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Some notes about *Acerbia alpina* with the description of a new subspecies, *A. alpina severa*

(Lepidoptera, Arctiidae)

by

AIDAS SALDAITIS & POVILAS IVINSKIS

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Summary: Differences between the subspecies *Acerbia alpina alpina, A. alpina sibirica*, and *A. alpina johanseni* are presented and a new subspecies *A. alpina severa* subspec. nov. (type locality: Kodar, Siberia, Russia) is described. Also, this is the first time that the preimaginal stages of *A. alpina sibirica* are described as well as biological data are presented.

Introduction

Acerbia alpina is one of the rarest species of the family Arctiidae. In the collections of the world museums, it was represented by single individuals for quite a long time (SATOVALTA, 1963). After the collaboration with private collectors and museums, the authors received abundant collection material of this species for research. This enabled them to investigate morphological peculiarities of this species from different areas and to assess previously described and synonymized systematic taxa. SATOVALTA (1963, 1980) presented differences of imaginal and preimaginal stages of *A. alpina* from Lapland, Siberia, and Alaska populations. Unfortunately, he considered the indicated differences insufficient for the recognition of subspecies status. DUBATOLOV (1996) supported the opinion of SATOVALTA. MURZIN (2003) recognized *A. alpina* from Altai Mts. as *A. alpina sibirica*, but the population of Alaska is considered by him as subspecies *A. alpina johanseni*. He presented these taxa in his work with no comments.

Acerbia alpina was described from Lapland by QUENSEL in 1802 from a single female type, which is deposited in the Swedish Nature History Museum in Stockholm (SATOVALTA, 1963). In 1927, verifying *Acerbia alpina*, BANG-HAAS separated the subspecies *Acerbia alpina alpina* from Lapland and Siberia, *Acerbia alpina sibirica* from the Altai Mts., and *Acerbia alpina johanseni* from North Alaska.

After the investigation of the material at hand and analysis of the publications about *Acerbia alpina*, we state that *Acerbia alpina* comprises 4 subspecies in its range (fig. 1).

Material studied

1. *Acerbia alpina alpina* QUENSEL: 1 ♀, Fennia, Le. Enl: Kilpisjarii, ex. larva, XI.1978, O. SOTAVALTA, S. KORPELA, coll. T. WITT.
2. *Acerbia alpina alpina* QUENSEL: 1 ♀, Finland, Urtasparta, ex. larva, 1977, leg. KORPELA, coll. T. WITT.

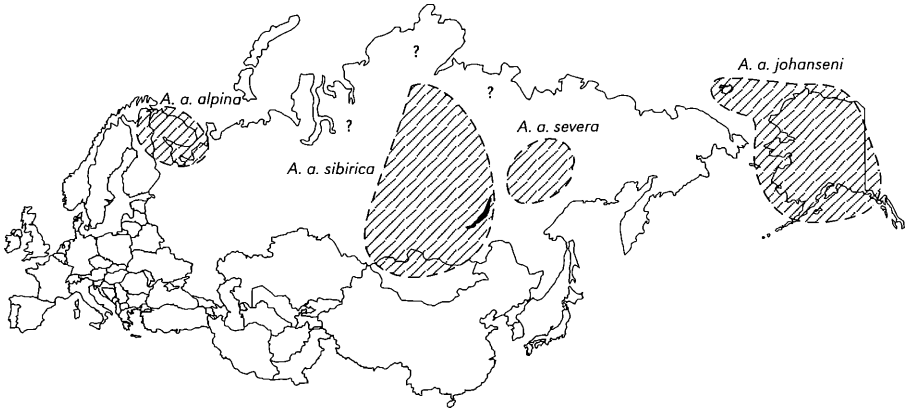

Fig. 1: Distribution map of *Acerbia alpina* QUENSEL; ? – unknown subspecies.

3. *Acerbia alpina alpina* QUENSEL: 3 ♂♂, 2 ♀♀: Schwedisch Lappland, Umg. Abisko, 8.–22.VII. 2000, H–1200 m, leg. HEINZ FISCHER, coll. H. FISCHER.

1. *Acerbia alpina sibirica* O. BANG-HAAS: 1 ♀, Russia, S.W. Tuva, West Tanuola Mts., Sagly River Valley, 5.–15.VI.2003, h-2700 m, S. VASCHENKO [VASHCHENKO] leg., coll. A. SALDAITIS.
2. *Acerbia alpina sibirica* O. BANG-HAAS: 13 ♂♂, 8 ♀♀: Russia, S.W. Tuva, West Tanuola Mts., Sagly River Valley, 20.VIII.–10.IX.2003, h-2700 m, ex. