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Notes on some satyrid butterflies from China with a review of the *Aulocera pumilus* (C. Felder, 1867)-group

(Lepidoptera, Nymphalidae, Satyrinae)

by

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Abstract: In this paper, type localities of the following satyrid taxa are studied based mainly upon their original descriptions and the works of Emil Bretschneider (1898, 1900), taxa including *Satyrus dryas* var. *paupera* Alphéraky, 1888, *Oeneis pumilus* var. *lama* Alph., 1889, *Satyrus pumilus* var. *nanshanicus* Grum-Grshimailo, 1902, *Pararge dumetorum* var. *fulvescens* Alph., 1889 and *Callerebia lóczyi* Frivaldszky, 1886. *Aulocera pumilus* (C. Felder, 1867)-group is reviewed and 9 species and 16 subspecies are recognised as following: *A. pumilus* (Feld.), *A. palaearcticus* (Staudinger, 1889) (= *lama* Alph., 1889, *divnogorski* Bang-Haas, 1927), *A. nanshanicus* (Gr.-Gr., 1902) **stat. nov.** (= *illustris* B.-H., 1927, ab. *unicolour* B.-H., 1927), *A. iole* (Leech, 1892) **stat. nov.**, *A. iole buddha* (B.-H., 1927) **stat. nov.**, *A. iole* ***songi*** **subspec. nov.** (from S. Qinghai), *A. iole* ***qiliana*** **subspec. nov.** (from N.E. Qinghai), *A. atunsensis* (Gross, 1958) **stat. nov.**, *A. atunsensis auloceroides* (Huang, 1999) **stat. nov.**, *A. atunsensis melanoleuca* Sakai, Aoki & Yamaguchi, 2001 **stat. nov.**, *A. atunsensis* ***vadimi*** **subspec. nov.** (from N. Sichuan), *A. parapumilus* (Huang, 2001), *A. parapumilus* ***mila*** **subspec. nov.** (from C. Tibet), *A. sikkimensis* (Stgr., 1889), *A. bicolour* (Seitz, 1908) and *A. grandis* (Riley, 1923). *Aulocera sybillina pygmaea* (Holik, 1949) is raised to specific status, i.e. *A. pygmaea* (Holik) **stat. nov.**, and it is the closest relative of the *A. pumilus* (Feld.)-group. For clarifying the taxonomic status of *Aulocera atunsensis* ***vadimi*** **subspec. nov.** and *A. pygmaea* (Holik) **stat. nov.**, their ♀ genitalia and those of some their related taxa are studied. A new subspecies of *Hipparchia autonoe* (Esper, 1783) from S. Qinghai is described, i.e. *H. autonoe* ***songkui*** **subspec. nov.** *Oeneis mulla* Stgr., 1881 and *Erebia callias* Edwards, 1871, with one of its subspecies *E. callias sibirica* Stgr., 1881, are recorded from the Chinese fauna for the first time. Two little know taxa of the genus *Ypthima* Hübner, 1818 from Make valley, Banma, S.E. Qinghai are mentioned, they are *Y. yoshinobui* Huang & Wu, 2003 and *Y. beautei qinghaiensis* Huang & Wu, 2003. Moreover, *Ypthima yoshinobui* Huang & Wu is sunk to a subspecies of *Y. putamdui* South, 1913, i.e. *Y. putamdui yoshinobui* Huang & Wu **stat. nov.** Finally, variations of ♂ brand on forewing dorsal side of *Lethe uemurai* (Sugiyama, 1994) and *L. jianqingi* Lang, 2016 (= *L. armandina yanbiana* Lang, 2016 **syn. nov.**) are discussed.

Abbreviations:

CMNH - Chongqing Museum of Natural History, Beibei, CHINA.
MTDG - Museum für Tierkunde, Dresden, GERMANY.
ZISP - Zoological Institute, Russian Academy of Sciences, St.-Peterburg, RUSSIA.
ZMKU - Zoological Museum, Kyiv National Shevchenko University, Kyiv, UKRAINE.
LSY - Collection of S. Y. Lang, Beibei, CHINA.
MK - Collection of M. Kalabza, Pardubice, CZECH.
SK - Collection of S. Kocman, Ostrava, CZECH.
VVT - Collection of V. V. Tshikolovets, Kyiv, UKRAINE.
DS - Dorsal side.
DFW - Dorsal forewing.
DHW - Dorsal hindwing.
VS - Ventral side.
VFW - Ventral forewing.
VHW - Ventral hindwing.
HT - Holotype; PT - Patratype; TL - Type locality.

Minois paupera (Alphéraky, 1888)

Satyrus dryas var. *paupera* Alphéraky, 1888: 67. TL: Fluß Honton [upper water of Fujiang in Songpan, Sichuan].

"The TL of *Minois paupera* (Alph.) was simply recorded as 'Fluß Honton; den 10. August 1885. (Potanin)' in the original description. The Honton river, or Fluß Honton (Map. 1: 5), is a small locality. Where is it? Holik (1954) subjectively stated that Honton is a place of S. Mongolia. Actually, the collector, famous Russian explorer G. N. Potanin, travelled at S. Mongolia and NW. China during the period from 1884 to 1886, but in August 1885, he was on his journey at extreme N. Sichuan (Sung-pang [Songpan]- Lung-an-fu [Pingwu] area) and nearby extreme SE. Gansu (Ven-hsien [Wenxian] area). Therefore, the type of *Minois paupera* (Alph.) was undoubtedly collected by him from extreme N. Sichuan or adjacent extreme SE. Gansu, but not from S. Mongolia which is far away from the known range of this species. Between nowadays Wenxian County and Wudu County of extreme SE. Gansu, there is a small river called Hongtong (means Red Bronze in Chinese), a tributary of Bailongjiang River which is an important branch of Jialingjiang River. Accordingly, the present author believes that the Hongtong River is the true 'Fluß Honton', viz. the type locality of *Minois paupera* (Alph.)" (Lang, 2013).

As cited above, the type locality "Fluß Honton" of *Minois paupera* (Alph.) was discussed in Lang (2013) and the explanation is that "Fluß Honton" is a small river called Hongtong, located at extreme S.E. Gansu. However, I doubted this explanation because this place seems too low in altitude to be a habitat of an alpine species *Minois paupera* (Alph.) and I deduced that "Hongtong river" from S.E. Gansu is the TL only based upon its similar pronunciation with "Fluß Honton". With additional literatures and information obtained, this viewpoint must be revised here. According to Alphéraky (1888, 1889) the type of *Minois paupera* (Alph.) was collected by G. N. Potanin on 10 August 1885 and Potanin travelled in Sichuan from 24 July to 2 September 1885, i.e.

"24 Juillet - 2 Septembre 1885 - prov. Setchonen (Alph., 1889)". Therefore, considering the schedule, it can make sure that "Fluß Honton" is a place in Sichuan but not in Gansu as deduced by Lang (2013). Thence, the question "where is 'Fluß Honton', arose again. This time, a bid map came across me, it is "*Map of China and the surrounding Regions*" by Emil Bretschneider (1900), who is a Russian (Baltic German ethnicity) sinologist and botanist. The Bretschneider's map of the China Proper includes not only many historic place names but also those route lines of European expeditions for plants before 1900 including that of Potanin in 1895. From the map, people can find where is "Honton", which is the upper water of Fou kiang (Fujiang river, a main tributary of Jialingjiang River) and is originated from E. slope of Mt. Süe pao ting (Xuebao-ding, 5588 m) in Sungpan (Songpan) and flows to Lungan-fu (nowadays Pingwu Town), and also can find the route of Potanin, who went over Mt. Xuebao-ding from west to east and arrived at Pingwu Town along the valley of "Honton" in 1895. Moreover, in his monograph "*History of European Botanical Studies in China*", Bretschneider (1898) also wrote "This [Honton] is the Tangutan [Dangxiang people, actually Amdo Tibetan] name of the river. Potanin says that its Chinese name is San shui. Captain Gill, who in 1877 travelled by the same route, calls it Siao ho. On the Chinese map the same river, in its lower course bears the name Fou kiang". From the notes of Bretschneider (1898) cited above, Capt. Gill's "Siao ho" is Potanin's "Honton". In modern Chinese Pinyin, "Siao ho" should be wrote as "Xiao-he". Formerly, people in Songpan called Min river as Da-he (means big river) and called Fujiang as Xiao-he (= Siao ho, means small river), and also a small town which was important in history called Xiao he (= Siao ho) is situated on the upper water of Fujiang river at Songpan and near the border of Pingwu. Therefore, the type of *Minois paupera* (Alph.) was collected in the alpine zone of "Honton" valley at the eastern border area of Songpan, N. Sichuan, i.e. E. Slope of Mt. Xuebao-ding. Before an accurate historic map and more detailed informations (Alph., 1889; Bretschneider, 1898, 1900), my first explanation of "Honton" (Lang, 2013) seems naive, so both scientific and historical researches must base on conclusive evidences but not a guess.

A review of *Aulocera pumilus* (C. Felder, 1867)-group

The classification of the *pumilus*-group has been confusing its scholars and students for more than a hundred years, debates mainly including to "which genus does it belong" and "how many species are there in this group" (Table 1). Taxa in this species group have been placed in different genera by various authors during a long period, and those genera including *Oeneis* Hübner, [1819], *Chionobas* Boisduval, 1832, *Satyrus* Latreille, 1810, *Paroeneis* Moore, 1893 and *Aulocera* Butler, 1867. Moore (1893) was the first researcher who realised that this species group might be different from other genera in Satyrini, therefore he established the genus *Paroeneis* Mr. with its type *P. pumilus* (Feld.). However, Moore wrongly included *Oeneis buddha* Gr.-Gr., 1891, which is a true member of *Oeneis* Hbn., in his *Paroeneis* Mr. After that, for a long time, taxa of this group had been often placed in *Satyrus* Latr., because at that time the genus *Satyrus* Latr. *sensu lato* often contained a serie of mordern separated genera such as *Satyrus* Latr. *sensu stricto*, *Aulocera* Btlr., *Paroeneis* Mr. But some researchers already realised the inherent relationship between *pumilus*-group and *Aulocera* Btlr. For example, in Gross (1958), taxa of *pumilus*-group were arranged in the subgenus *Aulocera* Btlr. of the genus *Satyrus* Latr. Recently, the controversy focused on whether *Paroeneis* Mr. is an independent genus or it is only a synonym of the genus *Aulocera* Btlr. When study members of *Aulocera* Btlr. and *Paroeneis* Mr. respectively, it can be found that *Aulocera sybillina* (Oberthür, 1890) is very close to *Paroeneis* Mr., i.e. *pumilus*-group, not only in external appearances but also in genitalia structures. That is, excluding members of *Paroeneis* Mr., *Aulocera* Btlr. should be a paraphyletic taxon. Thus, following the arrangement of Sakai *et al.* (2001), the present author treats taxa of *pumilus*-group as members of *Aulocera* Btlr. (= *Paroeneis* Mr.).

The classification of the group in specific level has been even more intensely debated (Table 1). The focus of the debate is concentrated in "a single species viewpoint" versus "several species viewpoint". And moreover, different authors who supported the "several species viewpoint" also made their different species rosters. Also some authors, who supported "a single species viewpoint" such as Gross (1958) and Sakai *et al.* (2001), divided the single species into different numbers of subspecies groups. In fact, two different taxa of *pumilus*-group can be found together in a small habitat in nature (e.g. Riley, 1923; Huang, 2001; in this paper). When holding "a single species viewpoint", it can be hardly explained that two or more different conspecific subspecies can fly together. Therefore, the "several species viewpoint" is supported, but the components including species and subspecies of *Aulocera pumilus* (Feld.)-group should be revised. For convenience of the discussion below, the checklist of *Aulocera pumilus* (Feld.)-group given in this research is presented first, it includes 9 species and 16 subspecies as following: *A. pumilus* (Feld.), *A. palaearcticus* (Stgr.) (= *lama* Alph., *divnogorski* B.-H.), *A. nanshanicus* (Gr.-Gr.) **stat. nov.** (= *illustris* B.-H., ab. *unicolour* B.-H.), *A. iole* (Leech) **stat. nov.**, *A. iole buddha* (B.-H.) **stat. nov.**, *A. iole* ***songi*** **subspec. nov.**, *A. iole* ***qiliana*** **subspec. nov.**, *A. atunsensis* (Gross) **stat. nov.**, *A. atunsensis auloceroides* (Huang) **stat. nov.**, *A. atunsensis melanoleuca* Sakai, Aoki & Yamaguchi **stat. nov.**, *A. atunsensis* ***vadimi*** **subspec. nov.**, *A. parapumilus* (Huang), *A. parapumilus* ***mila*** **subspec. nov.**, *A. sikkimensis* (Stgr.), *A. bicolour* (Seitz) and *A. grandis* (Riley).

In this study, photographs of many specimens of *Aulocera pumilus* (Feld.)-group kept in some European public as well as private collections including important historic material were provided by Mr. Vadim V. Tshikolovets (Kiev). The review of this group here is only a temporary work. Though photographs of nearly all described taxa in this group have been checked, more works based upon specimens are still needed, certainly it will not be a short term and easy task.

Genitalia of *Aulocera pumilus* (C. Felder)-group and its relatives

♂ genitalia (figs: 51-54): Features of ♂ genitalia of the group are nearly useless in classification. Though shape of valva is often variable, but it usually only belongs to individual variation. The valva bears an upper lobe and its apex forms a lower lobe, and both lobes can vary in shape and size individually in a given population or in a given taxon. Nevertheless, some features of valva still can be used for identification (see specific cases below), e.g. the width of valva as a whole, the degeneration of the upper lobe.

♀ genitalia (figs: 59-65): To clarifying the taxonomic status of *Aulocera atunsensis* ***vadimi*** **subspec. nov.** and *A. pygmaea* (Holik) **stat. nov.**, their ♀ genitalia are studied together with those of some related taxa for comparing. Features of ♀ genitalia are seldom used in the classification of the subfamily Satyrinae, both in specific level and in higher class level, excepting a few of excellent works, such as Coutsis (1984). The reason is not that characters of ♀ genitalia of Satyrinae lack taxonomic values, but is that ♀ satyrid usually has an intricately structured, highly specialized, variously shaped and three-dimensional sterigma (or called genital plate), which as I think has partly prevented the study of satyrid ♀ genitalia. A vocabulary of genitalia of Klots (1970) has been widely applied in Lepidopterology, but it seems poor words when deals with the sterigma of Satyrinae. Therefore, when studied that of European *Hipparchia* Fabricius, 1807, Coutsis (1984) had to name a series of parts of sterigma. But Coutsis (1984) also stated "It is felt that

the creation of new formal names would have been meaningless, considering the poor state of our knowledge of homologies in the ♀ genitalia". It is indeed right, though both *Aulocera* Btlr. and *Hipparchia* F. are members of Subtribe Satyrina, their structures of sterigma are quite different. Sterigma of *Aulocera* Btlr. is somewhat simplified and specialised comparing with that of *Hipparchia* F., and it results in a hard use of Coutsis's terminology in this study. Therefore, even a part in this research with a same name which was used in Coutsis (1984) might not be a homological organ of the namesake in Coutsis (1984). The terminology of ♀ genitalia of *Aulocera* Btlr. mainly following Coutsis (1984), is shown in fig. 59.

