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ON THE STUDYING OF THE *Ennominae* SUBFAMILY (*Lepidoptera*, *Geometridae*) OF THE FAUNA OF GREATER CAUCASUS (AZERBAIJAN)

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К ИЗУЧЕНИЮ ПОДСЕМЕЙСТВА *Ennominae* (*Lepidoptera*, *Geometridae*) ФАУНЫ БОЛЬШОГО КАВКАЗА (АЗЕРБАЙДЖАН)

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Abstract. The article presents data on the species belonging to the subfamily *Ennominae* (*Geometridae*) collected in the Greater Caucasus region within Azerbaijan. The distribution areas of 28 species belonging to 18 genera (*Abraxas* - 1 species, *Ligadia* - 1 species, *Colotois* - 1 species, *Erannis* - 1 species, *Ennomos* - 2 species, *Semiothisa* - 4 species, *Thefrina* - 2 species, *Cabera* - 2 species, *Zamacra* - 1 species, *Gnophos* - 2 species, *Triphosa* - 1 species, *Emarturgia* - 1 species, *Selenio* - 2 species, *Campaes* - 1 species, *Elicrinia* - 1 species, *Opisthoptis* - 1 species, *Calospilos* - 2 species) from the subfamily *Ennominae* of the family (*Geometridae*) of the Greater Caucasus were noted. Representatives of the subfamily *Ennominae* (*Geometridae*) were first noted for the Azerbaijani part of the Greater Caucasus region.

Аннотация. В статье представлены данные о видах, принадлежащих к подсемейству *Ennominae* (*Geometridae*) собранных в регионе Большого Кавказа в пределах Азербайджана. Были отмечены ареалы распространения 28 видов, принадлежащих к 18 родам (*Abraxas* - 1 вид, *Ligadia* - 1 вид, *Colotois* - 1 вид, *Erannis* - 1 вид, *Ennomos* - 2 вида, *Semiothisa* - 4 вида, *Thefrina* - 2 вида, *Cabera* - 2 вида, *Zamacra* - 1 вид, *Gnophos* - 2 вида, *Triphosa* - 1 вид, *Emarturgia* - 1 вид, *Selenio* - 2 вида, *Campaes* - 1 вид, *Elicrinia* - 1 вид, *Opisthoptis* - 1 вид, *Calospilos* - 2 вида) из подсемейства *Ennominae* (*Geometridae*) Большого Кавказа. Представители подсемейства *Ennominae* (*Geometridae*) впервые отмечены для азербайджанской части региона Большого Кавказа.

Keywords: *Geometridae*, material, region, subfamily, genus, species

Ключевые слова: *Geometridae*, материал, подсемейство, *Ennominae* род, вид

2000 genera and 23000 species include the *Geometridae* family and this family is one of the largest family of the butterflies order [1].

In Azerbaijan, in the Absheron-Gobustan region, this family was studied by A. Piriyevev [4, 5], and in the Mountainous Shirvan region, it was studied by S. Hajiyeva [8-10].

Balakan, Zagatala, Shaki, Gakh, Gabala, Oghuz, Ismayilli, Shamakhi, Khachmaz, Guba, Shabran, Gusar, Baku, Sumgait, Gobustan, etc. include the Azerbaijani part of the Greater Caucasus. 27 species belonging to 16 genera of the *Ennominae* subfamily of the *Geometridae* family of the the Institute of Zoology of the Ministry of Science and Education of the Republic of

Azerbaijan were collected from the above-mentioned regions and their collected areas and worldwide distribution were noted [1-3].

Material and methods

The butterflies of the Azerbaijani part of the Greater Caucasus are mainly collected from the Shamakhi, Ismayilli, Zagatala, Gakh, Shaki, Gabala, Gusar regions and Absheron by A. Bogacev, R. Efendi, S. Aliyev, A. Piriyeu, E. Didmanidze and S. Hajiyeva with the built light temples (PRK-2, PRK-4, Ekonom-75) at night, and using a hand net during the days. The collected butterflies were determined by using the designation tables and labeled [1, 3, 6, 7].

