

## Some notes on *Lopinga* MOORE, 1893 with the description of two new subspecies from China

(Lepidoptera, Nymphalidae & Satyrinae)

by

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**Abstract:** Two new subspecies of *Lopinga* MOORE, 1893 are described from China, they are *L. catena zhaoi* LANG **subspec. nov.** from Liupan-shan, Ningxia Hui Autonomous Region, northwestern China and *L. achine tshikolovetsi* LANG, LIU, YU & ZHANG **subspec. nov.** from Dabie-shan, Anhui Province, central China. *Lopinga shaana* LANG & TSHIKOLOVETS, 2017 from Mts. Qinling, Shaanxi Province, northwestern China is mentioned.

### Abbreviations

CMNH: Chongqing Museum of Natural History, Beibei, Chongqing, CHINA.

CZU: Chuzhou University, Chuzhou, Anhui, CHINA.

GCB: Collection of GIAN C. BOZANO, Milano, ITALY.

LSY: Collection of SONG-YUN LANG, Beibei, Chongqing, CHINA.

LZH: Collection of ZI-HAO LIU, Fengtai, Huainan, Anhui, CHINA.

YL: Collection of LEI YU, HEFEI, Anhui, CHINA.

ZSQ: Collection of SHI-QI ZHANG, Hefei, Anhui, CHINA.

Three species of the Palearctic genus *Lopinga* MOORE (Satyrini: Parargina) are involved in this paper, viz. *L. achine* (SCOPOLI, 1763), *L. catena* (LEECH, 1890) and *L. shaana* LANG & TSHIKOLOVETS, *L. achine* (SCOP.) is widely distributed in Eurasian temperate zone from France and S. Scandinavia eastwards to Kamchatka, Sakhalin and Japan, and more than ten subspecies have been described, mainly from northeastern Asia. According to GÖRGNER (1990), LUKHTANOV & LUKHTANOV (1994), TUZOV et al. (1997), SHIRÖZU (2006), and TSHIKOLOVETS et al. (2009, 2016), following subspecies are accepted: the nominate subspecies from Europe, Caucasus Major, Siberia, N.E. Kazakhstan, N. Mongolia, Transbaikalia, Russian Far East and Kamchatka; *L. a. achinoides* BUTLER, 1878 from Japan (Honshu), N.E. China and Russian Amur and Ussuri regions; *L. a. chosensis* MATSUMURA, 1929 from Korea; *L. a. karaftunis* MATSUMURA, 1928 from Sakhalin; *L. a. kurilensis* MATSUMURA, 1928 from S. Kuriles; *L. a. jezeonis* MATSUMURA, 1929 from Hokkaido; *L. a. oniwakiensis* YAZAKI & HIRAMOTO, 1981 from Rishiri Is. Also some authors simply synonymized all subspecies names under the nominate subspecies *achine* Scopoli (BOZANO, 1999; LANG, 2017). In China, *L. achine* (SCOP.) is distributed in N.E. China, N. China and N. Xinjiang (Altai) (LANG, 2017). Though GÖRGNER (1990) and TUZOV et al. (1997) considered *L. achine* (SCOP.) from N.E. China as *L. a. achinoides* BTL., which was described from Japan, the present author still considered population from N.E. China belonging to the nominate subspecies. Comparing with the wide range of *L. achine* (SCOP.) mentioned above, the range of *L. catena* (LEECH) is confined only to mountain areas of central and western China (W. Hubei, N. Sichuan, S. Shaanxi, S. Gansu) (BOZANO, 1999; LANG, 2017) and with two subspecies known, *L. c. catena* LEECH and *L. c. stax* SUGIYAMA, 1999. Furthermore, *L. achine* (SCOP.) and *L. catena* (LEECH) are allopatric. At last, *L. shaana* LANG & TSHIKOLOVETS is a recently described species from Mt. Qin-ling in S. Shaanxi.

