

Towards the knowledge of the fauna of clearwing moths (Lepidoptera, Sesiidae) of Nakhchivan Autonomous Republic, Azerbaijan

Oleg G. Gorbunov¹, Nataly Snegovaya^{2,3}, Nazar A. Shapoval⁴,
Ismayil B.-O. Mammadov^{5,6}, Roman V. Yakovlev^{7,8,9}

1 A.N. Severtsov Institute of Ecology and Evolution, Russian Academy of Sciences, 33 Leninsky prospekt, Moscow, 119071, Russia

2 Institute of Zoology, Ministry of Science and Education of Azerbaijan (IZB), 115 A. Abbaszade st., pr. 1128, bl. 504, AZ 1004, Baku, Azerbaijan

3 Western Caspian University, 31 Istiglaliyyat st., Baku, Azerbaijan

4 Department of Karyosystematics, Zoological Institute, Russian Academy of Sciences, 1 Universitetskaya nab., St. Petersburg, 199034, Russia

5 Nakhchivan State University, University Campus, Nakhchivan, AZ 7012, Azerbaijan

6 Institute of Bioresources (Nakhchivan), Ministry of Science and Education of Azerbaijan, 32 M.F. Akhundov st., AZ 7000, Nakhchivan, Azerbaijan

7 Altai State University, 61 Lenin ave., Barnaul, 656049, Russia

8 Samarkand State University named after Sharof Rashidov, 15 University Boulevard, Samarkand, 140100, Uzbekistan

9 Tomsk State University, 36 Lenina ave., Tomsk, 634050, Russia

Corresponding author: Oleg G. Gorbunov (gorbunov.oleg@mail.ru)

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Abstract

A small collection of five clearwing moths (Lepidoptera, Sesiidae) collected using artificial sex attractants in the vicinity of Ordubad, Nakhchivan Autonomous Republic, Azerbaijan, is presented and illustrated. Four species, viz. *Paranthrene tabaniformis* (Rottemburg, 1775), *Conopia amasina* (Staudinger, 1856), *Synanthedon myopaeformis* (Borkhausen, 1789), and *Chamaesphesia turbida* Le Cerf, 1937, are recorded for the fauna of the region for the first time. *Synanthedon armeniaca* O. Gorbunov, 1991, is

restored from synonyms of *S. myopaeformis* (Borkhausen, 1789). The important role of artificial sex attractants in studies of the faunal composition of Sesiidae is noted.

Keywords

Clearwing moths, Sesiidae, Lepidoptera, Azerbaijan, Nakhchivan, synthetic sex attractants, new records

Introduction

This article is a continuation of the series of publications dedicated to the Lepidoptera fauna of Azerbaijan (Snegovaya and Yakovlev 2017; Yakovlev and Snegovaya 2020; Pimanchikova et al. 2024; Anikin et al. 2025; Streltsov et al. 2025; Ustjuzhanin et al. 2025).

There is only one publication concerning the fauna of clearwing moths (Sesiidae) in Transcaucasia. It was published 40 years ago (Gorbunov 1986a) and is undoubtedly significantly outdated, both in terms of the systematics and the species composition of the family in the region. Beside that, a number of species have been described from various parts of Transcaucasia, and their type localities are here (Emich 1872, 1873; Romanoff 1884; Bartel 1906; Bálint and Katona 2016; Gorbunov 1986b, 1987a, 1987c, 1991a, 1991b, 2019; Gorbunov and Špatenka 1992; Špatenka and Gorbunov 1992). There are works on the biology of some local species (Gorbunov 1987b, 1988, 1989). In addition, one can cite a number of works on Lepidoptera from some regions of Transcaucasia, which contain some data, often with erroneous definitions, on Sesiidae (Milyanovsky 1964; Didmanidze 1978; Gorbunov 2013). Some data on this interesting group of Lepidoptera can be found in the classic work ‘Seitz’ (Bartel 1912). The most complete data on clearwing moths of Transcaucasia by the end of the 20th century can be found in the monumental work on Palaearctic Sesiidae (Špatenka et al. 1999). Unfortunately, no special works on clearwing moths of Azerbaijan in general and Nakhchivan in particular have been published, despite the fact that the first author has repeatedly visited various places in the republic to collect these insects. With this work, we are trying to remedy this situation and begin to publish information about this interesting but difficult-to-obtain group of Lepidoptera of Azerbaijan.

