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## Revision of the *erythrophleps* species-group of the genus *Eospilarctia* KÔDA, 1988 (Lepidoptera, Erebidae, Arctiinae)

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### Abstract

The *erythrophleps* species-group of the genus *Eospilarctia* is revised. So far only two species were recognized in the group: *Eospilarctia erythrophleps* (HAMPSON, 1894) from India and *Eospilarctia ignivagans* (ROTHSCHILD, 1919) nov.comb. from China. The authors describe three new species: *Eospilarctia vicina* nov.sp. from Thailand, *Eospilarctia pallidivagans* nov.sp. and *Eospilarctia volynkini* nov.sp., both from Vietnam.

### Zusammenfassung

Die *erythrophleps* Artengruppe der Gattung *Eospilarctia* wird revidiert. Bisher waren in der Artengruppe nur zwei Arten bekannt: *Eospilarctia erythrophleps* (HAMPSON, 1894) aus Indien und *Eospilarctia ignivagans* (ROTHSCHILD, 1919) nov.comb. aus China. Die Autoren beschreiben drei neue Arten: *Eospilarctia vicina* nov.sp. aus Thailand, *Eospilarctia pallidivagans* nov.sp. und *Eospilarctia volynkini* nov.sp., beide aus Vietnam.

### Introduction

So far, no comprehensive revision exists of the genus *Eospilarctia*. The genus is widespread in the East Palaearctic and North Oriental Regions with 14 species (de FREINA & THOMAS (†), 2015) to which 4 species are added here. *Spilosoma erythrophleps* (HAMPSON, 1894) has been transferred to *Eospilarctia* KÔDA, 1988 by de FREINA & THOMAS (†) (2015). The genus *Eospilarctia* is reviewed by de FREINA & THOMAS (†) (2015) and SALDAITIS et al. (2012). It was described by KÔDA (1988), and KÔDA's figure of the male genitalia of *Eospilarctia taliensis* (ROTHSCHILD, 1933) (= *jordansi* DANIEL, 1943) shows a very similar structure of the vesica, with two smaller basal diverticula and a larger terminal one, and

similar groups of spines. The female genitalia are also quite characteristic, the signum consists of paired circular plates. Moreover, the ductus bursae is quite short and there are very large triangular anal papillae. However there are also considerable differences of the *erythrophleps* species group from typical members of *Eospilarctia* which indicate a somewhat separate position in the genus (including its subgenus *Pareospilarctia*), e.g. the presence of two pairs of well developed apophyses in the female genitalia: KÔDA (1988) indicates that the apophysis anterioris is rudimentary, and very small anterior apophyses are also shown in the *yuennanica* group of species (SALDAITIS et al. 2012). Moreover, the ventral keel of the ductus bursae is not very obvious in the known female genitalia of the *erythrophleps* group, and the valva is not simple. The uncus does not show the shape of the subgenus *Pareospilarctia* DUBATOLOV & KISHIDA, 2008, and therefore cannot be attributed to it. The external appearance of the *erythrophleps* species group is different from other *Eospilarctia* species but quite homogeneous. The moths can be described in dependence of HAMPSON (1894) in the following way: ♂ antennae bipectinate; head, thorax, and abdomen reddish orange; palpi and frons black; collar and tegulae with paired black spots; abdomen with dorsal black bands and patch on terminal segment. Forewing orange, the veins scarlet; numerous black spots in the interspaces; a black streak from base through the discal cell to near outer margin. Hindwing pale ochreous; medial and postmedial maculate black bands conjoined into a large patch in cell; a marginal series of spots with one inside it on vein 5 [M2] or black bands more or less joined blackening the whole hindwing in extreme case. This general characterisation is not repeated under each species diagnosis, where only the discriminating diagnostic characters are mentioned. The *Spilosoma* (*Spilarctia*) genus group has already received a very strong generic division by KÔDA (1988), so it seems not wise to proceed in a further splitting. There is a strongly sclerotized invagination of the genital chamber called "sinus" (KÔDA 1987) which is typical for this generic group and which is also found in the *erythrophleps* species group.

Closer study immediately revealed that *Eospilarctia erythrophleps* and *Eospilarctia ignivagans* are different species. Moreover, there are 3 undescribed species of the group, which can be substantiated both by genitalia morphology and DNA barcode. The studied material widens the knowledge of the distribution of the species in the *erythrophleps* group which were so far almost only known from the type localities. Distribution records not based on dissections must be regarded as doubtful.

It was not easy to understand species delimitation in this group. Many species are superficially highly variable, especially in the hindwing, which can vary from fasciated to unicolorous grey. The male genitalia are quite diverse and provide good differences, females were not available for most species. The wide difference of many male genitalia was so obvious that several species had to be recognized, but there were so many intermediate structures that a high individual variability of the species had to be considered. It was challenging to select useful features for species discrimination and to circumscribe the individual variability of the recognized species. DNA barcodes were available for all species and revealed to be a considerable help for the interpretation of differences in genitalia and external appearance.

The present study is primarily based on the material of the Museum Witt, Munich, and the types in the Natural History Museum in London.

## Material and Methods

### Sampling

Some 130 specimens of the genus *Eospilarctia* have been examined at the Museum Witt, Munich, the Bavarian State Collection of Zoology, Munich, and the Natural History Museum, London. For identification, about 20 male and female dissections were made, using standard procedures (ROBINSON 1976).