The modern names of the regions on the labels: Nukha – Shaki; Gutgashen – Gabala; Vartashen – Oghuz; Gasimkand – Khizi.

Abbreviations: GC - Greater Caucasus; NMG - National Museum of Georgia; SPIZ - Saint Petersburg Institute of Zoology.

Researches and discoveries:

Family: *Geometridae* Leach, 1815.

Subfamily: *Ennominae*.

O. luteolata Linnaeus, 1758.

Material: Azerbaijan – GC Shamakhi 15.06.68 1♂ R.Afandi, Altiaghaj 21.05.88 3♂ 1♀ A.Piriyeu.

Distribution: Western, Central and Eastern Europe, Caucasus, Southern Caucasus.

Genus: *Calospilos* Hübner, 1825

C. pantaria Linnaeus, 1758.

Material: Azerbaijan – Aghdash 1875 1♀, E.Didmanidze (NMG), Zagatala, 30.07.1960 1♀, Altiaghaj 30.05.80 1♀, R.Afandi; Khizi 15.07.89 2♂ 3♀, Zagatala Qabizdara 30.07.1993 1♂1♀, Ismayilli Garagaya 22.09.20 1♂, S. Hajiyeva.

Distribution: Southern Caucasus, Mediterranean countries, Lesser Asia, Northern Africa.

C. sylvata Scopoli, 1867.

Material: Azerbaijan – Zagatala, 30.07.1993 1♀, R.Afandi; Khizi 15.07.89 1♂, Zagatala Qabizdara 29.07.1993 1♂1♀, Ismayilli Garagaya 22.09.20 1♂, S. Hajiyeva.

Distribution: Western, Central and Eastern Europe, Caucasus, Southern Caucasus, Altai, Western Siberia, China, Japan.

Genus: *Abraxas* Leach, 1815

Material: Azerbaijan – Shamakhi 3.07.1976 1♂ 1♀, R.Afandi; Guba Alpan 30.05.80 1♂ 1♀, Gakh Ilisu 23.07.1990 R.Afandi, Ismayilli Garagaya 22.09.20 1♂, S. Hajiyeva.

Distribution: Western, Central and Eastern Europe, Caucasus, Southern Caucasus, Crimea, Southern Siberia, China, Japan.

Genus: *Ligadia* Guenne, 1857

L. adustata Denis et Schif., 1775

Material: Azerbaijan – GC Gusar river 27.06.62 1♂, Zagudov; Gusar river 02.06.64 1♂, Chomchabulag 19.07.1964 1♂ R.Afandi, Ismayilli Garagaya 22.09.20 1♂, S. Hajiyeva.

Distribution: Western, Central and Eastern Europe, Caucasus, Southern Caucasus, Central Asian Reserve.

Genus: *Colotois* Hübner, 1823

C. pennaria Linnaeus, 1767.

Material: Azerbaijan – Nabran 10.10.1961 1♂, Pirgulu 4.07.64 1♀, Chomchabulag 19.07.64 1♂, R.Afandi; Gakh Ilisu 24.07.90 1♂ A. Piriyeu, Nabran 29.07.1993 1♂ 1♀, Ismayilli Garagaya 22.09.20 1♂, S. Hajiyeua.

Distribution: Western, Central and Eastern Europe, Caucasus, Southern Caucasus, Crimea, Western Central Asia, Lesser Asia, Northern America.

Genus: *Erannis* Hübner, 1825

E. declinaus, Staudiger, 1858.

Material: Azerbaijan – GC Altiaghaj 3.08.80 4♂ 3♀, Nabran 28.07.93 4♂ 3♀ A. Piriyeu, Ismayilli Garagaya 22.09.20 1♂, S. Hajiyeua.

