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New species of Noctuidae (Noctuinae) – moths from Nepal (Lep.)

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Abstract

Six new species of the genera *Amathes* and *Diarsia* from Nepal are described and figured based on external structures and genitalia. These species belong to the temperate altitude zones of the humid eastern Himalaya which is part of the palearctic region. All specimens are in Zoologische Staatssammlung.

Introduction

During the Nepal expeditions, sponsored by Fritz Thyssen Stiftung and Deutsche Forschungsgemeinschaft, a number of Noctuidae moths were collected which were studied in part by Mr. Ch. Bour-sin, identified as undescribed species and named (i. l.). Based on these results and continued studies, especially on material collected during the 1973 expedition to Central Nepal, descriptions of six new species are given: *Amathes lehmanni*, *Amathes friederikae*, *Amathes cyanosticta*, *Amathes giselae*, *Amathes haematodes*, and *Diarsia fletcheri*.

These species may show some aspects of evolution from isolating factors belonging to the mountain system of the Himalaya which can be noted as geographic isolation by the deep valleys crossing the Himalayan ridge, zonal isolation due to variation of climate with altitude and isolation by time of activity. A future comprehensive paper including a comparison of all species noticed will elaborate these facts in a more extensive manner. At present 22 species of the genus *Amathes* and 14 species of the genus *Diarsia* are known from the Nepal Himalaya. There is no doubt that future collections will yield more species of these genera.

Amathes lehmanni spec. nov.

Male and female (Fig. 1) – Wingspan 30–33 mm male and 29–32 mm female. Forewings purplish gray, fuscous and brownish. Dark patches before and after the rounded orbicular spot and at base before the inner line. Costal area pale from base to postmedial line. Hindwings fuscous. Both sexes alike in markings. Resembles *Amathes ditrapezium orientalis* Strand but differs by the smaller size, darker hindwings and rounded, not triangular pale orbicular spot. Antennae in male slightly fasciculated with bristles 1 × diameter of antennal segment (Fig. 18).

Male genitalia (Fig. 7): As figured. Similar to *Amathes stupenda* Butler, *Amathes c-nigrum devaiota* Hampson and *Amathes kollari* Lederer. These species are larger in size and different in markings.

Female genitalia (Fig. 14): As figured. Corpus bursae with three signa, narrow crenulated stripes, one of which is half of the length of the other two.



1



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6

Fig. 1: *Amathes lehmanni* spec. nov., Paratype ♂, natural size. – Fig. 2: *Amathes friederikae* spec. nov., Holotype ♂, natural size. – Fig. 3: *Amathes cyanosticta* spec. nov., Holotype ♂, natural size. – Fig. 4: *Amathes giselaiae* spec. nov., Paratype ♂, natural size. – Fig. 5: *Amathes haematodes* spec. nov., Holotype ♂, natural size. – Fig. 6: *Diarsia fletcheri* spec. nov., Paratype ♂, natural size.

Types: Holotype ♂, Central Nepal, Choklopani near Tukche, 2600 m, 20. 6. 1973, leg. W. Dierl-E. Lehmann. Paratypes 4♂, Taksang above Choklopani, 3200 m, 24. 6. 1973, leg. E. Lehmann.

Allotype and Paratypes 6♀, loc. cit., leg. E. Lehmann.

Preparations: N 1742 (♂, HT), N 1765 (♂, PT), N 1912 (♀, AT).

In Coll. Zoologische Staatssammlung.

This species is dedicated to Mr. E. Lehmann, member of the 1973 expedition.

Amathes friederikae spec. nov.

Male and female (Fig. 2) – Wingspan 24–28 mm male and 25 mm female. Head, thorax, and forewings olive-brown, markings distinct, dark brown, reniform narrow, grayish, with dark outline. Postmedial line dark, dentate, pale on outer side, submarginal line blackish on inner side, marginal space grayish with small blackish marginal spots. Costa pale from the base to postmedial line. Under-side gray with indistinct markings and yellowish marginal line. Hindwings yellowish gray with fuscous

discocellular spot, postmedial line and suffused marginal line. Underside yellowish gray with distinct discocellular spot and postmedial line. No difference in sexes. Antennae in male fasciculated with bristles $2 \times$ diameter (Fig. 22). Female antennae filiform and minutely ciliated.

Male genitalia (Fig. 8): As figured. Resembles *Amathes cyanosticta* spec. nov., but differs in the shape of juxta, claspers and cornuti. Juxta with almost parallel sides, triangular base and slightly excised top. Clasper large with dull teeth, elkhorn-shaped. Two narrow stripes with small cornuti.