In a recent research of *Lopinga* MOORE from China, LANG (2017) wrongly identified and illustrated a specimen from Mt. Liupan-shan, Ningxia under the name *Lopinga achine* (SCOP.). The incorrect identification was totally based upon external appearance, though the appearance of the specimen from Liupan-shan is somewhat *achine*-like, its ♂ genitalia is more close to that of *L. catena* (LEECH) in fact. After studying more material of *L. achine* (SCOP.), now it can be confirmed that the main difference between *L. achine* (SCOP.) and *L. catena* (LEECH) is that the uncus of *L. achine* (SCOP.) is obviously thickened whereas in *L. catena* (LEECH) its uncus is thin. Therefore, the specimen from Liupan-shan which has a thin uncus should be *L. catena* (LEECH) and is here described as a new subspecies.

On the other hand, a population of *L. achine* (SCOP.) from Mts. Dabie-shan (S.W. Anhui) has been reported recently (ZHU et al., 2017). Geographically, this population is isolated from the formerly known range of *L. achine* (SCOP.), and it comes from a more southern and warm area. Superficially, comparing with typical *L. achine* (SCOP.) from northern China, material from Dabie-shan has a broader whitish postdiscal band on ventral hindwing. Its external appearance happens to coincide with that of *L. a. jezeonis* MATSUMURA from Hokkaido. The present authors describe it as a new subspecies of *L. achine* (SCOP.).

### *Lopinga catena zhaoi* LANG **subspec. nov.** (figs: 5, 6, 15)

*Lopinga achine*: LANG (2017: 117, pl. 14: 158, pl. XIV: 7).

Holotype (HT) ♂, CHINA: Ningxia, Mt. Liupanshan, 2000 m, 23.VI.2008, leg. ZONG-YI ZHAO (CMNH).

**Etymology:** The specific name *zhaoi* is named after Mr. ZHAO ZONGYI from the University of Chinese Academy of Sciences who collected the HT and gave it to the first author.

**Diagnosis:** The new subspecies can be distinguished from *L. c. catena* (LEECH) and *L. c. stax* SUGIYAMA by the combination of the following characters:

1. On the ventral hindwing, the whitish subbasal marking only presents as a slender bar in cell as in *L. achine* (SCOP.), whereas subbasal markings present in cell and other spaces in *L. c. catena* (LEECH) and *L. c. stax* SUGIYAMA.
2. On the ventral hindwing, the inner edge of the whitish postdiscal band is smooth as in *L. achine* (SCOP.), whereas it protrudes inwards as a sharp tooth in space 4 in *L. c. catena* (LEECH) and *L. c. stax* SUGIYAMA.

**Distribution:** China (S. Ningxia).

*Lopinga achine tshikolovetsi* LANG, LIU, YU & ZHANG **subspec. nov.** (figs: 1, 2, 13)

*Lopinga achine*: ZHU et al., 2017: 117.

HT ♂, CHINA: Anhui, Yuexi, Yaoluoping, 1200 m, 8.VI.2017, leg. SHI-QI ZHANG (CMNH). Paratype (PT): 2 ♂♂, CHINA Dabie Shan Park, trail to Baimajian peak starting at 31°07'30"N 116°10'00"E, 1300-1750 m, NE Hubei Prov. [accurately in Anhui Prov.] 27.VI.2011 leg. G. C. BOZANO (GCB); 1 ♂, CHINA: Anhui, Yuexi, Yaoluoping, 1100 m, 8.VI.2017, leg. LEI YU (LZH); 2 ♂♂, 1 ♀, ditto, 1200 m, 7-8.VI.2017, leg. SHI-QI ZHANG (ZSQ); 1 ♂, CHINA: Anhui, Yuexi, Yaoluoping, Duozhijian peak, 1200 m, 26.VI.2003, leg. LEI YU (YL); 1 ♂, illustrated in ZHU et al. (2017: 117) (CZU); 1 ♂, CHINA: Anhui, Jinzhai, Tiantangzhai, 12.VI.2017, leg. YUN-FEI WU (CZU).

**Etymology:** The specific name *tshikolovetsi* is named after Mr. VADIM V. TSHIKOLOVETS who also noticed that *L. achine* (Scop.) from Dabie-shan should be a new subspecies.

