Zygaenidae of Mongolia (Lepidoptera)

Konstantin A. Efetov, Oleg G. Gorbunov and Gerhard M. Tarmann

Prof. Dr. Konstantin A. Efetov, Crimean State Medical University, UA-95006 Simferopol, Crimea, Ukraine; efetov.konst@gmail.com

Dr. Oleg G. Gorbunov, A. N. Severtsov Institute of Ecology and Evolution of Russian Academy of Sciences, Leninskiy prospekt, 33, RU-119071 Moscow, Russia; gorbunov.oleg@mail.ru

Prof. Dr. Gerhard M. Tarmann, Tiroler Landesmuseen, Ferdinandeum, Naturwissenschaftliche Sammlungen, Feldstrasse 11a, A-6020 Innsbruck, Austria; g.tarmann@tiroler-landesmuseen.at

Abstract: An overview of the Zygaenidae fauna of Mongolia is provided. Ten species are recorded, including *Illiberis (Primilliberis) pruni* Dyar, 1905, which is new for Mongolia.

Die Zygaenidae der Mongolei (Lepidoptera)

Zusammenfassung: Die derzeitige Kenntnis über die Zygaenidae-Arten der Mongolei wird zusammengefaßt. 10 Arten werden aufgelistet. Eine Art wird erstmals für das Gebiet der Mongolei gemeldet: *Illiberis (Primilliberis) pruni* Dyar, 1905.

A checklist of the Zygaenidae of Mongolia

Subfamily Procridinae Boisduval, 1828(: 38)

***Illiberis (Primilliberis) rotundata* Jordan, 1907(: 15).**

= *psychina* sensu Alberti (1951: 134) (*nec* Oberthür 1880: 28), misidentification.

= *kaszabi* Alberti, 1970(: 194) (*Illiberis* sp.). – Synonymized by Efetov (2005: 200).

= *ononica* Dubatolov, 2002(: 109). – Synonymized by Efetov (2005: 200).

***Illiberis (Primilliberis) pruni* Dyar, 1905(: 954).**

= *pseudopsychina* Alberti, 1951(: 139) (*Illiberis* sp.). – Synonymized by Efetov & Tarmann (1995: 75).

I. (P.) pruni pseudopsychina **Alberti, 1951**(: 139). – Combination by Efetov & Tarmann (1995: 75).

***Illiberis (Alterasvenia) ulmivora* (Graeser, 1888[: 107])**

(*Northia* sp.).

***Rhagades (Rhagades) pruni* ([Denis & Schiffermüller], 1775[: 308])**

(*Sphinx* sp.).

= *chinensis* (Felder & Felder, 1862[: 31]) (*Ino* sp.).

Rh. (Rh.) pruni chinensis **(Felder & Felder, 1862**[: 31]). – (*Ino* sp.).

***Jordanita (Roccia) budensis* (Speyer & Speyer, 1858[: 466])**

(*Ino* sp.).

J. (R.) budensis centralasiae **(Alberti, 1937**[: 87]) (*Procris budensis* ssp.).

= *naufocki* sensu Daniel (1965: 93) (nec Alberti 1937: 88), misidentification.

Subfamily Zygaeninae Latreille, 1809(: 189, 211)

***Zygaena (Mesembrynus) purpuralis* (Brünnich, 1763[: 686])**

(*Sphinx* sp.).

Z. (M.) purpuralis tianschanica **Burgeff, 1926**(: 14).

= *naryna* Burgeff, 1926(: 14.)

= *kasakstana* Holik, 1939(: 273).

= *talassica* Holik & Sheljuzhko, 1953(: 192).

***Zygaena (Agrumenia) exulans* (Hohenwarth, 1792[: 265])**

(*Sphinx* sp.).

Z. (A.) exulans sajana **Burgeff, 1926(: 25).**

= *altayensis* Dabrowski, 1977(: 27).

= *chastilovi* Churkin & Saldaitis, 2005(: 133). – Synonymized by Tremewan (2006: 144).

***Zygaena (Agrumenia) viciae* ([Denis & Schiffermüller], 1775[: 45])**

(*Sphinx* sp.).