The material presented below was collected using artificial sex attractants. It is well known that sex pheromones and sex attractants play an increasingly important role in faunal investigations of Lepidoptera, because they allow researchers to discover new species, detect populations of pest or rare species, monitor and control the seasonal flight of moths (Efetov and Gorbunov 2021, 2024; Gorbunov 2015, 2016, 2017, 2018a–c, 2020, 2021, 2022a–e, 2023a–b, 2024a, 2025a–c; Efetov et al. 2025; Gorbunov and Efetov 2024a–b, 2025a–b). Meanwhile, usage of female attractants has one drawback: this method allows you to collect only males (Gorbunov and Efetov 2018, 2025b; Efetov and Gorbunov 2021). Although we repeatedly observed

females approaching lures with artificial sex attractants, this occurred when the males' flight had already ended a week or two earlier. Perhaps the female, having unsuccessfully tried for a long time to attract a male, senses the presence of an active 'female' and approaches her hoping to meet a male.

Materials and methods

All images of moths were taken with a Sony α450 DSLR camera equipped with a Minolta 50 mm f/2.8 macro lens. The processing of all illustrations was finalized using Adobe Photoshop CC2020 software. Pictures of the specimens are labeled with a number which consists of the name of the family, two consecutive digits and a year (e.g., SESIIDAE pictures No 0107-0112-2025). These numbers correspond to those of the illustrated specimens in the archives of the first author.

The specimens were attracted to artificial female sex pheromones for sesiid moths produced by PHEROBANK®, Wijk bij Duurstede, the Netherlands.

For each taxon, the original spelling from the original publication is given in quotation marks. If the work was published over a number of years, the actual date of publication is indicated in square brackets after the original spelling of the taxon. The synonymy of *Paranthrene tabaniformis* (Rottemburg, 1775) includes only synonyms from the Palearctic part of the range. The presence of subspecies is indicated in the 'Remarks' subsection. The subsection 'Literature' includes only those works that specify the specific locations of the species in Azerbaijan, or if the work contains information about the biological characteristics of the taxon.

The names of plants were verified with the WFO (2025).

The material studied is kept in the collection of the A.N. Severtsov Institute of Ecology and Evolution of the Russian Academy of Sciences, Moscow, Russia (COGM).

Results

Negotinthia hoplisiformis (Mann, 1864)

Figs 1–3, 11–13

'*Paranthrene hoplisiformis* m.': Mann 1864: 176, Taf. 4, Fig. 1. Type locality: Turkey, Brussa [= Bursa], designated by the lectotype ♀ (Špatenka and Laštůvka 1988: 336).

Literature. Gorbunov 1986a: 6 (*Zenodoxus*); Špatenka et al. 1999: 38 (key), 41, text-figs 15, 280, map, pl. 1, fig. 6 (*Tinthia*).

Material. 6♂♂, Azerbaijan, Nakhchivan, Zangezur Range, Ordubad district, Ashagy Aylis village, 900 m, 38°55'38"N, 45°59'37"E, 24–25.V.2025, V. Doroshkin, N. Shapoval & R. Yakovlev leg. (Sesiidae pictures No 0107-0112–2025).

Bionomics. Larva lives in the roots of *Sanguisorba minor* Scop. [= *Poterium sanguisorba* L.] (Rosaceae) throughout the year. The moths fly from late May to mid-July in a single generation.

Distribution. Very locally in xerothermic grassland habitats in Greece, Turkey, Armenia, Nakhchivan (Azerbaijan) and Iran.

Paranthrene tabaniformis (Rottemburg, 1775)

Figs 4–6, 14–16

‘*Sphinx tabaniformis*.’: Rottemburg 1775: 110. Type locality: ‘von Landsberg an der Warthe’ [= Poland: Lubusz Province, Goźów Wielkopolski].

