

# A list of Sphingidae (Lepidoptera) of Azerbaijan

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## Abstract

A list of 31 species of hawk moths from the territory of Azerbaijan is given, based on collection materials from the Institute of Zoology of the Azerbaijan National Academy of Sciences (Baku) and the Georgian National Museum (Tbilisi). Distribution maps for 27 species are provided.

## Keywords

Sphingidae, Azerbaijan, species, distribution

## Introduction

Hawk moths (Lepidoptera, Sphingidae) is a small family of butterflies represented in the world fauna by more than 770 species, and 31 of them were reported for the Azerbaijan. In Azerbaijan, the hawk moths were studied by R. Effendi (1967, 1970), who presented the data on biology, ecology and regional distribution for this family. Our work is based on the collection from the Institute of Zoology of the Azerbaijan National Academy of Sciences (hereinafter IZB) and the Georgian National Museum (hereinafter GNMT). We also updated the data reported by Effendi (1967, 1970).

## Taxonomy

### Sphinginae

#### *Acherontia atropos* (Linnaeus, 1758)

(Figs 1, 28)

Effendi 1967: *Acherontia (Manduca) atropos* L., 51; Effendi 1970: *Acherontia (Manduca) atropos* L., 101-102; Didmanidze, Petrov and Zolotuhin 2013: *Acherontia atropos* (Linnaeus, 1758), 271-272; Zolotukhin and Evdoshenko 2019: *Acherontia atropos* (Linnaeus, 1758), 73-76.

**Material. IZB:** 1 ♂, Astara, 23.05.1983; 1 ♂, Nakhichevan, Ustunu, 5.06.1967, leg. S. Aliyev.

**Distribution:** Absheron (Bilgyah), Khachmaz, Shemakha, Ismailly, Agdash, Zagatala, Mirbashir (now Terter), Lachin, Talysh (Alekseevka) (Effendi 1970). Common in lowlands, less often in the foothills.

**Biology.** According to Effendi (1970), the butterfly flies in May-June and August, gives 2 generations, feeds on tree sap and honey; the caterpillar feeds on the leaves of *Solanum tuberosum* L., *S. dulcamara* L., *S. melongena* L., and *Datura stramonium* L. in July and September.

#### *Agrius convolvuli* (Linnaeus, 1758)

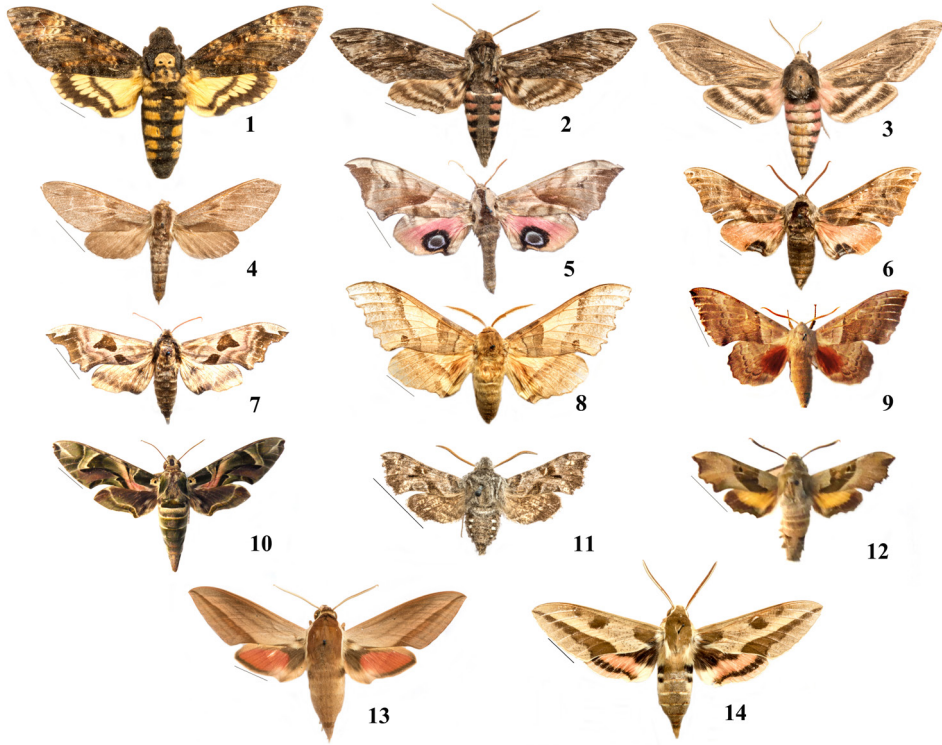
(Figs 2, 29)

Effendi 1967: *Herse convolvuli* L., 54; Effendi 1970: *Herse (Protoparce) convolvuli* L., 104; Didmanidze, Petrov and Zolotuhin 2013: *Agrius convolvuli* (Linnaeus, 1758), 272-273; Zolotukhin and Evdoshenko 2019: *Agrius convolvuli* (Linnaeus, 1758), 84-86.

**Material. GNMT:** 2♂♂, Elisavetpol (now Ganja), 3.VII.1911, Romanov coll.; 1♂, Turianchay Nature Reserve, .VI.1972, leg. E. Didmanidze; 1♂, Gobustan, 6.VI.1974; 1♂, 17.VII.1874, leg. E. Didmanidze; 2♂♂, Nizovaja, Mill steppe, 11.VII.1980, leg. E. Didmanidze. **IZB:** 4♂♂, Talysh, Alekseevka (now Burjali), 14.06.1969; 1♀, Shemakha, Kirovka (now Nagarakhana), 27.07.1964, leg. R. Effendi; 1♂, same place, 21.07.1964, leg. R. Effendi; 1♂, 1♀, Mughan steppe, Saatli, Djafarkhan, 8.07.1977, leg. R. Effendi; 1♂, 1♀, Lenkoran, Istisu, 25.09.1968, leg. R. Effendi; 1♀, Agdash, collective farm named after V. Lenin, pupa - January, imago 24.05.1949, leg. Evstropov; 3♂♂, 3♀♀, Samukh distr., Garayeri vill., 22-24.07.2019, leg. N. Snegovaya.

**Distribution:** It is widely spread everywhere, with the exception of high mountains (Effendi 1970). Common in lowlands and foothills.

**Biology.** According to Effendi (1970), it flies in May-June and August-September, gives two generations. The caterpillar feeds on Convolvulaceae in July and October.



**Figures 1–14.** **1** - *Acherontia atropos* (Linnaeus, 1758), Astara (IZB); **2** - *Agrius convolvuli* (Linnaeus, 1758), Talysh (IZB); **3** - *Sphinx ligustri* Linnaeus, 1758, Shemakha (IZB); **4** - *Hylloicus pinastris* (Linnaeus, 1758) (IZB); **5** - *Smerinthus ocellatus* (Linnaeus, 1758), Shemakha (IZB); **6** - *Smerinthus kindermannii* Lederer, 1852, Talysh (IZB); **7** - *Mimas kitchingi* Melichar & Řezáč, Talysh (IZB); **8** - *Marumba quercus* ([Denis & Schiffermüller], 1775), Gakh (IZB); **9** - *Laothoe caucaso* Zolotuhin, 2018, Lenkoran (GNMT); **10** - *Daphnis nerii* (Linnaeus, 1758), Elisavetpol' (GNMT); **11** - *Neoptero-donta gorgoniades* (Hübner, [1819] 1916), Talysh (IZB); **12** - *Proserpinus proserpina* (Pallas, 1772), Nakhichevan (GNMT); **13** - *Theretra alecto* (Linnaeus, 1758), Baku (IZB); **14** - *Hyles euphorbiae* (Linnaeus, 1758), Lerik (IZB). Scale bar – 10 mm.

