



Discovery of the genus *Maikona* Matsumura, 1928 (Noctuidae: Agaristinae) from India with the description of a new species

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Abstract

The genus *Maikona* Matsumura, 1928 is reported for the first time from India with the description of a new species, *Maikona mayodiana* n. sp., from the Mayodia pass, Arunachal Pradesh, India. The diagnoses of the new species with similar congeners along with illustrations of its habitus, and genitalia are provided. A distributional map of the members of the genus is also provided.

Key words: Arunachal Pradesh, East Asia, new record, northeast India, taxonomy

Introduction

The genus *Maikona* Matsumura, 1928 belonging to the subfamily Agaristinae in Noctuidae was established by monotypy with *M. jezoensis* Matsumura, 1928 as its type species from Hokkaido, Japan. The species is found throughout the main islands of Japan except on Yakushima Island, south of Kyushu, where the nominotypical population is replaced by a distinct subspecies, *M. j. tenebricosa* Inoue, 1982. Chen (1982) collected and illustrated a female specimen of *M. jezoensis* from Shaanxi, Central China. After five years, Kishida (1987) collected a male specimen of *M. jezoensis* from Mount Alishan (2200 m), Taiwan, and described it as a subspecies, *M. j. yazakii* Kishida, 1987. This subspecies was later raised to a bona species, *M. yazakii* based on the materials collected from Nanling (N. Guangdong, South China) (Owada *et al.* 2003a). Along with this, they also described a new species, *M. nanlingensis* Owada *et.* Wang, 2003 from Nanling. Later, Eda & Wang (2019) described *M. kishidai* Eda *et.* Wang, 2019 from Jialingjiang (1600m) (Shaanxi, C. China). In a recent Entomological expedition to Arunachal Pradesh, India, the moths of genus *Maikona* were collected for the first time from India. I was able to examine them in detail and concluded that the Arunachal Pradesh population is new to science.

Material and Methods

The materials were collected in Arunachal Pradesh, India from Mayodia pass at an altitude between 1900–2000m. The genital preparations followed the protocols outlined by Robinson (1976). Specimens' whole abdomens were removed and soaked overnight in a 10% potassium hydroxide (KOH) solution, then dissected in 30% ethyl alcohol. The genitalia were preserved on permanent slides in Euparal. Images were captured using a Leica S8AP0 HD binocular microscope equipped with a camera. Species identification and distributional data were gathered from previously published literature (Matsumura 1928; Inoue 1982; Kishida 1987; Owada *et al.* 2003a, 2003b; Eda & Wang 2019). All type materials will be housed at the National Zoological Collections of the Zoological Survey of India (NZC, ZSI), located in Kolkata, India.

Results and discussions

Taxonomy

Genus *Maikona* Matsumura, 1928

Type species: *Maikona jezoensis* Matsumura, 1928. *Insecta Matsumurana* 2(3): 126, by original designation.

Diagnosis. The moths of the genus *Maikona* Matsumura, 1928 exhibit male genitalia that are very similar to those of the genus *Alloasteropetes* Kishida & Machijima, 1994, but they differ significantly in their wing patterns. *Maikona* moths follow the typical trifold noctuid moth pattern, with orbicular and reniform stigmata and distinct antemedial and postmedial transverse lines (Owada *et al.* 2003a). Adult *Maikona* moths are notable for their very hairy bodies, a prominent crest on the first abdominal segment, and blackish body and wing coloration (Owada *et al.* 2003b). In the male genitalia of *Maikona*, the ventral projection of the valva is connected to a sclerotized plate that originates from a basal sclerotized part of the costa. In contrast, in *Alloasteropetes*, a sclerotized plate from the costa is present, but the ventral projection of the valva is absent (Owada *et al.* 2003b).

Maikona mayodiana n. sp.

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(Figures. 1–4, 11, 16, 21, 22)

Holotype. ♂, INDIA, Arunachal Pradesh, Old Hotel, 65 km Roing road, 1900 m, 30.III.2023, 28.279717°N, 95.912541°E, coll. local collector, IJ3578, genitalia slide. G-688.—A red holotype label will be added accordingly.

