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Yellow-masked bees (Hymenoptera: Apidae: *Hylaeus*) on the island of Samos in the Aegean archipelago

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Abstract

Nineteen species of *Hylaeus* Fabricius, 1793 were found on the island of Samos in the Aegean Archipelago during two different visits, in 2015 and 2018. Notes on flower visits are provided.

Key words: *Hylaeus*, bees, Apoidea, fauna, records, Greece.

Zusammenfassung

Neunzehn Arten von Maskenbienen, Gattung *Hylaeus* Fabricius, 1793, wurden während zweier Reisen in den Jahren 2015 und 2018 auf der Insel Samos im Ägäischen Archipel nachgewiesen. Anmerkungen zum Blütenbesuch werden gemacht.

Introduction

This is a report on the solitary bees of the genus *Hylaeus* Fabricius, 1793 found on the Greek island of Samos in the Aegean Archipelago. The island was visited twice, September 12–18, 2015 and May 20–26, 2018. In all, nineteen different species were collected.

The island is situated very close to the Turkish mainland (Asia Minor), which makes it particularly interesting from a European point of view. Species from Turkey can easily reach the island since the distance to Samos is less than two kilometres.

Yellow-masked bees have been the subject of collections on many islands of the Aegean Archipelago. However, publications about the topic are scarce. The distribution of the eastern species *Hylaeus trifidus* is mentioned in an article by Prof. Dr. Holger Dathe (Dathe 2015). At the University of the Aegean, a paper on *Hylaeus* bees is in preparation; it will include the distribution of 25 different species found in the Archipelago (T. Petanidou, pers. comm.). On Samos, however, yellow-masked bees have not been intensely collected so far (T. Petanidou, pers. comm.). This makes this particular island especially interesting and was one reason for me to visit it.

Yellow-masked bees can occur in large numbers of individuals and exhibit high species diversity within one habitat. In May they outnumbered by far all other bee genera on the island of Samos. Even in September they dominated the bee fauna. Since they are very small, about 3.5–9 mm in length, they are easily overlooked, though. Searching on flowers of the family Apiaceae, such as *Daucus carota*, *Foeniculum vulgare* and *Crithmum maritimum*, is the best way to find most of them. In May you can often see more than ten different specimens at the same time visiting one single flock of *Daucus carota*.

Material and methods

The island of Samos is a rather large island, 43 km long and 22.5 km wide. The highest mountain, Kerkis, reaches 1434 metres above see level. Samos is often referred to as the "green island". Compared to many other islands of the Aegean Archipelago this is true. The island offers many different habitats, both in the plains and the mountains. The island is fertile, with lots of farmland. There are also large pine forests.

On Samos *Hylaeus* bees were mostly found at lower elevations. Along the roads, in farmland, close to smaller villages, along the sea, in open grassland, these are good places where to look for them. To collect specimens, I used a net which I sweep through the flowers. I did not use traps.

During my two visits to Samos, I have collected about 100 specimens of *Hylaeus*. Besides collecting I have also identified lots of *Hylaeus* bees in the field, with a magnifying glass. Especially the males of some species are quite easy to identify. For these species, I have only collected one or two specimens as proof. These voucher specimens are kept in my own collection.

The places I have visited most frequently are Kokari (N 37.77°, E 26.89°), Votsalakia (N 37.70°, E 26.66°), Karlovasi (N 37.79°, E 26.69°), Agios Dimitrios (N 37.80°, E 26.73°), Mykali (N 37.70°, E 27.00°), Psili Ammos (N 37.70°, E 27.01°), and Poseidonion (N 37.71°, E 27.05°).

To identify the different species of *Hylaeus* in Europe, I have used two articles by Prof. Dr. Holger Dathe (Dathe 1980, Dathe et al. 2016).

Species list

The species are arranged alphabetically.

Hylaeus clypearis (Schenck, 1853)

Material examined: Kokari, 21–25.V.2018, 1 male and 1 female; Agios Dimitrios, 23.V.2018, 1 female.

Notes: All were collected on *Daucus carota*. In Kokari, the species was not uncommon, particularly the males are quite easy to identify in the field.

Hylaeus gibbus Saunders, 1850

Material examined: Karlovasi, 15.IX.2015, 3 males.

Notes: Collected on an unidentified species of Asteraceae.

Hylaeus gredleri Förster, 1871

Material examined: Kokari, 21–25.V.2018, 3 females; Agios Dimitrios, 23.V.2018, 1 female; Votsalakia, 23.V.2018, 1 female; Mykali, 24.V.2018, 1 female.

Notes: Collected on *Daucus carota*, except the one in Votsalakia that was on an unidentified Brassicaceae.

Hylaeus imparilis Förster, 1871

Material examined: Karlovasi, 15.IX.2015, 3 males; Votsalakia. 16.IX.2015, 1 male; Agios Dimitrios, 23.V.2018, 1 male; Votsalakia, 23.V.2018, 1 male.

Notes: The males collected in 2015 were found on *Foeniculum vulgare* in Votsalakia and on *Crithmum maritimum* in Karlovasi. The males collected in 2018 were found on *Daucus carota* in Agios Dimitrios and on an unidentified species of Brassicaceae in Votsalakia.