Androconia of *Aulocera pumilus* (C. Felder)-group and its relatives (fig: 66)

Androconia are used currently as a morphological indicator of taxonomic status, and they appear to be relatively consistent in overall size and shape within species (Wakeham-Dawson & Kudrna, 2000), and features of androconia have been already used in the classification of *Aulocera* Btlr. in Sakai *et al.* (2001). Terminology of androconia in this paper is partly following that of Wakeham-Dawson & Kudrna (2000) but with some modifications. The present author divided an androconium scale into four parts from top to base as following: terminal ears, distal stalk, lamina and basal stalk. The terminal ears equals "terminal points at apex" in Wakeham-Dawson & Kudrna (2000). The distal stalk is the slender section which connected the terminal ears and the lamina, it should be an extending section of the lamina. The use of lamina and basal stalk follows Wakeham-Dawson & Kudrna (2000).

***Aulocera pumilus* (C. Felder, 1867)** (figs: 1, 2)

Chionobas pumilus C. Felder, in C. & R. Felder, 1867: 490, Tab. LXIX: 6, 7. TL: Himalaya occidental.: Ladak: Trantse Sumdo, Lanak Pass, in alt. 15,500 ped., Pangchog (Dr. Stoliczka). Cll. F.

This species can be easily separated from all other species in the group by the combination of the following characters: DS ground colour is vivid orange yellow; DFW ♂ brand is absent; DFW pale postdiscal spots are disappearing; upper lobe of valva is extremely reduced (Gross, 1958: Abb. 2).

***Aulocera palaearcticus* (Staudinger, 1889)** (figs: 3, 4)

Oeneis ? (*Satyrus*?) *Palaearcticus* Staudinger, 1889: 20. TL: S. Issyk-kul.

Oeneis pumilus var. *lama* Alphéraky, 1889: 80. TL: le pays entre le Loob-Noor et l'Ak-sou [N. slope of Kunlun-shan between Keriya and Qira].

Satyrus pumilus divnogorski Bang-Haas, 1927: 49, Taf. 7: 16, 17. TL: Chinesisch Turkestan: Mustag Ata, südl. Kaschgar, westl. Jarkent, Oberlauf des Jarkent-Flußes.

According to Gross (1958), the nominate *Aulocera palaearcticus* (Stgr.) was recorded from Mustag-ata, Issyk-kul und Altyn-tag, and excluding Altyn-tag (Altun-shan) which is a high ridge located mainly at S. Xinjiang as well as westernmost Gansu and northwesternmost Qinghai, this butterfly is only known from S.W. Tian-shan - E. Pamir - W. Kunlun-shan area, i.e. E. Kyrgyzstan, E. Tajikistan and S.W. Xinjiang. The name *lama* Alph. which has been considered as a junoir synonym of *A. palaearcticus* (Stgr.) was believed to be known from Lob Nor (S.E. Xinjiang) and Aksu (W. Xinjiang), because the TL of *lama* Alph. in the original paper is "le pays entre le Loob-Noor et l'Ak-sou", i.e. the country between Lob-Nor and Aksu. The country between Lob-Nor and Aksu is a very large area, considering that Lob-Nor is at the desert of easternmost of Tarim Basin whereas Aksu is at the northwestern rim of Tarim. To clarify the exact TL of the taxon *lama* Alph. which was caught on Przewalsky's third expedition to China (1883-1885), the present author checked the schedule and route of the journey first. According to Bretschneider (1898), Przewalsky's team reached Lob Nor on Jan. 28 (from Tsaidam and crossing Altyn tagh), arrived Cherchen (now Qiemo) on April 14, reached Niya (now Minfeng) in middle May, stayed at Keria (Keriya, now Yutian) in June 1 to 10, left Keria on June 10 and travelled along a road touching the north slope of Kuen lun (Kunlun) and arrived Chira (Qira, now Cele) on Aug. 2, arrived Khotan at the end of August, stayed at Khotan for a week, travelled from Khotan to Aksu across desert of Tarim along Yurung kash and Khotan river, and reached Aksu on Oct. 16. Considering the route and the fly period of the butterfly, typical materials of *lama* Alph. should be collected from the N. slope of Kunlun between Keriya and Qira, because the team travelled from Keriya to Qira from Jun. 10 to Aug. 2 which is the season of the butterfly. But also less likely, they were collected from the road from Qira to Khotan in August. No matter how, *lama* Alph. was obtained from the N. slope of Kunlun between Keriya and Khotan (most possibly and accurately between Keriya and Qira), and was impossible from neither Lob-Nor nor Aksu in the Przewalsky's third expedition to China. Therefore, the taxon *lama* Alph. was described only from S.W. Xinjiang (N. slope of W. Kunlun-shan). Taking into account the above mentioned factors, the nominate *Aulocera palaearcticus* (Stgr.) (= *lama* Alph., *divnogorski* B.-H.) is known from western, southwestern and southern rims of Xinjiang (i.e. S.W. Tian-shan - E. Pamir - W. Kunlun-shan - Altun-shan), E. Kyrgyzstan and E. Tajikistan, and all its subspecies from E. Asia will be removed from it in this research (see below).

***Aulocera nanshanicus* (Grum-Grshimailo, 1902) stat. nov.** (figs: 5, 6, 20, 33)

Satyrus pumilus var. *nanshanicus* Grum-Grshimailo, 1902: 192. TL: Nan-schan, in declivitate septentrionali montium Humboldti [N. slope of Humboldt Mts. = Danghe-Nanshan = Wulan-Daban, nowadays in Subei, Gansu].

Satyrus pumilus nanchanica: Bang-Haas, 1927: 114.

Satyrus pumilus nanshanicus: Gaede, 1930: 160; Gross, 1958: 263, Tafel I: 9-10.

Aulocera pumilus nanshanicus: Sakai, Aoki & Yamaguchi, 2001: 55.

Satyrus palaearcticus var. *nanshanicus*: Gaede, 1931: 99.

Paroeneis palaearcticus nanshanicus: Huang, 2001: 97.

Satyrus pumilus illustris Bang-Haas, 1927: 49, Taf. 7: 10, 11. TL: Kansu, Richthofen mont., westl. Liang-tschou (Synonymised by Gross, 1958: 267); Gaede, 1930: 160, pl. 10: f.

Satyrus pumilus var. *illustris*: Gaede, 1931: 100.

Satyrus pumilus illustris ab. *unicolour* Bang-Haas, 1927: 49, Taf. 7: 12. TL: Kansu, Richthofen mont., westl. Liang-tschou.

Satyrus pumilus unicolour: Gaede, 1930: 160.

Satyrus pumilus ab. *unicolour*: Gaede, 1931: 100.

According to the original description, the TL of *nanshanicus* Gr.-Gr. is "Nan-schan, in declivitate septentrionali montium Humboldti". In western literatures of that time, Nan-shan (Nian Chian) was also called Humboldt Mts. which is nowadays

Danghe-Nanshan (means a mountain south of the Danghe River). The typical material of *nanshanicus* Gr.-Gr. was collected by the expedition team of Roborovski and Kozlov in 1894 (Robor-Kozl. 1893-1895), and from the labels of the syntypes, the exact type data is "Nian Chian Ulan Bulak 30 VI 1894 10 000". On a modern map of Subei (a County in N.W. Gansu), Ulan Bulak [= Wu-lan-bu-la-ge in Chinese Pinyin], which means red spring in Mongolian, is a small place near Yanchiwan and on the north slope of Danghe-Nanshan (Humboldt Mts.). It should be mentioned that Nan-shan (= Humboldt Mts. or Danghe-Nanshan) is only a mountain ridge of Qilian-shan sensu lato which is a huge mountain systems south of Hexi Zoulang (= Hexi Corridor). Moreover, Qilian-shan sensu stricto is Richthofen Mt. or called Zoulang Nanshan (means a mountain south of the Hexi Corridor), and it is also a part of Qilian-shan sensu lato.

When described *Satyrus pumilus illustris* B.-H. in "*Horae Macrolepid.*" from Richthofen Mt., Bang-Haas (1927) obviously overlooked the publication of *S. pumilus nanshanicus* Gr.-Gr., and he only added the latter name in "Nachträge und Berichtigungen von Horae Macrolepid.". Gross (1958) soundly sunk *illustris* B.-H. as a junior synonym of *nanshanicus* Gr.-Gr. and considered the latter as a subspecies of *Satyrus pumilus* (Feld.). Huang (2001) treated *nanshanicus* Gr.-Gr. as a subspecies of *Paroeneis palaearcticus* Stgr. Whether it has been considered as a subspecies of *pumilus* (Feld.) or *palaearcticus* Stgr., no author has treated *nanshanicus* Gr.-Gr. as a distinct species before. Here, subspecific *nanshanicus* Gr.-Gr. is raised to specific status, i.e. *Aulocera nanshanicus* (Gr.-Gr.) **stat. nov.**

Aulocera nanshanicus (Gr.-Gr.) **stat. nov.** has a pale and yellowish DS ground colour, it is quite different from sympatric *A. iole* (Leech) **stat. nov.** which has a dark brown DS ground colour. Its colour recalls that of *A. bicolour* (Seitz, 1908) and *A. grandis* (Riley, 1923) from C. Himalaya, but it bears a well present DFW ♂ brand which is absent from the latter two Himalayan species. It is also similar to *A. parapumilus* (Huang) from E. Himalaya which bears DFW ♂ brand, but the latter has a more dark colour.

***Aulocera iole* (Leech, 1892) stat. nov.** (figs: 10, 11, 35)

Oeneis pumilus var. *iole* Leech, 1892: 75, pl. 11: 2. TL: How-kow [Yajiang, Sichuan].
Satyrus pumilus iloe: Bang-Haas, 1927: 49; Gaede, 1930: 160; Gross, 1958: 264.
Aulocera pumilus iole: Sakai, Aoki & Yamaguchi, 2001: 55.
Satyrus palaearcticus iloe: Seitz, 1909: 122, pl. 41: a.
Paroeneis palaearcticus iole: d'Abrera, 1992: 224; Huang, 2001: 97.

Its appearance is more similar to that of *Aulocera palaearcticus* (Stgr.) than to that of *A. pumilus* (Feld.), but considering its long distance separation from *A. palaearcticus* (Stgr.), it is suggested to be a distinct species, i.e. *A. iole* (Leech) **stat. nov.** Therefore, taxa from the eastern rim of the Tibetan Plateau which had been arranged as subspecies of *A. palaearcticus* (Stgr.) by some authors before should be transferred to *A. iole* (Leech) **stat. nov.** Those taxa includes *buddha* B.-H., *atunsensis* Gross, *auloceroides* Huang and *melanoleuca* Sakai, Aoki & Yamaguchi. However, excepting *buddha* B.-H., other taxa mentioned should be another separated species which will be treated below. So at last, only *buddha* B.-H. of them is a subspecies of *A. iole* (Leech) **stat. nov.**, i.e. *A. iole buddha* (B.-H.) **stat. nov.** (fig: 12). Furthermore, populations from S. Qinghai (Yushu Region) and N. Qinghai (Qilian-shan Region), which had been identified as *buddha* B.-H. before, will be described as two new subspecies of *A. iole* (Leech) **stat. nov.** immediately below.

***Aulocera iole s o n g i* subspec. nov.** (fig: 13)

HT ♂: CHINA: Qinghai, Yushu, Gyegu, 3900 m, 16.VII.2011, leg. Kui Song, CMNH.

Etymology: The subspecific name *songi* is named after Mr. Song Kui who kindly sent the present author interesting satyrid butterflies from Gyegu including this new subspecies.

Diagnosis: The new subspecies can be distinguished from other known subspecies of *Aulocera iole* (Leech) **stat. nov.** by the combination of the following characters:

1. It is somewhat smaller than *A. iole iole* (Leech) **stat. nov.** and *A. iole buddha* (B.-H.) **stat. nov.**
2. DS ground colour is yellowish brown, whereas it is blackish brown in *A. iole iole* (Leech) **stat. nov.** and *A. iole buddha* (B.-H.) **stat. nov.**
3. Lamina of androconia (fig: 66 h) is very short, whereas it is obviously elongated in other subspecies (fig: 66 e-g, i).

Distribution: S. Qinghai.

***Aulocera iole q i l i a n a* subspec. nov.** (figs: 14-19)

HT ♂: CHINA: Qinghai, Qilian, Heihe Valley, N. slope of Tolai-shan, 2900 m, 16.VII.2017, leg. Song-yun Lang, CMNH. PTs: 9 ♂♂, same data as HT, LSY; 14 ♂♂, Qinghai, Qilian, Babao, N. slope of Tolai-shan (fig: 70 b), 3250 m, 15.VII.2017, legs. Song-yun Lang, Yi Lang & Jiang Hou, LSY; 1 ♂, CHINA: Qinghai, Menyuan, N. slope of Daban-shan, 3250 m, 13.VII.2017, leg. Song-yun Lang, LSY.

Etymology: The subspecific name *qiliana* is named after Qilian. The TL Qilian is a County in its homonymous Qilian-shan sensu lato.

Diagnosis: The new subspecies can be distinguished from other known subspecies of *Aulocera iole* (Leech) **stat. nov.** by the combination of the following characters:

1. DS ground colour is deep reddish brown, whereas it is blackish brown without reddish tinge in *A. iole iole* (Leech) **stat. nov.** and *A. iole buddha* (B.-H.) **stat. nov.**, and is yellowish brown in *A. iole songi* **subspec. nov.**
2. DFW postdiscal spots and DHW discal band are orange or strongly stained with orange, whereas they are pure white or yellowish white or strongly stained with ground colour in other known subspecies.
3. ♂ VHW veins are clearly outlined by white lines, whereas those white lines are weakly present in *A. iole iole* (Leech) **stat. nov.**

Variations: DS orange tinges of few individuals are vestigial or weakly present (figs: 18, 19).

Notes: The range of *Aulocera iole* ***qiliana* subspec. nov.** overlaps that of *A. nanshanicus* (Gr.-Gr.) **stat. nov.**, but the present author failed to obtain the latter species in his trip to N.E. Qinghai in July, 2017.

Distribution: N.E. Qinghai.

***Aulocera atunsensis* (Gross, 1958) stat. nov.**

Satyrus pumilus atunsensis Gross, 1958: 268. TL: A-tun-tse [Deqen, Yunnan].
Aulocera pumilus atunsensis: Sakai, Aoki & Yamaguchi, 2001: 55.
Paroeneis palaearcticus atunsensis: Huang, 2001: 97.

