

Taxonomic notes on the genus *Erynnis* SCHRANK, 1801

(Lepidoptera, HesperIIDae)

by

A. L. DEVYATKIN

received 21.VI.1996

Summary: The specific status of *Erynnis popoviana* (NORDMANN, 1851) is confirmed on the ground of its sympatry with *E. tages* (LINNAEUS, 1758) in Transbaikalia; data on morphology, variation and distribution of *E. popoviana* NORDM. are summarized. The rank of *E. marloyi pathan* EVANS, 1949 and *E. marloyi max* EVANS, 1949 is raised to species status on the base of the male genitalia.

1. Diagnostic characters, variation and distribution of *Erynnis popoviana* (NORDMANN, 1851)

The taxon *popoviana* (NORDMANN, 1851) was originally described from Kyakhta (East Transbaikalia) as a variety of *E. tages* (LINNAEUS, 1758) and was either treated under this status in the old reviews (STAUDINGER & REBEL, 1901; MABILLE, 1903, 1909) or synonymized with *E. tages* (ELWES & EDWARDS, 1898), if mentioned at all; the taxon *sinina* (GROUM-GRSHIMAILO, 1891) described from Amdo was synonymized with *popoviana* (STAUDINGER & REBEL, 1901; MABILLE, 1909). EVANS (1949) in his profound revision of the family conserved the synonymy and treated *popoviana* as a true subspecies of *E. tages*, pointing among other characters on slight differences in the genitalia. Since then the taxon seems to have remained unknown in nature to most lepidopterists.

BELYAEV (1985) recorded *E. popoviana* NORDM. from the South Primorye and Khabarovsk region (Russian Far East) and suggested to raise its rank to species level on the base of genital armature, although there was no obvious distributional overlap with *E. tages* L., and geographical variation could not be excluded. Basing on 2 specimens (a single male and female) he listed and figured the characters distinguishing this species from *E. tages* L.; in general, he managed to find the main differences in the genitalia but the lack of data on variation as well as the absence of evidence of sympatry with *E. tages* L. left his taxonomical conclusion rather doubtful.

New material collected by the author during a Transbaikalian-Far East expedition in 1995 and found in other collections show that both taxa in question are sympatric in Transbaikalia. This fact proves with certainty that *E. popoviana* NORDM. can be regarded as a distinct species. Study of variation on several series from different localities also makes it possible to define its specific characters more precisely. These are as follows.

External characters of *E. popoviana* NORDM. (compared to *E. tages* L.) (col. pl. XI, figs. 1–6)

1) Forewing narrower with the apex pointed.

2) Upperside: forewing discal pattern (combined of pale and dark bands) brighter and more contrasting; hindwing discal white spots conspicuous; marginal white dots bright and sharply defined on both wings.

3) Underside: forewing dorsal edge usually white; discal and marginal white spots large and sharply defined.

In general the butterflies look brighter and more variegated compared to *E. tages* L. Wing-span 24–30mm (forewing length 12–13.5 mm).

Male genitalia (compared to *E. tages* L.) (fig. 1)

- 1) The ventral plate of the uncus is located nearer to its end and is of a different shape.
- 2) Distal part of cuiller narrower (claspers strongly asymmetrical).
- 3) End of internal process of the left clasp more rounded and headlike expanded.
- 4) Internal process of the right clasp present as a small but prominent protuberance.
- 5) Cornuti of the aedeagus more numerous and arranged in a massive formation.

Female genitalia (fig. 2)

These differ in fact only in the shape of the postvaginal plate.

- 1) Median lobe of postvaginal plate small.
- 2) Lateral lobes curved towards each other.

The latter character is also found as an exception in some specimens of *E. tages* L. from European localities, but the differences in size of the median lobe seem to be constant.

Other characters mentioned by BELYAEV (1985) either represent an artefact (viz., "a sclerotized area at the right side of the postvaginal plate", which made the latter look asymmetrical) or are unreliable due to great individual variation (like the size of teeth at the end of cuiller and internal process of clasp, the width of unsclerotized "valvula" on the external side of clasp, the distance between ostium and the proximal edge of the genital plate, and the extent of expansion of distal ends of apophyses posteriores).

Variation

Variation in external characters of *E. popoviana* NORDM. does not seem to be great; specimens from South Primorye, South Shensi and Shantung look a little darker compared to Transbaikalian and Central Chinese ("Amdo") ones. This may be due to different humidity conditions in Central and East Asiatic habitats. However, individual variation in respect to size and forewing colour pattern does take place within all the series studied.