***Hylaeus intermedius* Förster, 1871**

Material examined: Kokari, 23.V.2018, 2 males.

Notes: Collected on *Daucus carota*.

***Hylaeus kahri* Förster, 1871**

Material examined: Votsalakia, 16.IX.2015, 1 male and 1 female.

Notes: Collected on *Foeniculum vulgare* in the village of Votsalakia.

***Hylaeus lineolatus* (Schenck, 1859)**

Material examined: Votsalakia, 23.V.2018, 1 male and 3 females; Agios Dimitrios, 24.V.2018, 1 female.

Notes: All specimens collected on *Daucus carota*.

***Hylaeus longimaculus* (Alfken, 1936)**

Material examined: Votsalakia, 23.V.2018, 1 female; Poseidonion, 24.V.2018, 3 females.

Notes: The female in Votsalakia was collected on an unidentified species of Brassicaceae. All three females in Poseidonion were collected on *Daucus carota*.

***Hylaeus meridionalis* Förster, 1871**

Material examined: Karlovasi,15.IX.2015, 2 males; Votsalakia, 13–17.IX.2015, 3 males and 2 females, 23.V.2018, 1 male.

Notes: In 2015 quite a few on *Foeniculum vulgare* in Votsalakia, and on *Crithmum maritimum* in Karlovasi. In 2018, one on *Daucus carota* in Votsalakia.

***Hylaeus punctatus* (Brullé, 1832)**

Material examined: Votsalakia, 13–17.IX.2015, 2 males and 2 females; Karlovasi, 15.IX.2015, 1 male and 4 females; Kokari, 20–25.V.2018, 3 males and 4 females; Votsalakia, 23.V.2018, 1 female; Poseidonion, 24.V.2018, 2 females.

Notes: Collected in 2015 on *Foeniculum vulgare* in Votsalakia and on *Crithmum maritimum* in Karlovasi. Collected in 2018 on *Daucus carota*. Seems to be a common species on Samos.

***Hylaeus punctus* Förster, 1871**

Material examined: Kokari, 21–25.V.2018, 2 males and 5 females; Agios Dimitrios, 24.V.2018, 2 females; Votsalakia, 24.V.2018, 1 female.

Notes: The specimens from Kokari and Agios Dimitrios were all collected on *Daucus carota*, the specimen from Votsalakia on an unidentified species of Brassicaceae. Judging from the number of males identified in the field, the species might be locally rather common.

***Hylaeus rubicola* Saunders, 1850**

Material examined: Kokari, 25.05.2018, 1 female and 2 males.

Notes: Collected on *Rubus*.

***Hylaeus scutellatus* (Spinola, 1838)**

Material examined: Kokari, 21.05.2018, 1 male.

Notes: Collected on *Daucus carota*.

***Hylaeus sinuatus* (Schenck, 1853)**

Material examined: Kokari, 22.V.2018, 1 female.

Notes: Collected on *Daucus carota*.

***Hylaeus soror* (Pérez, 1903)**

Material examined: Kokari, 25.V.2018, 3 males.

Notes: Collected on *Daucus carota*.

***Hylaeus taeniolatus* Förster, 1871**

Material examined: Votsalakia, 13–17.IX.2015, 1 male and 2 females; Karlovasi, 15.IX.2015, 3 males and 3 females; Kokari, 21–25.V.2018, 1 male and 3 females; Agios Dimitrios, 24.V.2018, 1 female.

Notes: Collected on *Foeniculum vulgare* in Votsalakia, on *Crithmum maritimum* in Karlovasi, on *Daucus carota* in Kokari and Agios Dimitrios.

***Hylaeus trifidus* (Alfken, 1936)**

Material examined: Votsalakia, 13–17.IX.2015, 1 male; Karlovasi, 15.IX.2015, 2 males and 2 females; Kokari, 21–25.V.2018, 2 males and 3 females; Agios Dimitrios, 24.V.2018, 1 female.

Notes: Collected on *Foeniculum vulgare* in Votsalakia, on *Crithmum maritimum* in Karlovasi, on *Daucus carota* in Kokari and Agios Dimitrios. Though this species is very small, 3.5–4 mm, it is easy to identify with a magnifying glass. In May in Kokari and Agios Dimitrios it was the most common species of *Hylaeus*. In Europe it is found only in the Aegean Archipelago on islands close to Turkey (Dathe 2015).

***Hylaeus tyrolensis* Förster, 1871**

Material examined: Kokari, 13–17.V.2015, 2 males and 3 females; Agios Dimitrios, 24.V.2018, 1 male; Votsalakia, 24.V.2018, 1 male; Psili Ammos, 25.V.2018, 1 female.

Notes: All specimens collected on *Daucus carota*.

***Hylaeus variegatus* (Fabricius, 1798)**

Material examined: Kokari, 21–25.V.2018, 2 males and 2 females; Votsalakia, 23.V.2018, 1 male; Mykali, 24.V.2018, 1 male.

Notes: Collected on *Daucus carota* in Kokari and Mykali, in Votsalakia on an unidentified species of Brassicaceae.

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