Distribution: Daghestan, Southern Caucasus, Balkan Peninsula, Lesser Asia, Northern Iran.

Genus: *Ennomos* Treitschke, 1825

E. quercinaria, Hübner, 1813.

Material: Azerbaijan – GC Khizi 15.07.89 5♂ 3♀, Nabran 28.08.81 4♂ 3♀, Kirovka 3.08.88 2♂, Pirgulu 3.05.88 R.Afandi, Ismayilli Garagaya 22.09.20 1♂, S. Hajiyeua.

Distribution: Central and Eastern Europe, Caucasus, Southern Caucasus, Western Central Asia, Lesser Asia.

E. erosaria, Denis et Schiffermüller, 1775

Material: Azerbaijan – GC Khizi 15.07.89 2♂ 3♀, A. Piriyeu, Altiaghaj 15.06.88 1♂ 3♀ R.Afandi, Ismayilli Garagaya 22.09.20 1♂, S. Hajiyeua.

Distribution: Central and Eastern Europe, Caucasus, Southern Caucasus, Western Central Asia, Lesser Asia.

Genus: *Semiothisa* Treitschke, 1825 (= *Chiasmia* Hüber, 1823, = *Isturgia* Hüber, 1823, = *Macaria* Curtis, 1825)

S. alternata, Denis et Schiffermüller, 1775

Material: Azerbaijan – GC Chomchabulag 19.07.64 1♂, Gusar river 5.06.64 1♂ R.Afandi, Ismayilli Garagaya 22.09.20 1♂ S. Hajiyeua.

Distribution: Western, Central and Eastern Europe, Caucasus, Southern Caucasus, Eastern Central Asia, Siberia, Amur region.

S. notata, Linnaeus, 1758.

Material: Azerbaijan – GC Gakh Ilisu 24.07.90 3♂, Gusar river 24.07.90 1♂ A. Piriyeu, Ismayilli Garagaya 22.09.20 1♂, S. Hajiyeua.

Distribution: Western, Central and Eastern Europe, Caucasus, Southern Caucasus, Central Asia, Siberia, Northern Iran.

S. clatrata, Linnaeus, 1758.

Material: Azerbaijan – GC Goytapa lake 03-07.1904 1♂ 3♀ (NMG Shaposhnikova), Gonagkand 20.04.62 1♂, Gusar river 5.06.64 1♂1♀, Laza 6.08.74 1♀ R.Afandi, Altiaghaj 14.07.89 1♂, Sumgait 6.06.64 1♂ A. Piriyeu, Ismayilli Garagaya 22.09.20 1♂ S. Hajiyeua.

Distribution: Western, Central and Eastern Europe, Caucasus, Southern Caucasus.

S. glarearia Denis et Schiffermüller, 1775.

Material: Azerbaijan – GC Shamakhi 27. 07. 37 1♂ A. Bogachov, Gonagkand 20.07.62 1♂ , Gusar river 5.06.64 2♂ 2♀, Shamakhi Kirovka 17.05.73 1♂, Pirgulu 3.05.88 R.Afandi, Altiaghaj 21.05.88 4♂, Khizi 16.05.89 4♂ 3♀ A.Piriyeu, Ismayilli Garagaya 22.09.20 1♂ S. Hajiyeua.

Distribution: Southern Europe, Crimea, Kazakhstan, Central Asia.

Genus: *Thefrina* Guenee, 1845 (= *Eubolia* Dupenchel, 1845).

Thefrina hopfferaria Staudinger, 1879.

Material: Azerbaijan – Ordubad 1♀ 1899 (Radde, NMG), Nakhchivan 16.06.73 1♀ E. Didmanidze, Shamakhi Kirovka 24.03.73 1♂ R.Afandi, Ismayilli Garagaya 22.09.20 1♂, S. Hajiyeve.

Distribution: Southern Caucasus, Lesser Asia.