The differences in the external features may also reflect seasonal variation: according to the labels, *E. popoviana* NORDM. produces two generations a year (April to June and July to August), and summer individuals from Shantung and S. Shensi are definitely darker and duller than spring ones from the same localities, in some cases looking very similar to *E. tages* L. (colour plate XI, figs. 5, 6).

Variation in male genitalia (figs. 3, A–F) concerns first of all the shape of cuiller (seen from the same angle of vision), especially that of the left clasp. Size and number of teeth on it are also variable, as well as the total length of the toothed ridge. A similar pattern of variation of the left clasp is seen in *E. tages* L. from different geographic localities (fig. 3, G–K) but in Transbaikalian populations *E. popoviana* NORDM. seems to be much more variable individually compared to *E. tages* L.

The characteristic shape of cuiller of the right clasp of *E. popoviana* NORDM. (fig. 3), though variable in details, seems to be much more constant than that of the left one. The sclerotized tuberculus corresponding to the left clasp process varies in the extent of development from

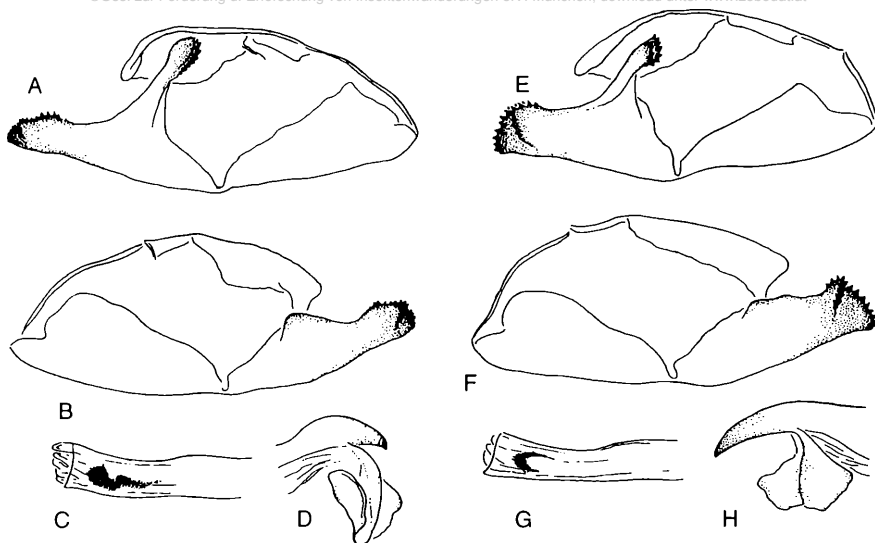


Fig. 1: Male genitalia of *Erynnis popoviana* (NORDMANN, 1851) and *E. tages* (LINNAEUS, 1758). A–D: *E. popoviana*, Tchita region, Onon river., loc. Nizhny Tzasutchey, 19.VI.1995 (A. DEVYATKIN leg.). A – left clasp; B – right clasp; C – aedeagus (distal part); D – uncus. Clasps seen from inside.

almost total absence to a prominent stout formation. In *E. tages* L. (fig. 3) it is always absent, and the general view of the cuiller is completely different.

The female genitalia are slightly variable in details of the shape of the plates, the width of the proximal part of the genital plate (before ostium) and the extent of expansion of the distal parts of the apophyses posteriores.

Distribution (fig. 4)

The following regions and localities have been ever listed for *E. popoviana* NORDM.: Dauria, Amur and N. China (STAUDINGER & REBEL, 1901); N. Thibet (Amdo, Sining), Chili (Peking, Nankow Pass), Shan Si, Shen Si, Shantung (EVANS, 1949); E. Manchuria and C. China (KURENTZOV, 1970); S. Amur and S. Primorye (BELYAEV, 1985). The last two authors doubted the presence of this taxon in Transbaikalia despite the original description and early literature indications. However, new data confirm its occurrence in Dauria and extend its range further west to Buryatia. STAUDINGER & REBEL (1901) also cited E. Nan Shan and Asia Minor as localities of *E. popoviana* NORDM.; the last indication is apparently an error based on similar colour forms occurring in this region and Transcaucasia.