**Diagnosis:** The new subspecies can be distinguished from typical *L. achine* (Scop.), biogeographically adjacent population, by the combination of the following characters:

1. On ventral hindwing, whitish postdiscal band is broad as in *L. a. jezeensis* MATSUMURA from Hokkaido, whereas it is narrow in typical *L. achine* (Scop.).
2. Uncus is somewhat thicker than typical *L. achine* (Scop.).
3. Saccus and aedeagus are somewhat longer than those of typical *L. achine* (Scop.).
4. Teeth on surface of aedeagus are coarser than those of typical *L. achine* (Scop.).
5. Caudal third of aedeagus bends in lateral view, whereas it is straight in typical *L. achine* (Scop.).

**Distribution:** China (S.W. Anhui, ?N.E. Hubei).

*Lopinga shaana* LANG & TSHIKOLOVETS, 2017 (figs: 7, 8, 14)

LANG & TSHIKOLOVETS, in LANG (2017: 118, pl. 14: 161, 162, pl. XIV: 10, 11).

**Material:** HT ♂, CHINA: Shaanxi: Ningshan, Pinghe-liang, 2200 m, 9.VII.2017, leg. SONG-YUN LANG (CMNH); PT ♂, the same data as the HT (LSY); 5 PT ♂♂, CHINA: Shaanxi: Ningshan, Cigou-liang, 1900 m, 8.VII.2017, legs. YI LANG & SONG-YUN LANG (4 ♂♂ in LSY, 1 ♂ in LZH).

**Diagnosis:** This species can be distinguished from *L. catena* (Leech) and *L. achine* (Scop.) by the combination of the following characters:

1. On ventral hindwing, inner edge of whitish postdiscal band is smooth as in *L. achine* (Scop.) and *L. catena zhaoi* LANG **subspec. nov.**, whereas it protrudes inwards as a sharp tooth in space 4 in *L. catena catena* (Leech) and *L. c. stax* SUGIYAMA.
2. On ventral hindwing, subbasal markings present in cell and surrounding spaces as in *L. catena catena* (Leech) and *L. c. stax* SUGIYAMA, whereas whitish marking presents as a slender bar in *L. achine* (Scop.) and *L. catena zhaoi* LANG **subspec. nov.**
3. Uncus is thicker than *L. catena* (Leech).
4. Aedeagus is much shorter than *L. achine* (Scop.).
5. Dorsal edge of valva nearly straight, whereas it is swollen in *L. achine* (Scop.) and *L. catena* (Leech).