### ***Sphinx ligustri* Linnaeus, 1758**

(Figs 3, 30)

Effendi 1967: *Sphinx ligustri* L., 54; Effendi 1970: *Sphinx ligustri* L., 104; Didmanidze, Petrov and Zolotuhin 2013: *Sphinx ligustri* Linnaeus, 1758, 273; Zolotukhin and Evdoshenko 2019: *Sphinx ligustri* Linnaeus, 1758, 98-103.

**Material.** GNMT: 1♂, Gobustan Reserve, 17.VI.1979, leg. E. Didmanidze; IZB: 3♂♂, 1♀, Shemakha, Kirovka, 3.07.1978, leg. R. Effendi; 1♂, ibid, 06.07.1964, leg. R. Effendi; 1♀, Galaalty, 1.08.1956.

**Distribution:** Gusar (Gonakhkend), Shemakha (Kirovka, Pirkuli), Kutkashen (now Gabala) (Kyamyarvan), Dashkesan, Lachin, Agdam, Masally (Istisu) (Effendi 1970). Rare in the lowlands, more often found in the foothills.

**Biology.** According to Effendi (1970), flies from May to July, develops in one generation; the caterpillar feeds on *Syringa* and *Ligustrum* in August-September.

**Remarks.** According to Zolotukhin and Evdoshenko (2019), the subspecies ssp. *eichleri* Eitschberger, Danner & Surholt, 1992 occurs in the Transcaucasia.

### *Hyloicus pinastri* (Linnaeus, 1758)

(Figs 4, 31)

Effendi 1967: *Sphinx (Hiloicus) pinastri* L.; Effendi 1970: *Sphinx (Hiloicus) pinastri* L., 104; Didmanidze, Petrov and Zolotuhin 2013: *Hyloicus pinastri* (Linnaeus, 1758), 274; Zolotukhin and Evdoshenko 2019: *Hyloicus pinastri* (Linnaeus, 1758), 106-109.

**Distribution:** It is usual in the vicinity of Lake Goygol, in other parts of Azerbaijan it is not marked (Effendi 1970).

**Biology.** According to Effendi (1970), gives two generations, flies in April and July; the caterpillar feeds on pine needles in June and September.

## Smerinthinae

### *Smerinthus ocellatus* (Linnaeus, 1758)

(Figs 5, 32)

Effendi 1967: *Smerinthus ocellata* L., 53; Effendi 1970: *Smerinthus ocellata* L., 102; Didmanidze, Petrov and Zolotuhin 2013: *Smerinthus ocellatus* (Linnaeus, 1758), 274-275; Zolotukhin and Evdoshenko 2019: *Smerinthus ocellatus* (Linnaeus, 1758), 178-181.

**Material. GNMT:** 1♂, Adjikent, Caucasus, leg. A. Wassilinin; 1♂, 1♀, Helenendorf (now Goygol), 1890, Romanov coll.; 1♂, Elizavetpol (now Ganja), 8.V.1910, leg. A. Wassilinin; 1♂, Nachichevan, riv. Paragachai, vill. Bilav, 19.VI.1973, leg. E. Didmanidze. **IZB:** 1♂, Shemakha, Pirkuli, 1-5.06.1972, leg. R. Effendi; 1♂, Shemakha, Kirovka, 4.07.1976, leg. R. Effendi; 1♂, Gakh, Ilisu, 4.07.1977, leg. R. Effendi; 1♂, Talysh, Lerik, 27.06.1971, leg. R. Effendi; 1♀, Lerik, Zuvand, Gosmolyan, 19.06.1969, leg. R. Effendi; 1♂, Astara, Motlayatag vill., 9-10.07.2020, leg. N. Snegovaya.

**Distribution:** throughout the lowlands and in the foothills, rarely in the mountains, to the upper boundary of the forest (Effendi 1970).

**Biology.** According to Effendi (1970), develops possibly in three generations, flies in May, July and September; the caterpillar feeds on various types of *Salix*, less often on *Populus*.

***Smerinthus kindermannii* Lederer, 1852**

(Figs 6, 33)

Effendi 1967: *Smerinthus kindermanni* Ld., 5; Effendi 1970: *Smerinthus kindermanni* Ld., 108; Didmanidze, Petrov and Zolotuhin 2013: *Smerinthus kindermannii* Lederer, 1852, 275-276; Zolotukhin and Evdoshenko 2019: *Smerinthus kindermannii* Lederer, 1852, 186-188.

**Material.** GNMT: 1♂, Helenendorf (now Goygol), 1890, Romanov coll.; 1♂, Elizavetpol (now Ganja), 8.V.1910, leg. A. Wassilinin; 1♂, Nackichevan, riv. Paragachai, vill. Bilav, 19.VI.1973, leg. E. Didmanidze; 1♂, Aresh (Agdash now), leg. Schelkovnikov (all GNMT). **IZB:** 1♂, Talysh, Zuvand, 23.06.1969, leg. R. Effendi; 3♂♂, same place, 24.06.1969, leg. R. Effendi; 1♂, 25.07.1978, leg. R. Effendi; 1♂, Talysh, Zuvand, Kyalvaz, 14.06.1968, leg. S. Aliyev; 2♂♂, Nakhichevan, Shakhbuz, Batabat, 8.07.1975, leg. R. Effendi; 1♂, Agdash, collective farm named after F. Engels, 4.08.1959, leg. R. Effendi; 1♂, Talysh, Lenkoran, Lerik, 27.06.1971, leg. R. Effendi.

**Distribution:** Agdash (Gorgan), Norashen. Rare in the lowlands and in the foothills (Effendi 1970).

**Biology.** According to Effendi (1970), gives two generations, flies in May and August; the caterpillar feeds on various *Salix* species in June and September.

***Mimas kitchingi* Melichar & Řezáč, 2015**

(Figs 7, 34)

Effendi 1967: *Dilina (Mimas) tiliae* L., 53; Effendi 1970: *Dilina (Mimas) tiliae* L. ssp. *brunnescens* Stgr., 108; Didmanidze, Petrov and Zolotuhin 2013: *Mimas tiliae* (Linnaeus, 1758), 276; Zolotukhin and Evdoshenko 2019: *Mimas kitchingi* Melichar Řezáč, 2015, 176.

**Material.** **IZB:** 1♂, Talysh, Lenkoran, 13.05.1968, leg. R. Effendi; 1♀, Talysh, Alekseevka (Burjali), 15.05.1969, leg. R. Effendi; 1♂, Talysh, 20.05.1976, leg. R. Effendi; 1♂♂, Siyazan distr., Galaalti vill., 10-12.06.2019, leg. N. Snegovaya.

**Distribution:** Shemakha (Pirkuli), Zakatala (Jary), Lenkoran (tea farm “Auro-ra”). Quite rare in the foothills, at forest edges (Effendi 1970).

**Biology.** According to Effendi (1970), gives 2 generations, flies in May-June and at the end of July-August; the caterpillar feeds on *Tilia* and *Alnus* in July and September.

**Remarks.** According to Zolotukhin and Evdoshenko (2019), reliably known from Talysh and Northern Iran.

***Marumba quercus* ([Denis & Schiffermüller], 1775)**

(Figs 8, 35)

Effendi 1967: *Marumba (Smerinthus) quercus* Schiff., 52; Effendi 1970: *Marumba (Smerinthus) quercus* Schiff., 102; Didmanidze, Petrov and Zolotuhin 2013: *Marumba quercus* ([Denis & Schiffermüller], 1775), 277; Zolotukhin and Evdoshenko 2019: *Marumba quercus* ([Denis & Schiffermüller], 1775), 153-156.