= ‘*Sph.[inx] Asiliformis*.’: [Denis, Schiffermüller] 1775: 305. Type locality: ‘[Wienergegend]’ [= Austria: Vienna surroundings]. Junior primary homonym of *Sphinx asiliformis* Fabricius, 1775 (Lepidoptera, Sesiidae).

= ‘[*Sphinx. Sesia.*] *Sesia*.’: Gmelin 1790: 2389. Type locality: ‘Habitat in Europa magis australi’ [= Southern Europe].

= ‘*Sph.[inx] rhingiaeformis*.’: Hübner 1790: 89, Taf. II, Fig. I. Type locality: ‘aus Florenz’ [= Italy: Tuscany, Florence].

= ‘*Sesia Crabroniformis*.’: Laspeyres 1801: 11. Type locality: ‘Habitat in Italia, ... Lipsiae’ [= Italy; Germany: Saxony, Leipzig]. Junior primary homonym of *Sesia crabroniformis* Fabricius, 1783 (Lepidoptera, Sesiidae).

= ‘*S.[esia] Serratiformis*. (Freyer).’ [Freyer 1842]: Freyer 1839–1842: 130, Tab. 362, Fig. 3. Type locality: ‘bey Hannover’ [= Germany: Lower Saxony, Hanover].

= ‘*Sesia Synagriformis*, Nobis.’ [Rambur 1866]: Rambur 1858–1866: 148. Type locality: ‘de Malaga’ [= Spain: Andalusia, Malaga].

= ‘*Sciapteron Tabaniforme* Rott. var. *Kungessana* Alph. nova.’ [Alpheraky 1882]: Alpheraky 1882–1883: 20. Type locality: ‘Tian-Chian, 24.V.1874’ [= China: Xinjiang Uygur Autonomous Region, Kyunes River Valley, Shar-kodo tract of land], designated by the lectotype ♂ (Gorbunov 1992: 70).

= ‘*P.[aranthrene] tabaniformis* ...form *sangaica* form. nov.’: Bartel 1912: 380, pl. 50, row g. Type locality: ‘at Shanghai’ [= China: Shanghai suburbs].

= ‘*Paranthrene rhingiaeformis*, Hbn. var. *intermedia* n. var.’: Le Cerf, 1916: 16, CC-CXXII bis, figs 4682a, 4682b. Type locality: ‘Sebdou (Oran)’ [= Algeria: Tlemcen Province, Sebdou], designated by the lectotype ♂ (Špatenka 1992: 492).

Literature. Špatenka et al. 1999: 106 (key), 107, text-figs 61, 326, map, pl. 10, figs 71, 72, pl. 11, fig. 73.

Material. 7♂♂, Azerbaijan, Nakhchivan, Zangezur Range, Ordubad district, Ashagy Aylis village, 900 m, 38°55'38"N, 45°59'37"E, 24–25.V.2025, V. Doroshkin, N. Shapoval & R. Yakovlev leg. (Sesiidae pictures No 0093-0098–2025).

Bionomics. Larvae in various parts (roots, trunks, branches) of many species of poplar (*Populus* spp.) and willow (*Salix* spp.) (Salicaceae). There are indications that larvae feed on other woody plants, but such examples should be considered accidental. Larvae live for one year, but in northern parts of the areal, a two-year generation is possible. Larvae in branches cause gall-like enlargements. Moths fly from mid-May to late August in a single generation.

Distribution. It is very widespread in the Holarctic Realm in forest and intra-zonal biotopes with the mandatory presence of at least one species of host plant. This is the first specific indication of the species for Nakhchivan.

Remarks. The species is divided into two subspecies, of which the nominative subspecies inhabits most of the range, including the Caucasus and Transcaucasia.

Conopia amasina (Staudinger, 1856)

Figs 7, 17

‘Ses[ia]. *Stomoxiformis* [sic]. ... Ses[ia]. var. *Amasina* m.’: Staudinger 1856: 209.

Type locality: ‘bei Amasia’ [= Turkey: Amasya].