Aulocera atunsensis (Gross) **stat. nov.** is given species status here with following two subspecies, *A. atunsensis auloceroides* (Huang) **stat. nov.** and *A. atunsensis melanoleuca* Sakai, Aoki & Yamaguchi **stat. nov.**, which had been arranged as subspecies of *A.*

palaearcticus (Stgr.) or *A. pumilus* (Feld.) before. This species is more closely related to *A. iole* (Leech) **stat. nov.** than to others. But its DS is black with pure white markings and its VS is more deeper, whereas DS is brownish with markings more or less stained in *A. iole* (Leech) **stat. nov.** All subspecies of *A. atunsensis* (Gross) **stat. nov.** have been known from a very restricted and confined area, i.e. E. Himalayan-S.W. Hengduan-shan Region (S.E. Tibet-N.W. Yunnan-N. Myanmar). In this research, a population from northeasternmost Hengduan-shan Region (N. Sichuan) is discovered, and its habitat is far away from the hitherto known range of *A. atunsensis* (Gross) **stat. nov.** It is described as a new subspecies below.

***Aulocera atunsensis v a d i m i* Lang subspec. nov.** (figs: 8, 9, 30, 31, 36)

HT ♂: CHINA: Sichuan, Pingwu, Huangtu-liang Pass (fig: 70 a), 3300 m, 30.VII.2018, leg. Song-yun Lang, CMNH. PTs: 5 ♂♂, 4 ♀♀, same data as HT, LSY.

Etymology: The subspecific name *vadimi* is named after Mr. Vadim V. Tshikolovets (Kiev), my friend and collaborator.

Diagnosis: **(A)** The new subspecies can be distinguished from other subspecies of *A. atunsensis* (Gross) **stat. nov.** by the combination of the following characters, however ♂ *A. atunsensis auloceroides* (Huang) **stat. nov.** is still undiscovered:

1. ♂ brand on DFW is absent or vestigial, whereas it is well present in *A. atunsensis atunsensis* (Gross) **stat. nov.** and *A. atunsensis melanoleuca* Sakai, Aoki & Yamaguchi **stat. nov.**
2. ♂ DFW whitish spots are tiny but clear, they are somewhat smaller than those of *A. atunsensis atunsensis* (Gross) **stat. nov.** and *A. atunsensis melanoleuca* Sakai, Aoki & Yamaguchi **stat. nov.**
3. ♂ DHW whitish discal band is very thin and discontinuous, whereas it is somewhat wider and nearly continuous in *A. atunsensis atunsensis* (Gross) **stat. nov.** and *A. atunsensis melanoleuca* Sakai, Aoki & Yamaguchi **stat. nov.**
4. ♀ VFW white subapical spots in spaces 5 and 6 are much smaller than those of *A. atunsensis auloceroides* (Huang) **stat. nov.**
5. Valva (figs: 51 a-c, 53) is nearly even width throughout, whereas it gradually becomes narrow towards the distal end in *A. atunsensis atunsensis* (Gross) **stat. nov.** (Gross, 1958: Abb. 5).
6. Lamina of androconia (fig: 66 d) is somewhat elongated, whereas is it much shorter but with its base more widely bulbed in *A. atunsensis melanoleuca* Sakai, Aoki & Yamaguchi **stat. nov.** (Sakai et al., 2001: fig. 77. d).

(B) The new subspecies is very similar to sympatric *Aulocera pygmaea* (Holik, 1949) **stat. nov.** (see below) and can be distinguished from the latter by the combination of the following characters:

1. It is somewhat smaller than *A. pygmaea* (Holik) **stat. nov.**
2. ♂ brand on DFW is absent or vestigial, whereas it is developed in *A. pygmaea* (Holik) **stat. nov.**
3. ♂ DFW whitish spots are much smaller than those of *A. pygmaea* (Holik) **stat. nov.**
4. ♀ DFW whitish spots are larger than those of *A. pygmaea* (Holik) **stat. nov.**
5. ♂ DHW whitish discal band is very thin, whereas it is much wider in *A. pygmaea* (Holik) **stat. nov.**
6. ♀ DHW whitish discal band is continuous, whereas it is discrete in spaces 1, 2 and 3 in *A. pygmaea* (Holik) **stat. nov.**
7. Valva (figs: 51 a-c, 53) is nearly even width throughout, whereas it gradually becomes narrow towards the distal end in *A. pygmaea* (Holik) **stat. nov.** (figs: 51 d-f).
8. Mid-dorsal process of sterigma (figs: 62, 63) is not strongly extending distally, whereas it is obviously protruding distally in *A. pygmaea* (Holik) **stat. nov.** (fig: 61).
9. Lower flange of sterigma is deeply bifurcate on its distal end (figs: 62, 63), whereas it is only slightly bifurcate in *A. pygmaea* (Holik) **stat. nov.** (fig: 61).
10. Dorsal surface of lower flange of sterigma has a weak ridge on each lobe (figs: 62, 63), whereas it is not ridged in *A. pygmaea* (Holik) **stat. nov.** (fig: 61).
11. Both ductus bursae and signa (fig: 62) are shorter than those of *A. pygmaea* (Holik) **stat. nov.** (fig: 61).
12. Lamina of androconia (fig: 66 d) is nearly equal width, whereas is it broadly bulbed basally and sharply tapering distally in *A. pygmaea* (Holik) **stat. nov.** (fig: 66 c).
13. Distal stalk of androconia (fig: 66 d) is inconspicuous, whereas it is obvious in *A. pygmaea* (Holik) **stat. nov.** (fig: 66 c).

Variations: A ♂ (fig: 9) with its whitish markings very developed is quite different from other ♂♂. Its forewing postdiscal spots on both sides are much larger than others. Its DHW discal band is much wider than others.

Distribution: N. Sichuan.

***Aulocera parapumilus* (Huang, 2001)** (figs: 22-24, 32)

Paroeneis parapumilus Huang, 2001: 97, pl. 8: 57. TL: Demula, Tibet.

Wing pattern and colour of this species are somewhat similar to those of *Aulocera nanshanicus* (Gr.-Gr.), but its DS colour is more brownish than the latter.

***Aulocera parapumilus m i l a* subspec. nov.** (fig: 21)

HT ♂: CHINA: Tibet, Gongbo Gyamda, Songdo, East of Mila Pass, 4200 m, 5.VII.2013, leg. Song-yun Lang, CMNH.

Etymology: The subspecific name *mila* is named after the Mila Pass.

Diagnosis: The new subspecies can be distinguished from the nominate subspecies from E. Tibet by the following characters:

1. Basal half ground colour of DFW is deep yellowish, whereas it is brown in the nominate subspecies.
2. DFW postdiscal spots are blur, whereas they are clear in the nominate subspecies.
3. Lamina of androconia (fig: 66 j) is shorter than that of the nominate subspecies (fig: 66 k, l).

Notes: This subspecies was collected together with *A. bicolour* (Seitz) at the east slope of the Mila Pass.

Distribution: C. Tibet.

***Aulocera sikkimensis* (Staudinger, 1889)** (figs: 7, 25, 40)

Oeneis palaearcticus var. *sikkimensis* Staudinger, 1889: 21. TL: Sikkim.

This species can be separated from the other two central Himalayan species, i.e. *Aulocera bicolour* (Seitz) and *A. grandis* (Riley), by its almost uniformly deep brown ground colour on DS. DFW ♂ brand is absent as the latter two.

***Aulocera bicolour* (Seitz, 1908)** (figs: 26, 39)

Satyrus pumilus f. *bicolour* Seitz, 1908: 121, pl. 42: b. TL: Chumbi valley [Chunpi, Yadong], Tibet.

Size is similar to *Aulocera sikkimensis* (Stgr.). Colour is similar to *A. grandis* (Riley), but forewing length is only two thirds of that of the latter. DS is orange on basal two-thirds and blackish on distal third. DFW postdiscal spots and DHW discal band are yellowish. DFW ♂ brand is absent.

***Aulocera grandis* (Riley, 1923)** (figs: 27, 38)

Paroeneis grandis Riley, 1923: 471, pl. XXXVI: 10. TL: Kharta, W.of Mt. Everest, Tibet.

Its colour is very similar to *A. bicolour* (Seitz), but it is much larger in size. DFW ♂ brand is also absent. Sometimes, it is very difficult to define *A. grandis* (Riley) from *A. bicolour* (Seitz). According to Riley (1923), the upper lobe of valva is large, blunt and slightly longer than the lower lobe in the former, whereas it is much shrunken in size in the latter. But as we know, ♂ genitalia features, including the size of the upper and lower lobes of valva, are usually not stable in this species group, and maybe it is an evidence of an ongoing evolutionary process. *Aulocera grandis* (Riley) was described basing upon 2 ♂♂ with their DFW yellowish postdiscal spots reduced, but these spots can become vestigial also in other species in the group.

Some biogeographical notes: Distribution pattern of *A. pumilus* (Feld.)-group (fig: 67): The distribution pattern of the group is a perfect Circum-Tibetan Plateau (Qinghai-Xizang Plateau) pattern. *Aulocera pumilus* (Feld.) and *A. palaearcticus* (Stgr.) are known from the western rim of the Tibetan Plateau but their ranges were separated by the great Karakoram, therefore *A. pumilus* (Feld.) is confined its range in Kashmir as well as westernmost of Tibet and *A. palaearcticus* (Stgr.) is known to the north of *A. pumilus* (Feld.) and inhabits W. Kunlun-shan, E. Pamir and W. Tian-shan. Furthermore, *A. pumilus* (Feld.) is absent from S. slope of W. Himalaya. The southern rim of the Tibetan Plateau is occupied by *A. sikkimensis* (Stgr.), *A. bicolour* (Seitz) and *A. grandis* (Riley), and according to Riley (1923), these three species can be found from the Qomolangma (Mt. Everest) area together but in different elevations from about 3500 m to 5100 m. Moreover, it seems that *A. grandis* (Riley) only has a restricted range in the Qomolangma (Mt. Everest) area, whereas *A. bicolour* (Seitz) is widely distributed and extends its range into the hinterland of Tibet. The southeastern rim of the Tibetan Plateau is occupied by *A. atunsensis* (Gross) **stat. nov.** and *A. parapumilus* (Huang). While the eastern rim of the Tibetan Plateau is the kingdom of *A. iole* (Leech) **stat. nov.**, but in the extremely east, a small land colonized by *A. atunsensis* ***vadimi*** **subspec. nov.** is found. So, the range of *A. atunsensis* (Gross) **stat. nov.** is very largely separated by that of *A. iole iole* (Leech) **stat. nov.** into two completely separated parts. The northeastern rim of the Tibetan Plateau (Qilian-shan Region) is shared by *A. nanshanicus* (Gr.-Gr.) **stat. nov.** and *A. iole* ***qiliana*** **subspec. nov.** together. At last, the northern rim of the Tibetan Plateau (Altun-shan Region) is mysterious, and according to Gross (1958) *A. palaearcticus* (Stgr.) was found here. But this simple record in Gross (1958) needs further confirmation.

Biogeographical notes of the Qilian Region (fig: 68 A): Qilian Region, or called Qilian-shan sensu lato, is a vast and northwest-southeast orientated belt land located at N.E. Qinghai and the southern border of N.W. Gansu. This Region can be roughly divided into north part (fig: 68 A_1) and south part (fig: 68 A_2). The north part contains those ridges north of Qinghai lake (Ku-ku Nor) and Huangshui (Sining ho [Xining-he]) valley, including Humboldt ridge, Richthofen ridge, Tolai-shan, Tolai-Nanshan, Daban-shan, etc. and the south part contains Qinghai lake, Huangshui valley, Qinghai-Nanshan and Laji-shan. The faunistic components of the north part of Qilian Region are somewhat different from those of the south part, and the latter is more close to Amdo Region which is more south and is an area surrounded by the big bent of Yellow River in E. Qinghai. Different conspecific subspecies can be found respectively from the north and south parts of Qilian Region, only take into account species studied in this paper, *Aulocera iole qiliana* **subspec. nov.**, *A. sybillina holiki* (Gross) and *Hipparchia autonoe extrema* (Alph.) are known from the north part and *Aulocera iole buddha* (B.-H.) **stat. nov.**, *A. sybillina bianor* (Gr.-Gr.) and *Hipparchia autonoe arcellae* Sbordoni, Bozano & Cesaroni are from the south part. Evidence which can support the different faunistic features of north and south parts of Qilian Region can also be found in other species of Satyrinae, for example, *Erebia alcmena veldmani* Kotzsch, 1929 is known from north Qilian Region and *E. alcmena alcmena* Gr.-Gr., 1891 is from south Qilian and Amdo Regions.

Biogeographical notes of the S.E. Gansu-N. Sichuan Region (fig: 68 B): This Region is the knot of three big mountain ridges, i.e. W. Qin-ling (including Die-shan, Peiling shan, etc.), W. Daba-shan (Motian-ling section) and Min-shan, and these above mentioned mountains close together and form the upper water basin of Jialingjiang River with its main tributaries in this Region including upper water of Fujiang, Bailongjiang, Xihanshui (West Hanshui). This Region is also a part of the eastern fringe of the Tibetan Plateau and its fauna seems somewhat different from that of its surrounding areas. Taking satyrids as example, endemics of this Region are considerably rich, such as *Aulocera atunsensis vadimi* **subspec. nov.**, *A. pygmaea* (Holik) **stat. nov.**, *Hipparchia autonoe maxima* (B.-H.), *Minois connectens* Sugiyama, 1999, *Lopinga eckweileri* Görgner, 1990, *Loxerebia loczyi* (Frivald.), etc. Moreover it seems that the borders of this faunistic Region with others are very sudden and clear, it means that components (species or subspecies) of this fauna are usually quite different from their corresponding close relatives from nearby faunistic Regions, for example, *Aulocera pygmaea* (Holik) **stat. nov.** is quite different from *Aulocera sybillina* (Obth.) whose range is very close to that of the former. Furthermore, this Region also serves as a knot of three zoogeographic Regions of the world, i.e. the Palearctic Region, the Oriental Region and the Tibetan Region, of course the concept of an independent Tibetan Region is full of debates. The unique features of the fauna of this Region is attractive and its cause needs further researches.

***Aulocera pygmaea* (Holik, 1949) stat. nov.** (figs: 28, 29)

Satyrus sybillina pygmaea Holik, 1949: 98. TL: Kansu, Peiling shan, Taupingfluß; Gross, 1958: 272, Taf. II: 6, 7.
Aulocera sybillina pygmaea: Sakai, Aoki & Yamaguchi, 2001: 4.

