habitats and roosts mainly in cliff crevices. The presence of *R. ferrumequinum* and *M. schreibersii*, both cave dwellers (as is *M. capaccinii*), indicates the presence of colonies in the area, although the latter is very wide ranging and could have come from any of the nearby mountains. *T. teniotis* and *N. leisleri* are also wide ranging and the latter is partly migratory, possibly of only seasonal occurrence. It should be noted, however, that relatively little is known about bat migration in Greece.

Since the study was relatively limited in time, it cannot be assumed that all the bat species in Schinias area were recorded. Further study will probably add some more species, both locally and in Attica in general.

Also, relatively little is known about the conservation status of bats in Attica. Probably the most threatened species are those that depend on caves and other underground sites, such as *Miniopterus schreibersii* and *Myotis capaccinii*. Further studies should focus on the discovery of such sites in the wider area and their protection.

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Literature