Literature. Špatenka et al. 1999: 121 (key), 131, text-figs 76, 339, map, pl. 14, fig. 103 (*Synanthedon stomoxiformis amasina*); Gorbunov 2024b: 507, figs 13–18.

Material. 1♂, Azerbaijan, Nakhchivan, Zangezur Range, Ordubad district, Ashagy Aylis village, 900 m, 38°55'38"N, 45°59'37"E, 24–25.V.2025, V. Doroshkin, N. Shapoval & R. Yakovlev leg. (Sesiidae pictures No 0099-0100–2025).

Bionomics. Larvae live in the upper part of the root of *Rhamnus pallasii* Fisch. & C.A. Mey. (Rhamnaceae) for one year. In spring, the larva constructs a long, very dense exit tube from wood fibres and sawdust, held together with silk. This tube reaches a length of 5–6 cm above the ground. Moths fly from late May to late July in a single generation.

Distribution. Locally in shrub thickets in upland xerophytic biotopes, on forest edges with the obligatory presence of a host plant in eastern Turkey, Armenia, Azerbaijan and northern Iran. This is the first specific record of the species for Nakhchivan.

Remarks. Many European researchers consider this taxon to be a subspecies of *Conopia stomoxiformis* (Hübner, 1790).

***Synanthedon myopaeformis* (Borkhausen, 1789)**

Figs 8, 18

- ‘*Sphinx Myopaeformis*, ...’: Borkhausen 1789: 169. Type locality: не указано [= Germany: Frankfurt am Main] (Špatenka et al. 1999: 151).
- = ‘*Sphinx Typhiaeformis*, ...’: Borkhausen 1789: 174, Taf. [1], Fig. 4, 5. Type locality: ‘in Italien’ [= Italy].
- = ‘*Sphinx zonata*.’: Donovan 1797: 35, pl. CXCXV. Type locality: ‘in England’ [= United Kingdom: England].
- = ‘*Sesia Mutillaeformis*.’: Laspeyres 1801: 26. Type locality: ‘Habitat in Austria, Hungaria’ [= Austria; Hungary].
- = ‘[*Sesia*.] ... *Luctuosa*.’: Lederer 1853: 82. Type locality: ‘bei Brussa’ [= Turkey: Bursa].
- = ‘*Sesia cruentata*.’: Mann 1859: 91. Type locality: ‘im Thale Palla-gutta’ [= Italy: Sicily, near Palermo].
- = ‘*Sesia elegans* m.’: Lederer 1861: 150, Taf. 1, Fig. 7, 8. Type locality: ‘aus Antiochia’ [= Turkey: Hatay Province, Antakya].
- = ‘[*Sesia* ...] ... [*Myopiformis* Brh.] ... var. *Graeca* ...’ [Staudinger 1870]: Staudinger 1870–1871: 92. Type locality: ‘Parnassus’ [= Greece: Parnassus], designated by the lectotype ♂ (Špatenka and Laštůvka 1988: 332).
- = ‘*Synanthedon myopaeformis mesoreaca* subsp. nov.’: Fischer and Lewandowski 2003: 299, Abb. 22, 25. Type locality: ‘Athienou’ [= Cyprus: Larnaca District, Atiénou].

Literature. Špatenka et al. 1999: 121 (key), 151, text-figs 96, 355, 356, map, pl. 18, 135–137.

Material. 1♂, Azerbaijan, Nakhchivan, Zangezur Range, Ordubad district, Ashagy Aylis village, 900 m, 38°55′38″N, 45°59′37″E, 24–25.V.2025, V. Doroshkin, N. Shapoval & R. Yakovlev leg. (Sesiidae pictures No 0101-0102–2025).

Bionomics. Larvae live under the bark, usually in damaged areas of apple trees (*Malus* spp., Rosaceae). There are indications that larvae also feed under the bark of other Rosaceae trees (*Crataegus*, *Prunus*, *Pyrus*, *Sorbus*, etc.) (Špatenka et al. 1999), but we have never been able to find them anywhere except on old apple trees. The larva feeds for one year. Pupation occurs in a dense cocoon under loose bark. Moths fly from the second half of May to mid-July in a single generation.