Z. (A.) viciae dahurica **Boisduval, 1834**(: 57).

= *mongolica* Staudinger, 1901(: 383).

***Zygaena (Zygaena) osterodensis* Reiss, 1921: 118.**

= *scabiosae* sensu auctorum (nec *scabiosae* Scheven, 1777[: 97]).

Z. (Z.) osterodensis kenteina **Burgeff, 1926**(: 19).

***Zygaena (Zygaena) lonicerae* (Scheven, 1777[: 97])**

(*Sphinx* sp.).

Z. (Z.) lonicerae tannuensis **Viidalepp, 1979**(: 18). – (*Zygaena (Huebneriana) lonicerae* ssp.).

Systematic part

Illiberis (Primilliberis) rotundata Jordan, 1907

Alberti (1951: 134) mentioned a ♂ specimen of this species from northern Mongolia ("Mongolei sept.") under the name *Illiberis psychina*. This ♂ from the Püngeler collection had been determined by K. Jordan as *I. psychina* and bears his original identification label. Alberti dissected this specimen and figured its genitalia (1951: 135, pl. 4, figs. 3a–3c). Alberti (1954: 232) once more mentioned *I. psychina* from Mongolia and also from northern China and the Far East of Russia ("Amur") and provided new drawings of the genitalia (pl. 18: figs. 5a–5c), including also a figure of the female genitalia. Subsequently, Inoue (1976: 483) studied the ♀ holotype of *I. rotundata* as well as ♂♂ and ♀♀ of this species from Japan and found that the specimens figured by Alberti are *I. rotundata*, not *I. psychina*.

Alberti (1970: 194) described *Illiberis kaszabi* based on 8 ♂♂ and 3 ♀♀ from Mongolia collected by Z. Kaszab. According to the original description the material of Kaszab originates from:

> "Südgobi aimak: Gurban Sajchan ul Gebirge, 15 km S von der Stadt Dalanzadgad, ca. 1750 m, 13. VI. 1967 (Nr. 794), 2 ♂♂ [paratypes];
>
> Ostrand vom Zöölön ul Gebirge, 58 km WSW von Somon Bajandalaj, 1500 m, 16. VI. 1967 (Nr. 806), 5 ♂♂ [holotype and paratypes] and 3 ♀♀ [paratypes];

Nojon nuruu Gebirge, in einer Schlucht unterwegs zwischen Dund gol (‚alter' Somon Gurban-tes) und Somon Nojon, 30–40 km SO vom Salzsee, 1600 m, 19. VI. 1967 (Nr. 821), 1 ♂" [paratype].

The examination of 5 ♂♂ and 2 ♀♀ paratypes of *I. kaszabi* deposited in Museum Witt, Munich, Germany, by K. A. Efetov and comparison with the ♀ holotype of *I. rotundata* deposited in the Natural History Museum (BMNH) in London, U.K. (Efetov 1997: 234–235, figs. 7–9) showed the conspecificity of these two taxa. As a consequence, *I. kaszabi* Alberti, 1970, was synonymized with *I. rotundata* Jordan, 1907 (Efetov 2005: 200, 204).

There is another taxon described on the basis of two specimens (♂ holotype, ♀ paratype) from Russia, not far from the boundary of northern Mongolia: *Illiberis ononica* Dubatolov, 2002. The type locality is "Russia, SE Transbaikalia, left bank of the Onon River, 7 km upper of Nizhnii Tsasuchei village, 'Malyi Natur' local place". The type specimens were collected on 16. VII. 1997. No differences were found between *I. rotundata* and *I. ononica* (original description, photos of the type specimens and genitalia drawings). Consequently, *I. ononica* Dubatolov, 2002, was synonymized with *I. rotundata* Jordan, 1907 (Efetov 2005: 200, 204).