Until now, the following subspecies of *A. sybillina* (Obth., 1890) are known (fig: 68), including *A. s. sybillina* (Obth.) (fig: 37), *A. s. yunnanicus* (Gross, 1958), *A. s. bianor* (Gr.-Gr., 1891), *A. s. holiki* (Gross, 1958) and *A. s. pygmaea* Holik, 1949. *Aulocera s. pygmaea* Holik was described from "Kansu, Peiling shan, Taupingfluß" which is nowadays Taoping-he, a small river in Lixian (Lihsien), S.E. Gansu, and in this research it was collected from Pingwu, N. Sichuan which is not far away from the TL. Both localities, Pingwu and TL, i.e. Peiling shan, belong to the S.E. Gansu-N. Sichuan Region (fig: 68 B), and the unique fauna of this Region has already been discussed above. Though the range of *A. s. pygmaea* Holik is very close to that of *A. s. sybillina*

(Obth.), their features, both superficial and internal, are quite different from each other. Therefore, *A. s. pygmaea* Holik is raised to specific status here. In Gross (1958), the author wrote "Ein Männchen mit der Fundortangabe „Kansu mer. or., Fukiang, Peilingshan sept., 2500 m, Juli" steht der ssp. *pygmaea* sehr fern, es gleicht in allen Merkmalen mehr den Tieren von Ta-tisen-lu. Da die Fundortangabe ost-asiatischer Tiere aber oft fehlerhaft sind, lässt sich leider nichts Weiteres darüber aussagen". "Fukiang" [Fuqiang] is nowadays Gangu which is on the north slope of Peiling-shan, but "Taupingfluß", i.e. TL of *pygmaea* Holik, is on the south slope of Peiling-shan. Two different subspecies were found from two very close localities respectively, it made Gross confused, therefore he suspected the correctness of the label. However, maybe the label of the ♂ from "Fukiang" mentioned by Gross (1958) is not wrong and it is just a clue that *Aulocera pygmaea* (Holik) **stat. nov.**, which is an independent species now, and *A. sybillina* (Obth.) can occur in a small area. Moreover, Peiling-shan is just the northern border of the above mentioned S.E. Gansu-N. Sichuan Region, so it is possible that *A. pygmaea* (Holik) **stat. nov.** was collected from the S. slope and *A. sybillina* (Obth.) from the N. slope of Peiling-shan.

Diagnosis: *Aulocera pygmaea* (Holik) **stat. nov.** can be separated from *A. sybillina* (Obth.) by the combination of the following characters:

1. As its name suggests, it is usually obviously smaller than *A. sybillina* (Obth.).
2. DFW postdiscal spots are much smaller than those of *A. sybillina* (Obth.).
3. DHW discal band is much narrower than that of *A. sybillina* (Obth.).
4. Valva (figs: 51 d-f) is shorter and narrower than that of *A. sybillina sybillina* (Obth.) (figs: 51 g, h) and *A. sybillina bianor* (Gr.-Gr., 1891) (fig: 51 i).
5. Ductus bursae (fig: 61) is long with its distal end widened near the ostium bursae, whereas it is very short and not obviously widened in *A. sybillina sybillina* (Obth.) (fig: 60).
6. Signa (fig: 61) is narrower than that of *A. sybillina sybillina* (Obth.) (fig: 60).
7. Lower flange of sterigma is only slightly bifurcate at its distal end (fig: 61), whereas it is deeply bifurcate in *A. sybillina sybillina* (Obth.) (fig: 60).
8. Lamina of androconia (fig: 66 c) is obviously shorter and narrower than that of *A. sybillina sybillina* (Obth.) (fig: 66 a, b).

Notes: The study of ♀ genitalia suggests again that *Aulocera pumilus* (Feld.)-group is very close to *A. pygmaea* (Holik) **stat. nov.** and *A. sybillina* (Obth.) intrinsically. Moreover, both ♂ and ♀ genitalia similarities of them give the present author an idea that the *A. pumilus* (Feld.)-group should also includes *A. pygmaea* (Holik) **stat. nov.** and *A. sybillina* (Obth.). Therefore, the generic name *Paroeneis* Mr. must be a junior synonym of *Aulocera* Btlr. and it even does not worth a subgeneric name. ♀ genitalia of *Aulocera ellenae* (Gross, 1958) (fig: 65) is also studied for comparing, it is different from the above mentioned species, its lower flange is more intricate in structure, and its lamella postvaginalis (llp) area is not leaving a simple mid-dorsal process but it is heavily sclerotized, fused with the dorsal-lateral lobes, and formed a wall which bears a sharply pointed mid-dorsal process. It is again a clue that *A. pygmaea* (Holik) **stat. nov.** and *A. sybillina* (Obth.) are more similar to the *A. pumilus* (Feld.)-group than to other species of *Aulocera* Btlr.

***Hipparchia autonoe s o n g k u i* Lang subspec. nov.** (fig: 45)

HT ♂: CHINA: Qinghai, Yushu, Gyegu, 3700 m, 14.VII.2011, leg. Kui Song, CMNH.

Etymology: The subspecific name *songkui* is named after Mr. Song Kui who kindly sent the present author interesting satyrid butterflies from Gyegu including this new subspecies.

Diagnosis: Until now, the following subspecies of *Hipparchia autonoe* (Esper, 1783) are known, including subspec. *autonoe* (Esper), subspec. *extrema* (Alph., 1889), subspec. *maxima* (B.-H., 1933), subspec. *arcellae* Sbordoni, Bozano & Cesaroni, 2018, subspec. *celaeno* (Leech, 1892) and subspec. *zezutonis* (Seok, 1934) (Sbordoni *et al.*, 2018a, b). The new subspecies can be distinguished from other subspecies from adjacent Regions by the combination of the following characters:

1. DFW postdiscal and DHW discal creamy white bands are narrow and heavily stained with dark colour, whereas they are broad and clear in *H. autonoe extrema* (Alph.), *H. autonoe maxima* (B.-H.) and *H. autonoe arcellae* Sbordoni, Bozano & Cesaroni.
2. DFW ♂ brand is very prominent, whereas it is weak or nearly absent in *H. autonoe celaeno* (Leech).
3. DFW and VFW ocelli in spaces 2 and 5 are normal in size, whereas they are somewhat reduced in size in *H. autonoe celaeno* (Leech).
4. VHW veins are clearly outlined by white lines, whereas those white lines are vestigial in *H. autonoe maxima* (B.-H.).

Notes: As additional information provided, ♂ genitalia and jullien's organ of the new subspecies are illustrated (fig: 55). Sbordoni *et al.* (2018b) illustrated a ♀ of *H. autonoe celaeno* (Leech) from Manigango, N.W. Sichuan, but its status is not very clear because no ♂ has been reported together. In my opinion, it is also possibly a ♀ of the new subspecies, and needs further study. Sbordoni *et al.* (2018b) illustrated a ♂ from Xiahe (S.W. Gansu) which is very similar to the present new subspecies and was temporarily treated as *H. autonoe celaeno* (Leech) with a question mark, but 2 ♂♂ kept in LSY have been examined and both of them are typical *H. autonoe extrema* (Alph.) (figs: 46, 56).

Distribution: S. Qinghai (fig: 69).

***Oeneis mulla* Staudinger, 1881** (figs: 47, 48)

Oeneis mulla Staudinger, 1881: 270. TL: Tarbagatai.

This species is only distributed in Tarbagatai-Saur area, and this area is a frontier area between E. Kazakhstan and N.W. Xinjiang. But until now this butterfly has not been reported from Xinjiang. In June 2017, the present author collected 3 ♀♀ on the S. slope of Saur (fig: 70 d) in Hoboksar, Xinjiang. It is the first record of *Oeneis mulla* Stgr. from the fauna of China.

***Erebia callias sibirica* Staudinger, 1881** (fig: 44)

Erebia tyndarus var. *sibirica* Staudinger, 1881: 270. TL: Tarbagatai.

Erebia callias Edwards, 1871 is a species with a Holarctic distribution but it has not been reported from China before. Alike *Oeneis mulla* Stgr. mentioned above, one of a subspecies of *E. callias* Edwards, i.e. *E. callias sibirica* Stgr., 1881, is only distributed in Tarbagatai-Saur and its discovery in China (Xinjiang) has also been expected. In June 2017, the present author collected 2 ♀♀ *E. callias sibirica* Stgr. on the S. slope of Saur Mt. in Hoboksar, Xinjiang. Therefore, both *E. callias* Edwards and *E. callias sibirica* Stgr. are first recorded from the fauna of China.

***Ypthima putamdui yoshinobui* Huang & Wu, 2003 stat. nov.** (figs: 42, 43)

Ypthima yoshinobui Huang & Wu, 2003: 115. TL: Make valley, E. Qinghai; Uémura, 2018: 15.

Ypthima yoshinobui Huang & Wu, 2003 was described basing upon a single ♂ from Make valley, E. Qinghai. In the early June, 2018, the present author collected 2 ♂♂ and 6 ♀♀ of this species from Make valley (fig: 70 c), Banma, Qinghai, i.e. the TL area. This species is very close to *Y. putamdui* South, 1913 which was described from Nya Chuka [Yajiang] in W. Sichuan. Uémura (2018) suspected that *Y. yoshinobui* Huang & Wu might be a subspecies of *Y. putamdui* South. No obvious differences can be found between the two species, therefore *Y. yoshinobui* Huang & Wu is sunk to a subspecies of *Y. putamdui* South, i.e. *Y. putamdui yoshinobui* Huang & Wu **stat. nov.**

***Ypthima beautei qinghaiensis* Huang & Wu, 2003** (fig: 41)

Ypthima beautei qinghaiensis Huang & Wu, 2003: 118. TL: Make valley, E. Qinghai.

This butterfly flies together with *Ypthima putamdui yoshinobui* Huang & Wu **stat. nov.** in nature but its occurrence is later than the latter. When a new ♂ *Y. beautei qinghaiensis* Huang & Wu was caught in early June, only worse ♂ and somewhat old ♀ of *Y. putamdui yoshinobui* Huang & Wu **stat. nov.** can be collected together. Geographically, Make valley is not separated from traditional W. Sichuan fauna, and it is only a dot on the northern fringe of this faunistic area. Fine forests are extending from W. Sichuan to the frontier of S.E. Qinghai (Make valley) along the Dadu-he valley (Make river is the upper water of Dadu-he river), that is no geographical isolation can be found between W. Sichuan, i.e. the habitat of *Ypthima putamdui putamdui* South and *Y. beautei beautei* Obth., 1884 and Make valley, i.e. the habitat of *Y. putamdui yoshinobui* Huang & Wu **stat. nov.** and *Y. beautei qinghaiensis* Huang & Wu, conversely they are well connected with each other as base and tip on a single twig. Make valley serves as the northern border of the ranges of the two species here. Therefore two subspecies of each species, either *Y. putamdui* South or *Y. beautei* Obth., might be clinal forms.

***Loxerebia loczyi* (Frivaldszky, 1886)**

Callerebia lóczyi Frivaldszky, 1886: 40, pl. IV: 4. TL: In China septentrionali ad Su-tschou [sic].

According to Bálint (2009), the label of the lectotype of *Callerebia loczyi* Frivald., 1886 is

"*Callerebia Lóczyi*/ China Széchenyi/ TYPUS/ Hung. Nat. Hist. Mus. coll. LEPIDOPTERA ~~PARA~~TYPUS",

therefore no exact collecting site can be found from labels of lectotype and paralectotypes (labels of paralectotypes see Bálint, 2009). But in the original description, Frivaldszky (1886) wrote that the typical material was from "China septentrionali ad Su-tschou". The Hungarian Scientific Expedition into East Asia (1877-1880) organized and sponsored by Count Széchenyi Béla was a very famous expedition especially in geology. In this expedition, Széchenyi and his entourages Lóczy Lajos (Hungarian geologist) and Gustav Kreitner (Austrian cartographer) traveled from Shanghai to Su-tschou [Suzhou, now Jiuquan, but not "Wuhsien, Province Jiangsu" explained by Bálint (2009)] in N.W. Gansu, N.W. China. After finishing their activities at Su-tschou and its nearby areas, Tung Huang (Dunhuang) for instance, they continued their journey and moved southwards, visited E. Qinghai, S. Gansu, W. Sichuan, W. Yunnan in turn, and finally left Yunnan to Myanmar. Undoubtedly, Frivaldszky's description of *Callerebia loczyi* Frivald. was based on specimens obtained by Széchenyi Expedition in China, but the exact TL "Su-tschou" is dubious. Based on recent collecting data, *Loxerebia loczyi* Frivald. is known from Min-shan area and its surroundings, namely the above mentioned S.E. Gansu-N. Sichuan Region (fig: 68 B), where natural environment and climate are quite different from those of Su-tschou area in which *L. loczyi* Frivald. unlikely exists. Futhermore, Széchenyi and his team arrived at Su-tschou on 21 March 1879 and left on 24 May of the same year (Bretschneider, 1898; Li, 2018), it means that the expedition team spent only a spring in Su-tschou. We know that *L. loczyi* Frivald. is a butterfly flying in autumn (from late August to Semptember), therefore *L. loczyi* Frivald. from Su-tschou can hardly be supported considering the seasonal factor. Thence, the typical material of *Callerebia loczyi* Frivald. should be collected by the expedition team when they went through S.E. Gansu-S.W. Shaanxi-N. Sichuan area in the autumn of 1879. Moreover, the route of the Count's team in that area was that: left Si ning (Xining) on Aug. 10 1879 - Nien po (Ledu) - Lan chou fu (Lanzhou) - An ting (Dingxi) - Kung ch'ang fu (Longxi) - Ning yüan (Wushan) - Fu kiang (Gangu) - Ts'in chou (Tianshui) - Hui (Huixian) - Lio yang (Lüeyang) - Kuang yüan (Guangyuan) - Kien chou (Jiange) - Mien chou (Mianyang) - reached Ch'eng tu fu (Chengdu) on Sept. 24 in the same year. Considering the modern records of this species, the typical material should be collected from the route between Kung ch'ang fu and Hui (nowadays Longxi - Huixian) in S.E. Gansu.

***Lopinga fulvescens* (Alphéraky, 1889)**

Pararge dumetorum var. *fulvescens* Alphéraky, 1889: 118. TL: entre Tcha-tchi-Kou et la petite ville Tchangla [in mountains S. of Siku, nowadays Zhugqu, Gansu].

"According to Bozano (1996), it seems impossible to find the TL of this species, given as Tcha-tchi-Kou, in current maps. Judging from the route taken by Potanin, collector of the type, expedition, Tcha-tchi-Kou is possibly a pass between Zhugqu [Sigu], S. Gansu and Jiuzhaigou [Nanping], N. Sichuan" (Lang, 2017).

The discovery of this species is also a result of Potanin's third journey in China (1884-1886) as *Minois paupera* (Alph.). As cited above, the TL of *Lopinga fulvescens* (Alph.) is possibly a pass between Zhugqu, S. Gansu and Jiuzhaigou, N. Sichuan. With more sufficient data, the exact location can be made more accurate. Alphéraky (1889) wrote "L'unique individu, un ♂, pris le 26 Juin 1885, entre Tcha-tchi-Kou et la petite ville Tchangla, …", and it means the type was collected by Potanin between Tcha-tchi-Kou and Tchangla on June 26th. Bretschneider (1898) wrote "… Si ku was reached June, 23. Stay till July first ... June 26-28, and July 3-8 the mountains south of Siku, 9000 ft, which separate the Siku River from the Satani R. where they made rich botanical collections. … Then continued on the Sze ch'uan road. - Crossed the Satani R. Village of Chago. Farther south went over the Chagola Pass, 10,650 ft., July 10 … crossed a mountain ridge I chu shan, 11,680 ft., July 15, and after having passed the frontier between Kan su and Sze ch'uan, reached the considerable river Hei ho. On the opposite side of it is the city of Nan p'ing (Sze ch'uan) …". Thus, it is that Potanin collected the type at the mountains south of Siku (nowadays Zhugqu town), and it can be known that the southward route of the team from Siku to Nanping (nowadays Jiuzhaigou town) was: Siku - the mountains south of Siku - Chago (Chagang village) - Chagola Pass (Mt. Chagola) - I chu shan - Hei ho - Nanping. Still neither Tcha-tchi-Kou nor Tchangla can be found on the Bretschneider's map (1890), but based on their route and schedule, the TL can be confined in a small and accurate scope on modern maps, i.e. the mountain between Zhugqu town and Chagang village.