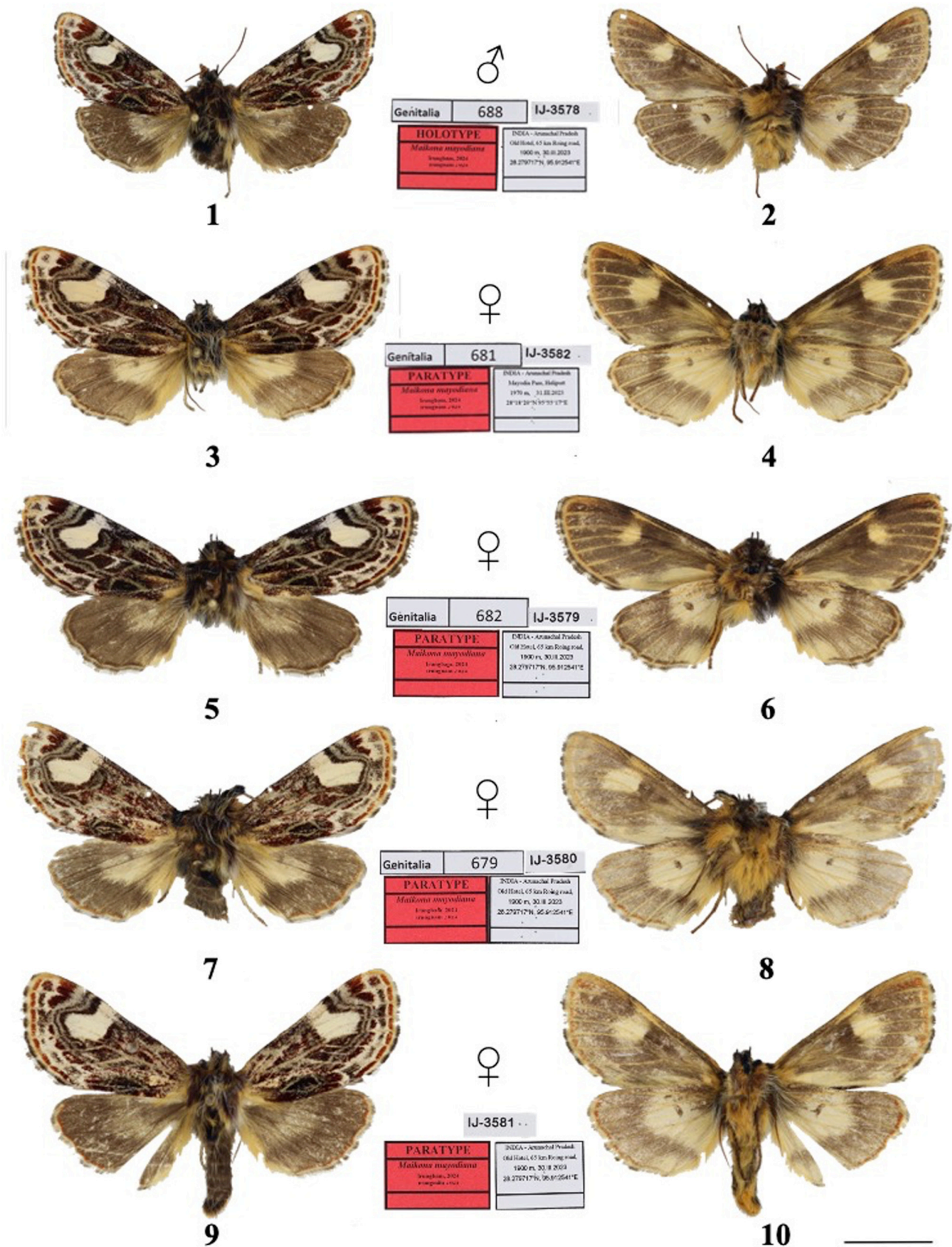
The holotype will be deposited in the collections of NZC, ZSI, Kolkata, India.

Paratypes (in total 5 ♀♀): 3 ♀♀, same locality as holotype, coll. local collector, IJ3578, IJ2580, IJ3581, genitalia slide. G-679, G-682; 2 ♀♀, INDIA, Arunachal Pradesh, Mayodia Pass, Heliport, 1970 m, 31.III.2023, 28°18'20"N, 95°55'17"E, coll. local collector, IJ3582, IJ3583, genitalia slide. G-681, G-683.—Blue paratype labels will be added.

The paratypes will be deposited in the collections of NZC, ZSI, Kolkata, India.

Diagnosis. Morphologically, the male of *M. mayodiana* n. sp. (forewing length 19 mm) is slightly larger than *M. yazakii* (forewing length 17 mm), but smaller than other congeners. The new species, *M. mayodiana* n. sp., is similar to *M. nanlingensis* but differs in the forewing crescent mark, which is creamy white and roundish (Fig. 1) instead of white and small in *M. nanlingensis* (Fig. 13). The forewing terminal line in *M. mayodiana* n. sp. is reddish brown interrupted by veins (Fig. 1), whereas in *M. nanlingensis* it is ochre, shaded internally with dark red (Fig. 13). The hindwing terminal line in *M. mayodiana* n. sp. is dark red with black linings whereas in *M. nanlingensis*, ochre, shaded internally with dark red as in forewing. In the male genitalia, *M. mayodiana* n. sp. closely resembles *M. nanlingensis*. In *M. mayodiana* n. sp., the outer membranous margin is slightly curved outward, whereas it is straighter in *M. nanlingensis*. Additionally, the apex of the costa is pointed in *M. mayodiana* n. sp. while it is rounder in *M. nanlingensis*. The harpe is long and broad with a blunt end in *M. mayodiana* n. sp., compared to an ovate shape with a rounder tip in *M. nanlingensis*. The surface of the aedeagus in *M. mayodiana* n. sp. features dorsal minute spines (Fig. 22), whereas in *M. nanlingensis*, these dorsal minute spines are absent (Fig. 22).

Description of male (Figs. 1, 2). Forewing length 19 mm in male holotype. (Wingspan in 38 mm). *Head:* Antenna ciliate, dark brown color; labial palpus bluish with whitish scales dorsally, dark brown with whitish scales ventrally; frons dark blue, vertex bluish with whitish long scales near the eye. *Thorax:* Patagia blue-black; tegula clothed with creamy yellow long scales. *Legs:* fore legs femur blue-black with long yellowish scales, tibia blue black with long yellowish scales; mid leg femur and tibia blue-black with yellowish scales dorsally, long creamy yellow scales ventrally; hind leg femur and tibia with long creamy yellow scales. *Abdomen:* First abdominal crest with long shiny black scales (tuft); dorsally, covered with metallic gray scales whereas ventrally with long yellowish orange scales. *Forewing:* ground colour pale grey, with whitish veins; crescent mark creamy white, roundish; terminal line reddish brown interrupted by veins; Cilia checkered with dark brown and pale yellow. *Hindwing:* dark brown, inner margin creamy yellow; the discal spot is dark-brown, small, not clearly visible dorsally, clearly visible ventrally, terminal line ochre with black linings; cilia chequered with dark brown



FIGURES. 1–10. Habitus of *Maikona mayodiana* n. sp. 1. Holotype male (dorsal); 2. Ditto, (ventral); 3. Paratype female (dorsal); 4. Ditto (ventral); 5. Paratype female (dorsal); 6. Ditto (ventral); 7. Paratype female (dorsal); 8. Ditto (ventral); 9. Paratype female (dorsal); 10. Ditto (ventral).

and pale yellow. *Underside* of the forewing greyish brown; crescent mark light yellow, a black orbicular spot visible in the cell; costal margin and terminal area light yellow; cilia as those on the upperside. Hindwing greyish brown; inner margin light yellow, discocellular spot black, terminal line and cilia as those on the upperside.