Distribution. In apple orchards, parks, roadside fruit plantations, and the edges of mixed forests in Western and Central Europe, north to southern England and southern Scandinavia. In Eastern Europe, the species is distributed northeast to approximately the line between St. Petersburg and Ufa. In the Middle East (in the broad sense), it is known from Turkey, Iran, Jordan, Israel, and Egypt. It is known also from Transcaucasia and Central Asia (Kyrgyzstan and Eastern Kazakhstan). This is the first specific record of the species for Nakhchivan.

Remarks. 1. Currently, this species is divided into two subspecies, of which the nominative subspecies inhabits most of the range, including the republics of Transcaucasia.

2. In 1991, *Synanthedon armeniaca* O. Gorbunov, 1991, was described by the first author based on a single male bred from a pupa collected under the bark of an old apple tree (Gorbunov 1991). The colouration of the labial palpus and ventral part of the abdomen, as well as the normal shape of the abdomen and the noticeably wide discal spot and outer margin of the hindwing, were indicated as the main features distinguishing this species from *S. myopaeformis*. In 2007, T. Garrevoet et al. (2007) considered *S. armeniaca* to be a form of *S. myopaeformis* and therefore synonymised this species with the latter. Indeed, many specimens from Transcaucasia have a wider discal spot and outer margin of the hindwing (Figs 13–14), but the shape of the abdomen and the colouration of the labial palpus and abdomen ventrally clearly distinguish *S. armeniaca* from *S. myopaeformis*. In our opinion, to confirm the conclusion of T. Garrevoet et al. (2007), more material of both species from Transcaucasia is needed, and therefore we here restore *S. armeniaca* O. Gorbunov, 1991, stat. rest. from the junior synonyms of *S. myopaeformis*.

***Chamaesphecia turbida* Le Cerf, 1937**

Figs 9, 10, 19, 20

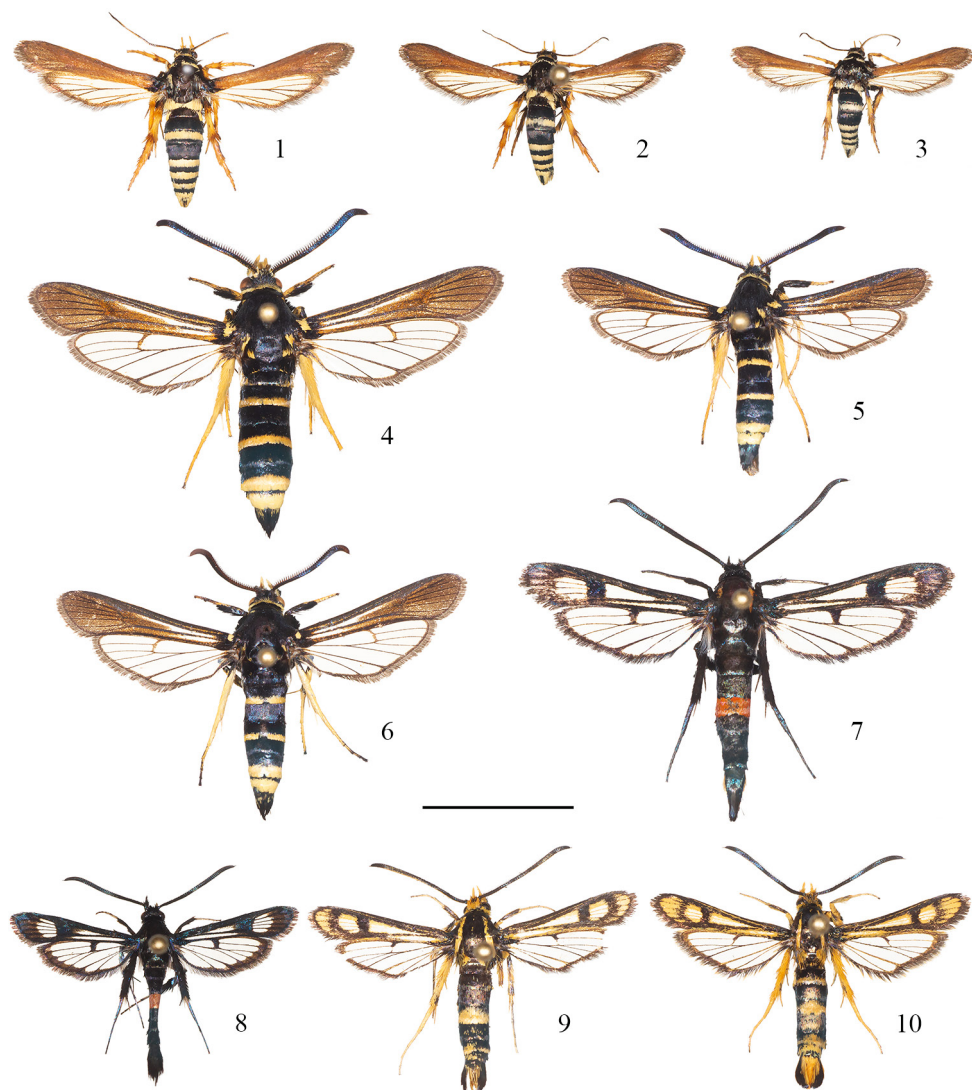
‘*Chamaesphecia turbida* n. sp.’: Le Cerf 1937: 84, pl. V, figs 7, 12. Type locality: ‘Iran, Elbursgebirge, Keredj, 1.100 m’ [= Iran: Alborz province, Karaj County].