Material examined from Mongolia (Fig. 3 [map])

1 ♂, paratype of *I. kaszabi*, with pin-labels: "Nr. 794, 13. VI. 1967", "Mongolia: Südgobi aimak, Gurban Sajchan ul, 15 km S von Dalanzadgad, 1750 m, Exp. Dr. Z. Kaszab, 1967";

3 ♂♂, 2 ♀♀, paratypes, "Nr. 806, 16. VI. 1967", "Mongolia: Südgobi aimak, Zöölön ul, 58 km WSW von Somon Bajandalaj, 1500 m, Exp. Dr. Z. Kaszab, 1967";

1 ♂, paratype, "Nr. 821, 19. VI. 1967", "Mongolia: Südgobi aimak, Nojon nuruu, Schlucht [un]terwegs zw. Dund gol und Somon Nojon, 30–40 km vom Salzsee, 1600 m, Exp. Dr. Z. Kaszab, 1967".

Biology

The larval hostplants of *I. rotundata* belong to the Rosaceae (Efetov 2005: 210). In Japan it is known as a pest in orchards. Univoltine.

Illiberis (Primilliberis) pruni pseudopsychina Alberti, 1951

Illiberis pseudopsychina was described as a species by Alberti (1951: 139) from the Far East of Russia (♂ holotype from "Ussuri, Kasakewitsch" [Khabarovskiy Kray, Kazakevichevo]). In the same paper he described the Japanese populations from Yokohama as a subspecies *I. pseudopsychina japonica* (Alberti 1951: 140), based on their larger size and darker habitus. Later Inoue (1976: 476) cited *I. pseudopsychina japonica* as a synonym of *I. pruni*. Efetov & Tarmann (1995: 75) recognized two subspecies of *I. pruni: I. pruni pruni* Dyar, 1905, from Japan and *I. pruni pseudopsychina* from the continental part of Asia. So far the last-mentioned subspecies is known from the Russian Far East (Amurskaya Oblast, south of Khabarovskiy Kray and Primorskiy Kray), China and Korea (Efetov 2005: 61, 211).

This is the first record of *I. pruni* from Mongolia based on the material collected in 2008 by O. G. Gorbunov.

Material examined from Mongolia (Fig. 3 [map])

13 ♂♂, 8 ♀♀, "Mongolia, Dornod Aimag, 17 km ESE Halhgol, 700 m, 47°34′ N, 118°49′ E, 11. VII. 2008, O. Gorbunov leg.";

1 ♂, "Mongolia, Dornod Aimag, 7 km S Chuluunhoroot, 600 m, 49°48′ N, 115°43′ E, 18. VII. 2008, O. Gorbunov leg.".

Biology

The larval hostplant in Mongolia (observation by O. G. Gorbunov) is *Malus baccata* (L.) Borkh. (Rosaceae). Biotope: riverside scrub with small apple trees scattered in gullies (Fig. 1). Univoltine.

Illiberis (Alterasvenia) ulmivora (Graeser, 1888)

There is only one record from Mongolia. Alberti (1951: 143) examined two ♂ specimens from the Püngeler collection in Berlin labelled "Mongolei". Later, Alberti (1970: 194) mentioned this record once more.

Biology

The larval hostplants of this species in the Far East of Russia are *Ulmus laciniata* (Trautv.) Mayr, and *Ulmus japonica* (Rehd.) Sarg. (Ulmaceae) (Efetov 2005: 216). Univoltine.

Rhagades (Rhagades) pruni chinensis (Felder & Felder, 1862)

In the continental parts of eastern Asia this species is represented by *Rh. (Rh.) pruni chinensis*. This trans-Palaearctic species is known from the Pyrenees to Japan. So far, in eastern Asia it is known from the Russian Far East (Amurskaya Oblast, south of Khabarovskiy Kray, Primorskiy Kray and southern Kuril Islands), China, Korea and Japan (Efetov 2005: 61, 211). In the Kuril Islands and Japan, the species is represented by another subspecies: *Rh. (Rh.) pruni esmeralda* Butler, 1877(: 394).

This species was recorded from Mongolia (as "*Rhagastes* [sic] *pruni*") by Daniel (1965: 93), based on 6 ♂♂ labelled "Central aimak: Zuun-Chara, Duusch ul., 1100 m, 8. VII. [19]64 (Nr. 282, 283)". One of these specimens was studied by the first author in 1997, but the altitude on the label is 850 m (see below).