Description of male genitalia (Fig. 17). Uncus, slender, long, curved with a small, hooked tip; Tegumen broad, well sclerotized; vinculum short; saccus broad; juxta short, weakly sclerotized, inverted Y-shaped. Valva with curved costa, outer margin curved inwards near ventral projection, and slight curved outwards near costal apex, costal apex more pointed; harpe long, broad with blunt end (ovate shape); sacculus well sclerotized, slightly curved; aedeagus short with dorsal minute spines (Fig. 22).



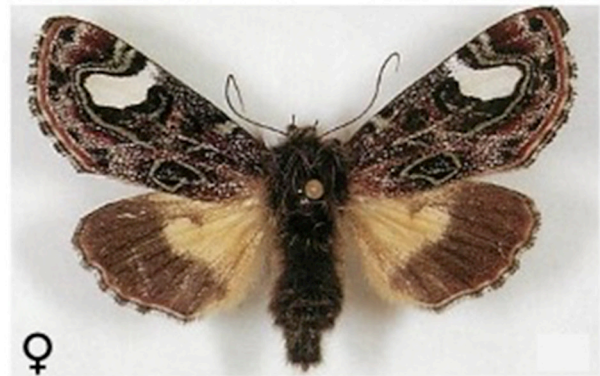
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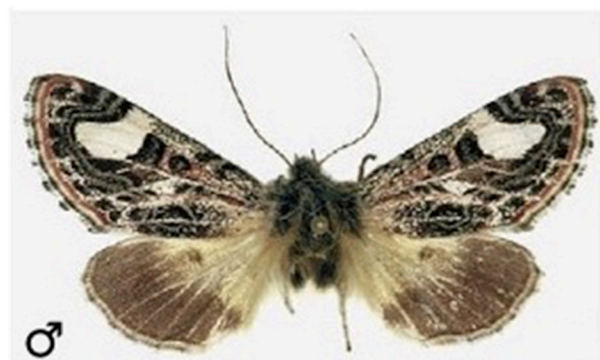
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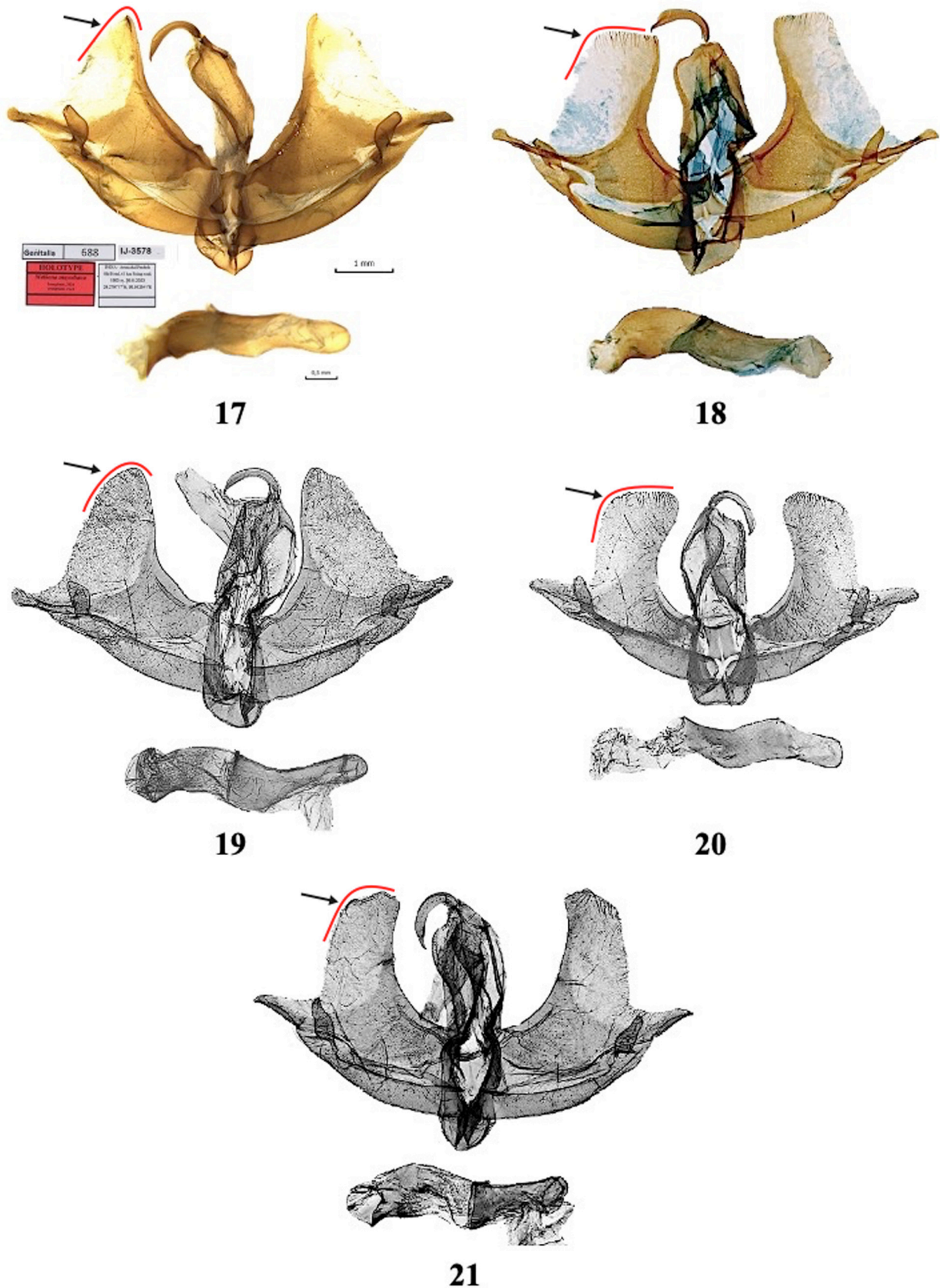