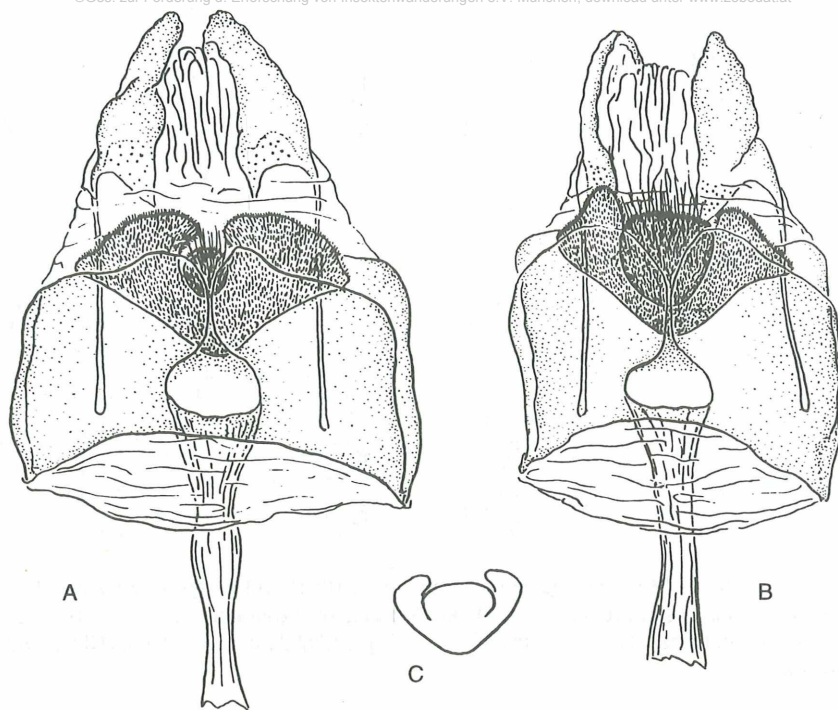


Fig. 2: Female genitalia of *Erynnis popoviana* (NORDMANN, 1851) and *E. tages* (LINNAEUS, 1758).

A – *E. popoviana*, Tchita region, Onon river., loc. Nizhny Tzasutchey, 19.VI.1995 (A. DEVIATKIN leg.). B – *E. tages*, 100 km E Tchita, Talatcha river near Urulga, 27.IV.1995 (A. DEVIATKIN leg.). C – *E. tages*, S. Armenia, Megri district, loc. Litchk, 8.VI.1982 (V. ERMOLENKO leg.) (postvaginal plate).

Putting it all together, it can be concluded that at present the known distribution of the species includes S. Transbaikalia (Buryatia and Dauria), S. Amur (Khabarovsk region) and S. Primorye; it seems to be widely distributed in N., C. and E. China (the identity with *sinina* GR.-GR. being doubtless). It must also be found in Mongolia, at least in its eastern part, but literature records of "*E. tages* L." are not reliable as both species could be meant under this name.

Material examined

E. popoviana NORDM.: 50 ♂♂, 26 ♀♀, Tchita region, Onon river, loc. Nizhny Tzasutchey, 17.–20.VI.1995 (leg. A. DEVIATKIN, V. TUZOV, K. KOLESNITCHENKO); 2 ♂♂, 1 ♀, Buryatia, 60 km NE