Our information is based on the material in the collection of Museum Witt, Munich, Germany, from the Dr. Kaszab expeditions (1964, 1965) and from new material collected in 2003, 2007 and 2008 by O. G. Gorbunov.

Material examined from Mongolia (Fig. 3 [map])

1 ♂, "Mongolia, Central aimak, Zuun-Chara, 850 m, Exp. Dr. Z. Kaszab, 1964", "Nr. 282, 8. VII. 1964";

4 ♀♀, "Mongolia, Centej aimak, 7 km NO von Somon Mörön, 1200 m, Exp. Dr. Z. Kaszab, 1965", "Nr. 321, 28–29. VII. 1965";

3 ♂♂, 6 ♀♀, "Mongolia, Selenge Aimag, 59 km NE of Darhan, 650 m, 49°48′ N, 106°35′ E, 19. VII. 2003, O. Gorbunov & F. Igari leg.";

1 ♂, 1 ♀, "Mongolia, Bayanhongor Aimag, 55 km WSW Bogd, 1400 m, 45°8′ N, 100°3′ E, 30. VI. 2007, O. Gorbunov leg." (Fig. 2);

1 ♂, "Mongolia, Bayanhongor Aimag, 40 km E Bayantsagan, 1800 m, 45°4′ N, 99°27′ E, 30. VI. 2007, O. Gorbunov leg.";

7 ♂♂, 3 ♀♀, "Mongolia, Dornogovi Aimag, 60 km S Mandah, 950 m, 43°52′ N, 108°14′ E, 24. VI. 2008, O. Gorbunov leg.".

Biology

A polyphagous species. The larval hostplants belong to the Rosaceae, Fagaceae, Ericaceae, Rhamnaceae and Salicaceae (Efetov & Tarmann 1999: 35, Efetov 2005: 220). The larval hostplants in Mongolia are *Amygdalus pedunculata* Pallas and *A. mongolica* Maxim. Univoltine.

The second author made the following field observation: "This species is very usual in Mongolia and can be found everywhere where *Amygdalus* occurs. The moths are sitting in the bushes of the hostplant and be seen on the wing only after disturbance."

Jordanita (Roccia) budensis centralasiae (Alberti, 1937)

In the original description, Alberti (1937: 87) mentioned the following characters for this subspecies (♂ holotype from Irkutsk): weakly scaled wings, green colour lighter and with less intensive sheen than populations from Hungary (type locality of *J. budensis budensis*). This species was mentioned by Daniel (1965: 93) from Mongolia as *Procris naufocki*, based on two ♂ specimens with identical label data (see below). After dissection of one of these specimens in Museum Witt, Munich, Germany, it was determined by K. A. Efetov as *Jordanita budensis* in 1993.

Material examined from Mongolia (Fig. 3 [map])

1 ♂, "Mongolia, Central aimak, Ulan-Baator, 1300–1400 m, a[m] linken Ufer des Tola, Exp. Dr. Z. Kaszab, 1964", "Nr. 116, 11. VI. 1964" (published by Daniel 1965: 93 as "*Procris naufocki*");

1 ♀, "Mongolia, Central aimak, Ulan-Baator, Nucht im, Bogdo ul, 1600–1700 m, Exp. Dr. Z. Kaszab, 1966", "Nr. 512, 9. VI. 1966";

1 ♂, "Mongolia, Central aimak, Ulan-Baator, Nucht im, Bogdo ul, 1650–1750 m, Exp. Dr. Z. Kaszab, 1966", "Nr. 516, 10. VI. 1966";

2 ♂♂, "Mongolia, Central aimak, Bogdo ul, Bugijn až achuj, 1650 m, Exp. Dr. Z. Kaszab, 1967", "Nr. 753, 31. V. 1967" (these two specimens were mentioned in Daniel 1970: 194, det. Alberti);

1 ♂, "Mongolia, Central aimak, Bugijn až achuj im Geb. Bogdo ul, 36 km SW von Ulan-Baator, 1650 m, Exp. Dr. Z. Kaszab, 1968", "Nr. 940, 10. VI. 1968";