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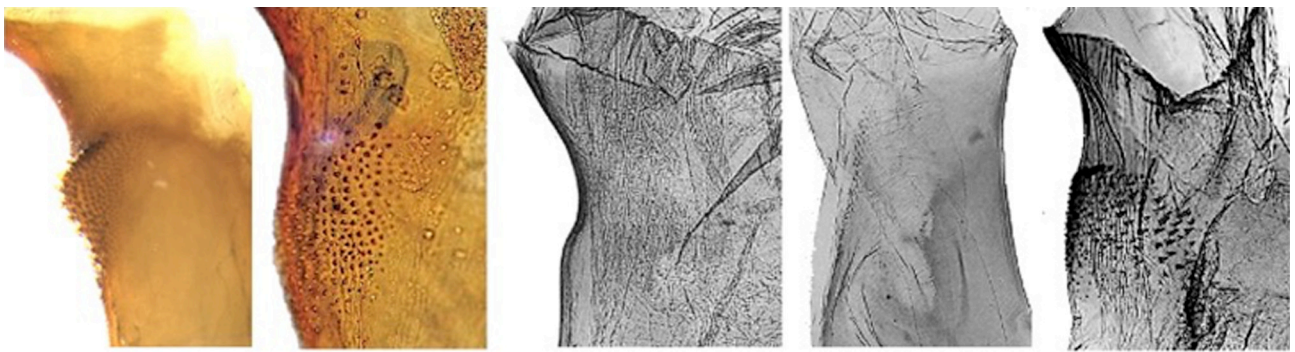


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FIGURES. 11–16. Habitus of *Maikona* sp. 11. *M. kishidai*, male holotype, Shaanxi, Central China (source Eda & Wang 2019); 12. *M. kishidai*, female paratype, Shaanxi, Central China (source Eda & Wang 2019); 13. *M. nanlingensis* male holotype, Guangdong, China (source Owada *et al.* 2003a); 14. *M. nanlingensis* female paratype, Guangdong, China (source Owada *et al.* 2003a); 15. *M. yazakii* male holotype, Mt. Alishan, Taiwan (source Owada *et al.* 2003a); 16. *M. jezoensis* male holotype, Hokkaido, Japan (source Owada *et al.* 2003a).