Female genitalia (Fig. 13): As figured. Resembles *Amathes cyanosticta* spec. nov. Signum in the bursa very small.

Types: Holotype ♂, Nepal, Khumbu, Khumjung, 3800 m, 24. 6. 1964, leg. W. Dierl. Paratypes ♂, Khumjung, 3800 m, 19.–24. 7. 1962, 3 ♂, leg. G. Ebert u. H. Falkner. Allotype ♀, loc. cit., 19. 7. 1962, leg. G. Ebert u. H. Falkner. Paratypes 7 ♂, 2 ♀, Dudh Kosi Valley, 3500 m, 22.–23. 7. 1962, leg. G. Ebert u. H. Falkner. Paratype ♂, Bujan, 2900 m, 18.–19. 7. 1964, leg. W. Dierl.

Preparations: N 1072 (PT, ♂), N 1037 (PT, ♂), N 2254 (AT, ♀).

In Coll. Zoologische Staatssammlung.

This species is dedicated to my wife Friederike.

Amathes cyanosticta spec. nov.

Male and female (Fig. 3) – Wingspan 30–32 mm male and 29–33 mm female. Head, thorax and forewings redbrown, markings dark brown, forewings with more or less purplish gray suffusion. A double chestnut brown slightly inwardly bent antemedial and a curved double postmedial line. The orbicular spot almost obsolete, the reniform a narrow dark lined lunula with grayish center. Hindwings yellowish gray with the dark discocellular spot and postmedial line, marginal area gray. Cilia reddish. Underside grayish with indistinct markings. Antennae in male fasciculated with bristles $1,2 \times$ diameter (Fig. 20). Female antennae filiform and minutely ciliated.

Male genitalia (Fig. 9): As figured. Very near *Amathes friederikae* spec. nov., but differs in the shape of juxta which is ventrally rounded and deeply excised dorsally, base of clasper narrow and only one stripe of cornuti.

Female genitalia (Fig. 15): As figured. The signum in the bursa is small, but double the size of that in *A. friederikae* spec. nov.

Types: Holotype ♂, Nepal, Prov. Nr. 3 East, Junbesi, 2750 m, 25.–31. 7. 1964, leg. W. Dierl. Paratypes 3 ♂, loc. cit., same date. Allotype ♀ and 3 ♀ Paratypes, loc. cit., same date, Paratype ♀, Dudh Kosi Valley, 3500 m, 22.–23. 7. 1962, leg. G. Ebert u. H. Falkner.

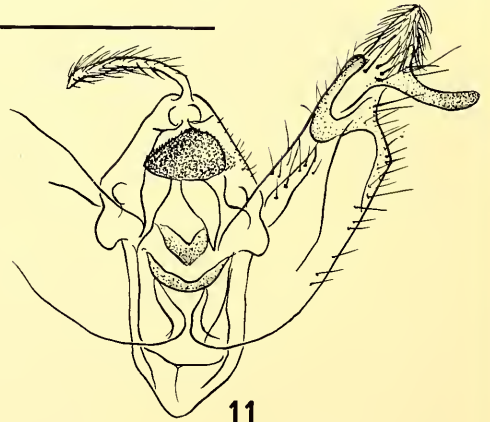
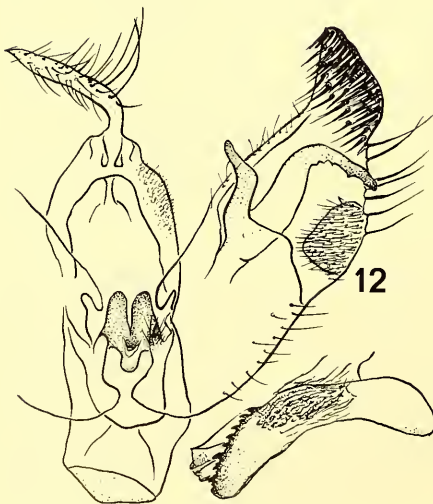
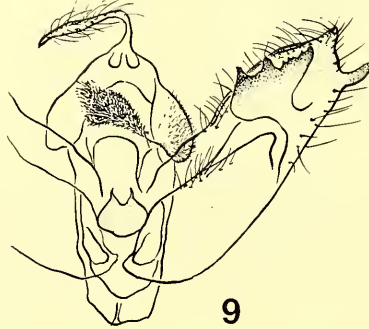
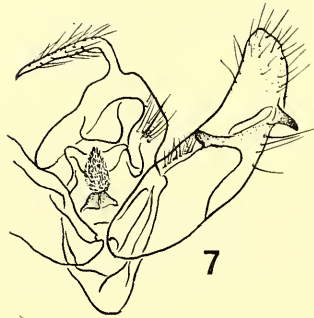
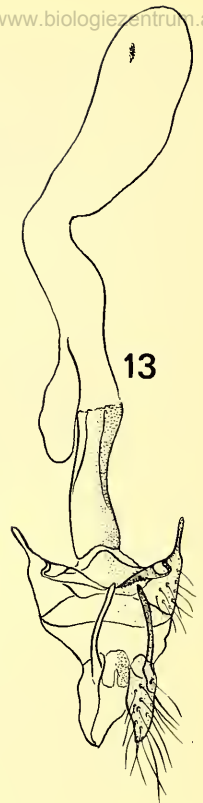
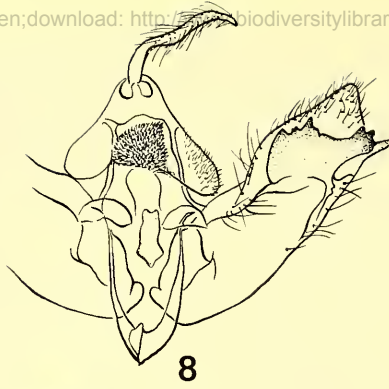
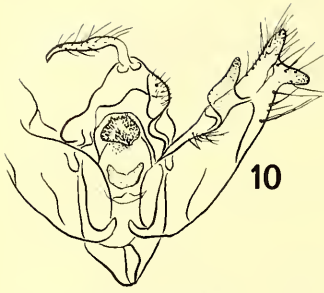
Preparations: N 1014 (HT, ♂), N 1035 (PT, ♂), N 2256 (AT, ♀).