1 ♂, "Mongolia, Central aimak, 11 km OSO von Somon Bajanzogt, 1600 m, Exp. Dr. Z. Kaszab, 1968", "Nr. 949, 13. VI. 1968";

1 ♂, "Mongolia, Bulgan aimak, zw. Somon Chischig-Öndör und Somon Orchon, 23 km NNO von Somon Chischig-Öndör, 1390 m, Exp. Dr. Z. Kaszab, 1968", "Nr. 962, 15. VI. 1968";

1 ♂, "Mongolia, Chövsgöl aimak, 6 km WNW von Somon Tosoncengel, 1480 m, Exp. Dr. Z. Kaszab, 1968", "Nr. 979, 18. VI. 1968";

1 ♂, "Mongolia, Chövsgöl aimak, N von Somon Chatgal am SW Rand des Sees, Chövs-göl nuur, 1650 m, Exp. Dr. Z. Kaszab, 1968", "Nr. 1122, 18. VII. 1968";

1 ♂, "Mongolia, Hovsgol Aimak, Tarvagatayn Mts, Oroohiin Pass, 48°18.94′ N, 99°23.57′ E, 2250 m, 8. VII. 2003, O. Gorbunov & F. Igari leg.";

2 ♂♂, 2 ♀♀, "Mongolia, Ulaanbaatar, Ulaanbaatar, Bogdo-Ula, 1500 m, 47°52′ N, 107°2′ E, 6. VI. 2004, O. Gorbunov leg.";

1 ♀, "Mongolia, Tov Aimag, 40 km NE of Mongonmorit, 1500 m, 48°31′ N, 108°52′ E, 3. VII. 2004, O. Gorbunov & K. Gunina leg.";

1 ♂, "Mongolia, Tov Aimag, 40 km NE of Mongonmorit, 1500 m, 48°31′ N, 108°52′ E, 4. VII. 2004, O. Gorbunov & K. Gunina leg.";

1 ♀, "Mongolia, Tov Aimag, 25 km N of Mongonmorit, 1500 m, 48°29′ N, 108°33′ E, 6. VII. 2004, O. Gorbunov & K. Gunina leg.";

1 ♂, "Mongolia, Tov Aimag, 25 km N of Mongonmorit, 1500 m, 48°29′ N, 108°33′ E, 7. VII. 2004, O. Gorbunov & K. Gunina leg.";

1 ♂, "Mongolia, Ulaanbaatar, 20 km NE of Ulaanbaatar, 1500 m, 48°5′ N, 107°4′ E, 12. VII. 2004, O. Gorbunov & K. Gunina leg.";

6 ♂♂, 1 ♀, "Mongolia, Bulgan Aimag, 35 km NW of Bayan-Agt, 1500 m, 49°13′ N, 101°46′ E, 16. VI. 2005, O. Gorbunov leg.".

Biology

The larval hostplants of *J. budensis* belong to the Asteraceae (Efetov & Tarmann 1999: 37, Efetov 2005: 221). Univoltine.

Zygaena (Mesembrynus) purpuralis tianschanica Burgeff, 1926

Zygaena purpuralis is a western and central Palaearctic species (Naumann et. al. 1984: map 96). Holik & Sheljuzhko (1953: 198) mentioned 4 ♂♂ specimens of *Zygaena purpuralis* labelled "Mongolia" deposited in Zoologische Staatssammlung, Munich. As there was no precise locality given, Naumann et al. (1984) did not place a distribution spot for Mongolia into their distribution atlas. Hofmann & Tremewan (1996: 75) also did not include Mongolia to the distribution of *Z. purpuralis*. However, as there are localities known from *Z. purpuralis tianschanica* in Altay (Russia) just on the boundary with Mongolia the presence of this species on Mongolian territory is to be expected. Therefore we consider that the origin of these 4 specimens mentioned by Holik & Sheljuzhko (1953) from Mongolia is true.

Biology

The larval hostplants of *Z. purpuralis* belong to the Lamiaceae (*Thymus, Satureja*) (Efetov 1990: 85, 2005: 168, Hofmann & Tremewan 1996: 71). Univoltine.