**Material. GNMT:** 1♂, Ajikend (now Goygol), 28.VI.1910, leg. A. Wassilinin; 1♂, Nakhichevan, riv. Paragachay, canyon, vill. Bilav, 6.VII.1977, leg. E. Didmanidze; 2♂♂, Aresh (now Agdash), 1906, leg. Schelkovnikov; 2♂♂, Aresh (now Agdash), Caucasus, 1906, leg. A. Wassilinin; 2♂♂, Aresh, 26.V.; 5.VI.1912, leg. A. Wassilinin; 1♂, 1♀, Geok-Tapa, distr. Aresh, 26, 29.V.1915; 11♂♂, 1♀, 9-24.VI.1915; 1♂, 2-4.VII.1915, 2♂♂, 1.VIII.1915, leg. Schelkovnikov (all GNMT). **IZB:** 1♂, Gakh, Ilisu, 4.07.1977, leg. R. Effendi; 1♂♂, Siyazan distr., Galaalti vill., 10-12.06.2019, leg. N. Snegovaya.

**Distribution:** Kutkashen (now Gabala) (Boom), Zakatala (Perzivan) (Effendi 1970). Rare in the foothills, up to the upper border of the forest, is associated with thickets of young oaks.

**Biology.** According to Effendi (1970), flies from late June to mid-July, develops in one generation; caterpillar feeds on the leaves of young *Quercus* in August-September.

### *Laothoe caucaso* Zolotuhin, 2018

(Figs 9, 36)

Effendi 1967: *Laothoe populi* L., 52; Effendi 1970: *Amorpha (Smerinthus) populi* L., 102-103; Didmanidze, Petrov and Zolotuhin 2013: *Laothoe populeti* (Bienert, 1870), 277-279; Zolotukhin and Evdoshenko 2019: *Laothoe caucaso* Zolotuhin, 2018, 201-202.

**Material. GNMT:** 1♀, Lenkoran, prov. Baku, 19.VI.1905, leg. Serfidovich; 2♂♂, Elisavetpol, vieina, 29.V.1900; 2♂♂, 2, 18.V.19010; 3♂♂, 17-20.V.1911, leg. A. Wassilinin; 1♂, Lenkoran, prov. Baku, 21.VIII.1912, leg. Pastuchov; 1♀, steppe Salyani steppe, 8.VI.1970, leg. E. Didmanidze; 1♀, Lac Goygol, 8.VI.1972, leg. E. Didmanidze; 1♂, around lac. Sari-Su, 11.VI.1973, 1♂, Turianchay Reserve, 23.IV.1923, leg. E. Didmanidze; Gosmoljan, 17.V.1975, leg. E. Didmanidze; 1♂, Nakhichevan, vill. Areni, 15.VI.1973, leg. E. Didmanidze; 1♂, Nakhichevan, vill. Bilav, 5.VII.1977, leg. E. Didmanidze; 1♂, Gosmolian, 17.VI.1874, leg. E. Didmanidze; 1♂, Shakhdag, vill. Laza, 29.VI.1975, leg. E. Didmanidze; 1♂, Geok-Tapa, Distr. Aresh (now Agdash), 27.III.1915; 9♂♂, 1♀, 1-27.V.1915; 7♂♂, 6-24.VI.1915; 10♂♂, 2-25.VII.1915; 6♂♂, 1, 12, 13.VIII.1915; 2♂♂, 23.VII.1916, leg. A. Schelkovnikov; 1♂, Aresh (now Agdash), 11.VII.1902; 1♂, Aresh (now Agdash), summer, 1906; 1♂, 7.VII.1911; 4♂♂, 7, 13, 17.V.1915, leg. A. Schelkovnikov. **IZB:** 2♂♂, Guba, Afurja vill., 8.07.2019, leg. N. Snegovaya; 3♂♂, Nakhichevan, Ordubad, Agdere, 16.06.2019; leg. N. Snegovaya; 1♂, same place, 17.06.2019, leg. N. Snegovaya; 1♂, same place, 19.06.2019, leg. N. Snegovaya; 1♂, Agdash, 9.06.2020, leg. N. Snegovaya; 1♂, Yardimli, 13.07.2020, leg. N. Snegovaya.

**Distribution:** throughout the lowlands, in the foothills and mountains, to the upper boundary of the forest (Effendi 1970).

**Biology.** According to Effendi (1970), flies in May-June and from late July to late August, development in two generations; caterpillar feeds on young *Populus* in July and September.

***Laothoe populeti* (Bienert, 1870)**

Zolotukhin and Evdoshenko 2019: *Laothoe populeti* (Bienert, 1870), 198-201.

**Remarks.** According to Zolotukhin and Evdoshenko (2019), distribution of this species is given preliminary and provisionally and includes Eastern Turkey, Syria, Northeastern Iraq, the mountains of Iran, the mountains of Southwestern Turkmenistan, Armenia and Azerbaijan (Nakhichevan).

***Akbesia davidi* (Oberthür, 1884)**

(Fig. 27)

Didmanidze, Petrov and Zolotuhin 2013: *Akbesia davidi* (Oberthür, 1884), 279; de Freina and Geck, 2018: *Akbesia davidi* ssp. *hofmanni*, 3, figs 13–24, 40–42, 44, 45, 51–54; Zolotukhin and Evdoshenko 2019: *Akbesia davidi* (Oberthür, 1884), 142-143

**Distribution:** currently only in the Turianchay State Reserve (Agdash district).

**Macroglossinae**

***Daphnis nerii* (Linnaeus, 1758)**

(Figs 10, 37)

Effendi 1967: *Daphnis nerii* L., 53; Effendi 1970: *Daphnis nerii* L., 108; Didmanidze, Petrov and Zolotuhin 2013: *Daphnis nerii* (Linnaeus, 1758), 279-280.

**Material.** GNMT: 1♂, Elisavetpol (now Ganja), 17.VII.1911, leg. A. Wassilinin (GNMT).

**Distribution:** Absheron (Baku, Bilgyah, Buzovna), Talysh (Lenkoran). (Effendi 1970).

**Biology.** According to Effendi (1970), flies from late May to September, develops in two or three generations; the caterpillar feeds on *Nerium* leaves.

***Neopterodonta gorgoniades* (Hübner, [1819] 1816)**

(Figs 11, 38)

Effendi 1967: *Pterogon (Proserpina) gorgoniades* Hb., 57; Effendi 1970: *Pterogon (Proserpina) gorgoniades* Hb., 108; Didmanidze, Petrov and Zolotuhin 2013: *Neopterodonta gorgoniades* (Hübner, [1819] 1916), 280; Zolotukhin and Evdoshenko 2019: *Neopterodonta gorgoniades* (Hübner, [1819] 1916), 270-272.

**Material. GNMT:** 2♂♂, 2♀♀, Elizavetpol (now Ganja), 3.V.1911; 27.VI.1911, leg. A. Wassilinin; 2♂♂, Turianchay Reserve, 6.V.1972, leg. E. Didmanidze. **IZB:** 1♂, Kirovobad (now Ganja), 13.06.1934, leg. M. Vinovsky; 1♂, Talysh, Zuvand, 18.06.1969, leg. R. Effendi; 1♂, 1♀, Nakhichevan, Buzgov, 19.05.1974, leg. R. Effendi.

**Distribution:** Ganja, Kusarchay. Rare in the lowlands (Effendi 1970).

**Biology.** According to Effendi (1970), flies in June, gives one generation; caterpillars feeds on *Galium* species in August.