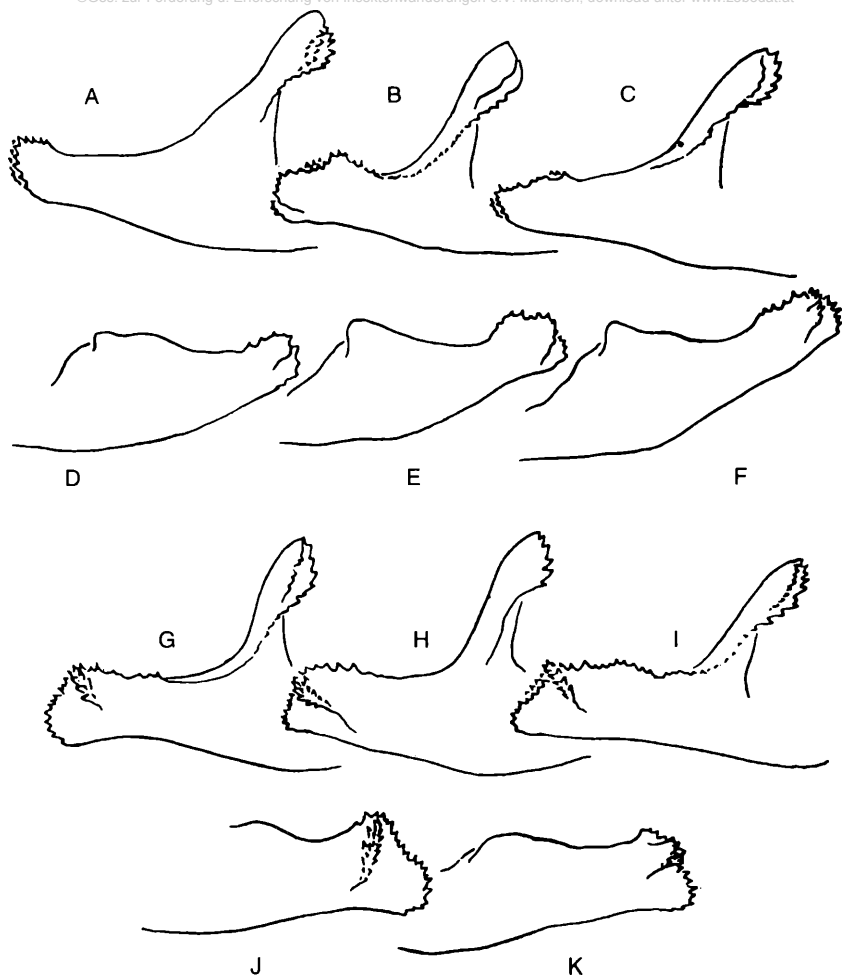


Fig. 3: Variation in the male genitalia of *Erynnis popoviana* (NORDMANN, 1851) and *E. tages* (LINNAEUS, 1758). Cuiller of left (A–C, G–I) and right (D–F, J, K) clasp.

A–F: *E. popoviana*, Tchita region, Onon river, loc. Nizhny Tzasutchey, 17.–20.VI.1995 (A. DEVYATKIN leg.). G–K – *E. tages*: G, J – Armenia, Mt. Aragatz, loc. Antarut, 15.–20. VIII.1984 (V. SAFRANOV leg.); H, K – E. Azerbaijan, Khatchmas district, loc. Nabran, 3.V.1984 (A. DEVYATKIN leg.); I – NW. Caucasus, vic. Anapa, 1.–10.VII.1986 (V. AREFYEV leg.).

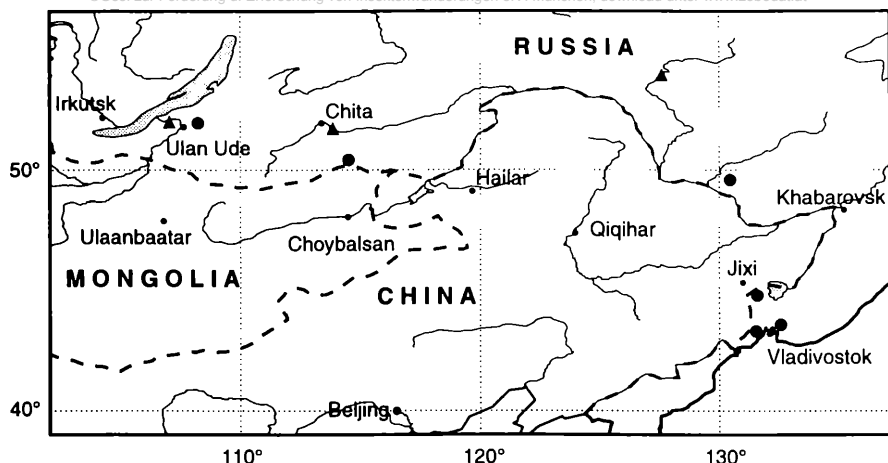


Fig. 4: Distribution of *Erynnis popoviana* (NORDMANN, 1851) and *E. tages* (LINNAEUS, 1758) in the East of Russia.

● – *E. popoviana*; ▲ – *E. tages*.

Ulan-Ude, loc. Pervomayevka, 24.VI.1991 (leg. V. Tuzov); 1 ♂, Khabarovsk region, Khingansk, 13.VII.1980 (leg. NOVOMODNY, genitalia figured by BELYAEV, 1985); 1 ♂, S. Primorye, Shkotovo district, loc. Romanovka, 27.V.1978 (leg. KARAKASH; genitalia figured by BELYAEV, 1985); 1 ♂, S. Primorye, Pogranitchny district, loc. Barabash-Levada, 2.VI.1986 (leg. L. NIKOLAEVSKY); 2 ♀♀, S. Primorye, Khassan district, "Kedrovaya Pad" Nature Reserve, summer 1969 (leg. N. PUGATCHUK). The last locality is somewhat doubtful as the original unmounted material was not labelled and the locality and time were suggested by P. BOGDANOV (Darwinian Museum, Moscow) judging from indirect data. China: 9 ♂♂, 2 ♀♀, AMDO (Sining, Kuku-nor); 20 ♂♂, 4 ♀♀, Tapaishan in Tsinling (S. Shensi), VI., VII.1936 (leg. H. HÖNE); 1 ♀, Peking; 7 ♂♂, 7 ♀♀, Tai-shan (Shantung), IV.–VI., VII.–VIII.1934 (leg. H. HÖNE). All the Chinese material is in the collection of The Natural History Museum, London (BMNH).