Zygaena (Agrumenia) exulans sajana Burgeff, 1926

Zygaena exulans has a disjunct arcto-alpine distribution in the western and central Palaearctis (Naumann et al. 1984: map 47). Holik & Sheljuzhko (1955: 121) recorded this species in Mongolia from Kobdo, Tannuola ("Palastgebirge") and Schawyr (Shavyr), and Alberti (1971: 370) from Dain-pan-dawa and Bodonč-gol, both localities situated in Aimak Chovd in the Mongolian Altay. *Zygaena exulans sajana* was described from Russia, Siberia, Tuva.

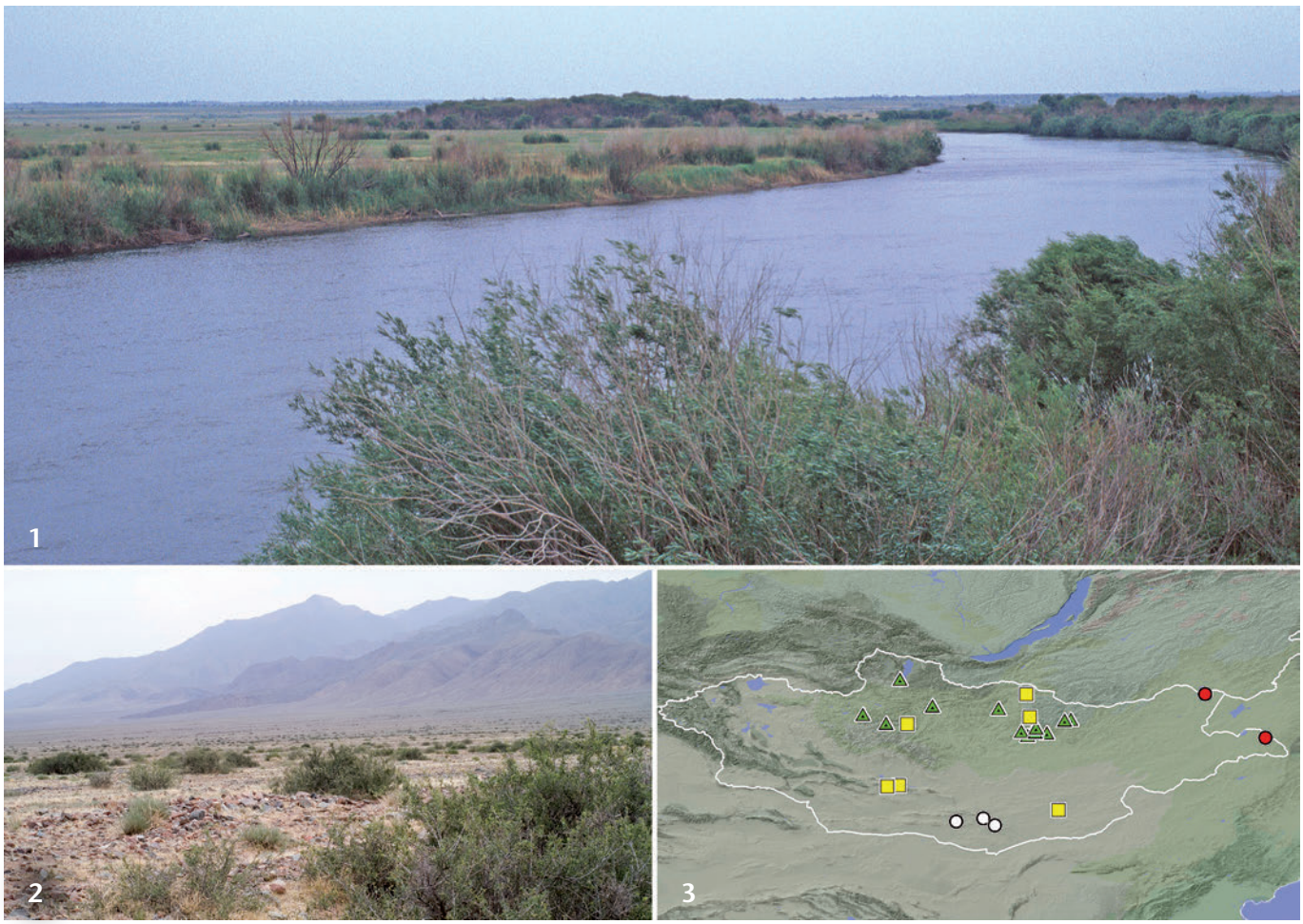

Fig. 1: Biotope of *Illiberis (Primilliberis) pruni pseudopsychina* Alberti, 1951, Mongolia, Dornod Aimag, 17 km ESE Halhgol, Halhin Gol [river], 700 m, 47°34' N, 118°49' E, 11. vii. 2008. **Fig. 2:** Biotope of *Rhagades (Rhagades) pruni chinensis* (Felder & Felder, 1862), with bushes of larval hostplant *Amygdalus*. Mongolia, Bayanhongor Aimag, 55 km WSW Bogd, 1400 m, 45°8' N, 100°3' E, 30. vi. 2007 (Photos: O. G. Gorbunov). — **Fig. 3 (map):** Distribution of the Procridinae in Mongolia. *Illiberis pruni pseudopsychina* (red circles), *I. rotundata* (white circles), *Rhagades pruni chinensis* (yellow quadrates), *Jordanita budensis centralasiae* (green triangles).

Distributed from Russian Altay to Hövsgöl in Mongolia (Hofmann & Tremewan 1996: 134). Recently Churkin & Saldaitis (2005: 133) described *Z. exulans chastilovi* Churkin & Saldaitis, 2005, from Mongolia, which has already been recognized by Tremewan (2006: 143) as a synonym of *Z. (A.) exulans sajana* Burgeff, 1926.