DNA sequences for 15 specimens in the genus *Eospilarctia* were available for analysis, ten belonging to the *erythrophleps* species-group. The latter sequences were received from DNA extracts obtained from a single leg from dried specimens in the Museum Witt.

### DNA Analysis

PCR amplification and DNA sequencing was performed at the CCDB, for most specimens, following standard high-throughput protocols (IVANOVA et al. 2006) that can be accessed under <http://www.dnabarcoding.ca/pa/ge/research/protocols>. PCR amplification with a single pair of primers consistently recovered a 658 bp region near the 5'terminus of the mitochondrial cytochrome c oxidase I (COI) gene that included the standard 648 bp barcode region for the animal kingdom (HEBERT et al. 2003). DNA extracts are stored at both the CCDB and in the DNA-Bank facility of the ZSM (see <http://www.zsm.mwn.de/dnabank/>).

All sequences are deposited in GenBank according to the iBOL data release policy. Complete specimen data including images, voucher deposition, GenBank accession numbers, GPS coordinates, sequence and trace files can easily be accessed in the Barcode of Life Data System (RATNASINGHAM & HEBERT 2007; RATNASINGHAM 2011) in the public dataset DS-EOSPILAR.

### Data Analysis

Sequence divergences for the barcode region were calculated using the Kimura-2-Parameter model, employing the analytical tools on BOLD (RATNASINGHAM & HEBERT 2007) and MEGA 6 (TAMURA et al. 2013). The BIN system for circumscribing species boundaries and for species discrimination is used as implemented on BOLD (RATNASINGHAM & HEBERT 2013). Genetic distances between species are reported as minimum pairwise distances, while intraspecific variation is reported as maximum pairwise distances. The tree (fig. 27) was constructed with MEGA 6 (TAMURA et al. 2013).

## Systematic part

### *Eospilarctia erythrophleps* (HAMPSON, 1894) (Tab. 1, fig. 1, 3, 5, 7)

*Spilosoma erythrophleps* HAMPSON, 1894, Fauna Br. India (Moths) 2: 8, L. t.: Nāga Hills, 6000 feet.

**M a t e r i a l :** Holotype ♂ with labels: Naga hills, 5500-7000 ft., Sept.-Oct. 1889, W. Doherty; Collection H. J. Elwes; *Spilosoma erythrophleps* HMPSON. type ♂; ROTHSCHILD Bequest 1939-1; Arctiidae Brit. Mus. Slide No. 6048 ♂; Type.

**F u r t h e r M a t e r i a l :** 1 ♂, N. Vietnam, 16-1800m, Mt. Fan-si-pan (West), Cha-pa (= Sapa), Sek.-Wald/Kulturland, 22.20'N 103.40'E, 10.V.-6.VII.1994, Sinjaev & einh. Sammler, Museum

Witt, genitalia slide 25331 Museum Witt; 1 ♂, dto., genitalia slide 25333 Museum Witt; 1 ♂, N. Vietnam, 1600 m, Mt. Fan-si-pan, Cha-pa, Primärwald, 22.17°N 103.44°E, 20.-30.IV.1995, leg. V. Sinjaev & einheim. Sammler, Museum Witt, genitalia slide 25332 Museum Witt; 1 ♂, N. Vietnam, Mt. Fan-si-pan, Cha pa, 1700 m NN (22.15°N 103.46°E), VI.1994, leg. Sinjaev & einheim. Sammler, genitalia slide 25334 Museum Witt; 5 ♂♂ China / Prov. Yunnan-prov. (NW), Dali Bai aut. pref., Yunlong county, Fengshuining-Mts., 2460 m, 13 km N of Caojian, 10.-23.VI.1999, 25.46°N / 99.06°E, leg./ex coll. Dr. Ronald Brechlin, Museum Witt, with BC ZSM Lep 66335 and genitalia slide 3486; 1 ♂ China / Prov. Yunnan-prov. (NW), Dali Bai aut. pref., Yunlong county, Fengshuining-Mts., 2460 m, 13 km N of Caojian, 20.V.-09.VI.1999, 25.46°N / 99.06°E, leg./ex coll. Dr. Ronald Brechlin, Museum Witt.

♀ unknown.

Male genitalia (5 genitalia slides examined: 3486, 25331, 25332, 25333, 25334 Museum Witt and 6048 Natural History Museum) (Tab. 3, fig. 17, 18): Dorsal projection of valva slightly longer than in *Eospilarctia vicina*, in a more basal position than in that species. Distal part of the valva after the projection much longer than in *Eospilarctia vicina* nov.sp.

Distribution: India (Nagaland), Thailand (Chiang Mai Province), Northern Vietnam (Fan-si-pan Mt.) and China (Yunnan) in elevations from 1600 to 2400 m. It seems likely that the species also occurs in northern Myanmar from where it was recorded by de FREINA & THOMAS (†) (2015). However, the specimens mentioned by these authors are apparently undissected, and it is possible that they belong to another species in the group.

Genetic data: BIN BOLD:ABX2960 (n=1; China: Yunnan). Nearest species: *Eospilarctia volynkini* (4.3%).