### *Proserpinus proserpina* (Pallas, 1772)

(Figs 12, 39)

Didmanidze, Petrov and Zolotuhin 2013: *Proserpinus proserpina* (Pallas, 1772), 281; Zolotukhin and Evdoshenko 2019: *Proserpinus proserpina* (Pallas, 1772), 262–265.

**Material. GNMT:** 3♂♂, Nakhichevan, gorge riv. Nakhichevanchay, mt. Shakhbuz, vill. Arinj, 19.V.1974, leg. E. Didmanidze (GNMT).

**Distribution:** Nakhichevan (Didmanidze, Petrov and Zolotuhin 2013).

### *Theretra alecto* (Linnaeus, 1758)

(Figs 13, 40)

Effendi 1967: *Theretra (Chaerocampa) alecto* L. ssp. *cretica* Bsd., 56; Effendi 1970: *Theretra (Chaerocampa) alecto* L. ssp. *cretica* Bsd., 106; Didmanidze, Petrov and Zolotuhin 2013: *Theretra alecto* (Linnaeus, 1758), 281–282.

**Material. GNMT:** 1♂, Zurnabad distr. Elisavetpol (now Ganja), 7.VII.1905; 1♂, 1♀, Lenkoran, prov. Baku, 24.V.1907, 25.VI.1907, leg. Pastuchov; 1♂, Ordubad, 17.V.1916; 1♂, Helenendorf (now Goygol), 1890, Romanov coll.; 1♂, Elisavetpol (now Ganja), 17.VI.1911, leg. A. Wassilinin; 1♂, Kush, distr. Nukha (now Sheki), 25.VI.1916; 1♂, Nakhichevan, mt. Arinj, 20.V.1974, leg. E. Didmanidze; 1♂, Nizovaya, steppe, 11.VII.19181, leg. E. Didmanidze; 4♂♂, 1♀, Aresh (now Agdash), 13, 17.VII.1911; 4♂♂, Aresh (now Agdash), Geok-Tapa; 1♂, 27–29.VI.1915; 4♂♂, 24–27.V.1915; 1♂, 2–4.VIII.1915, leg. Schelkovnikov; 3♂♂, Aresh (now Agdash), 28.VII.1910; 2♂♂, 18.VII.1911; 2♂♂, 4.VIII.1911, 4♂♂, 3♀♀, 15, 21.V.1912, leg. A. Wassilinin (all GNMT). **IZB:** 1♂, Baku, in the vineyard, pupa, 2.08.1950, butterfly 11.08.1950; 1♂, Baku, ex. larva, 30.07.1950; 1♀, Samukh distr., Garayeri vill., 22–24.07.2019, leg. N. Snegovaya; 1♂, Agdash, 9.06.2020, leg. N. Snegovaya.

**Distribution:** Throughout the lowlands and in the foothills (Effendi 1970).

**Biology.** According to Effendi (1970), develops in two generations, flies in May and early June and in the second half of July, August and early September; caterpillars feed on *Vitis* leaves in June and August–September.

### *Hyles euphorbiae* (Linnaeus, 1758)

(Figs 14, 41)



Effendi 1967: *Celerio euphorbiae* L. ssp. *lathyrus* Wlk., 55; Effendi 1970: *Celerio euphorbiae* L. ssp. *lathyrus* Wlk., 105-106; Didmanidze, Petrov and Zolotuhin 2013: *Hyles euphorbiae* (Linnaeus, 1758), 282-283.

**Material. GNMT:** 1♂, Ordubad, 20.VIII.1907, ab. minima, leg. E. Koenig; 1♂, Ajikend, 12.VIII.1911; 1♂, 10.VIII.1918, leg. A. Wassilinin; 9♂♂, Elisavetpol, Ganja, 2-21.V.1910; 1♂, 17.IV.1911, leg. A. Wassilinin; 2♂♂, 1♀, Elisavetpol et vicina, Caucasus, 1, 27, 29.V.1910; 5♂♂, 6, 7, 10, 14.VI.1910; 1♂, 20.VIII.1910, leg. A. Wassilinin; 1♂, Chaykend, prov. Shusha, 12.VIII.1911; 1♂, lac. Aggol, steppe hills, 8.VI.1972, leg. E. Didmanidze; 4♂♂, Nakhichevan, gorge riv. Arpachai, vill. Bilav, 14, 19.VI.1973; 1♀, vill. Naservaz, 24.V.1975, leg. E. Didmanidze; 4♂♂, Gosmolian, 1330 m, 19.VI.1975, leg. E. Didmanidze; 1♂, Gobustan, semi-desert, 25.VI.1980, leg. E. Didmanidze; 1♂, Aresh (now Agdash), 26.V.1912, leg. A. Wassilinin; 1♂, 1♀, Aresh (now Agdash), 2.VII.1912; 1♂, 13.V.1915, leg. A. Schelkovnikov; 1♀, Aresh (now Agdash), Caucasus, Geok-Tapa, 28.VIII.1914; 2♂♂, 22.IV.1915; 5♂♂, 6-22.V.1915; 1♂, Geok-Tapa, distr. Aresh (now Agdash), 2.VIII.1915, leg. A. Schelkovnikov (all GNMT). **IZB:** 1♀, Shemakha, Pirkuli, 1-5.06.1972, leg. R. Effendi; 1♂, Lerik, Gosmolyan, 2.06.1969, leg. R. Effendi; 1♀, Nakhichevan, Ordubad, Agdere, 27-28.07.2017; 1♀, same place, 27.07.2018, leg. N. Snegovaya; 1♂, Nakhichevan, Ordubad, Agdere, 16.06.2019, leg. N. Snegovaya; 1♂, same place, 15.06.2019, leg. N. Snegovaya; 3♂♂, same place, 17.06.2019, leg. N. Snegovaya.

**Distribution:** throughout the subalpine highlands (Effendi 1970).

**Biology.** According to Effendi (1970), produces two generations per year, flies in June and August; caterpillar feeds on *Euphorbia* in July and September.

### *Hyles gallii* (Rottemburg, 1775)

Effendi 1967: *Celerio gallii* Rott., 55; Effendi 1970: *Celerio gallii* Rott., 105; Didmanidze, Petrov and Zolotuhin 2013: *Hyles gallii* (Rottemburg, 1775), 284.

**Distribution:** throughout the lowlands, very rarely in the foothills (Effendi, 1970).

### *Hyles hippophaes* (Esper, [1793])

(Figs 15, 42)

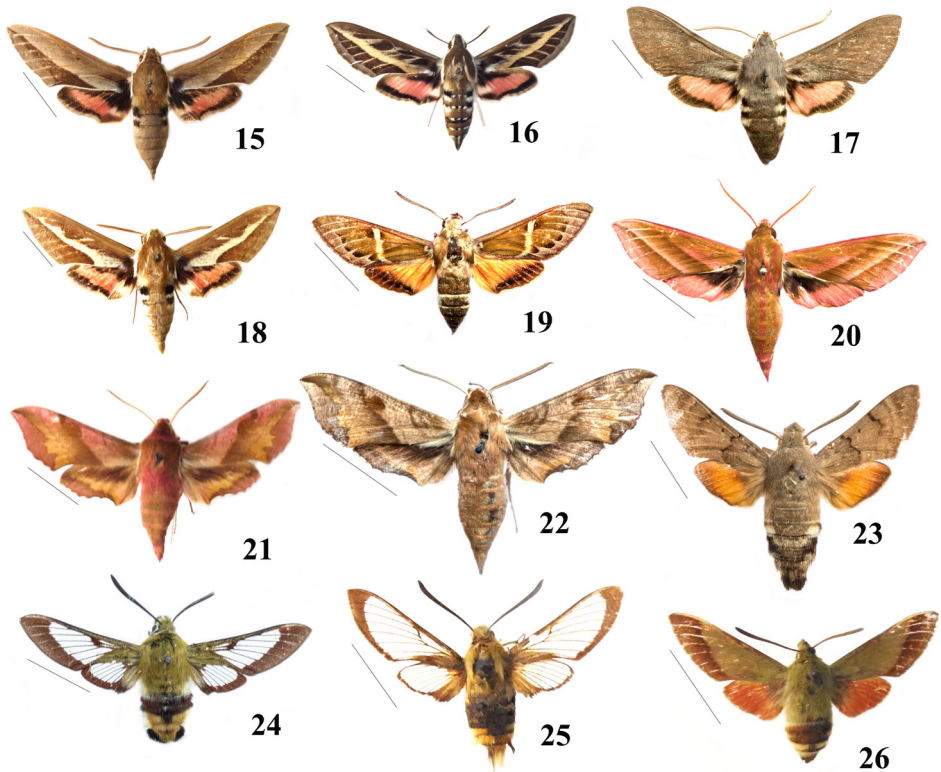
Effendi 1967: *Celerio hippophaes* Esp. ssp. *transcaucasica* Gehl., 54; Effendi 1970: *Celerio hippophaes* Esp. ssp. *transcaucasica* Gehl., 105; Didmanidze, Petrov and Zolotuhin 2013: *Hyles hippophaes* (Esper, [1793]), 284.