E. tages L.: 2 ♀♀, Buryatia, 30 km N of Ulan-Ude, loc. Mandrik, 11.–12.VI.1993 (leg. S. TCHURKIN); 1 ♀, Buryatia, NW Ulan-Ude, loc. Nyuki, 18.VI.1991 (leg. V. Tuzov); 8 ♂♂, 1 ♀, 100 km W Tchita, Talatcha river near Urulga, 24.–30.VI.1995 (leg. A. DEVYATKIN, V. TUZOV, K. KOLESNITCHENKO); 1 ♂, 1 ♀, Yablonovy Range, 70km W Tchita, vic. Yablonovo, 880m, 16.–20.VI.1995 (leg. A. BELIK); 1 ♂, SE. Transbaikalia, Klitchinsky Range, vic. Klitchka, 1000–1100m, 11.VI.1995 (leg. A. BELIK); 1 ♂, Amur region, Zeya, 25.VI.1978 (leg. A. DEVYATKIN).

Zoogeographical considerations

According to literature and the material examined, *E. popoviana* NORDM. is widely distributed in the south-eastern part of the Palearctic Region and seems to be a species of Central Asia

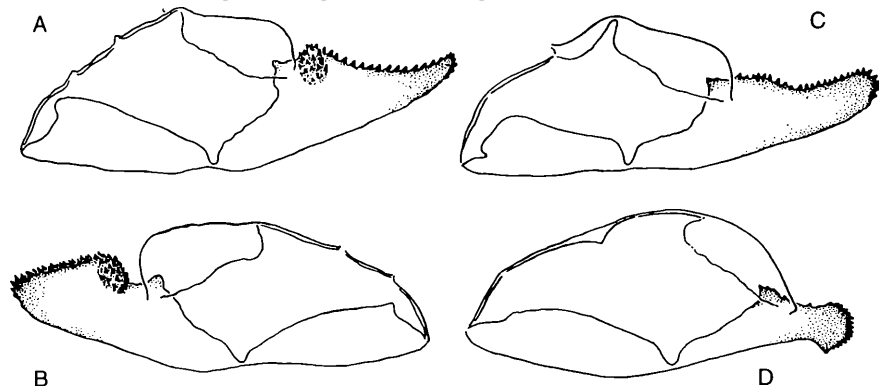


Fig. 5: *Erynnis* SCHRANK, male genitalia (claspers from outside).

A – *Erynnis marloyi* (BOISDUVAL, 1832), S. Armenia, Megri, 10.V.1983 (V. POTOPOLSKY leg.), left clasp; B – id., right clasp; C – *E. pathan* EVANS, 1949, Tadzhikistan, Darvaz Mts., ca. 30 km NW Kalai-Khumb, 1500 m, 23.VII.1990 (S. TCHURKIN leg.), left clasp; D – *E. max* EVANS, 1949, Baluchistan, Muhtarzai Pass, 7000 ft., 8.V.1931 (W. H. EVANS leg.), left clasp.

(more precisely, Central China) origin. Therefore it is found only in the southern areas of the Russian Far East and Transbaikalia, to the north being replaced by *E. tages* L. The distribution of the latter seems to extend to the east as far as to the northern part of the Amur region. Although both species occupy similar habitats in Transbaikalia (mostly river valleys), they may be parted ecologically in the places of direct contact, *E. popoviana* NORDM. generally being associated with more southerly (steppe) types of habitat. In view of this it seems worth to notice that in specific damp meadows which substitute steppe habitats in Primorye only the latter species is found. Such a type of distribution with ecological shift to more humid habitats at its eastern limits is known also for other species of the Central Asiatic complex and probably reflects a ecological differentiation of forms originating from Central and North Chinese areas (Shan Si, Shen Si, etc.) where climatic conditions allow both types of habitat to develop in close neighbourhood. However, the precise ecological and geographical relations between *E. popoviana* NORDM. and *E. tages* L. are still to be studied, as the present material and field observations are too scarce.

2. *Erynnis pathan* EVANS, 1949 bona spec.

This taxon was described as a subspecies of *E. marloyi* (BOISDUVAL, 1832) from Chitral (EVANS, 1949), with the distribution ranging from Beluchistan (Zhob Valley) to NW. Himalaya and the NW. Frontier Province of India. The main character distinguishing it from typical

E. marloyi BOISD., as stated by EVANS, was the shape of the left clasp which is inwardly concave. Externally it is very similar to *E. marloyi* though darker and slightly smaller (colour plate XI, figs. 7, 9).