Thefrina arenacearia Denis et Schiffermüller, 1775.

Material: Azerbaijan – Ordubad 1♀ 1899 (Radde, NMG), Nakhchivan 16.06.73 1♀ E. Didmanidze, Nukha Caruli 9.05.61 1♂, Gusar river 4.06.64 1♂ 2♀, Shamakhi Kirovka 14.05.73 1♂ R.Afandi, Absheron Mehdiabad 13.06.88 1♂, Altiaghaj 12.05.88 3♂, Saray 17.04.89 2♂, Sarigaya 23.05.89 2♂, A. Piriyeve, Ismayilli Garagaya 22.09.20 1♂, S. Hajiyeve.

Distribution: Southern Europe, Caucasus, Southern Caucasus, Central Asia, Southern Siberia, Mongolia.

Genus: *Cabera* Treitschke, 1845

C. pusaria Linnaeus, 1758

Material: Azerbaijan – Isti-su Yevlakh 1♀ 1899 (Radde, NMG), GC Gusar river 2.06.64 2♂, Shamakhi Kirovka 16.06.74 1♂, Astarkhanka 29.05.74 1♂ R.Afandi, Khizi 17.05.89 1♀ A. Piriyeve, Ismayilli Garagaya 22.09.20 1♂, S. Hajiyeve.

Distribution: Western, Central and Eastern Europe, Caucasus, Southern Caucasus, Kazakhstan, Siberia, Amur region, Sakhalin, Kuril Islands, Northern Iran.

C. exanthemata Scopoli, 1763.

Material: Azerbaijan – Isti-su Yevlakh 1♀ 1899 (Radde, NMG), GC Gusar river 2.06.64 2♂, GC Pirgulu 4.07.64 2♂ 1♀, Bum 16.07.74 1♂, Nabran 12.08.81 1♂ R.Afandi.

Distribution: Western, Central and Eastern Europe, Crimea, Caucasus, Southern Caucasus, Kazakhstan, the mountains of Central Asia, Siberia, Amur region, Sakhalin, Kuril Islands, Japan.

Genus: *Zamacra* Meyrick, 1885

Z. flabellaria Heeger, 1858.

Material: Azerbaijan – GC Davachi Sarban 20.03.77 2♂ R.Afandi, Ismayilli Garagaya 22.09.20 1♂, S. Hajiyeve.

Distribution: Southern Caucasus, Central Asia, Northern and Southern Africa, Front Asia, Iran.

Genus: *Gnophos* Meyrick, 1885

G. ambiguata Duponchel, 1830.

Material: Azerbaijan – GC Nabran 10.07.61 1♂, Qonaqkənd 20.07.62 1♂ R.Afandi, Vartashen Calud 30.07.89 1♂, Khizi 18.05.88 1♂ A.Piriyeve, Ismayilli Garagaya 22.09.20 1♂, S. Hajiyeve.

Distribution: Europe, the mountains of Central Asia, Altai.

G. variegata Duponchel, 1830

Material: Azerbaijan – GC Gonagkand 20.07.62 1♂ R.Afandi, Ismayilli Garagaya 22.09.20 1♂, S. Hajiyeve.

Distribution: Europe, Lesser Asia, Crimea.

Genus: *Triphosa* (= *Phalaena*) Stephens, 1829

Triphosa dubidata Linnaeus, 1758

Material: Azerbaijan – GC Baku 10.38 1♀ Garyaghdi, Balakan 19.07.60 1♂, Gonagkand 20.07.62 1♂ 1♀ R.Afandi, Altiaghaj 21.05.88 1♂ A.Piriyeve, Ismayilli Garagaya 22.09.20 1♂, S. Hajiyeve.

Distribution: Europe, Southern Caucasus.