**Material. GNMT:** 1♂, steppe Shirin-kum, 7.VI.1972, leg. E. Didmanidze; 2♂♂, Turianchay Reserve, 23.IV.1973, leg. E. Didmanidze; 1♂, Nakhichevan, 9.V.1974, PRK-4, leg. E. Didmanidze; 1♂, Gosmoljan, 1330 m, 19.VI.1975, leg. E. Didmanidze; 2♂♂, Nizovaya steppe, 11.VII.1980, PRK-2, leg. E. Didmanidze; 1♂, Aresh (now Agdash), summer 1906; 1♂, V.1915, leg. A. Schelkovnikov; 3♂♂, Aresh (now Agdash), 26.V.1912, 2, 10.VII.1912, 3.IX.1912, leg. A. Wassilinin; 1, Geok-Tapa, dis-

tr. Aresh (now Agdash), 28.VIII.1914; 3♂♂, Geok-Tapa, distr. Aresh (now Agdash), 13, 27.V.1915; 4♂♂, 1, 17, 24, VI.1916, 6♂♂, 4, 25, VII.1915, leg. A. Schelkovnikov. (all GNMT). **IZB:** 1♂, Great Caucasus, Kyamarvan, 19.07.1964, leg. R. Effendi.

**Distribution:** throughout the lowlands and in the foothills (Effendi 1970).

**Biology.** According to Effendi (1970), develops in two generations, flies in April-May and July; caterpillar feeds on *Hippophae* in June and September.



**Figures 15–26.** **15** - *Hyles hippophaes* (Esper, [1793]), Great Caucasus (IZB); **16** - *Hyles livornica* (Esper, [1779]), Shemakha (IZB); **17** - *Hyles vespertilio* (Esper, [1780]), Nakhichevan (IZB); **18** - *Hyles zygophylli* (Ochsenheimer, 1808), Elisavetpol (GNMT); **19** - *Rethera drilion* Rebel & Zerny, 1931, Nakhichevan (IZB); **20** - *Deilephila elpenor* (Linnaeus, 1758), Talysh (IZB); **21** - *Choerocampa porcellus* (Linnaeus, 1758) (IZB); **22** - *Choerocampa suellus* (Staudinger, 1878) (IZB); **23** - *Macroglossum stellatarum* (Linnaeus, 1758), Baku (IZB); **24** - *Hemaris fuciformis* (Linnaeus, 1758), Altyagach (IZB); **25** - *Hemaris tityus* (Linnaeus, 1758), Nakhichevan (GNMT); **26** - *Hemaris croatica* (Esper, [1800]), Alty-Agach (IZB). Scale bar – 10 mm.



**Figure 27.** *Akbesia davidi* (Oberthür, 1884) (photo by V.Tikhonov)

***Hyles livornica* (Esper, [1779])**

(Figs 16, 43)

Effendi 1967: *Celerio lineata* F. ssp. *livornica* Esp., 55; Effendi 1970: *Celerio lineata* F. ssp. *livornica* Esp., 106; Didmanidze, Petrov and Zolotuhin 2013: *Hyles livornica* (Esper, [1779]), 284-286.

**Material.** GNMT: 1♂, Elisavetpol (now Ganja), 12.IV.1910; 2♂♂, 1♀, Vieina, 20.V.1910; 1♂, 1♀, 20.V.1911, 19.VI.1911, leg. A. Wassilinin; 1♂, Elenendorf (now Goygol), IV. 1916; 1♂, Karabakh, Gusnl, distr. Shusha, 17.VII.1914; 2♂♂, Aggol, steppe, 8.VI.1972, PRK-4, leg. E. Didmanidze; 1♀, Turianchay Reserve, 5.VI.1972, leg. E. Didmanidze; 2♂♂, Nakhichevan, vill. Bilav, desert, 9, 18.VI.1973, PRK-4, leg. E. Didmanidze; 10♂♂, 2♀♀, Gobustan, semi-desert, 17, 25.VI.1980, PRK-4, leg. E. Didmanidze; 2♂♂, Nizovaja, near Caspian sea, grove forest, 19.VI.1974, PRK-4, leg. E. Didmanidze; 1♂, 1♀, Talish, Hirkan's Reserve, 14, 15.V.1979, leg. E. Didmanidze; 1♂, Absheron, 8.VI, 1980, f.minima, PRK-2, leg. E. Didmanidze; 4♂♂, Aresh (now Agdash), 15.VI.1911, 4, 5, 13.VII.1911, leg. A. Wassilinin; 2♂♂, 2♀♀, Geok-Tapa, Aresh (now Agdash), 7.V.1915; 27.VI.1915, leg. A. Schelkovnikov (all GNMT). IZB: 1♂, Nakhichevan, Shakhbuz, Bichenek, 25.05.1974, leg. R. Effendi; 9♂♂, 3♀♀, Shemakha, Kirovka (Nagarakhana), 3.07.1978, leg. R. Effendi; 1♂, She-

makha, Pirkuli, 4.07.1964, leg. R. Effendi; 1♂, same place, 5.07.1964, leg. R. Effendi; 1♂, Baku, Mashtaga, 20.06.1946, leg. A. Bogachev; 1♂, Talysh, Vilvan, 13.05.1965, leg. R. Effendi; 1♂, Talysh, Zuvand, 27.07.1978, leg. R. Effendi; 1♂, Gakh, Ilisu, 4.07.1977, leg. R. Effendi; 1♂, Nakhichevan, Ordubad, Agdere, 27-28.07.2017, leg. N. Snegovaya; 1♀, Samukh distr., Garayeri vill., 22-24.07.2019, leg. N. Snegovaya; 1♂, Agdash, 9.06.2020, leg. N. Snegovaya; 1♂, Neftchala, 2.06.2020, leg. N. Snegovaya.

**Distribution:** everywhere, less often in the mountains up to the subalpine belt (Effendi 1970).

**Biology.** According to Effendi (1970), develops in three generations - in May, July and August; caterpillar feeds on *Galium*, *Eremurus*, and *Calligonum* species from June to October.

### *Hyles nicaea* (Prunner, 1798)

(Fig. 44)

Effendi 1967: *Celerio nicaea* Prun., 55; Effendi 1970: *Celerio nicaea* Prun., 106; Didmanidze, Petrov and Zolotuhin 2013: *Hyles nicaea* (Prunner, 1798), 286.