### ***Eospilarctia vicina* nov.sp.** (Tab. 1, fig. 2)

**M a t e r i a l:** Holotype ♂, Thailand/Chiang Mai prov., Doi Inthanon National Park, km 44,5, road (N of) Chom Thong - summit 6,5 km above checkpoint 2, 2240 m, lower montane forest, 26./27.V.1998, leg./ex coll. Dr. Ronald Brechlin, Genital slide 24542 Museum Witt München. Paratypes: 1 ♂ Thailand, Chiang Mai, Mt. Doi Inthanon NP (2300 m) 2001.07.25, leg: Hentschel, Petrányi, Museum Witt, BC ZSM Lep 66330; 1 ♂ Thailand / Chiang Mai-prov., Doi Inthanon National Park, km 44,5, road (N of) Chom Thong - summit 6,5 km above checkpoint 2, 2240 m, lower montane forest; 26./27.V.1998, leg./ex coll. Dr. Ronald Brechlin, Museum Witt, BC ZSM Lep 66329, genitalia slide 3463 Museum Witt; 1 ♀ Thailand, Changwat Chiang Mai, Mt. Doi Phahompok, 16 km NW of Fang, 2000 m, 6.-7.VIII.1999, leg. T. Csövári & L. Mikus, Museum Witt, BC ZSM Lep 66331.

Wingspan: 44-50 mm.

Superficially very similar to *Eospilarctia erythrophleps*, but with grey marginal band of hindwing hardly interrupted (broadly interrupted in *Eospilarctia erythrophleps*), nearly indiscriminable from *Eospilarctia pallidivagans* nov.sp. However discriminated from all these species by the structure of the male genitalia. 1 ♂ paratype (of 4 types) with infuscated hindwings.

♀ not different from the males, but with filiform antennae.

Male genitalia (slides 24542 and 3462 Museum Witt) (Tab. 3, fig. 19): Valva slender, with a long dorsal terminally rounded projection in about middle of valva. In *Eospilarctia erythrophleps*, this projection is longer and in a more basal position. In the present species, the valval part after the dorsal projection is shorter than in *Eospilarctia erythrophleps*. Lateral diverticula of the vesica apparently reduced.

Female genitalia: not dissected.

Distribution: Thailand, Doi Inthanon, collected in elevations between 2000 and 2300 m.

Etymology: vicinus (lat.) near, similar.

Genetic data: BIN BOLD:ABX2958 (n=3; Thailand). Intraspecific variation low (0.2%).

Nearest species: *Eospilarctia pallidivagans* (2.4%), *Eospilarctia ignivagans* (2.7%).

***Eospilarctia volynkini* nov.sp.** (Tab. 1, fig. 6, 8; Tab. 2, fig. 9, 11)

**M a t e r i a l:** Holotype ♂, N. Vietnam, Mt. Fan-si-pan W-Seite, Cha-pa (= Sapa), 1600-1800 m, 22.20°N 103.40°E, sek. Wald/Kulturland, 30.VI.-12.VII.1994, leg. Brechlin/Schintlmeister, Museum Witt.

Paratypes: 4 ♂♂ dto.:

11 ♂♂ N. Vietnam, 16-1800m, Mt. Fan-si-pan (West), Cha-pa (=Sapa), Sek. Wald/Kulturland, 22.20°N 103.40°E, 10.VI.-6.VII.1994, leg. Sinjaev & einh. Saml., Museum Witt, genitalia slide 24546; 4 ♂♂ N. Vietnam, Mt. Fan-si-pan, Cha-pa, 1700 m NN (22.15°N 103.46°E), VI.1994, leg. Sinjaev & einheim. Sammler, Museum Witt; 5 ♂♂ 1 ♀ N. Vietnam, Mt. Fan-si-pan, W-Seite, Cha-pa (= Sapa), 1600-1800 m, N 22.20°E 103.40° Sek. Wald, September 1994, leg. Mong, ex. coll. A. Schintlmeister, Museum Witt; 1 ♂ N. Vietnam, Mt. Fan-si-pan W-Seite, Cha-pa (= Sapa), 2000 m, 22.15°N 103.45°E, primär. Nebelwald, 5.VII.1994, leg. Brechlin/Schintlmeister, Museum Witt; 1 ♂ N. Vietnam, 1600 m, Mt. Fan-si-pan (Nord), Cha-pa, Primärurwald, 22.17°N 103.44°E, 20.-30.IV.1995, leg. V. Sinjaev & einheim. Sammler, Museum Witt, genitalia slide 24547; 1 ♂ N. Vietnam, 16-1800 m, Mt. Fan-si-pan (West), Cha-pa, Sek. Wald/Kul. (22.20°N 103.40°E), 20.-30.X.1994, leg. Sinjaev & einh. Sammler, ex. coll. A. Schintlmeister, Museum Witt; 1 ♂ N. Vietnam, Mt. Fan-si-pan W-Seite, Cha-pa (=Sapa), 1600-1800 m, 22.20°N 103.40°E Sek. Wald/Kulturland, 10.-30.X.1994, leg. Sinjaev & einh. Sammler, ex. coll. A. Schintlmeister, Museum Witt; 4 ♂♂, Vietnam (N), Mt. Fan-si-pan, W-side, Cha-pa, 22°20'N 103°40'E, 1600-1800m, 15.-25.IV. 1995, leg. Sinjaev & loc. coll., Museum Witt; 7 ♂♂, 3 ♀♀ N. Vietnam, Fan-si-pan Mts. W-Seite, near Cha-pa, 1600-1800 m, 22°20'N 103°40'E, Mai 1995, leg. local collectors, ex coll. Schintlmeister, Museum Witt, genitalia slide 24727 ♀; 1 ♂ Nord Vietnam, Mt. Fan-si-pan, Cha pa, 1700 m NN (22,15°N 103.40°E), Juni 1995, leg. Sinjaev, Museum Witt, Fangjahr 1994 (nec 1995); 1 ♂ N. Vietnam, 16-1800 m, Mt. Fan-si-pan (West), Cha-pa, sek. Wald (22.20°N 103.40°E) 30.6.- 12.VII.1994, leg. Brechlin & Schintlmeister, Museum Witt, genitalia slide 3417, BC ZSM Lep 66337; 1 ♂ Vietnam (N), Mt. Fan-si-pan (W-side), Cha-pa, 22°20'N 103°40'E, 1600-1800 m, 15.-25.IV. 1995, leg. Sinjaev & loc. Coll., Museum Witt, BC ZSM Lep 66338.