Literature. Gorbunov 1987b: 38; Špatenka et al. 1999: 298 (key), 311, text-figs 219, 449, map, pl. 44, figs 365, 366.

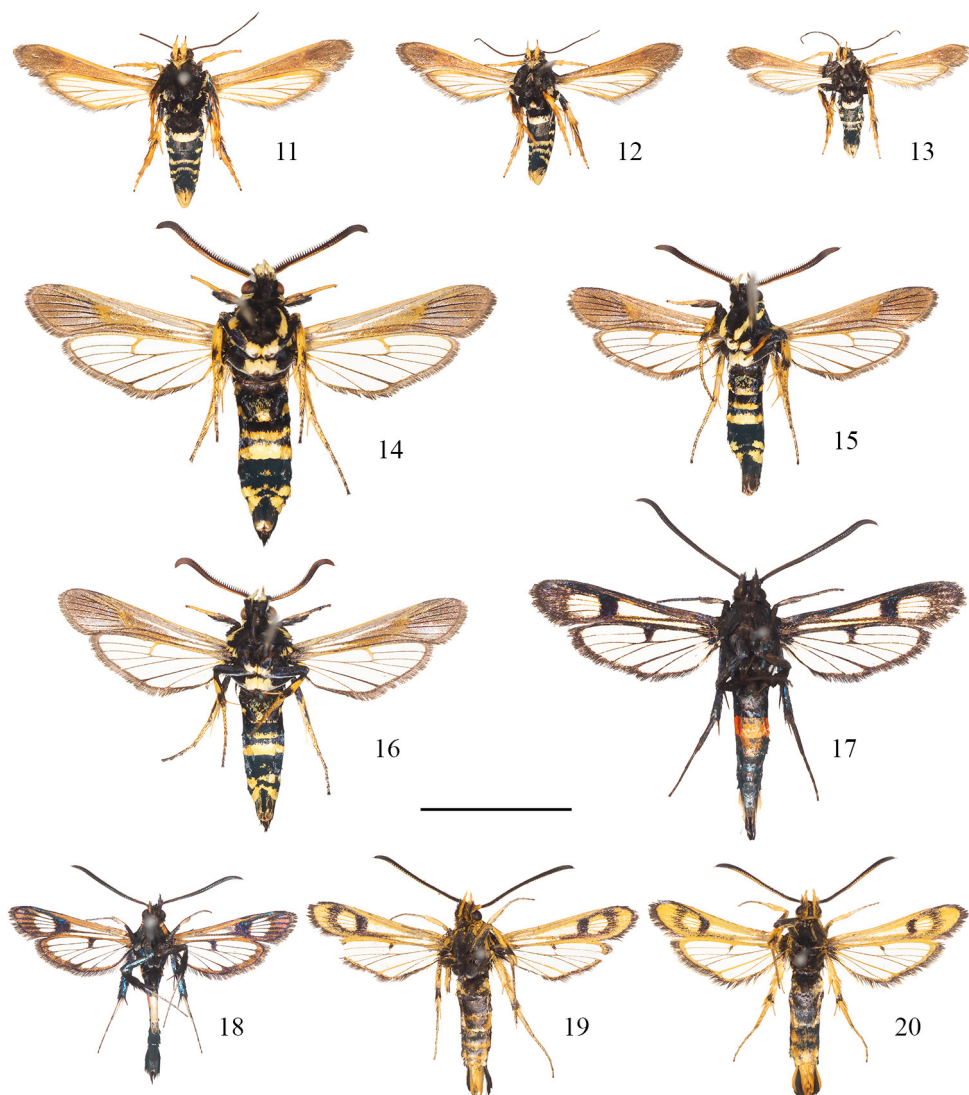
Material. 2♂♂, Azerbaijan, Nakhchivan, Zangezur Range, Ordubad district, Ashagy Aylis village, 900 m, 38°55′38″N, 45°59′37″E, 24–25.V.2025, V. Doroshkin, N. Shapoval & R. Yakovlev leg. (Sesiidae pictures No 0103-0106–2025).