**Material. GNMT:** 2♂♂, Elizavetpol (Ganja) et vicina, 10, 29.V.1910, leg. A. Wassilinin; 1♂, Steppe, prov. Elisavetpol (Ganja), V.1911, leg. I. Voronov; 1♂, Kara-gush, prov. Shusha, 8.VI.1915, leg. P. Viridsky; 1♂, Nakhichevan, vill. Bilav, 19.V.1973; 2♂♂, gorge riv. Arpachai, 14, 19.VI.1973, PRK-4, leg. E. Didmanidze; 1♀, Nakhichevan, vill. Arinj, 19.V.1974, PRK-4, leg. E. Didmanidze; 1♂, Nakhichevan, Julpha, 21.VII.1974, 3♂, 13.VI.1980, leg. E. Didmanidze; 1♂, Gobustan, arid canyon, 17.VI.1974, leg. E. Didmanidze; 9♂♂, 1♀, Gosmolian, 900-1350 m, 17, 19.VI.1975, leg. E. Didmanidze; 1♂, Nizovaja, steppe, 11.VII.1980, PRK-2, leg. E. Didmanidze; 1♀, Aresh (now Agdash), 1911; 3♂♂, Geok-Tapa, Caucasus, 6, 7, 8.V.1915; 1♂, 27.VI.1915; 1♂, 4.VII.1915, leg. A. Schelkovnikov (all GNMT). **IZB:** 1♂, Talysh, Zuvand, 23.07.1978, leg. R. Effendi.

**Distribution:** Nakhichevan, Ordubad (Dirnis, Kyalyaki, Pazmara) (Effendi 1970).

**Biology.** According to Effendi (1970), it gives two generations, flies in May-June and July-August; caterpillars feed on *Euphorbia* in June and August-September.

### *Hyles vespertilio* (Esper, [1780])

(Figs 17, 45)

Effendi 1967: *Celerio (Deilephila) vespertilio* Esp., 54; Effendi 1970: *Celerio (Deilephila) vespertilio* Esp., 104; Didmanidze, Petrov and Zolotuhin 2013: *Hyles vespertilio* (Esper, [1780]), 287.

**Material. GNMT:** 5♂♂, 1♀, Mt. Shakhdag, 1440 m, vill. Laza, 28-29.VI.1975, leg. E. Didmanidze; 1♀, Lenkoran, Talysh, Hirkanian forest Reserve, 22.VII.1975, PRK-s, leg. E. Didmanidze (all GNMT). **IZB:** 1♂, 1♀, Nakhichevan, Shakhbuz,

Bichenek 13.06.1967, leg. S. Aliyev; 17♂♂, 5♀♀, Gakh, Ilisu, 4.07.1977, leg. R. Effendi; 1♂, same place, 3-4.07.1978, leg. R. Effendi; 1♂, Great Caucasus, Kyamarkan, 19.07.1964, leg. R. Effendi; 1♂, Vartashen (now Oguz), Jalud, 28.06.1978; 1♂, Ismailly, Garagaya vill., 27.07.2020, leg. N. Snegovaya.



Fig. 28



Fig. 29



Fig. 30



Fig. 31



Fig. 32



Fig. 33

**Figures 28–33.** Species distribution map: **28** – *Acherontia atropos* (Linnaeus, 1758); **29** – *Agrilus convolvuli* (Linnaeus, 1758); **30** – *Sphinx ligustri* Linnaeus, 1758; **31** – *Hyloicus pinastri* (Linnaeus, 1758); **32** – *Smerinthus ocellatus* (Linnaeus, 1758); **33** – *Smerinthus kindermanni* Lederer, 1852.

**Distribution:** common in the foothills of the Greater Caucasus, Kutkashen (Gabala) (Bum, Kyamarvan), Shemakha (Kirovka, Pirkuli) (Effendi 1970).

**Biology.** According to Effendi (1970), develops in 1-2 generations, flies in May and July; caterpillar feeds on *Epilobium* leaves in June and August.

### ***Hyles zygophylli* (Ochsenheimer, 1808)**

(Figs 18, 46)

Effendi 1967: *Celerio zygophylli* O., 55; Effendi 1970: *Celerio zygophylli* O., 105; Didmanidze, Petrov and Zolotuhin 2013: *Hyles zygophylli* (Ochsenheimer, 1808), 287–288.

**Material. GNMT:** 2♂♂, Elisavetpol et vicina (now Ganja), 28.IV.1910, 17.VI.1910, leg. A. Wassilinin; 1♂, Petropavlovsk, Mughan steppe, 27.VI.1917, leg. J. Prines; 1♂, Aggol, Mill steppe, 8.VI.1979, PRK-4, leg. E. Didmanidze; 1♂, Aresh (now Agdash), 3.VI.1906, leg. A. Schelkovnikov; 6♂♂, Geok-Tapa, distr. Aresh (now Agdash), 1, 28.V.1915; 24.VI.1915, 13.VIII.1915, leg. A. Schelkovnikov (all GNMT). **IZB:** 1♀, Nakhichevan, Ordubad, Kyalyaki, 29.05.1970; 1♂, Lerik, Zuvand, Gosmolyan, 19.06.1978; 1♂, Lerik, Talysh, Gosmolyan, 23.06.1969, leg. R. Effendi; 1♂, Shemakha, Pirkuli, 5.07.1964, leg. R. Effendi; 1♂, same place, 4.07.1964, leg. R. Effendi; 1♂, Talysh, Alekseevka (Burjali), 15.06.1969, leg. R. Effendi; 1♀, Agdash, collective farm named after F. Engels, 3.07.1959, leg. R. Effendi.

**Distribution:** common on lowlands, in floodplains (taut), in semi-deserts. Shirvan Steppe, Ganja, Gobustan, Absheron (Effendi 1970).

**Biology.** According to Effendi (1970), develops in two generations, flies in May and July; caterpillar feeds on *Zygophyllum* in June and August.

### ***Rethera drilion* Rebel & Zerny, 1931**

(Figs 19, 47)

Effendi 1967: *Rethera (Chaerocampa) kamarovi* Chr., 56; Effendi 1970: *Rethera (Chaerocampa) kamarovi* Chr., 107; Didmanidze, Petrov and Zolotuhin 2013: *Rethera komarovi* (Christoph, 1885), 288; Zolotukhin and Evdoshenko 2019: *Rethera drilion* Rebel & Zerny, 1931, 293–294.

**Material. GNMT:** 1♀, Nakhichevan, Ordubad, 17.V.1916; 1♂, Riv. Arpachay, vill. Chananab, 14.VI.1973, leg. E. Didmanidze; 1♂, Djulfa, mt. Dari-Dagh, 950 m, 21.V.1974, 3♂♂, 1♀, 6–13.VI.1980, leg. E. Didmanidze; 2♂♂, Arinj, 19.V.1974, leg. E. Didmanidze (all GNMT). **IZB:** 1♂, Nakhichevan, Kyarmachatakh, 15.06.1967; 1♂, Nakhichevan, Shakhbuz, Kolani, 17.05.1970, leg. R. Effendi; 2♂♂, Talysh, Alekseevka (Burjali), 14.06.1969, leg. R. Effendi; 1♂, Barda, 5.05.1971; 1♂, Talysh, Vilvan, 13.05.1965, leg. R. Effendi; 1♂, Nakhichevan, Ordubad, Agdere, 3.07.2018, leg. N. Snegovaya.

**Distribution:** Nakhchivan: Ordubad, Kyarmachatah, Dirnis, Kyalyaki, Pazmara, Yaydji, Djulfa (Effendi 1970).

**Biology.** According to Effendi (1970) gives 1 generation, flies in May-June; caterpillar feeds on *Euphorbia* species in July-early August.