***Lethe uemurai* (Sugiyama, 1994)** (figs: 49, 50)

Zophoessa uemurai Sugiyama, 1994: 5, figs. 13-16, 21. TL: Mongbi Mts. (N. Qionglai Mts.), Sichuan.

Sugiyama (1994) described this satyrid from Mongbi Mts. [a ridge between Barkam and Xiaojin], N.W. Sichuan, and it is the westernmost point of the range of this species. Until now, this species has been collected by the present author and his colleagues from a lot of localities in N. Sichuan, S.E. Gansu, S. Shaanxi and W. Hubei. Though this species was described somewhat late, in fact it is a very common species from the above mention Regions and lives at altitudes betwee 1800-3500 m. In nature, it can be observed that a large numbers of *Lethe uemurai* (Sugiyama), more than a hundred sometimes, accumulate together on moist cement roads and rock cliffs. This species is very close to *Lethe helle* (Leech, 1891), but it can be easily recognised from the latter by its DFW ♂ brands on veins 1b, 2 and 3 which are totally absent in the latter. With observation of a large series of individuals of *L. uemurai* (Sugiyama), it is found that the development of ♂ brand of this species is very variable in a given population, from totally absent (fig: 49) to well developed (fig: 50). Therefore, presence or absence of ♂ brand on DFW should not be a necessary and sufficient diagnosis character in some satyrid species, such as this one. Lang (2016c) once mentioned that "*L. uemurai* (Sugiyama) is a replacement species of *L. helle* (Leech) in the fauna of N. Sichuan, S.E. Gansu and S. Shaanxi", but now it seems that it is also possible only a subspecies of *L. helle* (Leech).

***Lethe jianqingi* Lang, 2016**

Lethe armandina jianqingi Lang, 2016a: 37, figs. 1-5, 11, 12. TL: Mt. Luojishan, Puge, Sichuan.
Lethe jianqingi Lang, 2016b: 342, figs. 12-14, 19 f, 25, 28 A.; Lang, 2017: 54, pl. III: 11.
Lethe armandina yanbiana Lang, 2016b: 342, figs: 9, 10, 26, 28B. TL: Gesala, Yanbian, Sichuan; Lang, 2017: 53, pl. III: 15. **syn. nov.**

Lethe jianqingi Lang, 2016 from S.W. Sichuan and N. Yunnan which bears DFW ♂ brand is very close to *Lethe armandina* (Obth., 1881) from W. Sichuan whose ♂ brand is totally absent. As a result of considering presence or absence of DFW ♂ brand as a necessary and sufficient diagnosis character, *L. armandina yanbiana* Lang, 2016 whose ♂ brand is absent was described. Apart from the absence of ♂ brand, *L. armandina yanbiana* Lang, which flies together with *L. jianqingi* Lang, is more close to *L. jianqingi* Lang than to *L. armandina* (Obth.). Considering the similar situation of *Lethe uemurai* (Sugiyama) mentioned above, the present author changes his former treatment and sinks *L. armandina yanbiana* Lang **syn. nov.** to a junior synonym of *L. jianqingi* Lang in which DFW ♂ brand is also variable as *L. uemurai* (Sugiyama), from totally absent to well present.

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Moore (1893)	Seitz (1909)	Riley (1923)	Bang-Haas (1927)	Gaede (1930)***
Paroeneis	***Satyrus***	***Paroeneis***	***Satyrus***	***Satyrus***
P. pumilus	***S. pumilus***	***P. grandis***	***S. pumilus***	***S. pumilus***
P. sikkimensis	*S. p. bicolor*	***P. bicolor***	*S. p. pumilus*	*S. p. sikkimensis*
P. buddha*	***S. palaearcticus*** = *lama*	***P. sikkimensis***	*S. p. sikkimensis*	*S. p. iloe*
P. palaearcticus	*S. p. sikkimensis*		*S. p. sikkimensis* ab. *bicolor*	*S. p. palaearcticus*
	S. p. iole		*S. p. grandis*	*S. p. nanchanica*
			S. p. iole	*S. p. illustris*
			S. p. illustris	*S. p. unicolor*
			S. p. illustris ab. *unicolor*	*S. p. grandis*
			S. p. buddha	*S. p. divnogorski*
			S. p. palaearcticus = *lama*	*S. p. buddha*
			S. p. divnogorski	
			*S. p. nanchanica***	

Talbot ([1949])	Gross (1958)	Huang (2001)	Sakai *et al.* (2001)	In this paper
Oeneis	***Satyrus* (*Aulocera*)**	***Paroeneis***	***Aulocera***	***Aulocera***
O. pumilus	***S. pumilus***	***P. pumilus***	***A. pumilus***	***A. pumilus***
O. p. pumilus	**Gruppe 1.**	***P. palaearcticus***	***Pumilus* group**	***A. palaearcticus*** = *lama*, *divnogorski*
O. p. bicolor	*S. p. sikkimensis* = f. *bicolor*	*P. p. palaearcticus* = *lama*, *divnogorski*	*A. p. pumilus*	***A. nanchanicus*** = *illustris*, ab.*unicolour*
O. palaearcticus	*S. p. grandis*	*P. p. nanchanicus* = *illustris*	*A. p. palaearcticus* = *lama*	***A. iole***
O. p. sikkimensis	**Gruppe 2.**	*P. p. buddha*	*A. p. sikkimensis*	*A. i. iole*
	S. p. pumilus	*P. p. iole*	*A. p. bicolor*	*A. i. buddha*
	Gruppe 3.	*P. p. atunsensis*	*A. p. grandis*	*A. i. songi*
	S. p. palaearcticus	*P. p. auloceroides*	*A. p. divnogorski*	*A. i. qiliana*
	S. p. divnogorski	***P. parapumilus***	***Nanchanicus* group**	***A. atunsensis***
	Gruppe 4.	***P. bicolor***	*A. p. nanchanicus*	*A. at. atunsensis*
	S. p. nanchanicus = *illustris*	***P. grandis***	*A. p. illustris*	*A. at. auloceroides*
	Gruppe 5.	***P. sikkimensis***	*A. p. buddha*	*A. at. melanoleuca*
	S. p. iole		*A. p. parapumilus*	*A. at. vadimi*
	S. p. buddha		***Iole* group**	***A. parapumilus***
	S. p. atuntsensis		*A. p. iole*	*A. p. parapumilus*
			A. p. atuntsensis	*A. p. mila*
			A. p. auloceroides	***A. sikkimensis***
			A. p. melanoleuca	***A. bicolour***
				A. grandis

Table 1. Classifications of *Aulocera pumilus* (Feld.)-group in different works, including some Regional works. *It is *Oeneis buddha* Gr.-Gr., 1891 but not *Satyrus pumilus buddha* B.-H., 1927; **Bang-Haas did not include *Satyrus pumilus nanchanica* Gr.-Gr. in the main part of his "*Horae Macrolepid.*", but added it in the part of "*Nachträge und Berichtigungen von Horae Macrolepid.*" in page 114; ***the work of Gaede (1930) is a supplementary work of Seitz (1909).

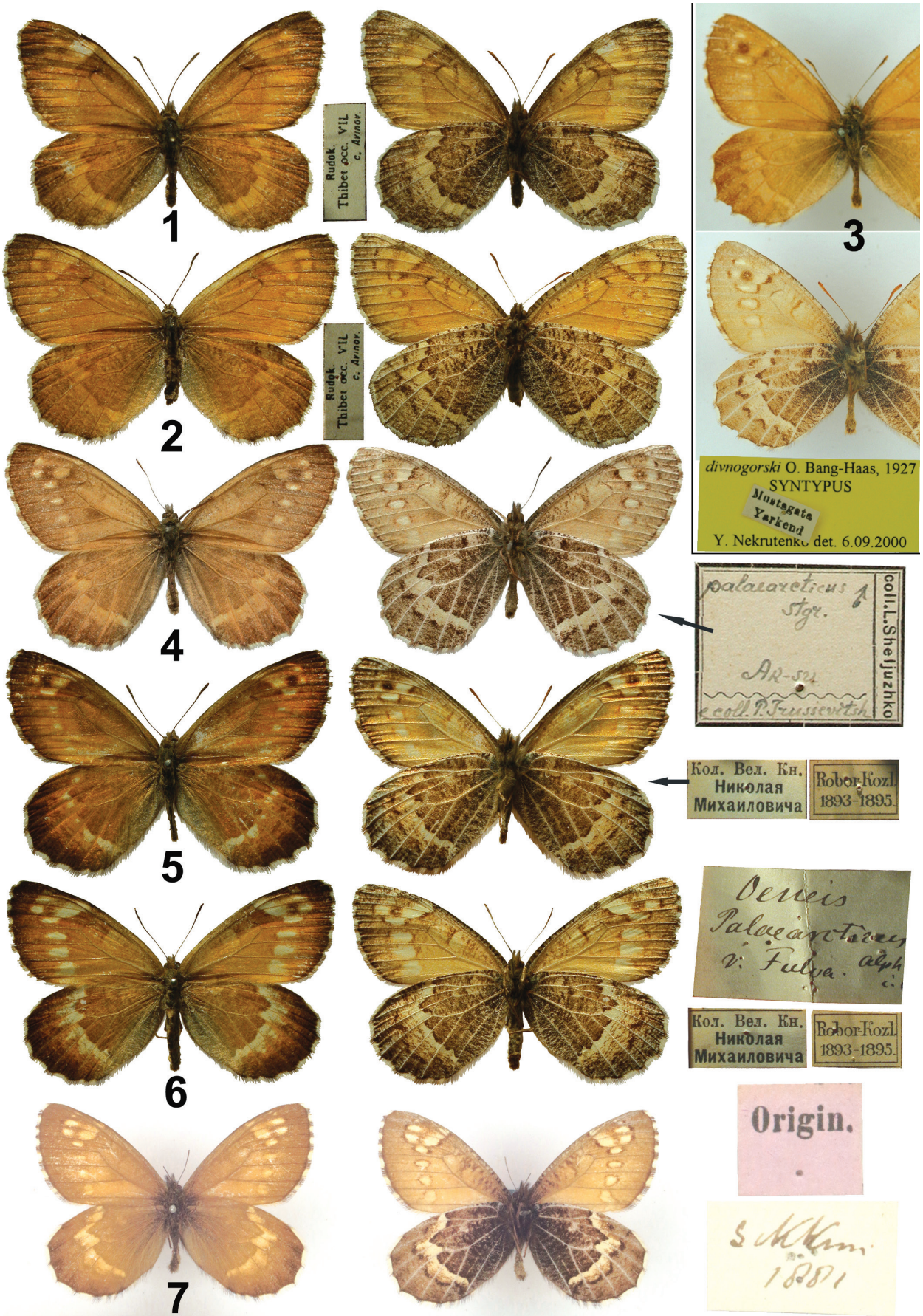

Fig. 1-2: *Aulocera pumilus* (Feld., 1867): (1) ♂, Thibet occ., Rudok, ZISP; (2) ♀ ditto. **Fig. 3-4:** *Aulocera palaearcticus* (Stgr., 1889): (3) ♂, syntype of *Satyrus pumilus divnogorski* B.-H., Mustagata Yarkend, MTDG; (4) ♂, Ak-su, ZMKU. **Fig. 5-6:** *Aulocera nanshanicus* (Gr.-Gr., 1902) **stat. nov.**: (5) ♂, syntype of *Satyrus pumilus* var. *nanshanicus* Gr.-Gr., Nian Chian, Ulan Bulak, ZISP; (6) ♀, ditto. **Fig. 7:** *Aulocera sikkimensis* (Stgr., 1889): ♂, syntype of *Oeneis palaearcticus* var. *sikkimensis* Stgr., Sikkim, ZMHU.