The type series of *Z. exulans chastilovi* Churkin & Saldaitis, 2005 originates from:

> "Holotype: ♂, Mongolia, Khovd aimak, Mongolian Altai (east. sl.), 25 km S Tzetzeg somon, 2.–3. vii. 2004, 2700–2900 m, Churkin S. leg.
>
> Paratypes: 131 ♂♂, 7 ♀♀, same data, Churkin, S., Chastilov S. & A. Saldaitis leg.; 7 ♂♂, 1 ♀, SW Mongolia, Govi-Altai aimak, Mongolian Altai (south. sl.), Alag Khairkhan Mts., 2650–2900 m, 11.–15. vi. 2004, Churkin S. & S. Chastilov leg."

Material examined from Mongolia

> 1 ♂, "Mongolia, Zavhan/Arhangay, Solongotyn davaa Pass, 2550 m, 48°17′ N, 98°58′ E, 13. vii. 2005, O. Gorbunov leg."

Biology

A polyphagous species. The larval hostplants belong to the Fabaceae, Ericaceae, Empetraceae, Betulaceae, Salicaceae, Rosaceae, Saxifragaceae, Scrophulariaceae, Caryophyllaceae, Cyperaceae, Lamiaceae, Orchidaceae, Polygonaceae, Ranunculaceae (Hofmann & Tremewan 1996: 132). Univoltine.

Zygaena (Agrumenia) viciae dahurica Boisduval, 1834

Zygaena viciae is a trans-Palaearctic species (Naumann et al. 1984: map 56). *Zygaena viciae dahurica* was described from Russia: Chita, Dauriya (Siberia). Distributed in Russia (Lake Baykal region and Chita) and Mongolia (Selenge, Töv) (Hofmann & Tremewan 1996: 148). The taxon *mongolica* Staudinger, 1901 was described from specimens originating from "Urga" (Mongolia); it is now recognized as a synonym of *Z. viciae dahurica* (Hofmann & Tremewan 1996: 148).