**Distribution:** China (S. Shaanxi).

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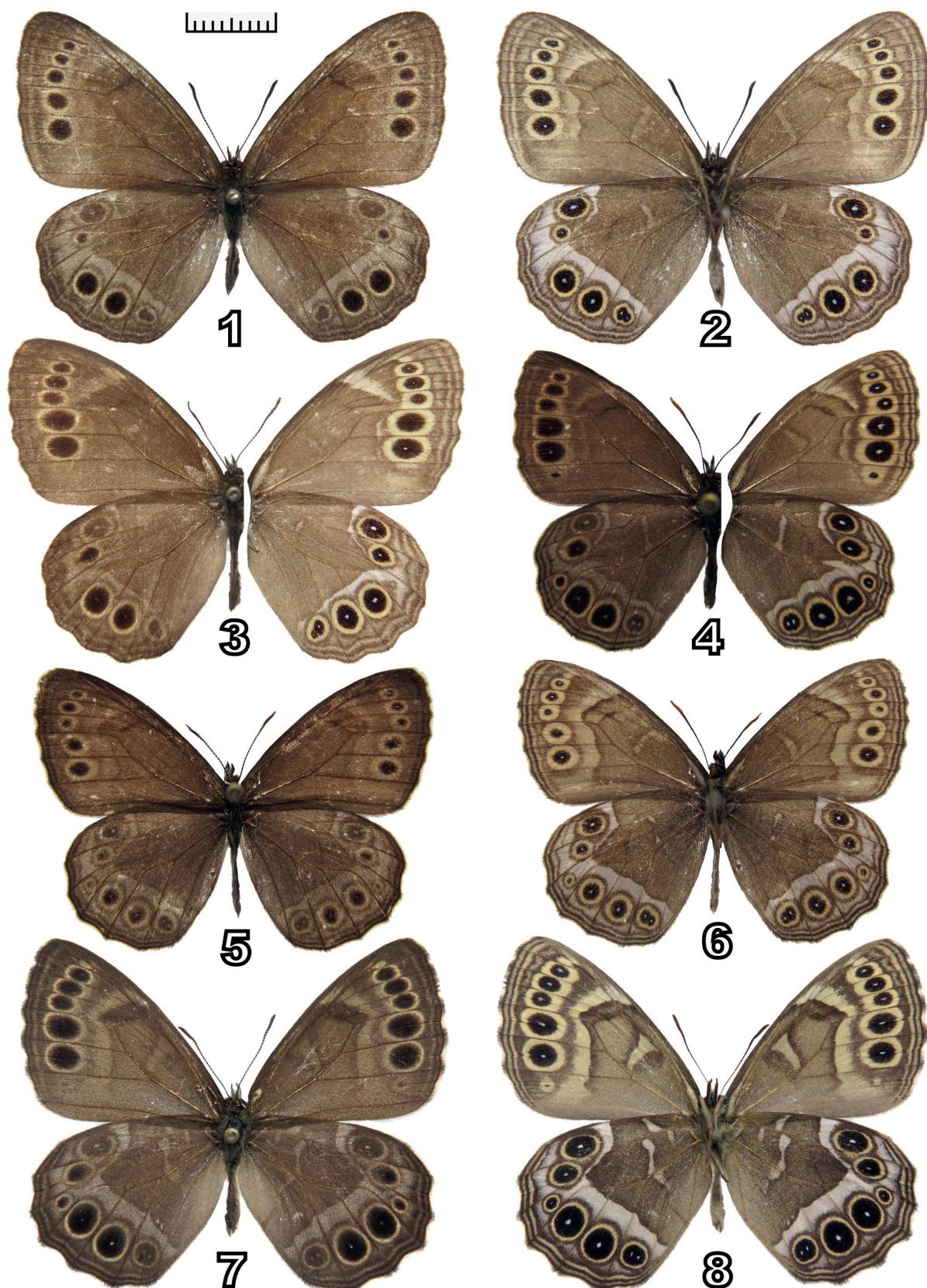


Fig. 1, 2: *Lopinga achine tshikolovetsi* LANG, LIU, YU & ZHANG subspec. nov., HT ♂, CHINA: Anhui, Yuexi, CMNH, upper- and underside.

Fig. 3: *Lopinga achine achine* (SCOPOLI, 1763), ♂, CHINA: Beijing, Songshan, LSY, upper- and underside.

Fig. 4: *Lopinga catena stax* SUGIYAMA, 1999, ♂, CHINA: Shaanxi, Fengxian, LSY, upper- and underside.

Fig. 5, 6: *Lopinga catena zhaoi* LANG subspec. nov., HT ♂, CHINA: Ningxia, Mt. Liupanshan, CMNH, upper- and underside.

Fig. 7, 8: *Lopinga shaana* LANG & TSHIKOLOVETS, 2017, HT ♂, CHINA: Shaanxi, Ningshan, CMNH, upper- and underside.