Wingspan 50-60 mm.

The largest species in the group, with yellowish white hindwings (the whitish areas broader than in the other species) and interrupted grey fasciae. Only one specimen of a total of 47 has infuscated hindwings.

♀ like the male, but with filiform antennae.

Male genitalia (two slides examined, 24546 and 24547 Museum Witt) (Tab. 3, fig. 20): Valva similar to that of *Eospilarctia vicina* with a rather long dorsal projection of valva which is situated, like in *Eospilarctia vicina* nov.sp., in a rather basal position. Valval part after the projection very long, slender, curved. In *Eospilarctia vicina* nov.sp., this part of the valva is shorter and stouter.

Female genitalia (slide 24727) (Tab. 5, fig. 26): Anal papillae large, triangular. Both pairs of apophyses present, the anterior one only slightly shorter than the posterior one. Sinus vaginalis strongly sclerotized, ductus bursae short and corpus bursae with two signa.

Distribution: So far only in the Fan-si-pan mountain massif in northern Vietnam in elevations from 1600 to 2000 m.

Etymology: Named in honour of Anton Volynkin, Barnaul, an excellent specialist of Erebidae, Arctiinae.

Genetic data: BIN BOLD:ABX3029 (n=2; Vietnam). Nearest species: *Eospilarctia erythrophleps* (4.3%).

***Eospilarctia ignivagans* (ROTHSCHILD, 1919) nov.comb.** (Tab. 2, fig. 10, 12, 14-16)

*Spilosoma ignivagans* ROTHSCHILD, 1919, Ann. Mag. nat. Hist. (9) 3 (17): 487, L. t.: Tali, Yunnan

M a t e r i a l : Holotype with labels: Tali, Yunnan; *Spilosoma ignivagans* Type ROTHSCH.; ROTHSCHILD Bequest B. M. 1939-1; 485; Arctiidae Brit. Mus. Slide No. 6047 ♂; Type.

The validity of this species was drawn into doubt by some authors and synonymy with *Eospilarctia erythrophleps* supposed. This is certainly not the case and it was correctly treated as a separate species e.g. by DUBATOLOV (2010). It was not mentioned under *Eospilarctia* by de FREINA & THOMAS (†) (2015) (eventually in the assumption that it is a synonym of *erythrophleps*) and therefore must receive a new combination here.

Other m a t e r i a l associated with the present species: 1 ♂: Thailand, Changwat Chiang Mai, Mt. Doi Phahompok, 16 km NW of Fang, 2000 m, 6.-7. VIII.1999, leg. T. Csövari & L. Mikus, Museum Witt, genitalia slide 24543 Museum Witt; 1 ♂: Thailand, Changwat Chiang Mai, Mt. Doi Phahompok, 17 km NW of Fang, 2100 m, 15.VIII.1999, leg. T. Csövari & L. Mikus, Museum Witt, Genitalia slide 24544 Museum Witt; 3 ♂ Thailand (N), Provinz Chiang Mai, Doi Pha Hom Pock, Mae Ai/2000 m, 13.-18.02.2004, leg. Thomas Ihle, coll. Swen Löffler, Museum Witt, BC ZSM Lep 66332, 66333, 66334.

Wingspan: 48-50 mm.

The darkest species in the group. Hindwings almost always completely infuscated. Only a few specimens show a narrow band of the yellowish white ground colour at the inner (basal) side of the marginal grey band and sometimes a yellowish white stripe at inner border of the distal fascia.

♀ unknown.

Male genitalia (3 slides examined: 6047 Natural History Museum, London (holotype), and slides 24543 and 24544 Museum Witt)(Tab. 4, figs. 21-23): Valva small, with a very short thorn-like, apically acute costal projection beyond middle. This projection is slightly longer and terminally rounded in *Eospilarctia pallidivagans*. The vesica with one large and two smaller diverticula.

Female genitalia: unknown.

Distribution: China (Yunnan) (type locality), and Thailand, Doi Phahompok, above 2000 m. Eventually, a few specimens from Doi Inthanon also belong to the present species. The conspecificity of the Thailand specimens should still be verified by DNA barcode which is still unknown for the typical Yunnan population.