Bionomics. The larvae live in the roots of *Euphorbia marschalliana* Boiss. (Euphorbiaceae), where they make tunnels 5–9 cm long over the course of a year. In spring or early summer, the larva pupates in the tunnel or in a short exit tube without constructing a cocoon. Moths fly from late May to early August in a single generation.

Distribution. Locally in the biotopes of upland xerophytes with the obligatory presence of host plants in Azerbaijan (Nakhchivan and Talysh) and northern Iran. This is the first specific record of the species for Nakhchivan.



Figures 1–10. Males of Sesiidae. Dorsal view. 1–3 – *Negotinthia hoplisiformis* (Mann, 1864): 1 – Sesiidae picture No 0107–2025; 2 – Sesiidae picture No 0109–2025; 3 – Sesiidae picture No 0111–2025. 4–6 – *Paranthrene tabaniformis* (Rottemburg, 1775): 4 – Sesiidae picture No 0093–2025; 5 – Sesiidae picture No 0095–2025; 6 – Sesiidae picture No 0097–2025. 7 – *Conopia amasina* (Staudinger, 1856), Sesiidae picture No 0099–2025. 8 – *Synanthedon myopaeformis* (Borkhausen, 1789), Sesiidae picture No 0101–2025. 9–10 – *Chamaesphracia turbida* Le Cerf, 1937: 9 – Sesiidae picture No 0103–2025; 10 – Sesiidae picture No 0105–2025. Scale bar: 10.0 mm.



Figures 11–20. Males of Sesiidae. Ventral view. 11–13 – *Negotinthia hoplisiformis* (Mann, 1864): 11 – Sesiidae picture No 0108–2025; 12 – Sesiidae picture No 0110–2025; 13 – Sesiidae picture No 0112–2025. 14–16 – *Paranthrene tabaniformis* (Rottemburg, 1775): 14 – Sesiidae picture No 0094–2025; 15 – Sesiidae picture No 0096–2025; 16 – Sesiidae picture No 0098–2025. 17 – *Conopia amasina* (Staudinger, 1856), Sesiidae picture Mo 0100–2025. 18 – *Synanthedon myopaeformis* (Borkhausen, 1789), Sesiidae picture No 0102–2025. 19–20 – *Chamaesphecia turbida* Le Cerf, 1937: 19 – Sesiidae picture No 0104–2025; 20 – Sesiidae picture No 0106–2025. Scale bar: 10.0 mm.

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