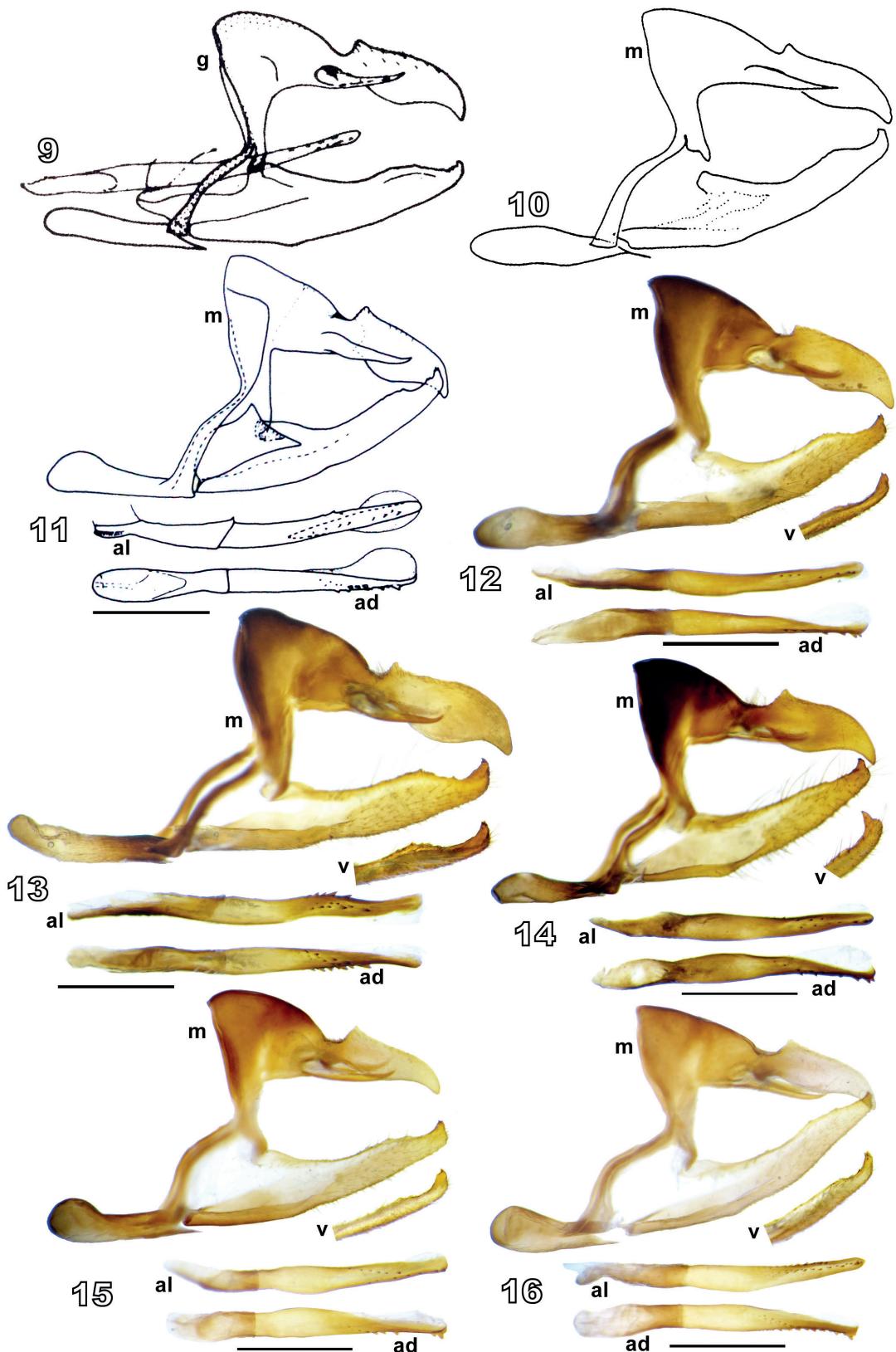


Fig. 9-16: ♂ genitalia: (g) ♂ genitalia in lateral view, (m) ♂ genitalia in lateral view with left valva and aedeagus removed, (al) aedeagus in lateral view( ad) aedeagus in dorsal view, (v) apex of valva in dorsal view. Scale bar = 1 mm.

Fig. 9: “*Lopinga achine*” from Europe after HIGGINS (1975).

Fig. 10: “*Lopinga achine achinoides*” from Heilongjiang, Ichun after GÖRGNER (1990).

Fig. 11: “*L. achine*” from Japan after KAWAZOÉ & WAKABAYASHI (1979).

Fig. 12: *Lopinga achine achine* (SCOPOLI, 1763), CHINA: Beijing, Donglingshan, LSY.

Fig. 13: *Lopinga achine tshikolovetsi* LANG, LIU, YU & ZHANG **subspec. nov.**, HT ♂, CHINA: Anhui, Yuexi, CMNH.

Fig. 14: *Lopinga shaana* LANG & TSHIKOLOVETS, 2017, HT ♂, CHINA: Shaanxi, Ningshan, CMNH.

Fig. 15: *Lopinga catena zhaoi* LANG **subspec. nov.**, HT ♂, CHINA: Ningxia, Mt. Liupanshan, CMNH.

Fig. 16: *Lopinga catena stax* SUGIYAMA, 1999, CHINA: Shaanxi, Fengxian, LSY.

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