Genetic data: BIN BOLD:ABX2958 (n=3; Thailand). Intraspecific variation low (0.2%). Nearest species: *Eospilarctia pallidivagans* (2.4%), *Eospilarctia vicina* nov.sp. (2.7%).

***Eospilarctia pallidivagans* nov.sp.** (Tab. 2, fig. 13)

**M a t e r i a l :** Holotype ♂, N. Vietnam, 16-1800 m, Mt. Fan-si-pan (West), Cha-pa (= Sapa), Sek. Wald/Kulturland, 22.20'N 103.40'E, 10.VI-6.VII.1994, Sinjaev & einh. Sammler, Museum Witt, genitalia slide 25336 Museum Witt;

Paratypes: 1 ♂ N. Vietnam, 16-1800 m, Mt. Fan-si-pan (West), Cha-pa, Sek. Wald (22.20'N 103.40'E, 10.VI-6.VII.1994, Schintmeister leg., Museum Witt, genitalia slide 24545; 1 ♂ N. Vietnam, 16-1800 m, Mt. Fan-si-pan (West), Cha-pa, Sek. Wald (22.20'N 103.40'E), 30.VI-12.VII.1994, leg. Brechlin/Schintlmei., Museum Witt, genitalia slide 25335 Museum Witt; 1 ♂ N. Vietnam, 16-1800 m, Mt. Fan-si-pan (West), 1 ♂ N. Vietnam, 16-1800 m, Mt. Fan-si-pan (West), Cha-pa, Sekund.-Wald, 22.20'N 103.40'E, 20.-30.VI.1994, leg. Sinjaev & Einh. Sr., Museum Witt, genitalia slide 25337 Museum Witt; 1 ♂ N. Vietnam, Mt. Fan-si-pan, W-Seite, Cha-pa (= Sapa), 1600-1800 m, N 22.20'E 103.40', Sek. Wald, September 1994, leg. Mong, ex coll. A. Schintmeister, Museum Witt, genitalia slide 25330 Museum Witt; 1 ♂ N-Vietnam, Mt. Fan-si-pan, Cha-pa, 1700 m (22.15'N 103.46'E), 08.-29.V.1993, leg. Sinjaev & Simonov, Museum Witt, BC ZSM Lep 66336.

Wingspan: 44-51 mm.

Quite easily discriminated from *Eospilarctia ignivagans* nov.sp. which has similar male genitalia by the much paler hindwings. The moths are superficially indiscriminable from the pale forms of *Eospilarctia erythrophleps* and *Eospilarctia vicina* nov.sp. which, however, have quite different genitalia. Variability low. Hindwing yellowish white, in some specimens the base grey. A narrow grey undulated proximal fascia is externally followed by a narrow irregular zone of the ground colour and then by a grey distal fascia widening towards costa. Marginal band almost uninterrupted like in *Eospilarctia vicina* (frequently interrupted in *Eospilarctia erythrophleps*).

♀ unknown.

Male genitalia (3 slides examined, 25335, 25336, 35337 Museum Witt) (Tab. 4, fig. 24, 25): Very similar to *Eospilarctia ignivagans* nov.sp. Dorsal projection of valva variable in size, small, thumb-shaped, not as acute like in *Eospilarctia ignivagans* nov.sp.

Female genitalia: unknown.

Distribution: This species is so far only known from the Fan-si-pan mountain massif in elevations from 1600 to 1800 m.

Etymology: a contraction of pallidus (lat.) pale and ignivagans, the most similar species in genitalia morphology.

Genetic data: BIN BOLD:ABX3028 (n=1; Vietnam). Nearest species: *Eospilarctia ignivagans* (2.4%), *Eospilarctia vicina* (2.4%).

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**Tab. 1 (adults) Figs 1-8:**

1. *Eospilarctia erythrophleps* (HAMPSON, 1894) ♂; Holotype, its labels shown in fig. 3.
2. *Eospilarctia vicina* nov.sp. ♂; Holotype, its labels shown in fig. 4.
3. *Eospilarctia erythrophleps* (HAMPSON, 1894); labels of holotype (fig. 1).
4. *Eospilarctia vicina* nov.sp.; labels of holotype (fig. 2).
5. *Eospilarctia erythrophleps* (HAMPSON, 1894) ♂; N. Vietnam, 16-1800m, Mt. Fan-si-pan (West), Cha-pa (= Sapa), Sek.-Wald/Kulturland, 22.20'N 103.40'E, 10.V.-6.VII.1994, Sinjaev & einh. Sammler, Museum Witt, genitalia slide 25331 Museum Witt.
6. *Eospilarctia volynkini* nov.sp. ♀, Paratype, N. Vietnam, Fan-si-pan Mts. W-Seite, near Cha-pa, 1600-1800 m, 22°20'N 103°40'E, Mai 1995, leg. local collectors, ex. coll. Schintlmeister, Museum Witt.
7. *Eospilarctia erythrophleps* (HAMPSON, 1894) ♂; China / Prov.Yunnan-prov. (NW), Dali Bai aut. pref., Yunlong county, Fengshuining-Mts., 2460 m, 13 km N of Caojian, 10.-23.VI.1999, 25,46°N / 99.06°E, leg./ex coll. Dr. Ronald Brechlin, Museum Witt, with BC ZSM Lep 66335.
8. *Eospilarctia volynkini* nov.sp. ♂; Holotype, N. Vietnam, Mt. Fan-si-pan W-Seite, Cha-pa (= Sapa), 1600-1800 m, 22.20'N 103.40'E, sek. Wald/Kulturland, 30.VI.-12.VII.1994, leg. Brechlin/Schintlmeister, Museum Witt.