FIGURES. 17–21. Male genitalia of *Maikona* spp. 17. *M. mayodiana* n. sp. holotype male, Arunachal Pradesh, India (dorsal); 18. *M. kishidai*, male holotype, Shaanxi, Central China (after Eda & Wang, 2019); 19. *M. nanlingensis* male holotype, Guangdong, China (after Owada *et al.*, 2003a); 20. *M. yazakii* male holotype, Mt. Alishan, Taiwan (after Owada *et al.*, 2003a); 21. *M. jezoensis* male holotype Hokkaido, Japan (after Eda & Wang, 2019).



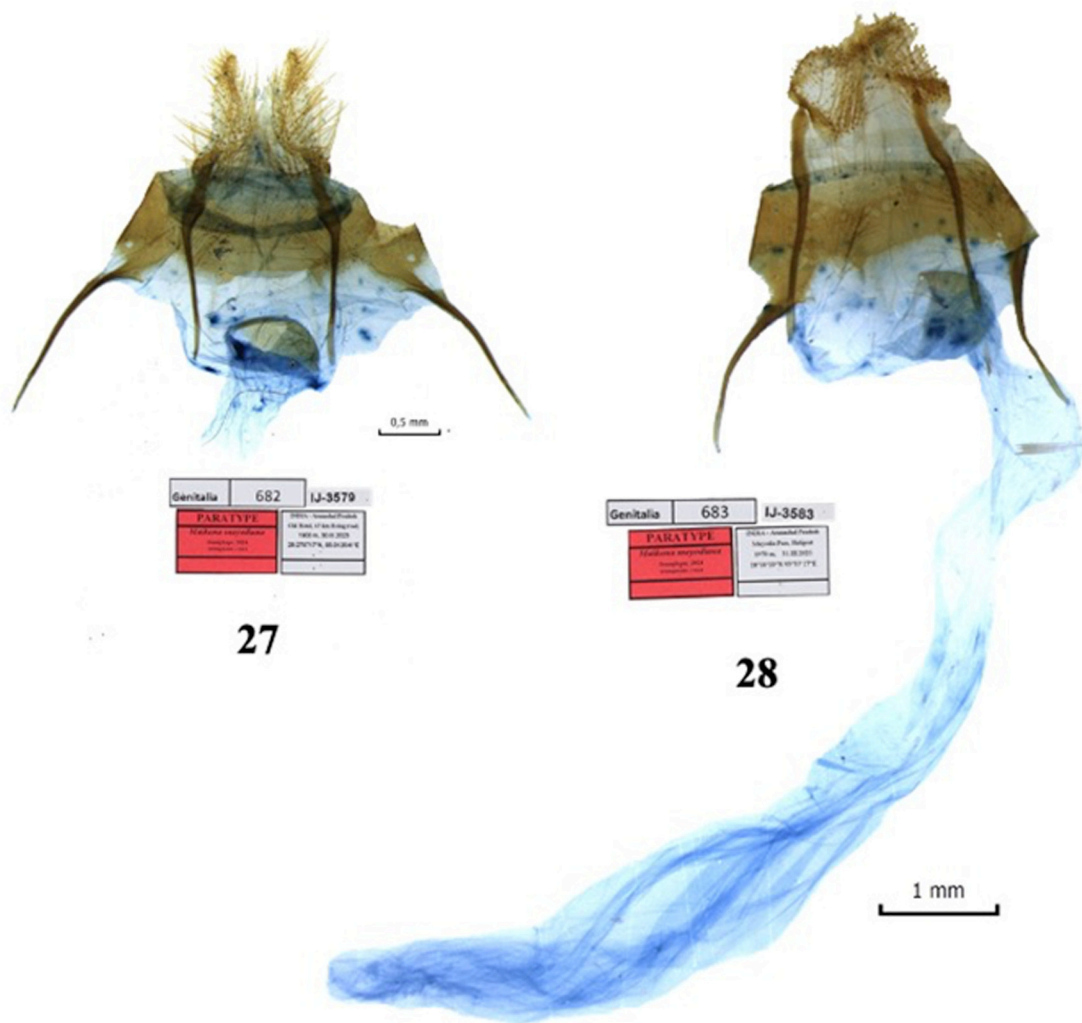
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FIGURES. 22–26. Dorsal distal portion of *Maikona* spp. 22. *M. mayodiana* n. sp. holotype male, Arunachal Pradesh, India (dorsal); 23. *M. kishidai*, male holotype, Shaanxi, Central China (source Eda & Wang 2019); 24. *M. nanlingensis* male holotype, Guangdong, China (source Eda & Wang 2019); 25. *M. yazakii* male holotype, Mt. Alishan, Taiwan; 26. *M. jezoensis* male holotype, Hokkaido, Japan (source Eda & Wang 2019).