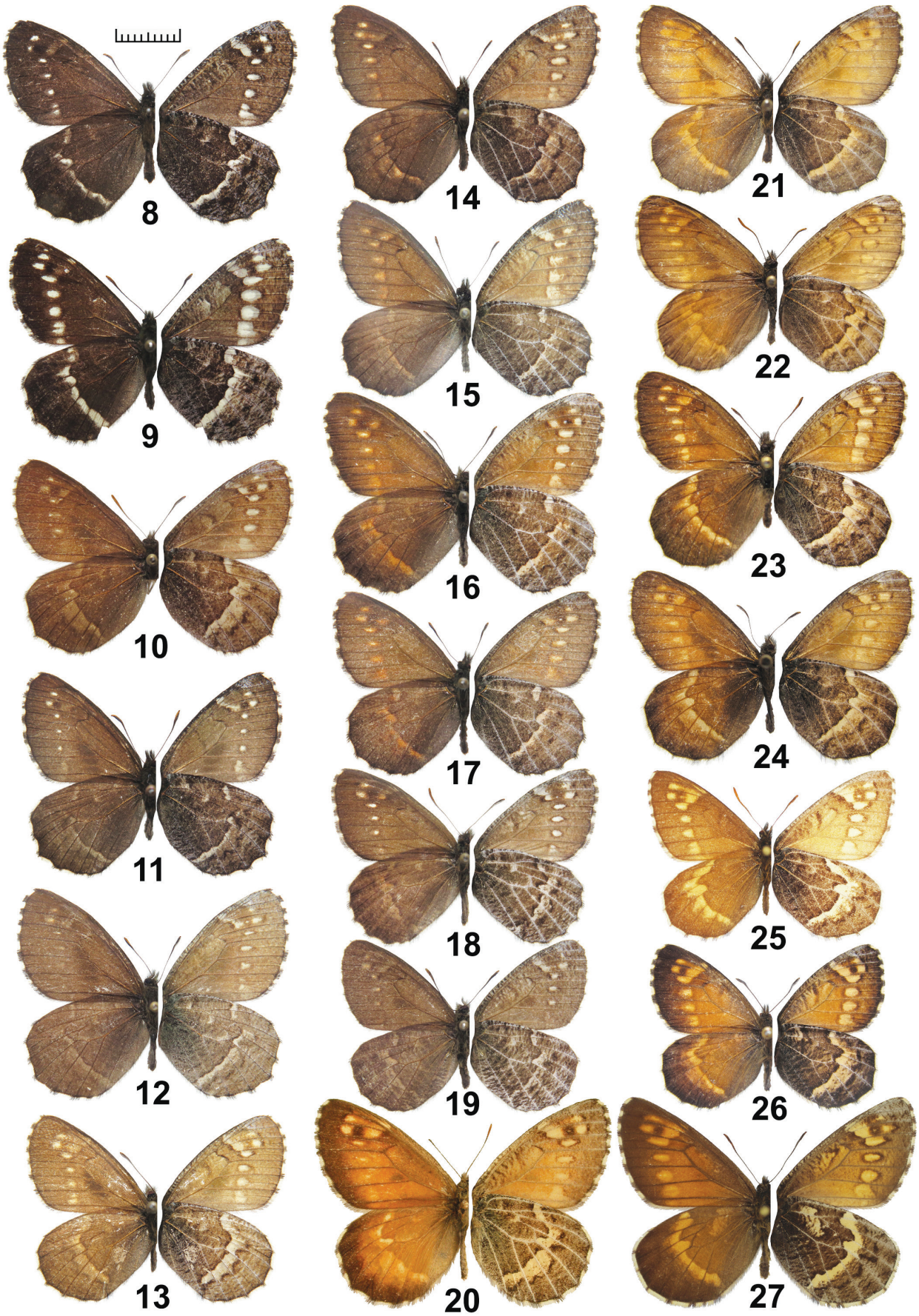

Fig. 8-9: *Aulocera atunsensis* ***vadimi*** **subspec. nov.**: (8) PT, ♂, Sichuan, Pingwu, LSY, SATY0742, ANDR0131; (9) ditto, SATY0766. **Fig. 10-11:** *Aulocera iole* (Leech, 1892) **stat. nov.**: (10) ♂, Sichuan, Kangding, LSY, SATY0041, ANDR0138; (11) ♂, Sichuan, Lixian, LSY, SATY0751, ANDR0139. **Fig. 12:** *Aulocera iole buddha* (B.-H., 1927) **stat. nov.**: ♂, Sichuan, Zoige, LSY, SATY0750, ANDR0140. **Fig. 13:** *Aulocera iole* ***songi*** **subspec. nov.**: HT, male, Qinghai, Gyegu, CMNH, SATY0753, ANDR0137. **Fig. 14-19:** *Aulocera iole* ***qiliana*** **subspec. nov.**: (14) HT, ♂, Qinghai, Qilian, CMNH, SATY0761; (15-19) PTs, ditto, LSY, (15) SATY0752, (16) SATY0772, (19) SATY0773. **Fig. 20:** *Aulocera nanshanicus* (Gr.-Gr., 1902) **stat. nov.**: ♂, Qinghai, Wulan, SK. **Fig. 21:** *Aulocera parapumilus* ***mila*** **subspec. nov.**: HT, ♂, Tibet, Gongbo Gyamda, CMNH, SATY0191, ANDR0134; **Fig. 22-24:** *Aulocera parapumilus* (Huang, 2001): (22) ♂, Tibet, Baxoi, LSY, SATY0760; (23) ditto, SATY0757, ANDR0136; (24) ditto, SATY0756, ANDR0135. **Fig. 25:** *Aulocera sikkimensis* (Stgr., 1889): ♂, SE Lhassa to Indian border, VVT. **Fig. 26:** *Aulocera bicolour* (Seitz, 1908): ♂, Tibet, Gongbo Gyamda, LSY, SATY0192. **Fig. 27:** *Aulocera grandis* (Riley, 1923): ♂, Tibet, Nyalam, VVT.

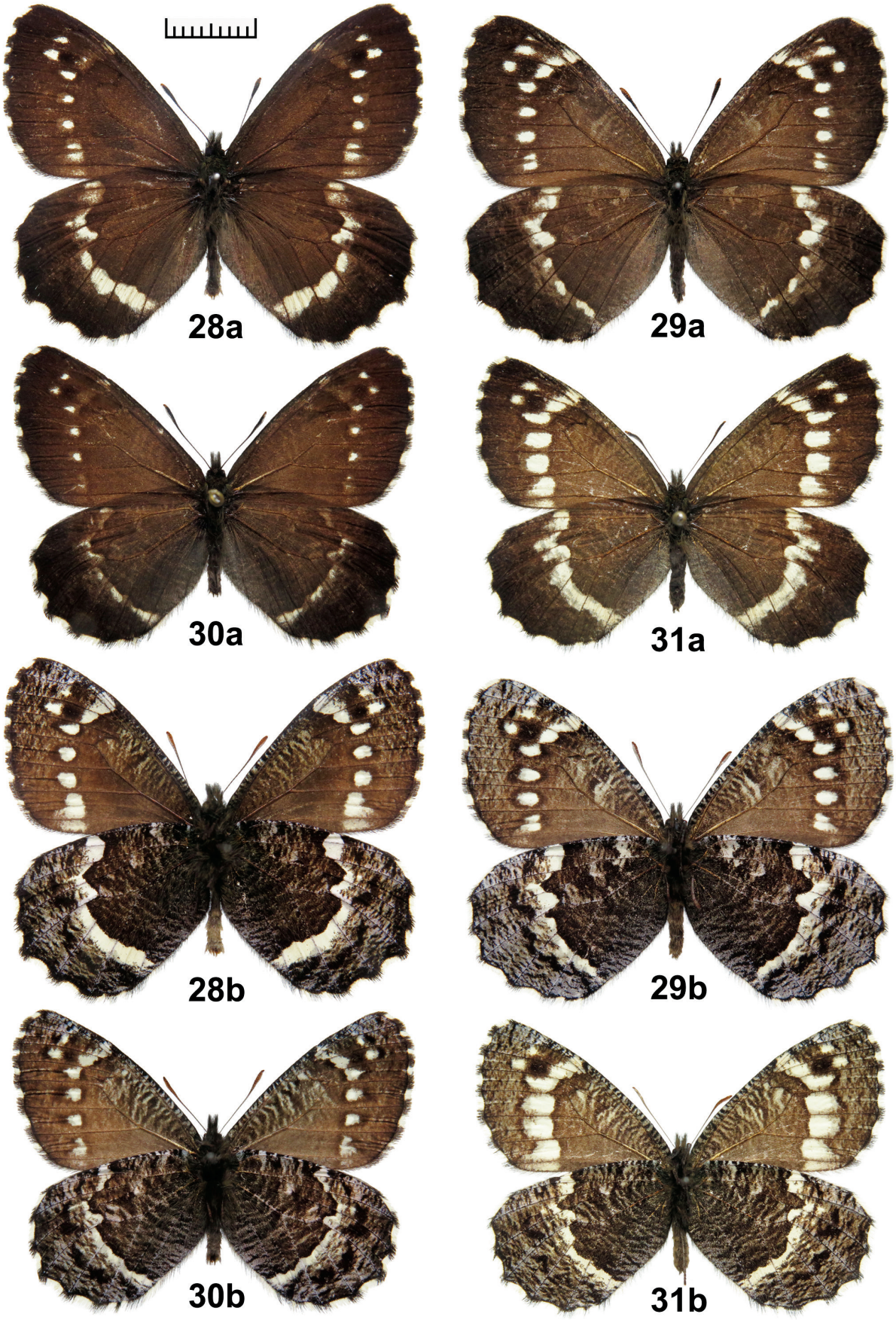

Fig. 28-29: *Aulocera pygmaea* (Holik, 1949) **stat. nov.**: (28a, b) ♂, Sichuan, Pingwu, LSY, SATY0743, ANDR0130; (29a, b) ♀, ditto, SATY0775. **Fig. 30-31:** *Aulocera atunsensis* ***vadimi*** **subspec. nov.**: (30a, b) HT ♂, Sichuan, Pingwu, CMNH, SATY0765; (31a, b) PT ♀, ditto, LSY, SATY0776.

Fig. 32: *Aulocera parapumilus* (Huang, 2001): ♀, Tibet, Baxoi, LSY, SATY0779. **Fig. 33:** *Aulocera nanshanicus* (Gr.-Gr., 1902) **stat. nov.**: ♀, Qinghai, Wulan, SK. **Fig. 34:** *Aulocera iole buddha* (B.-H., 1927) **stat. nov.**: ♀, Gansu, Xiahe, SK. **Fig. 35:** *Aulocera iole* (Leech, 1892) **stat. nov.**: ♀, Sichuan, Kangding, LSY, SATY0778. **Fig. 36:** *Aulocera atunsensis* ***vadimi*** **subspec. nov.**: PT, ♀, Sichuan, Pingwu, LSY, SATY0777. **Fig. 37:** *Aulocera sybillina* (Obth., 1890): ♀, Sichuan, Zoige, LSY, SATY0774. **Fig. 38:** *Aulocera grandis* (Riley, 1923): ♀, Tibet, Nyalam, MK. **Fig. 39:** *Aulocera bicolour* (Seitz, 1908): ♀, Tibet, Mt. Everest, MK. **Fig. 40:** *Aulocera sikkimensis* (Stgr., 1889): ♀, SE Lhassa to Indian border, VVT. **Fig. 41:** *Ypthima beautei qinghaiensis* Huang & Wu, 2003: ♂, Qinghai, Banma, LSY, SATY0689. **Fig. 42-43:** *Ypthima putamdui yoshinobui* Huang & Wu, 2003 **stat. nov.**: (42) ♀, Qinghai, Banma, LSY; (43) ♂ ditto, SATY0690. **Fig. 44:** *Erebia callias sibirica* Stgr., 1881: ♂, Xinjiang, Hoboksar, LSY. **Fig. 45:** *Hipparchia autonoe* ***songkui*** **subspec. nov.**: HT, ♂, Qinghai, Gyegu, CMNH, SATY0691. **Fig. 46:** *Hipparchia autonoe extrema* Alph., 1889: ♂, Gansu, Xiahe, LSY, SATY0736. **Fig. 47-48:** *Oeneis mulla* Stgr., 1881: (47) ♀, Xinjiang, Hoboksar, LSY; (48) ditto. **Fig. 49-50:** *Lethe uemurai* (Sugiyama, 1994): (49) ♂, Hubei, Shennongjia, LSY; (50) ditto.

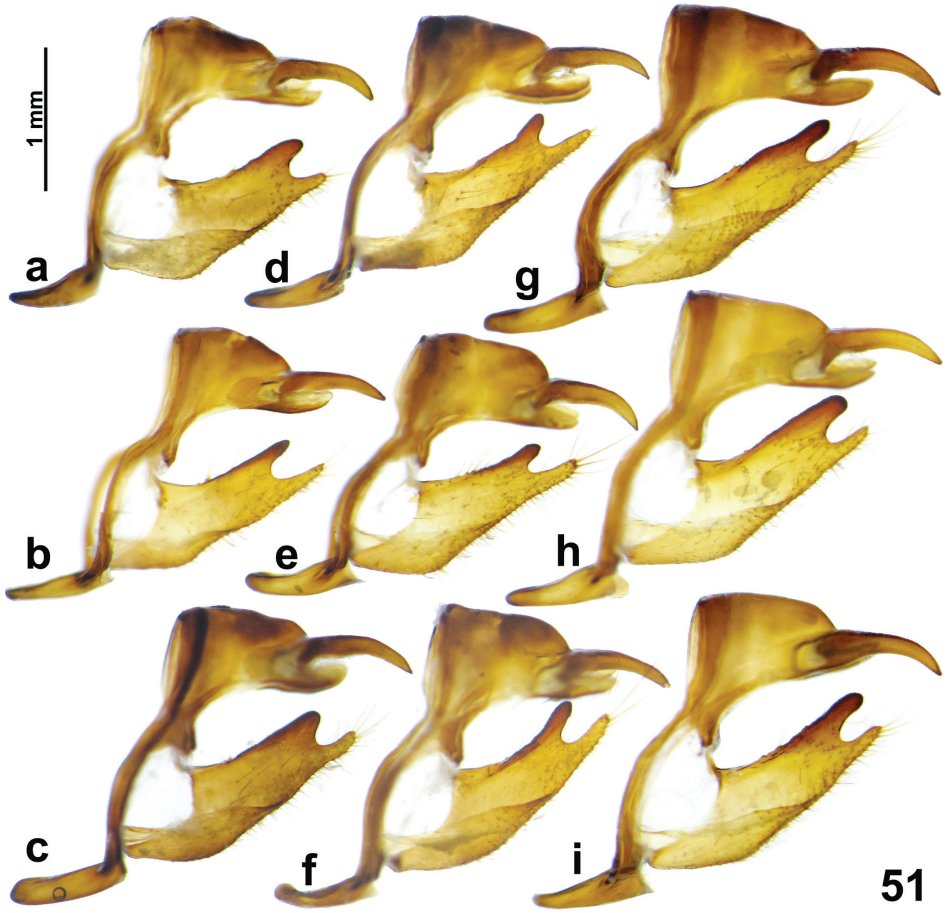

Fig. 51: ♂ genitalia in lateral view with left valva and aedoeagus removed. (a) *Aulocera atunsensis* ***vadimi*** **subspec. nov.**: PT, Sichuan, Pingwu, LSY, SATY0742, ANDR0131; (b) ditto, SATY0766; (c) ditto, SATY0769; (d) *Aulocera pygmaea* (Holik, 1949) **stat. nov.**: Sichuan, Pingwu, LSY, SATY0762; (e) ditto, SATY0767; (f) ditto, SATY0743; (g) *Aulocera sybillina* (Obth., 1890): Gansu, Xiahe, LSY, SATY0764, ANDR0128; (h) ditto: Sichuan, Zoige, LSY, SATY0749, ANDR0127; (i) *Aulocera sybillina bianor* (Gr.-Gr., 1891): Qinghai, Ping'an, LSY, SATY0763, ANDR0129.