1

*erythropleps*



2

*vicina*

58

Nago hills,  
5300-7000 ft.,  
Sept.-Oct. 1889,  
W. Doherty.

Type

Collecto  
H. J. Eiwes.

*Spilosoma*  
*erythropleps*  
Hampson type ♂

Rothschild  
Bequest  
B.M.1939-1.

Arctiidae  
Brit. Mus. slide  
No. 6043 ♂

Genitalpräparat  
Heterocera  
Nr. 24.542  
Museum WIT München

HT

Thailand / Chiang Mai - prov.  
Dai Iathanon National Park, km 44.5  
road (N 01) Chom Thong - summit  
6.5 km above checkpoint 2, 2240 m  
lower montane forest; 26/27.V.1998  
leg. / ex coll. Dr. Ronald Brechlin

Holotype ♂  
*Eospilarctia vicina*  
Speidel, Hausmann & Witt  
Sel. W. Speidel, 2018

3



*erythropleps*

4



*volynkini*

5



*erythropleps*

6



*volynkini*

7



8



**Tab. 2 (adults) Figs 9-16:**

9. *Eospilarctia volynkini* nov.sp. ♂, Paratype, dark, its labels shown in figure 11.
10. *Eospilarctia ignivagans* nov.sp. ♂, Holotype, its labels shown in fig. 12.
11. *Eospilarctia volynkini* nov.sp., labels of paratype shown in fig. 9.
12. *Eospilarctia ignivagans* nov.sp.; labels of holotype (fig. 10).
13. *Eospilarctia pallidivagans* nov.sp. ♂; Holotype, N. Vietnam, 16-1800 m, Mt. Fan-si-pan (West), Cha-pa (= Sapa), Sek. Wald/Kulturland, 22.20'N 103.40'E, 10.VI.-6.VII.1994, Sinjaev & einh. Sammler, Museum Witt, genitalia slide 25336 Museum Witt.
14. *Eospilarctia ignivagans* nov.sp. ♂ dark; Thailand, Changwat Chiang Mai, Mt. Doi Phahompok, 16 km NW of Fang, 2000 m, 6.-7.VIII.1999, leg. T. Csövari & L. Mikus, Museum Witt, genitalia slide 24543 Museum Witt.
15. *Eospilarctia ignivagans* nov.sp. ♂, dark, Thailand, Changwat Chiang Mai, Mt. Doi Phahompok, 16 km NW of Fang, 2000 m, 6.-7.VIII.1999, leg. T. Csövari & L. Mikus, Museum Witt.
16. *Eospilarctia ignivagans* nov.sp. ♂, pale, Thailand, Changwat Chiang Mai, Mt. Doi Phahompok, 16 km NW of Fang, 2000 m, 6.-7.VIII.1999, leg. T. Csövari & L. Mikus, Museum Witt.



9

*volynkini*



10

*ignivagans*

MUSEUM WITT  
VIETNAM (N)  
Nha Phan-gian, W-ide  
Chang, 22°20'N, 103°40'E  
1600-1800m.  
13-25. IV. 1993  
leg. Sanyev & loc. coll.

Paratype ♂  
*Eospilarctia volynkini*  
Speidel, Hausmann & Witt  
Sel. W. Speidel, 2018

BC ZSM Lep 66338

Type  
Tali  
Yunnan

Arctiidae  
Brit. Mus. slide  
No. 604787

*Spilosoma*  
*ignivagans*  
type Rothschild.