I was able to examine the type and other material in the collection of The Natural History Museum London (BMNH) and, apart from this, two specimens from the Darvaz Mts. (vic. of Kalai-Khumb) which fairly correspond by external features to the description and the type specimens of *pathan*. I found that in all specimens examined both clasps were concave and rounded at their ends, the left and the right ones being symmetrical (fig. 5)! Another distinguishing character to which EVANS obviously didn't pay attention is the absence of a toothed tuberculus on the outer side of both clasps in *pathan*, while in *E. marloyi* BOISD. it is always present both in Transcaucasian and Kopet-Dagh populations (fig. 5). These marked differences in the shape of the clasps can be regarded as a strong indication of specific distinction of the taxon *pathan* EVANS; infraspecific variation, although present in other parts of the distribution area of *E. marloyi* BOISD., as well as in the much wider distributed species of the genus *Erynnis* (like *E. tages* L.), never reaches such an extent. Moreover, the case of *E. popoviana* NORDM. demonstrates that even minor but constant differences in external features and genitalia in neighbouring populations may be indicative of a distinct species. Another interesting fact is the symmetry of both clasps in *pathan*. Such a case has already been described by BURNS (1970) for the N. American *E. funeralis* (SCUDDER & BURGESS, 1870) and *E. propertius* (SCUDDER & BURGESS, 1870); this secondary symmetry is regarded as unique and exceptional in the genus *Erynnis* as it was found in only two specimens of the above species. However, this symmetry, found in several randomly taken individuals of *pathan* EVANS from different localities, seems to be an additional evidence of its specific distinction and shows that it can be not an abnormal individual variation but a constant character of a certain taxon within the genus.

Having considered all the facts I conclude that the taxon *pathan* should be regarded as a distinct species: *Erynnis pathan* EVANS, 1949 (**stat. nov.**).

Material examined

10 ♂♂, 5 ♀♀, Chitral; 1 ♂, Shingarh (Beluchistan); 1 ♂, Razmak (India); 2 ♂♂, Bashahr (NW. Himalaya) (all BMNH); 2 ♂♂, Tadzhikistan, Darvaz Mts., ca. 30 km E Kalai-Khumb, 1500 m, 23.VII.1990 (leg. S. TCHURKIN).

3) *Erynnis max* EVANS, 1949, bona spec.

In view of the above considerations the specific status of a further taxon of the *marloyi*-group, viz. *max* EVANS, 1949, could be strongly suspected as the original description stated great differences from the related taxa both in external features and genitalia. This taxon was described as a subspecies of *E. marloyi* BOISD. from Beluchistan (Khojak), Pishin Valley being the only known record apart from the type locality (EVANS, 1949). The major characters distinguishing it from the typical *E. marloyi* BOISD., according to EVANS, are the whitish scaling of the forewing upperside (more or less obscuring the dark bands) and the shape of the left clasp which is short and broad-ended instead of being tapered. Examination of the type series deposited in BMNH allows to add other distinguishing features to the description of

this taxon, viz. the shape of the forewing which is narrower and more pointed than in *E. marloyi* BOISD. and *E. pathan* EVANS, and the shape of the discal band which is strongly elbowed outwards at the middle (colour plate XI, fig. 8). These features combined with the characteristic greyish scaling make the general appearance of *max* entirely different from other taxa of the group, thus confirming EVANS's statement.

In the male genitalia the differences are even more striking than could be concluded from the original description as not only the left clasp is expanded at the end but both clasps are symmetrical as in the case of *E. pathan* EVANS (fig. 5).

Comparison of the taxon *max* with other taxa of this group leave no doubt in its specific distinction: *Erynnis max* EVANS, 1949 (**stat. nov.**).

The distribution of *max*, though limited, seems to meet with that of *E. pathan* EVANS in the area of Zhob watershed (Beluchistan).

Material examined

17 ♂♂, 13 ♀♀, Khojak, Mahtarzai Pass, Gwal (Beluchistan) (all BMNH).

Acknowledgements

I am greatly indebted to Mr. P. R. ACKERY and Mr. C. R. SMITH (The Natural History Museum, London) for giving the opportunity to examine the collection of the British Museum and for loan of valuable material; for loan and gifts of specimens I am also deeply grateful to my Moscow colleagues P. BOGDANOV (Darwinian Museum), K. KOLESNITCHENKO, L. NIKOLAEVSKY, S. TCHURKIN and V. TUZOV.

This study was supported by grants of the International Science Foundation (No. N1M000, N1M300) and the Russian Academy of Sciences ("Biodiversity").