**Remarks.** According to Zolotukhin and Evdoshenko (2019), the subspecies ssp. *rjabovi* O.Bang-Haas, 1935 lives in Turkey and the Caucasus.



Fig. 34



Fig. 35



Fig. 36



Fig. 37



Fig. 38



Fig. 39

**Figures 34–39.** Species distribution map: **34** – *Mimas kitchingi* Melichar & Řezáč, 2015; **35** – *Marumba quercus* ([Denis & Schifferrmüller], 1775); **36** – *Laothoe caucaso* Zolotuhin, 2018; **37** – *Daphnis nerii* (Linnaeus, 1758); **38** – *Neopterodonta gorgoniades* (Hübner, [1819] 1916); **39** – *Proserpinus proserpina* (Pallas, 1772).

***Deilephila elpenor* (Linnaeus, 1758)**

(Figs 20, 48)

Effendi 1967: *Pergesa (Chaerocampa) elpenor* L., 56; Effendi 1970: *Pergesa (Chaerocampa) elpenor* L., 107; Didmanidze, Petrov and Zolotuhin 2013: *Deilephila elpenor* (Linnaeus, 1758), 288.

**Material.** GNMT: 1♂, Nakhichevan, vill. Bilav, 19.VI.1973, PRK-4, 1♂, Arinj, gorge riv. Nakhichevanchay, leg. E. Didmanidze; 1♀, Gobustan, arid canyon, semi-desert, 17.VI.1974, leg. E. Didmanidze; 2♀♀, Aresh (now Agdash), 10, 17.VI.1911, leg. A. Wassilinin; 6♂♂, Geok-Tapa, distr. Aresh (now Agdash), 1, 27.V.1915; 1♂, 27.VI.1915; 1♂, 2.VII.1915; 2♂♂, 23, 28.VIII.1915, leg. A. Schelkovnikov (all GNMT). **IZB:** 2♂♂, 1♀, Talysh, Vilvan, 13.05.1965, leg. R. Effendi; 4♂♂, Talysh, Alekseevka, 19.05.1969, leg. R. Effendi; 1♂, same place, 14.06.1969, leg. R. Effendi; 1♀, same place, 15.06.1969, leg. R. Effendi.

**Distribution:** throughout the lowlands and in the foothills (Effendi 1970).

**Biology.** According to Effendi (1970), gives two generations, flies in May-June and August; caterpillar feeds on *Epilobium*, *Gallium* and *Vitis* in July and September.

***Choerocampa porcellus* (Linnaeus, 1758)**

(Figs 21, 49)

Effendi 1967: *Eumorpha (Pergesa, Chaerocampa) porcellus* L., 56; Effendi 1970: *Eumorpha (Pergesa, Chaerocampa) porcellus* L., 107; Didmanidze, Petrov and Zolotuhin 2013: *Choerocampa porcellus* (Linnaeus, 1758), 28.

**Material.** GNMT: 1♂, Turianchay Reserve, steppe, 2.V.1970; 1♂, 23.IV.1974, leg. E. Didmanidze; 1♂, Near Baku, 16.VII.1974, leg. E. Didmanidze; 1♂, mt. Shakh-dagh, Laza, 26.VI.1975; 1♂, Nizovaya, steppe, 11.VII.1980, leg. E. Didmanidze; 2♂♂, Geok-Tapa, distr. Aresh (now Agdash), 6, 27.V.1915; 2♂♂, 12, 22.VIII.1915, leg. A. Schelkovnikov (all GNMT). **IZB:** 1♀, Agdash, Karagan, to the light, 15.08.1960, leg. S. Aliyev; 1♂, Zuvand, Gilidarya, 10.06.1970; 1♀, Ordubad, Unus, 18.05.1961, leg. S. Aliyev; 1♂, Agdam, Alimadarli, 22.04.1970, leg. S. Aliyev; 2♂♂, Gakh, Ilisu, 5.07.1977, leg. R. Effendi; 1♂, Shakhbuz, Bichenek, 25.05.1974, leg. R. Effendi; 1♀, Agdash, Gadagan, 19.08.1959; 1♂, Talysh, Gosmolyan, 23.06.1969, leg. R. Effendi; 4♂♂, Mugan steppe, Saatly, Jafarkhan, 8.07.1977, leg. R. Effendi; 1♀, Agdash, Karagan, to the light, 23.07.1960, leg. S. Aliyev; 1♀, same place, 24.05.1959; 1♀, same place, 21.06.1960, leg. S. Abdullayeva; 1♂, Nakhichevan, Buzgov, 24.05.1974, leg. R. Effendi; 1♂, 2♀♀, Nakhichevan, Ordubad, Agdere, 5.07.2018, leg. N. Snegovaya; 1♂, 1♀, Nakhichevan, Ordubad, Agdere, 17.06.2019, leg. N. Snegovaya; 1♂♂, Gakh, Saribash, 19.06.2020, leg. N. Snegovaya.

**Distribution:** Agdash, Geochay, Shemakha (Kirovka). Guba; quite rare in the lowlands and in the foothills (Effendi 1970).



**Biology.** According to Effendi (1970), develops in two generations, flies in June and in the second half of August; caterpillar feeds on leaves of *Gallium* and *Epilobium* in July and September.



Fig. 40



Fig. 41



Fig. 42



Fig. 43



Fig. 44



Fig. 45

**Figures 40–45.** Species distribution map: **40** – *Theretra alecto* (Linnaeus, 1758); **41** – *Hyles euphorbiae* (Linnaeus, 1758); **42** – *Hyles hippophaes* (Esper, [1793]); **43** – *Hyles livornica* (Esper, [1779]); **44** – *Hyles nicaea* (Prunner, 1798); **45** – *Hyles vespertilio* (Esper, [1780]).

***Choerocampa suellus* (Staudinger, 1878)**

(Figs 22, 50)

Effendi 1967: *Eumorphia suellus* Stgr., 56; Effendi 1970: *Eumorphia suellus* Stgr., 108; Didmanidze, Petrov and Zolotuhin 2013: *Choerocampa porcellus* (Linnaeus, 1758), 290.

**Material.** GNMT: 1♀, Elisavetpol (now Ganja), 29.V.1910, leg. A. Wassilinin; 2♂♂, 1♀, Turianchai Reserve, Eldar steppe, 2.VI.190, leg. E. Didmanidze; 1♂, Nizovaya, near lake Goygol, 7.VI.1972, PRK-4, leg. E. Didmanidze; 1♂, 1♀, Nizovaya, Mill steppe, 11.VII.1980, leg. E. Didmanidze; 2♂♂, Nakhichevan, gorge riv. Paragachay, vill. Bilav, 4.VII.1977, leg. E. Didmanidze; 2♂♂, Aresh (now Agdash), 9.IV.1912; 1♀, Aresh (now Agdash), 5.VI.1912, leg. A. Wassilinin; 1♂, Aresh (now Agdash), Caucasus, summer 1915, leg. A. Shelkovnikov; 3♂♂, Geok-Tapa, distr. Aresh (now Agdash), 6, 14.V.1915; 2♂♂, 20, 29.VI.1915; 7♂♂, 1♀, 2, 21, 23, 24.VIII.1915, leg. A. Shelkovnikov (all GNMT); 2♂♂, 1♀, Samukh distr., Garayeri vill., 22-24.07.2019, leg. N. Snegovaya; 9♂♂, 5♀♀, Nakhichevan, Ordubad, Agdere, 16.06.2019; leg. N. Snegovaya; 3♂♂, 2♀♀, same place, 15.06.2019, leg. N. Snegovaya; 4♂♂, 4♀♀, same place, 17.06.2019, leg. N. Snegovaya; 3♂♂, same place, 19.06.2019, leg. N. Snegovaya; 3♂♂, Mingechevir, 29-30.06.2020, leg. N. Snegovaya.