FIGURES. 27–28. Female genitalia of *M. mayodiana* n. sp.: 27. *M. mayodiana* n. sp. paratype female, G-682, Arunachal Pradesh, India; 28. *M. mayodiana* n. sp. paratype female, G-683, Arunachal Pradesh, India.

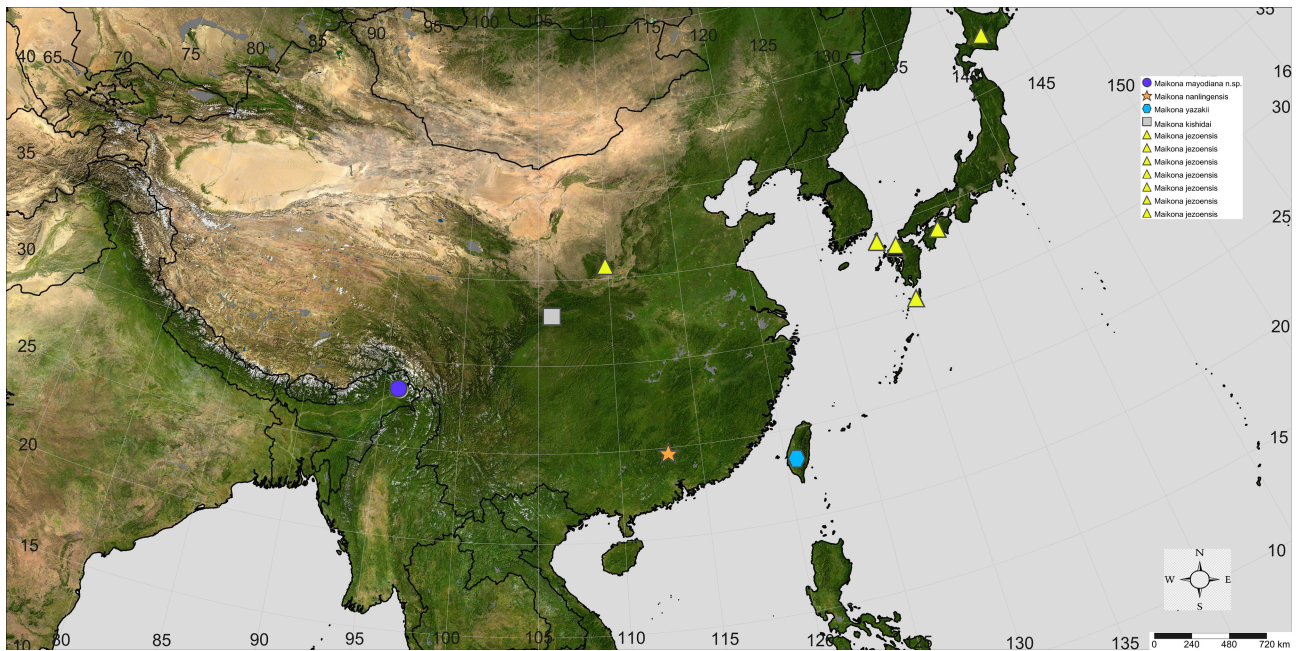


FIGURE 29. Map showing the type locality and distribution of Genus *Maikona*.