References

- BELYAEV, E. A. (1985): [New and little known butterflies (Lepidoptera, Rhopalocera) from the south of the Far East]. – [Taxonomy and ecology of arthropods of the Far East], Vladivostok, p. 67–70 (in russian).
- BURNS, J. M. (1970): Secondary symmetry of asymmetric genitalia in males of *Erynnis funealis* and *E. propertius* (Lepidoptera, Hesperidae). – *Psyche* **77**(4): 430–435.
- ELWES, H. J. & W. H. EDWARDS (1898): A revision of the Oriental Hesperidae. – *Trans. Zool. Soc. London* **14**: 101–324.
- EVANS, W. H. (1949): A catalogue of the Hesperidae from Europe, Asia and Australia in the British Museum (Nat. Hist.). – London, Trust. Brit. Mus. Nat. Hist., 502 pp, 53 pls.
- GROUM-GRSHIMAILO, G. E. (1891): Lepidoptera nova in Asia Centrali novissime lecta et descripta. – *Horae Soc. ent. ross.* **25**: 445–465.
- KURENTZOV, A. I. (1970): [Butterflies of the Far East of the USSR]. – Leningrad, Nauka, 164 pp., 14 pls. (in russian).
- MABILLE, P. (1909): Hesperidae, Dickköpfe. – In: SEITZ, A., Die Grossschmetterlinge der Erde, Abt. 1, Bd. 1: 330–354.
- NORDMANN, A. (1851): Neue Schmetterlinge Russlands beschrieben. – *Bull. Soc. Imp. Nat. Moscou* **24**(4): 439–446.

STAUDINGER, O. & H. REBEL (1901): Catalog der Lepidopteren des Palaearctischen Faunengebietes. – Berlin, Friedländer & Sohn, Bd. 1, 410 pp.

Explanation of colour plate XI (p. 687):

1	2
3	4
5	6
7	8
9	

Fig. 1: *Erynnis popoviana* (NORDMANN, 1851), ♂, Tchita region, Onon river, Nizhny Tzasutchey, 17.VI.1995, A. DEYATKIN leg., upperside.

Fig. 2: id., underside.

Fig. 3: *Erynnis tages* (LINNAEUS, 1758), ♂, Tchita region, 100 km E Tchita, Talatcha river near Urulga, 27.VI.1995, A. DEYATKIN leg., upperside.

Fig. 4: id., underside.

Fig. 5: *Erynnis popoviana* (NORDMANN, 1851), ♂, China, Prov. Shantung, Tai-Shan, 27.IV.1934, H. HÖNE leg. (coll. BMNH), upperside.

Fig. 6: *Erynnis popoviana* (NORDMANN, 1851), ♂, China, Prov. Shantung, Tai-Shan, 22.VII.1934, H. HÖNE leg. (coll. BMNH), upperside.

Fig. 7: *Erynnis pathan* EVANS, 1949, holotype ♂, Chitral, Utzen Nallah, 5000 ft., V.1901, leg. G. A. LESLIE & W. H. EVANS (coll. BMNH), upperside.

Fig. 8: *Erynnis max* EVANS, 1949, holotype ♂, Baluchistan, Khojak, 6000 ft., VI.1931 (coll. BMNH), upperside.

Fig. 9: *Erynnis marloyi* (BOISDUVAL, 1832), holotype ♂, "ex musaeo D-ris BOISDUVAL" (coll. BMNH), upperside.

address of the author

A. L. DEYATKIN
Department of Entomology
Faculty of Biology
Moscow State University
119899 Moscow
Russia

Colour plate XI

DEVYATKIN, A. L.: Taxonomic notes on the genus *Erynnis* SCHRANK, 1801 (Lepidoptera, Hesperiiidae). – *Atalanta* **27**: 605–614.

Fig. 1: *Erynnis popoviana* (NORDMANN, 1851), ♂, Tchita region, Onon river, Nizhny Tzasutchey, 17 VI.1995, A. DEVYATKIN leg., upperside.

Fig. 2: id., underside.

Fig. 3: *Erynnis tages* (LINNAEUS, 1758), ♂, Tchita region, 100 km E Tchita, Talatcha river near Urulga, 27 VI.1995, A. DEVYATKIN leg., upperside.

Fig. 4: id., underside.

Fig. 5: *Erynnis popoviana* (NORDMANN, 1851), ♂, China, Prov. Shantung, Tai-Shan, 27.IV.1934, H. HÖNE leg. (coll. BMNH), upperside.