In Coll. Zoologische Staatssammlung.

This species was determined to be new and named by Ch. Boursin (i. l.).

Amathes giselae spec. nov.

Male and female (Fig. 4) – Wingspan 27–33 mm male and female. Head, thorax and forewings pale brown, redbrown or purplish brown with great variation. Antemedial line oblique, dentate in submedian fold, postmedial line double, curved and dentate, a submarginal line of indistinct triangular spots. Orbicular spot large and rounded, reniform distinct, both with dark and light outlines. The area between and below darker. Hindwings pale fuscous with reddish cilia, distinct discocellular spot and almost obsolete curved postmedial line. Underside of forewings purplish gray, hindwings pale with darker costal area. A cell-spot and indistinct postmedial line. Antennae in male fasciculated with bristles $1/2$ diameter (Fig. 19). Female antennae filiform and minutely ciliated.



Male genitalia (Fig. 10): As figured. Valva with finger formed cucullus, pollux and clasper, juxta lunula shaped. Penis with one field of small cornuti.

Female genitalia (Fig. 16): As figured. Antrum rather short, signum a short crenulated stripe.

Types: Holotype ♂, Nepal, Khumbu, Khumjung 3800 m, 25. 7. 1962, leg. G. Ebert u. H. Falkner. Allotype ♀, loc. cit., 18. 7. 1962. Paratypes ♂ and ♀, 137 ♂♀, loc. cit., 13. 6.–19. 7. 1962, 25 ♂♀, loc. cit., 25. 5.–12. 7. 1964, leg. W. Dierl, Chukhung 4800 m, 11. 6. 1964, 2♂; Dudh Kosi Valley 3500 m, 22.–23. 7. 1962, 3 ♂♀; Periche 4350 m, 29. 6. 1962, 48 ♂♀; Pangpoche 3900 m, 29. 5. 1961, 5 ♂♀; Tanga 3900 m, 29. 7. 1962, 1 ♂; Dhaulagiri 3700 m, 10.–13. 6. 1973, 1 ♀, leg. Dierl-Lehmann.

Preparations: N 1786 (HT, ♂), N 867, N 915, N 910, N 1784, N 1785, N 1787 (PT, ♂), N 2255 (AT, ♀).

In Coll. Zoologische Staatssammlung.

This species is named in memory of my late wife Gisela.

Amathes haematodes spec. nov.

Male (Fig. 5) – Wingspan 38 mm. Head, thorax and forewings reddish irrorated with purple. Antemedial line obsolete, postmedial curved, dentate, dark spots on veins in the marginal area. Orbicular and reniform large, rounded, dark outlined, a narrow dark area around them. Hindwings grayish with indistinct cellspot and reddish cilia. Underside reddish gray, forewings darker. Antennae pectinated with branches 1 × diameter (Fig. 21).