Material examined from Mongolia

> 2 ♂♂, 3 ♀♀, "Mongolia, Selenge Aimag, 80 km W Suhbaatar, 1100 m, 50°9′ N, 105°8′ E, 18. vii. 2003, O. Gorbunov & F. Igari leg.";
>
> 2 ♀♀, "Mongolia, Selenge Aimag, 59 km NE of Darhan, 650 m, 49°48′ N, 106°35′ E, 19. vii. 2003, O. Gorbunov & F. Igari leg.";
>
> 1 ♀, "Mongolia, Selenge Aimag, 59 km NE of Darhan, 650 m, 49°48′ N, 106°35′ E, 20. vii. 2003, O. Gorbunov & F. Igari leg.";
>
> 1 ♂, "Mongolia, Selenge Aimag, 60 km NE of Darhan, 800 m, 49°52′ N, 106°33′ E, 22. vii. 2003, O. Gorbunov & F. Igari leg.".

Biology

The larval hostplants of *Z. viciae* belong to the Fabaceae (Hofmann & Tremewan 1996: 143). Univoltine.

Zygaena (Zygaena) osterodensis kenteina Burgeff, 1926

Zygaena osterodensis is a western and central Palaearctic species (Naumann et. al. 1984: map 46). *Zygaena osterodensis kenteina* was described from Mongolia, Hentiyn Nuruu (Keintei-Gebirge), N of Ulaanbaator (Urga) (Holik & Sheljuzhko 1954/1955: 111, 112, Hofmann & Tremewan 1996: 142).

Biology

The larval hostplants of *Z. osterodensis* belong to the Fabaceae (*Lathyrus, Vicia*) (Hofmann & Tremewan 1996: 139). Univoltine.

Zygaena (Zygaena) lonicerae tannuensis Viidalepp, 1979

Zygaena lonicerae is a western and central Palaearctic species (Naumann et al. 1984: map 63). It is recorded from Mongolia by Holik & Sheljuzhko (1958: 222) based on 5 ♂♂ and 4 ♀♀ labelled "Changai". Already Holik & Sheljuzhko (1958: 221–223) had discussed the possibility of the presence of a separate subspecies for central and western Siberia. However, it was not described until 1979 when Viidalepp named it ssp. *tannuensis* based on the ♂ holotype and 7 ♂♂, 6 ♀♀ (paratypes) collected in the Republic of Tuva: "Sosnovka, southern and south-eastern slopes of northern foothills of Tannu-Ola, 12.–14. vii. 1972". In addition to the type series he mentioned 1 specimen collected on the bank of the river Azas. This subspecies is characterized as follows: Forewings dark bluish black with weak sheen and carmine-red spots that are larger than in "Estonian subspecies (*Z. l. karelica* Bryk)". Hindwings are also carmine-red with narrow bluish black border (only in the part near apex broader, 1 mm); fringe bluish black. Red spot IV (which is situated between central cell and hind margin) roundish-quadrate large and divided from spot III (situated in cell) only by a narrow line of the main colour on hind margin of central cell. Basal spots confluent. Apex of forewings more stretched than in "Estonian form". On the underside red parts of pattern more pinkish than on upperside. Length of forewing: ♂♂ 33.0–36.5 mm, ♀♀ 35.5–38.5 mm.

Hofmann & Tremewan (1996: 180) mentioned *kalkanensis* Reiss, 1932 as the easternmost valid subspecies of *Z. lonicerae* with the synonym *uzjana* Holik, 1939, both described from the southern Ural. According to Holik & Sheljuzhko (1958: 221–223), *Z. l. kalkanensis* and *Z. l. uzjana* are characterized by their broad and rounded wings and the broad dark margin on hindwing. Moreover, Holik & Sheljuzhko compare both subspecies and describe them as remarkably different although the distance of their localities on both sides of the Ural (west and east side) is small. However, the characters given by Viidalep show that the Siberian populations are different from the Ural populations. This was already mentioned by Holik & Sheljuzhko (1958: 222). They had only 2 ♀♀ with equal characters but did not describe them as a subspecies due to lack of more material. Moreover, these authors mentioned in the list of recognized subspecies the populations from central and western Siberia as "ssp.?". There is more than 2000 km distance between the southern Ural and Tuva. We recognize subsp. *tannuensis* Viidalepp, 1979, as a valid subspecies.

The Mongolian populations are geographically close to Tuva and therefore can be referable to subsp. *tannuensis*.

Biology

The larval hostplants belong to the Fabaceae (Hofmann & Tremewan, 1996: 176). Univoltine.

Acknowledgements

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