Description of female (paratype, Figs. 3–10). Wing expanse 43 mm, forewing length 22 mm. Very similar in pattern to male: forewing crescent mark larger, creamy white; inner margin of the hindwing is creamy yellow, which is almost absent in some specimens; the discal spot is dark-brown, small; the cilia chequered with dark brown and pale yellow. Underside of the forewing greyish brown; crescent mark light yellow; costal margin and terminal area light yellow; cilia as those on the upperside. Hindwing greyish brown; inner margin and tornal margin light yellow, discocellular spot black, terminal line and cilia as those on the upperside.

Description of female genitalia (Figs. 27, 28). Papillae anales long, broad, apically rounded, with long setae basally; apophyses anteriores and posteriores long and narrow but apophyses anteriores shorter than apophyses posteriores. Ostium bursae wide; Ductus bursae slender and short; corpus bursae narrow and elongated.

Etymology. This new species is named after its type locality, Mayodia Pass in Dibang Valley district of Arunachal Pradesh, India.

Distribution & Habitat. *Maikona mayodiana* n. sp. is currently reported from the lush green mountainous landscape of Mayodia Pass, Dibang Valley district. This mountain pass ranges in elevation from 1800 to 2652 m and are flanked by rhododendrons and other evergreen plants. The primary vegetation type found here is East Himalayan Mixed Coniferous Forest (12/C3a) with occasional bamboo brakes (1B/2S) (Champion & Seth 1968). From November to March, the area is blanketed with snow; snowfall is highest in January and February; monsoon begins in July; and spring continues during March and April. The new species was encountered in March (early spring) when the average temperature varies from 15°C to 30°C with moderate precipitation.

Identification key to the species of *Maikona* Matsumura, 1928

- | | | |
|----|---|----------------------------|
| 1. | Forewing crescent mark colour white | 2 |
| | Forewing crescent mark colour creamy | 4 |
| 2. | Forewing ground colour black with dark red areas | <i>M. nanlingensis</i> |
| | Other forewing ground colour | 3 |
| 3. | Forewing ground colour dark brown with dark red areas. | <i>M. yazakii</i> |
| | Forewing ground colour burgundy sprayed with pale grey scales | <i>M. kishidai</i> |
| 4. | Forewing ground colour black irrorated with reddish brown | <i>M. jezoensis</i> |
| | Forewing ground colour pale grey, with whitish veins | <i>M. mayodiana</i> n. sp. |

An updated checklist of *Maikona* spp.:

1. *Maikona jezoensis* Matsumura, 1928
 - a. *Maikona jezoensis jezoensis* Matsumura, 1928
TL—Japan, Hokkaido, Sapporo.
Distribution: China (Shaanxi), Japan (Tsushima, Kyushu, Shikoku, Honshu, Hokkaido) (Chen 1982).
 - b. *Maikona jezoensis tenebricosa* Inoue, 1982
TL—Japan, Yakushima Is.
Distribution: Japan (Yakushima Is., Kyushu) (Inoue 1982).
2. *Maikona yazakii* Kishida, 1987
Maikona jezoensis yazakii Kishida, 1987
TL—Taiwan, Chiayi Hsien (Mt. Alishan)
Distribution: Taiwan (Nantou, Meifeng, Mt. Alishan) (Kishida 1987; Wu & Chang 2013).
3. *Maikona nanlingensis* Owada *et* Wang, in Owada *et al.*, 2003
TL—South China, Guangdong, Guangdong Nanling National Nature Reserve.
Distribution: China (Guangdong) (Owada *et al.* 2003a).
4. *Maikona kishidai* Eda & Wang, 2019
TL—Central China, Shaanxi, Jialingjiang.
Distribution: China (Jialingjiang (1600m), Baoji, Shaanxi) (Eda & Wang 2019).
5. *Maikona mayodiana* **n. sp.**
TL—India, Arunachal Pradesh, Old Hotel, 65 km Roing road, 1900 m.
Distribution: India (Arunachal Pradesh) (in the present study).

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Conflict of Interest

The author declares no conflict of interest.

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