Male genitalia (Fig. 11): As figured. Valva with pointed cucullus, fingerformed pollux and clasper. Juxta v-shaped. Penis with fields of small thorns.

Type: Holotype ♂, Nepal, Prov. Nr. 2 East, Thodung 3100 m, 20. 5. 1962, leg. G. Ebert u. H. Falkner.

Preparation N 1011 (HT, ♂).

In Coll. Zoologische Staatssammlung.

This species was named by Ch. Boursin (i. l.).

Diarsia fletcheri spec. nov.

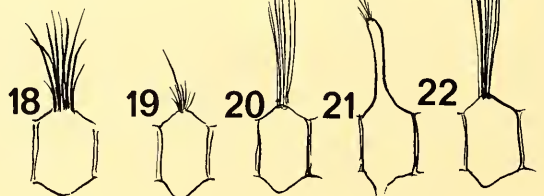
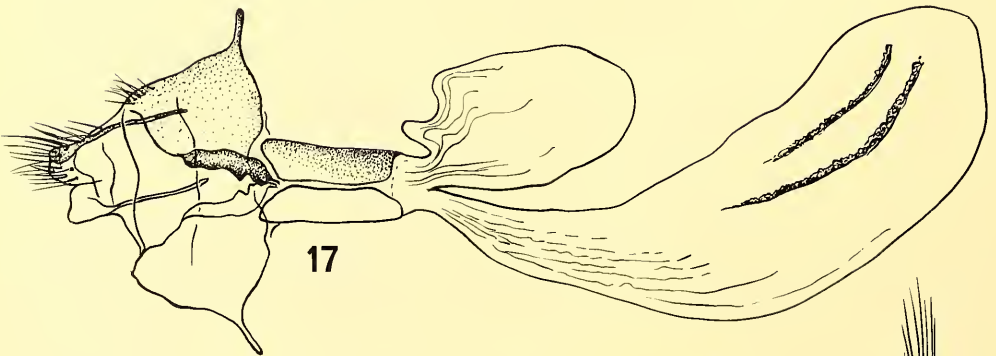
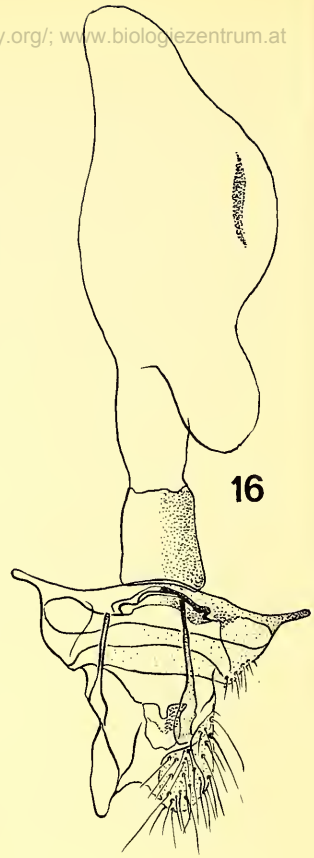
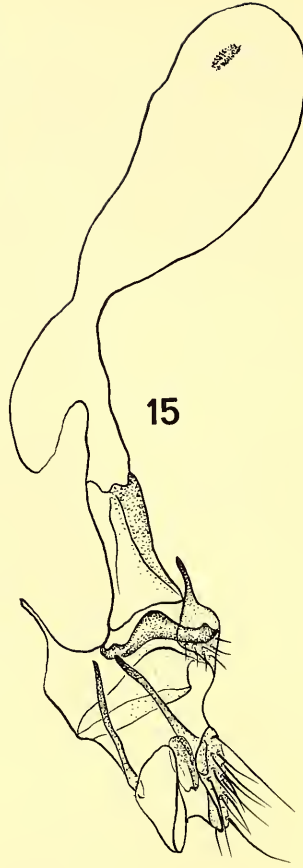
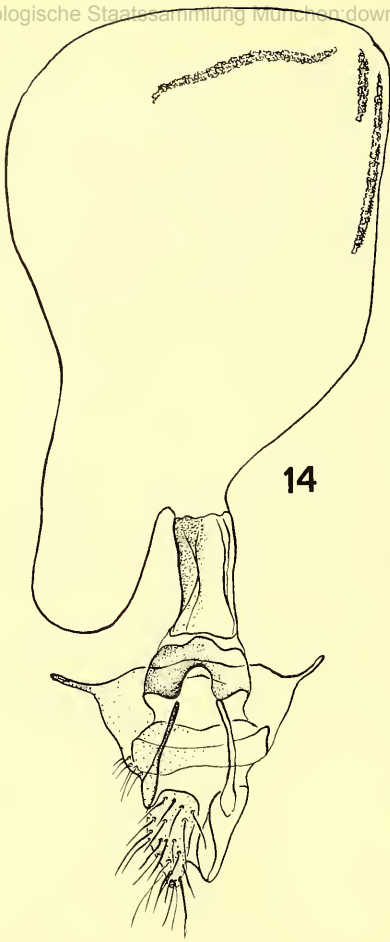
Male and female (Fig. 6) – Wingspan 34–39 mm male and female. Resembles to *Diarsia claudia* Boursin and *Diarsia boenei* Boursin which occur almost at the same time and altitude in Nepal. Wing colour is less reddish but more ochrous or grayish brown. These species are difficult to identify by external characters only. Markings and colouration are the same in both sexes. Male antennae filiform with cilia $\frac{1}{2}$ diameter.