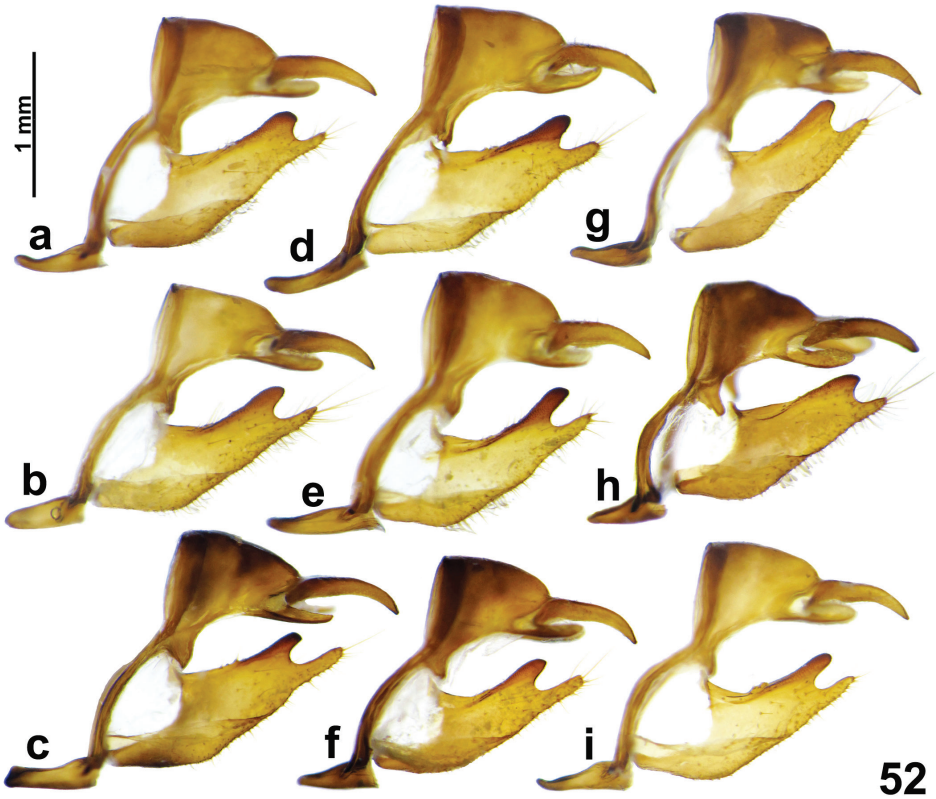

Fig. 52: ♂ genitalia in lateral view with left valva and aedoeagus removed. (a) *Aulocera iole* ***qiliana*** **subspec. nov.**: PT, Qinghai, Qilian, LSY, SATY0752; (b) ditto, SATY0771, ANDR0133; (c) ditto, SATY0772; (d) *Aulocera iole buddha* (B.-H., 1927) **stat. nov.**: Sichuan, Zoige, LSY, SATY0750, ANDR0140; (e) *Aulocera iole* (Leech, 1892) **stat. nov.**: Sichuan, Lixian, LSY, SATY0751, ANDR0139; (f) *Aulocera iole* ***songi*** **subspec. nov.**: HT, Qinghai, Gyegu, CMNH, SATY0753, ANDR0137; (g) *Aulocera parapumilus* (Huang, 2001): Tibet, Baxoi, LSY, SATY0757, ANDR0136; (h) ditto, SATY0758; (i) ditto, SATY0759.

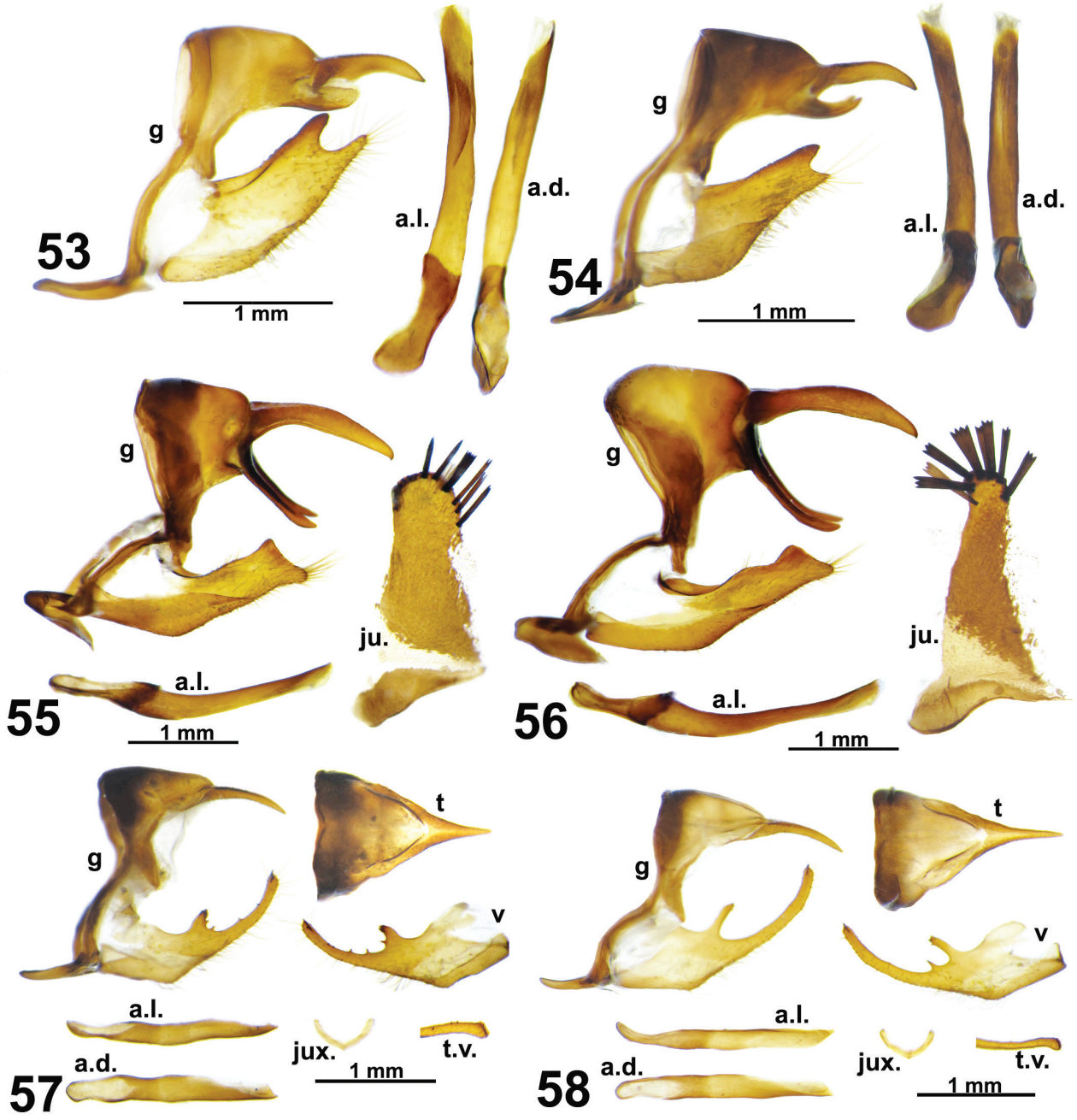

Fig. 53-58: ♂ genitalia. g - ♂ genitalia in lateral view with left valva and aedoeagus removed; a.l. - aedoeagus in lateral view; a.d. - aedoeagus in dorsal view; ju. - right half of jullien organ; t - tegumen in dorsal view; jux. - juxta; v - left valva; t.v. - tip of left valva in dorsal view. (53) *Aulocera atunsensis* ***vadimi*** **subspec. nov.**: HT, Sichuan, Pingwu, CMNH, SATY0765; (54) *Aulocera iole* ***qiliana*** **subspec. nov.**: HT, Qinghai, Qilian, CMNH, SATY0761; (55) *Hipparchia autonoe* ***songkui*** **subspec. nov.**: HT, Qinghai, Gyegu, CMNH, SATY0691; (56) *Hipparchia autonoe extrema* Alph., 1889: Gansu, Xiahe, LSY, SATY0736; (57) *Ypthima beautei qinghaiensis* Huang & Wu, 2003: Qinghai, Banma, LSY, SATY0689; (58) *Ypthima putamdui yoshinobui* Huang & Wu, 2003 **stat. nov.**: ditto, SATY0690.

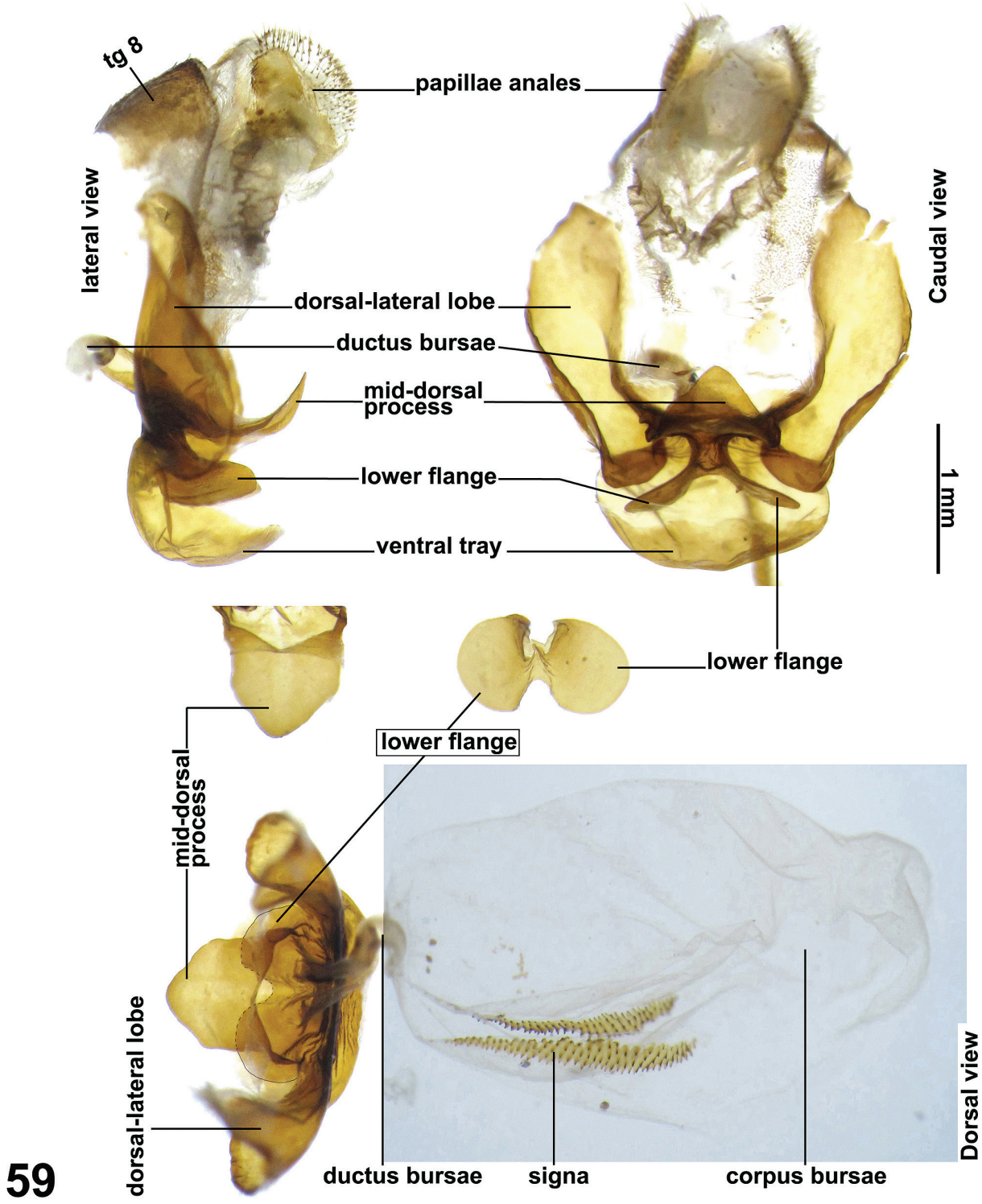

Fig. 59: ♀ genitalia of *Aulocera sybillina* (Oberthür, 1890), Sichuan, Zoige, LSY, SATY0774.

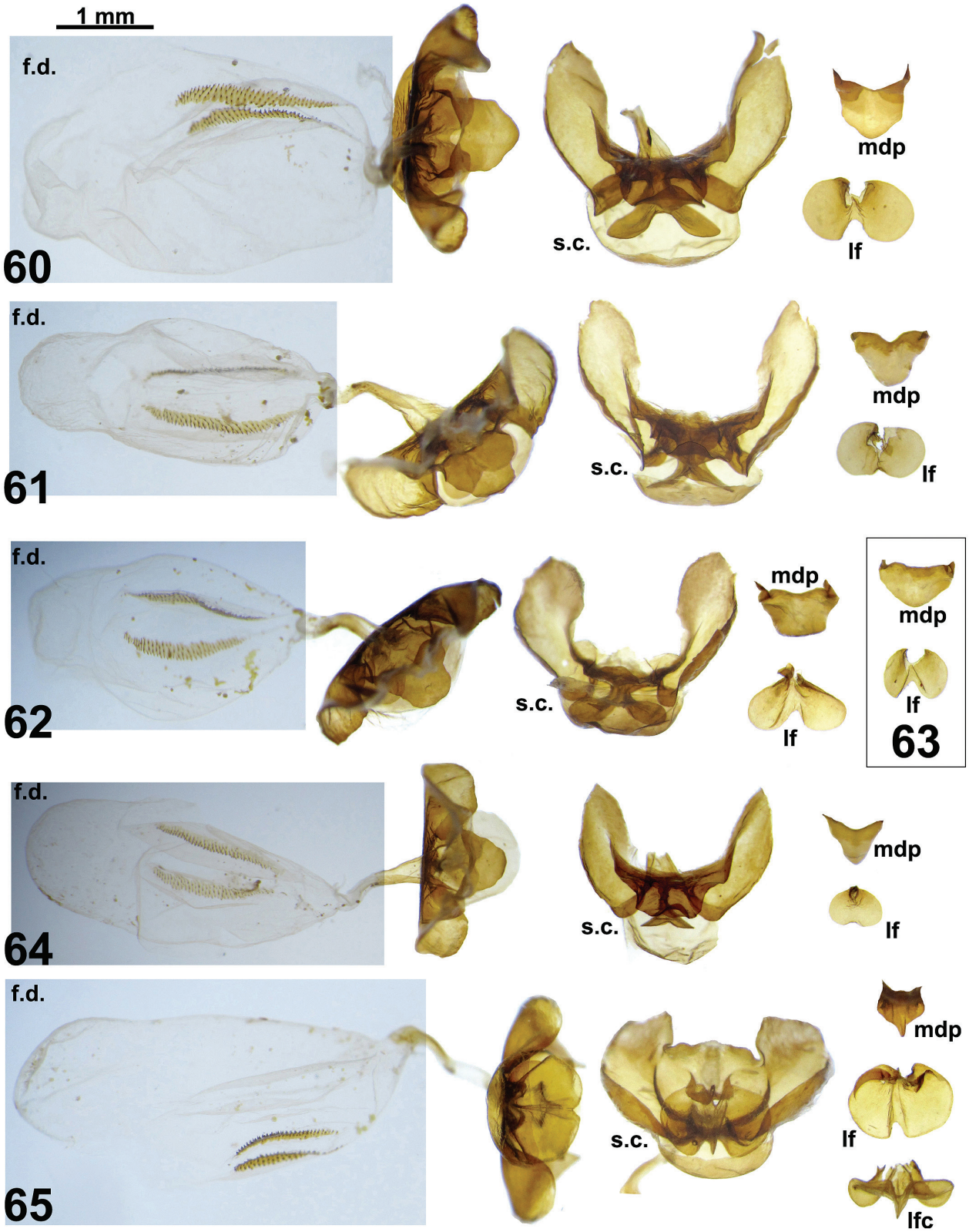

Fig. 60-65: ♀ genitalia. f.d. - ♀ genitalia in dorsal view; s.c. - sterigma in caudal view; mdp - mid-dorsal process in dorsal view; lf - lower flange in dorsal view; lfc- lower flange in caudal view. (60) *Aulocera sybillina* (Obth., 1890): Sichuan, Zoige, LSY, SATY0774; (61) *Aulocera pygmaea* (Holik, 1949) **stat. nov.**: Sichuan, Pingwu, LSY, SATY0775; (62) *Aulocera atunsensis* ***vadimi*** **subspec. nov.**: PT, ditto, SATY0776; (63) ditto, SATY0777; (64) *Aulocera parapumilus* (Huang, 2001): Tibet, Baxoi, LSY, SATY0779; (65) *Aulocera ellenae* (Gross, 1958): Sichuan, Xinduqiao, LSY, SATY0780.