**Distribution:** throughout the lowlands (Effendi 1970).

**Biology.** According to Effendi (1970), species can develop in two generations, flies in May-June and August; caterpillar feeds on *Lonicera* in July and September.

***Macroglossum stellatarum* (Linnaeus, 1758)**

(Figs 23, 51)

Effendi 1967: *Macroglossa stellatarum* L., 57; Effendi 1970 *Macroglossa stellatarum* L., 108; Didmanidze, Petrov and Zolotuhin 2013: *Macroglossum stellatarum* (Linnaeus, 1758), 291-292.

**Material.** GNMT: 6♂♂, 3♀♀, Mughan steppe, prov. Baku, V.1913, leg. N. Kostin; 1♂, Elisavetpol (now Goygol), lake Goygol, 4.VIII.1913, leg. Getling; 1♂, Kazi-Kend, 12.VIII.1914; 1♂, Shushinsky uezd, Karagush, 8.VI.1915, leg. P. Sviridenko; 4♂♂, 1♀, Mils kaya steppe, 25.V.1915, leg. P. Sviridenko; 1♀, Shushinsky uezd, Skobelevka, V.1916; 2♂♂, Karabakh, Kush, 20.VI.1916, leg. P. Goleniak; 1♀, Nakhichevan, Djulfa, geizer, 6.VII.1971; 1♂, Nakhichevan, Ordubad, 22.VI.1973, leg. E. Didmanidze; 2♂♂, Aggol, Mill steppe, 8.VI.1972, leg. E. Didmanidze; 1♂, Mt. Torgay, 17.VI.1973, leg. E. Didmanidze; 1♂, Gobustan Reserve, 16.VI.1976, PRK-4, leg. E. Didmanidze; 3♂♂, 1♀, Geok-Tapa, distr. Aresh (now Agdash), 6, 12, 23, 25.VIII.1915, leg. A. Shelkovnikov (all GNMT). **IZB:** 1♂, Agdash, Karagan, 20.06.1960, leg. S. Abdullayeva; 1♂, same place, to the light, 16.08.1960, leg. S. Aliyev; 1♂, same place 31.08.1960, leg. S. Abdullayeva; 1♀, Baku, 27.02.1933; 1♀, Baku, 4.10.1936; 5♂♂, Baku, Botanical garden, 1.10.1978, leg. R. Effendi; 1♀, Baku, 20.08.1947, leg. N. Samedov; 1♀, Baku, 16.10.1935; 1♀, Mingechevir, 27.03.1946,



Fig. 46



Fig. 47



Fig. 48



Fig. 49



Fig. 50



Fig. 51

**Figures 46–51.** Species distribution map: **46** - *Hyles zygophylli* (Ochsenheimer, 1808); **47** - *Rethera drilion* Rebel & Zerny, 1931; **48** - *Deilephila elpenor* (Linnaeus, 1758); **49** - *Choerocampa porcellus* (Linnaeus, 1758); **50** - *Choerocampa suellus* (Staudinger, 1878); **51** - *Macroglossum stellatarum* (Linnaeus, 1758).

leg. A. Bogachev; 1♀, Mugan steppe, Saatly, Jafarkhan, 8.07.1977, leg. R. Effendi; 1♂, Khudat, Nabran, 14.07.1977, leg. R. Effendi; 1♂, Talysh, Zuvand, Gilidarya, 8.06.1971, leg. R. Effendi.

**Distribution:** everywhere (Effendi 1970).

**Biology.** Butterflies fly from early spring to late autumn, sometimes even in winter. According to Effendi (1970), the caterpillar feeds on *Gallium* species.

### ***Hemaris fuciformis* (Linnaeus, 1758)**

(Figs 24, 52)

Effendi 1967: *Hemaris fuciformis* L., 57; Effendi 1970 *Hemaris fuciformis* L., 109; Didmanidze, Petrov and Zolotuhin 2013: *Hemaris fuciformis* (Linnaeus, 1758), 293; Zolotukhin and Evdoshenko 2019: *Hemaris fuciformis* (Linnaeus, 1758), 228–232.

**Material. GNMT:** 1♂, Gosmoljan, 17.V.1975, leg. E. Didmanidze (GNMT). **IZB:** 10♂♂, 7♀♀, Greater Caucasus, Altyagach, 30.05.1981, leg. R. Effendi; 3♂♂, 1♀, Altyagach, 4.08.1980, leg. R. Effendi; Zangelan, Vejnali, 1♀, 24.07.1978, leg. X. Aliev; 1♂, Shemakha, Pirkuli, 1–5.06.1972, leg. R. Effendi; 1♀, Gakh, Ilisu, 31.05.1977, leg. R. Effendi; 1♀, Zakataly, 16.07.1947, leg. L. Akhundova.

**Distribution:** Guba, Gusar, Shemakha, Gakh (Ilisu), Balaken (Ah-Kimal), oz. Goygol, Lachin (Yanshah) (Effendi 1970).

**Biology.** According to Effendi (1970), can develop in two generations, flies in June and August; caterpillar feeds on *Lonicera*, *Symphoricarpus*, and *Deutzia* species in July and September.

### ***Hemaris syra* (Daniel, 1939)**

Zolotukhin and Evdoshenko 2019: *Hemaris syra* (Daniel, 1939), 232–233; Zolotukhin and Evdoshenko (2019) indicated this species for South Azerbaijan.

The species is a sibling species of *Hemaris fuciformis*.

### ***Hemaris tityus* (Linnaeus, 1758)**

(Figs 25, 53)

Effendi 1967: *Hemaris tytyus* L., 58; Effendi 1970 *Hemaris tytyus* L., 109; Didmanidze, Petrov and Zolotuhin 2013: *Hemaris tityus* (Linnaeus, 1758), 294; Zolotukhin and Evdoshenko 2019: *Hemaris tityus* (Linnaeus, 1758), 236–240.

**Material. GNMT:** 1♂, Nakhichevan, vill. Naservaz, 24.V.1977, leg. E. Didmanidze.

**Distribution:** subalpine zone in the upper boundary of the forest; Gusar (Dustair), Lachin (Yanshah, Agdavan, Zorkeshish), Dashkesan (Khach-Bulag) (Effendi 1970).

**Biology.** According to Effendi (1970), it gives two generations, flies in June and August; caterpillar feeds on *Scabiosa* sp. in July and September.



Fig. 52



Fig. 53



Fig. 54

**Figures 52–54.** Species distribution map: **52** - *Hemaris fuciformis* (Linnaeus, 1758); **53** - *Hemaris tityus* (Linnaeus, 1758); **54** - *Hemaris croatica* (Esper, [1800]).

### *Hemaris croatica* (Esper, [1800])

(Figs 26, 54)

Effendi 1967: *Macroglossa croatica* Esp., 57; Effendi 1970 *Macroglossa croatica* Esp., 109; Didmanidze, Petrov and Zolotuhin 2013: *Hemaris croatica* (Esper, [1800]), 294; Zolotukhin and Evdoshenko 2019: *Hemaris croatica* (Esper, [1800]), 244-247.

**Material. IZB:** 1♂, Alty-Agach, 4.08.1980, leg. R. Effendi.

**Distribution:** quite rare in the foothills; Zakatala (Jary), Dashkesan (Effendi 1970).

**Biology.** According to Effendi (1970), gives 2 generations, flies in June and August; caterpillar feeds on *Scabiosa* sp. in July and September.

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