485  
Rothschild  
Bequest  
B.M. 1939-1.



11

13 *pallidivagans*



12

14 *ignivagans*



15

*ignivagans*



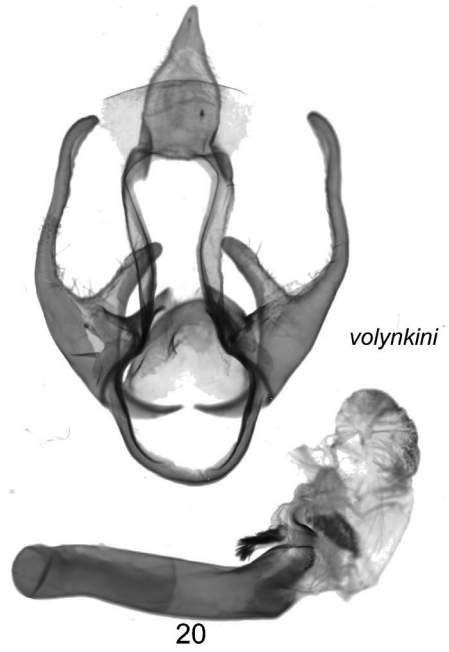
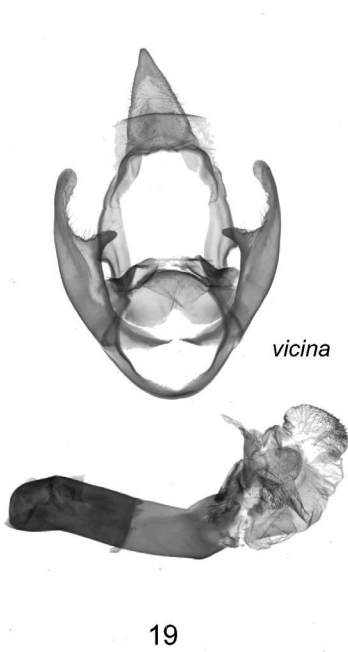
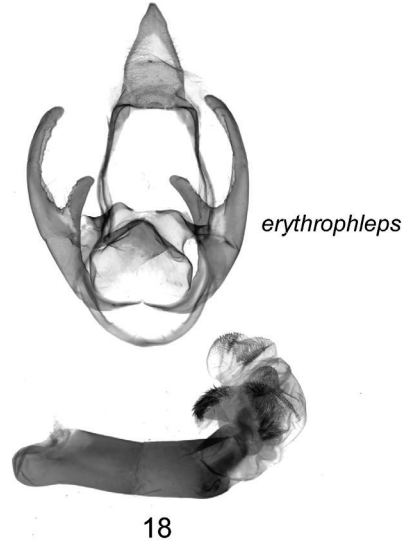
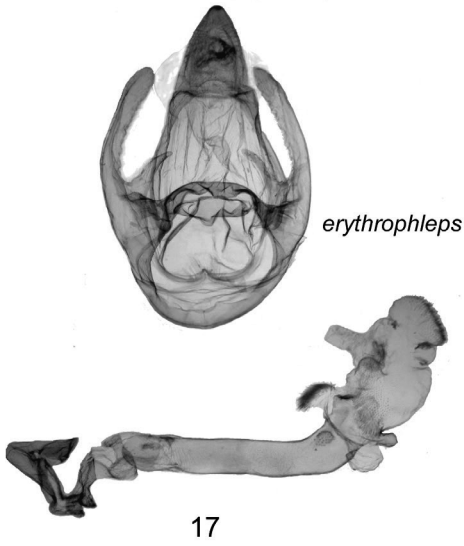
16

*ignivagans*



**Tab. 3 (male genitalia) Figs 17-20:**

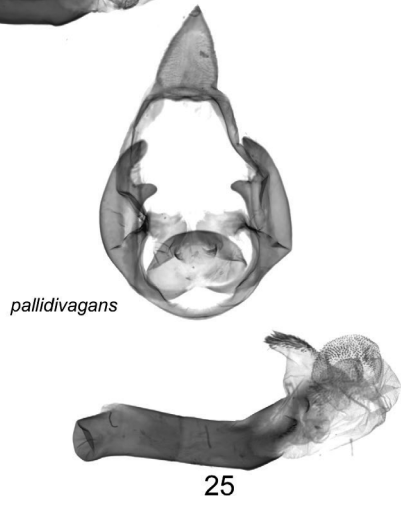
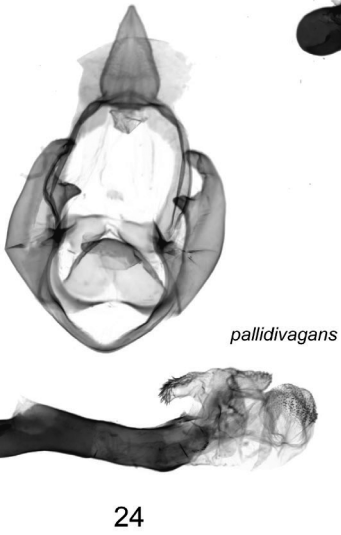
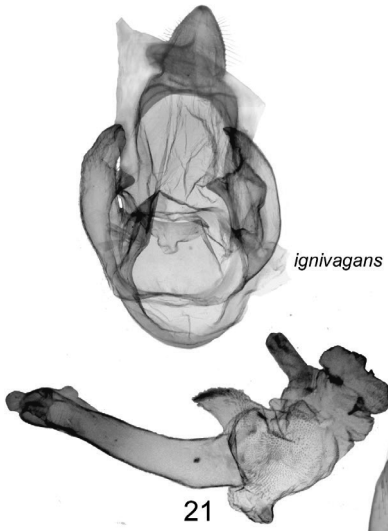
17. *Eospilarctia erythrophleps* (HAMPSON, 1894) ♂; holotype, slide 6048 Natural History Museum London, Naga hills, 5500-7000 ft., Sept.-Oct. 1889, W. Doherty; Collection H. J. Elwes; *Spilosoma erythrophleps* HMPSON. type ♂; ROTHSCHILD Bequest 1939-1.
18. *Eospilarctia erythrophleps* (Hampson, 1894) ♂; slide 25331 Museum Witt, N-Vietnam, 16-1800 m, Mt. Fan-si-pan (West), Chapa (= Sapa), Sek. Wald/Kulturland, 22.20'N 103.40'E, 10.VI.-6.VII. 1994, Sinjaev & einh. Saml., Museum Witt.
19. *Eospilarctia vicina* nov.sp. ♂; holotype, slide 24542 Museum Witt, Thailand/Chiang Mai prov., Doi Inthanon National Park Park, km 44,5, road (N of) Chom Thong – summit 6,5 km above checkpoint 2, 2240 m, lower montane forest, 26./27.V.1998, leg./ex coll. Dr. Ronald Brechlin.
20. *Eospilarctia volynkini* nov.sp. ♂; paratype, slide 24546 Museum Witt, N. Vietnam, 16-1800m, Mt. Fan-si-pan (West), Cha-pa (=Sapa), Sek.Wald/Kulturland, 22.20'N 103.40'E, 10.VI.-6.VII.1994, leg. Sinjaev & einh. Saml., Museum Witt.