Genus: *Emarturgia* Lederer, 1853

E. atomaria Linnaeus, 1758.

Material: Azerbaijan – Aresh Goy-tapa 06.1916 1♂ (NMG), GC Bum 16.07.64 1♂ R.Afandi, Ismayilli Garagaya 22.09.20 1♂ S. Hajiyeva.

Distribution: Europe, Northern Asia.

Genus: *Selenio* Stephens, 1829

S. tetralunaria Hufnagel, 1767.

Material: Azerbaijan – GC Chomchabulag 18.07.64 1♀, Gakh Ilisu 30.06.86 1♂ R.Afandi, Guba Alpan 30.05.80 1♂, Zagatala Gabizdara 29.07.93 3♂, A.Piriyev, Ismayilli Garagaya 22.09.20 1♂, S. Hajiyeva.

Distribution: Europe, Southern Caucasus.

S. lunaria Schiff, 1775.

Material: Azerbaijan – GC Bum 16.07. 64 1♀ R.Afandi, Khizi 15.07.89 1♂, Guba Alpan 30.05.80 1♂, Oghuz Calud 30.07.89 2♂ 3♀ A.Piriyev.

Distribution: Western, Central and Eastern Europe, Caucasus, Southern Caucasus, Northern Kazakhstan.

Genus: *Campaeo* Lamark, 1816

C. margaritata Linnaeus, 1767.

Material: Azerbaijan – GC Pirgulu 16.07. 64 1♀, Nabran 28.06.81 1♂, R.Afandi, Ismayilli 1. 08.89 1♂, Gakh Ilisu 31.07.93 1♂, Oghuz Calud 2.06.90 1♀ A.Piriyev.

Distribution: Central and Southern Europe, Caucasus, Southern Caucasus.

Genus: *Elicrinia* Hübner, 1823

E. cordiaria Hübner, 1790.

Material: Azerbaijan – GC Nukha Calud 6.05.61 4♂ R.Afandi, Altiaghaj 21.05.88 3♂1♀ A.Piriyev.

Distribution: Southern Europe, Northern Kazakhstan, Lesser Asia, Northern Iran, Caucasus, Southern Caucasus.

Genus: *Crocallis* Treitschke, 1826

C. tusciaria Borkhausen, 1793.

Material: Azerbaijan – GC Shamakhi 24.10.64 1♂, Nukha Calud 20.10.68 2♂, Khizi 19.10.89 2♂ R.Afandi, Altiaghaj 21.05.88 3♂ 1♀ A.Piriyev.

Distribution: Southern Europe, Northern Kazakhstan, Lesser Asia, Northern Iran, Caucasus, Southern Caucasus.

C. elinguarina Linnaeus, 1758.

Material: Azerbaijan – GC Altiaghaj 3.08.80 1♂, Shamakhi Pirgulu 5.08.88 1♂, Nabran 28.08.81 2♂, Vartashen Calud 30.07. 89 2♂ R.Afandi, Altiaghaj 21.05.88 3♂ 1♀ A.Piriyev.

Distribution: Southern Europe, Northern Kazakhstan, Lesser Asia, Northern Iran, Caucasus, Southern Caucasus.

Genus: *Opisthograptis* Hübner, 1823

/ = *O. luteolata* Denis and Schiffermüller, 1775.

Material: Azerbaijan – GC Ilisu 30. 06. 86 1♂ R.Afandi, Altiaghaj 21.05.88 2♂1♀ A.Piriyev, Shamakhi Damirchi 5.07.2017 1♂, Aghsu Hünqar 24.05.2017 1♀, Aghsu Musabayli 16.05.2019 2♂ S. Hajiyeva.

Distribution: Europe, Caucasus, Central and Southern Ural, Southern-Western Siberia.

Conclusion

In the Greater Caucasus region of Azerbaijan, 26 species belonging to 18 genera belonging from the *Ennominae* subfamily of the *Geometridae* family were noted by us. 13 species of them are new for this province. The species of the *Semiothisa* genus are predominate.

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