Fig. 6: *Erynnis popoviana* (NORDMANN, 1851), ♂, China, Prov. Shantung, Tai-Shan, 22.VII.1934, H. HÖNE leg. (coll. BMNH), upperside.

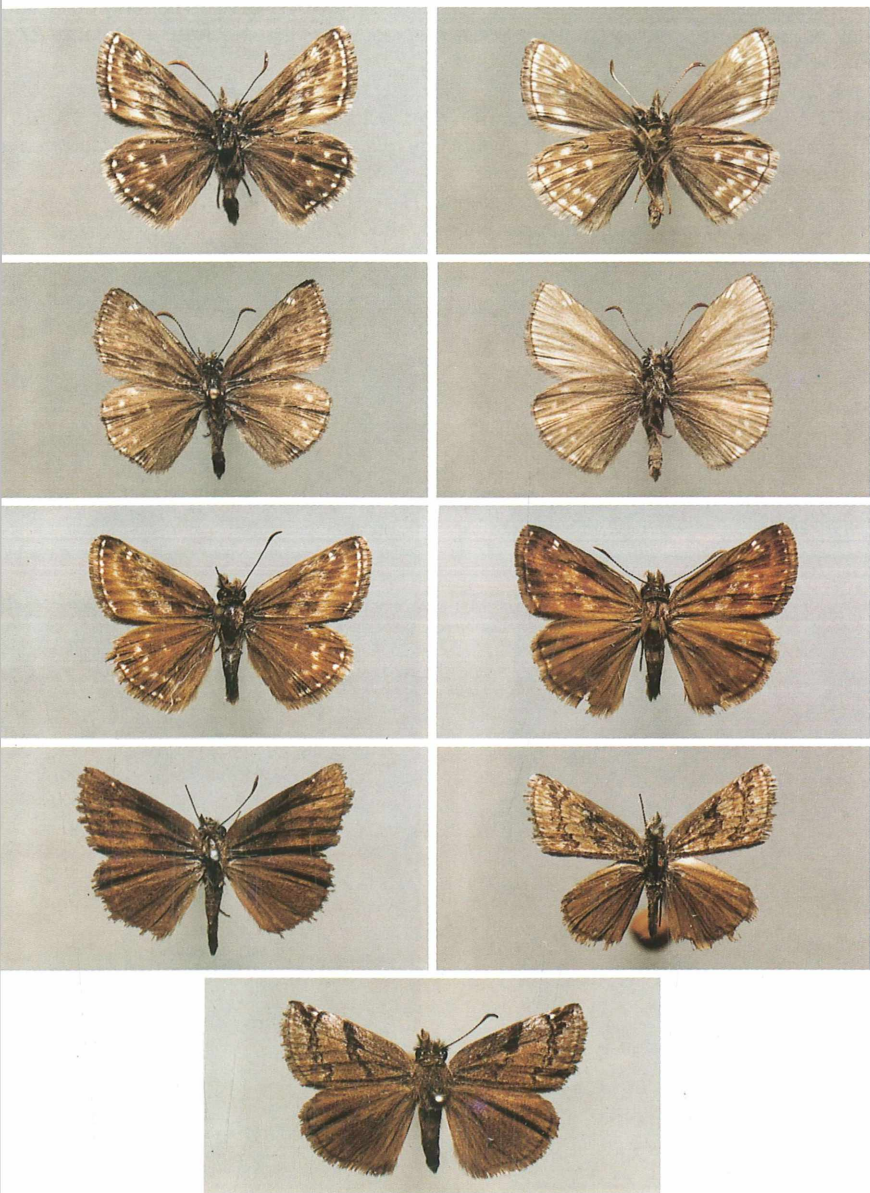
Fig. 7: *Erynnis pathan* EVANS, 1949, holotype ♂, Chitral, Utzen Nallah, 5000 ft., V.1901, leg. G. A. LESLIE & W. H. EVANS (coll. BMNH), upperside.

Fig. 8: *Erynnis max* EVANS, 1949, holotype ♂, Baluchistan, Khojak, 6000 ft., VI.1931 (coll. BMNH), upperside.

Fig. 9: *Erynnis marloyi* (BOISDUVAL, 1832), holotype ♂, "ex musaeo D-ris BOISDUVAL" (coll. BMNH), upperside.

1	2
3	4
5	6
7	8
9	

Colour plate XI



ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Atalanta](#)

Jahr/Year: 1996

Band/Volume: [27](#)

Autor(en)/Author(s): Devyatkin Alexey L.

Artikel/Article: [Taxonomic notes on the genus Erynnis \(Schrank, 1801\) \(Lepidoptera, Hesperidae\) 605-614](#)