**Tab. 4 (male genitalia) Figs 21-25:**

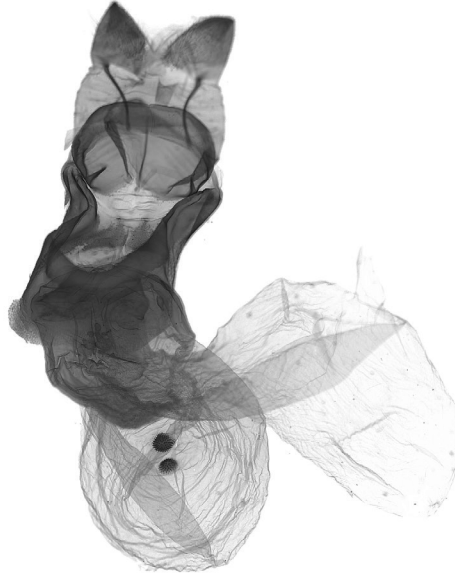
21. *Eospilarctia ignivagans* nov.sp. ♂; holotype, slide 6047 Natural History Museum London, Tali, Yunnan; *Spilosoma ignivagans* Type ROTHSCH.; ROTHSCHILD Bequest B. M. 1939-1; 485.
22. *Eospilarctia ignivagans* nov.sp. ♂; slide 24443 Museum Witt, Thailand, Changwat Chiang Mai, Mt. Doi Phahompok, 16 km NW of Fang, 2000 m, 6.-7.VIII.1999, leg. T. Csövari & L. Mikus, Museum Witt.
23. *Eospilarctia ignivagans* nov.sp. ♂; slide 24544 Museum Witt, Thailand, Changwat Chiang Mai, Mt. Doi Phahompok, 17 km NW of Fang, 2100 m, 15.VIII.1999, leg. T. Csövari & L. Mikus, Museum Witt.
24. *Eospilarctia pallidivagans* nov.sp. ♂; holotype, slide 25336 Museum Witt, N. Vietnam, 16-1800 m, Mt. Fan-si-pan (West), Cha-pa (= Sapa), Sek. Wald/Kulturland, 22.20'N 103.40'E, 10.VI.-6. VII. 1994, Sinjaev & einh. Sammler, Museum Witt.
25. *Eospilarctia pallidivagans* nov.sp. ♂; paratype, slide 25330 Museum Witt, N. Vietnam, Mt. Fan-si-pan, W-Seite, Cha-pa (= Sapa), 1600-1800 m, N 22.20' E 103.40', Sek. Wald, September 1994, leg. Mong, ex coll. A. Schintlmeister, Museum Witt.



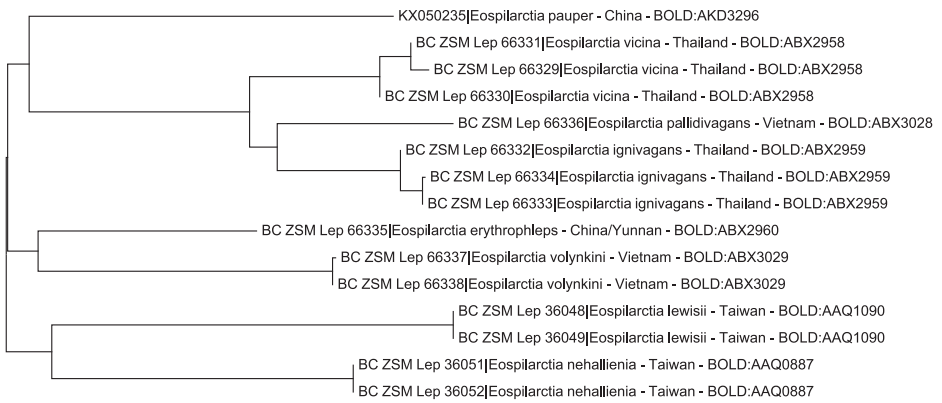


**Tab. 5 (female genitalia) Figs 26-27:**

26. *Eospilarctia volynkini* nov.sp. ♀; paratype, slide 24727 Museum Witt, N. Vietnam, Fan-si-pan Mts. W-Seite, near Cha-pa, 1600-1800 m, 22°20'N 103°40'E, Mai 1995, leg. local collectors, ex. coll. Schintlmeister, Museum Witt
27. Neighbour joining tree of the DNA barcodes (COI 5') of 15 specimens of the genus *Eospilarctia*, constructed with MEGA 6 (TAMURA et al. 2013).



26



27

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Jahr/Year: 2018

Band/Volume: [0039](#)

Autor(en)/Author(s): Speidel Wolfgang, Hausmann Axel, Witt Thomas Josef

Artikel/Article: [Revision of the erythrophleps species-group of the genus Eospilarctia Kôda, 1988 \(Lepidoptera, Erebidae, Arctiinae\) 817-835](#)