Fig. 66: Androconia. (a) *Aulocera sybillina* (Obth., 1890): Tibet, Zogang, LSY, SATY0092, ANDR0126; (b) ditto: Gansu, Xiahe, LSY, SATY0764, ANDR0128; (c) *Aulocera pygmaea* (Holik, 1949) **stat. nov.**: Sichuan, Pingwu, LSY, SATY0743, ANDR0130; (d) *Aulocera atunsensis* ***vadimi*** **subspec. nov.**: PT, Sichuan, Pingwu, LSY, SATY0742, ANDR0131; (e) *Aulocera iole* (Leech, 1892) **stat. nov.**: Sichuan, Kangding, LSY, SATY0041, ANDR0138; (f) ditto: Sichuan, Lixian, LSY, SATY0751, ANDR0139; (g) *Aulocera iole buddha* (B.-H., 1927) **stat. nov.**: Sichuan, Zoige, LSY, SATY0750, ANDR0140; (h) *Aulocera iole* ***songi*** **subspec. nov.**: HT, Qinghai, Gyegu, CMNH, SATY0753, ANDR0137; (i) *Aulocera iole* ***qiliana*** **subspec. nov.**: PT, Qinghai, Qilian, LSY, SATY0771, ANDR0133; (j) *Aulocera parapumilus* ***mila*** **subspec. nov.**: HT, Tibet, Gongbo Gyamda, CMNH, SATY0191, ANDR0134; (k) *Aulocera parapumilus* (Huang, 2001): Tibet, Baxoi, LSY, SATY0756, ANDR0135; (l) ditto: SATY0757, ANDR0136; (m) *Aulocera ellenae* (Gross, 1958): Sichuan, Xinduqiao, LSY, ANDR0141.

Fig. 67: Distribution map of *Aulocera pumilus* (Feld., 1867)-group (Sources of data: Specimens kept in CMNH, MTDG, ZISP, ZMKU, LSY, MK, SK, VVT; Stgr., 1889; Alph., 1889; Leech, 1892; Gr.-Gr., 1902; Seitz, 1908; Riley, 1923; B.-H., 1927; Talbot ([1949]); Gross, 1958; Fujioka, 1970; Huang, 1999, 2000, 2001; Sakai et al., 2001; Tshikolovets, 2005a, b; Tshikolovets & Pagès, 2016).

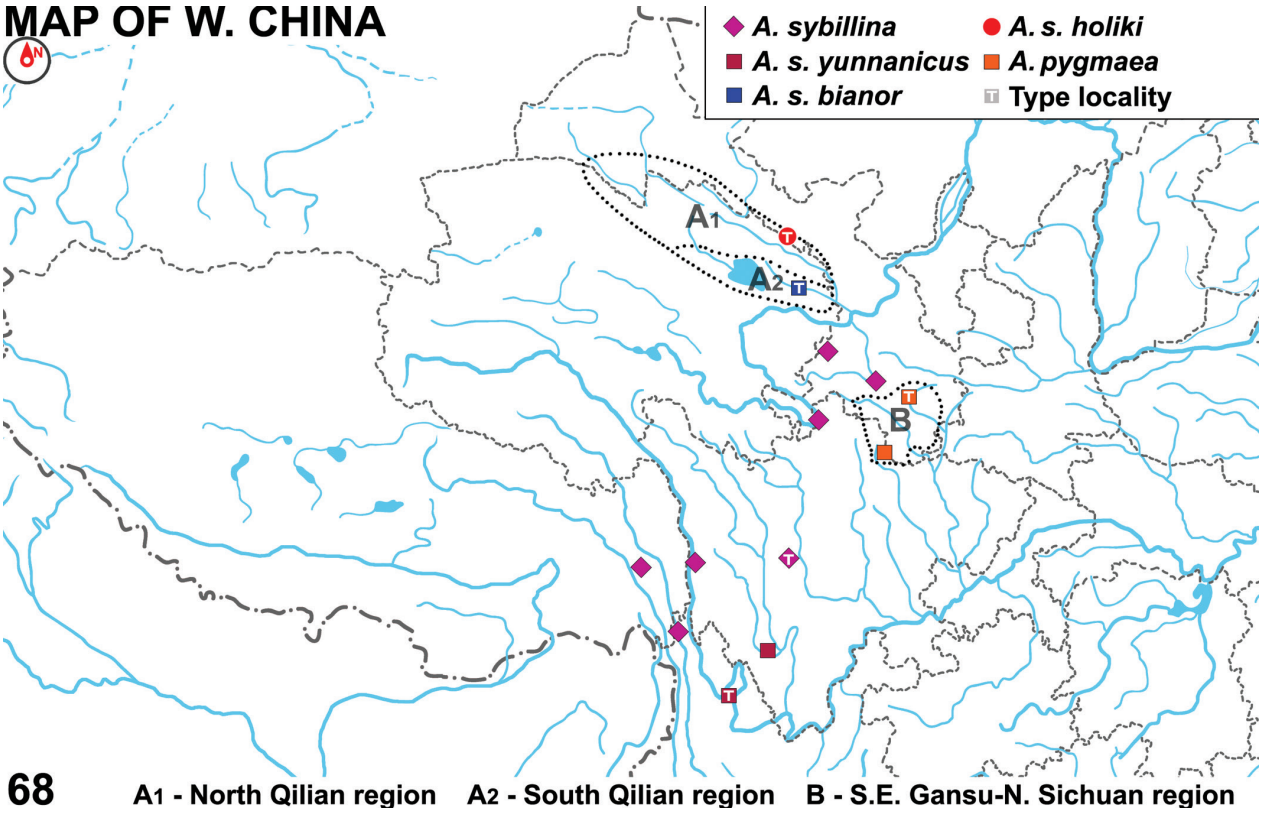

Fig. 68: Distribution map of *Aulocera sybillina* (Obth., 1890) and *A. pygmaea* (Holik, 1949) **stat. nov.** (Sources of data: Specimens kept in CMNH, LSY; Gross, 1958).

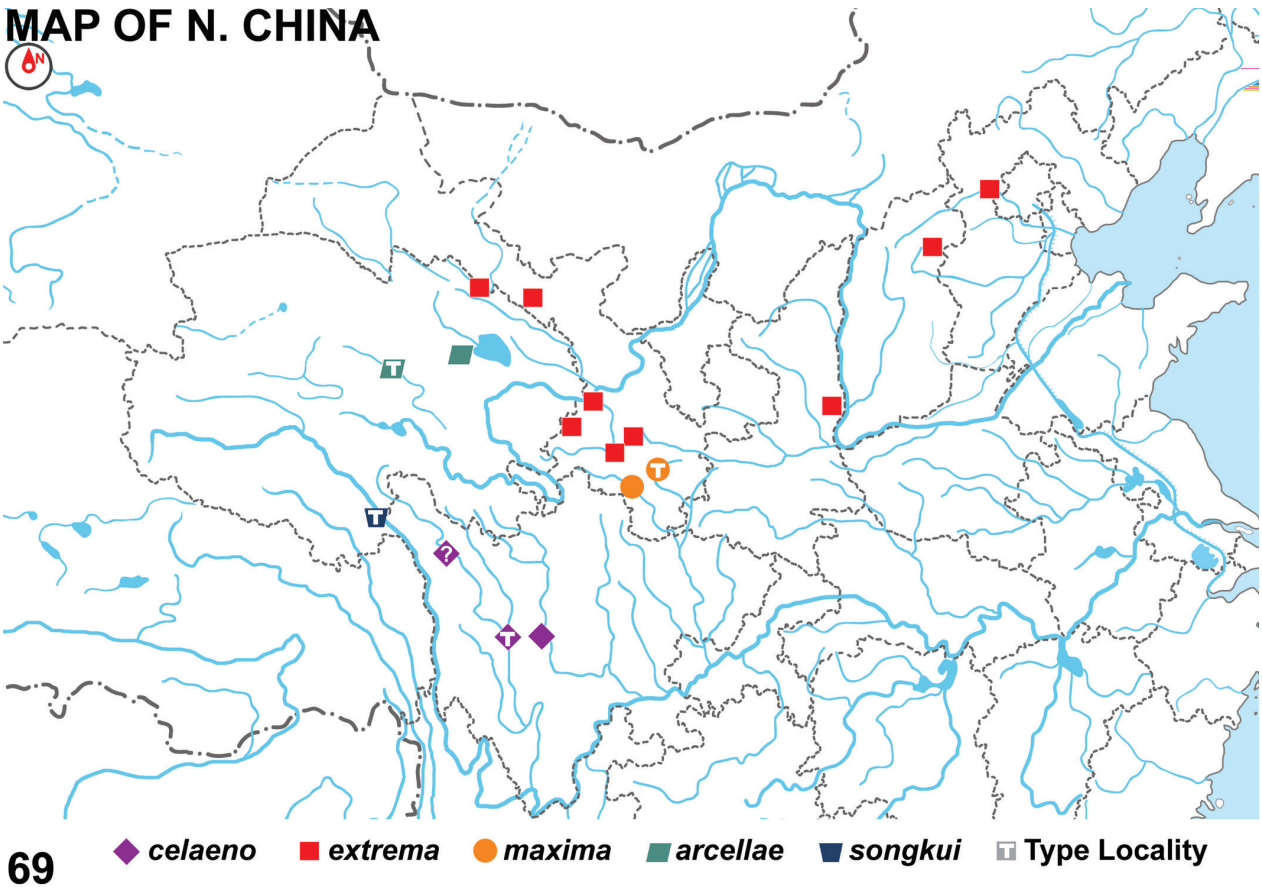

Fig. 69: Distribution map of *Hipparchia autonoe* (Esper, 1783) in N. China (Sources of data: Specimens kept in CMNH, LSY; Leech, 1892; B.-H., 1933; Sbordoni et al., 2018a, b)

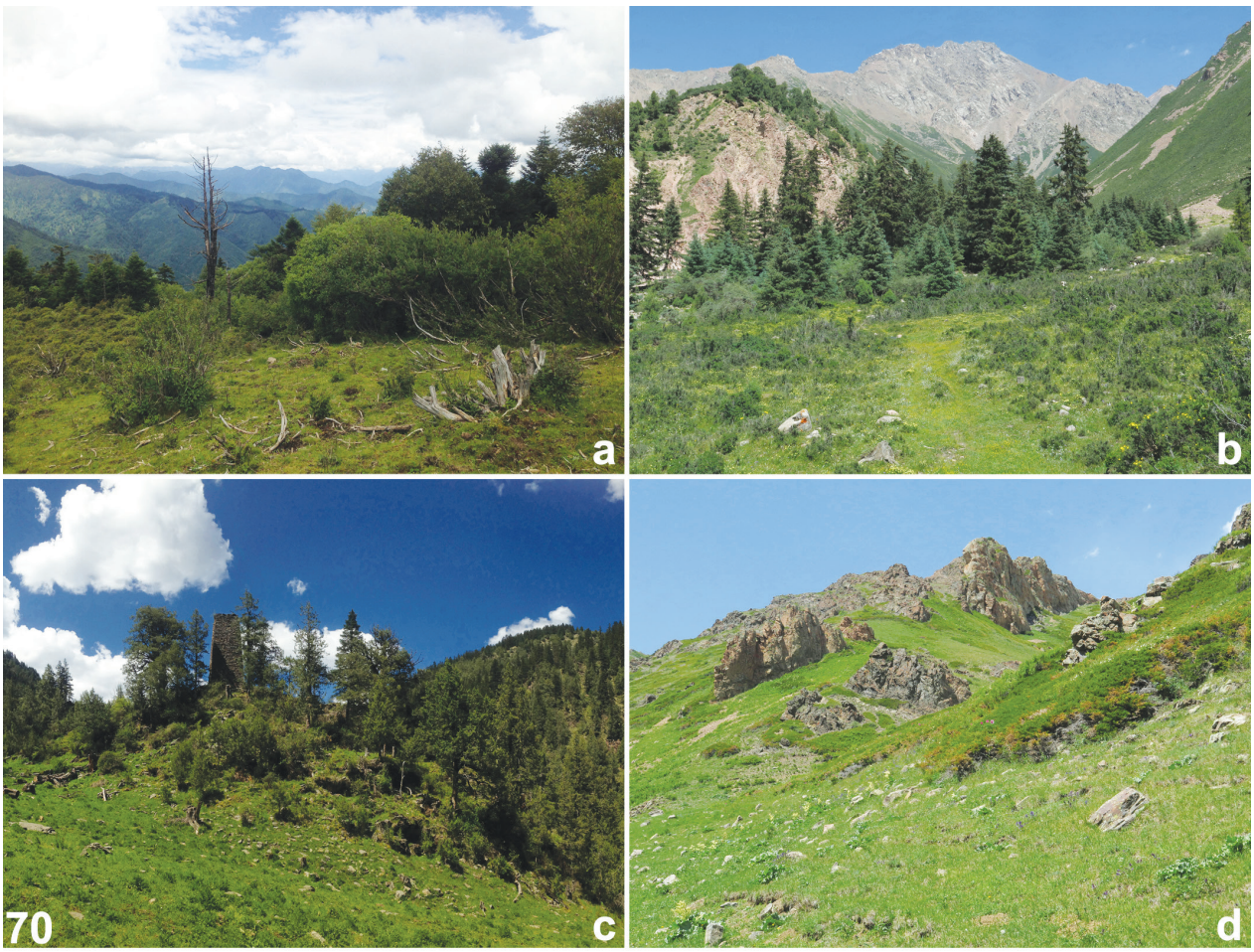

Fig. 70: Landscapes. (a) Habitat of *Aulocera atunsensis* ***vadimi*** **subspec. nov.**, *A. pygmaea* (Holik, 1949) **stat. nov.** and *Lethe uemurai* (Sugiyama, 1994), Huangtu-liang Pass, Pingwu, Sichuan, 30.VII.2018; (b) Habitat of *Aulocera iole* ***qiliana*** **subspec. nov.**, N. slope of Tolai-shan, Qilian, Qinghai, 15.VII.2017; (c) Habitat of *Ypthima putamdui yoshinobui* Huang & Wu, 2003 **stat. nov.** and *Y. beautei qinghaiensis* Huang & Wu, 2003, Make valley, Banma, Qinghai, 5.VI.2018; (d) Habitat of *Oeneis mulla* Stgr., 1881 and *Erebia callias sibirica* Stgr., 1881, S. slope of Saur, Hoboksar, Xinjiang, 15.VI.2017.