Male genitalia (Fig. 12): As figured. Differs from *D. claudia* and *D. boenei* in the slightly s-shaped harpe and distinct juxta (futura inferior [nomenclature by Boursin]). By these characters the species can easily be identified. (comp. Boursin 1963 et 1954).

Female genitalia (Fig. 17): As figured. Differences between the three species could not be traced.

Type: Holotype ♂, Nepal, Khumbu, Khumjung, 3800 m, 18. VI. 1964, leg. W. Dierl. Allotype ♀, C-Nepal, Kyumnu-Khola-Tal bei Gandrung, 2360 m, 22. V. 1973, leg. Dierl-Lehmann. Paratypes ♂♀, numerous, Khumbu, Khumjung, 3800 m, VI.–VII. 1962, 1964, Periche, 4300 m, VI. 1962, Dudh Kosi, 3500 m, V.–VII. 1962, 1964, leg. G. Ebert u. H. Falkner. C-Nepal, Kali Gandaki Valley, Kalopani, 2500 m, 31. V. 1973, Dhaulagiri,

Fig. 7: *Amathes lehmanni* spec. nov., Paratype ♂, Genitalia N 1765, 15:1. – Fig. 8: *Amathes friederikae* spec. nov., Paratype ♂, Genitalia N 1072, 15:1. – Fig. 9: *Amathes cyanosticta* spec. nov., Holotype ♂, Genitalia N 1014, 15:1. – Fig. 10: *Amathes giselae* spec. nov., Paratype ♂, Genitalia N 1787, 15:1. – Fig. 11: *Amathes haematodes* spec. nov., Holotype ♂, Genitalia N 1011, 15:1. – Fig. 12: *Diarsia fletcheri* spec. nov., Paratype ♂, Genitalia N 300, 15:1. – Fig. 13: *Amathes friederikae* spec. nov., Allotype ♀, Genitalia N 2254, 12:1.



3750 m, 10.–13. 6. 1973, Choklopani near Tukche, 2600 m, E. VI. 1973, Syang, 3950 m, 3. VII. 1973, leg. Dierl-Lehmann.

Other specimens: Pakistan, Indus-Kohistan, Khagantal, Naran, 3200–4500 m, 16. VII.–5. VII. 1977, 5 ♂, leg. de Freina (N 252).

Preparations: ♂, N 252, N 300, N 304, N 901, N 907, N 909, N 923, N 1810, N 1817, N 1873, N 1876, N 1884, N 1885, N 190, N 1892, N 1898 (PT, ♂). N 1878 (AT, ♀), N 1905 (PT, ♀).

In Coll. Zoologische Staatssammlung.

Remarks: The specimens from Central Nepal are darker in colour, purplish gray or brown.

This species was named by Ch. Boursin in honour of Mr. D. S. Fletcher.

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Fig. 14: *Amathes lehmanni* spec. nov., Allotype ♀, Genitalia N 1912, 12:1. – Fig. 15: *Amathes cyanosticta* spec. nov., Allotype ♀, Genitalia N 2256, 12:1. – Fig. 16: *Amathes giselae* spec. nov., Allotype ♀, Genitalia N 2255, 12:1. – Fig. 17: *Diarsia fletcheri* spec. nov., Allotype ♀, Genitalia N 1878, 12:1. – Fig. 18: *Amathes lehmanni* spec. nov., ♂-antennae. – Fig. 19: *Amathes giselae* spec. nov., ♂-antennae. – Fig. 20: *Amathes cyanosticta* spec. nov., ♂-antennae. – Fig. 21: *Amathes haematodes* spec. nov., ♂-antennae. – Fig. 22: *Amathes friederikae* spec. nov., ♂-antennae.

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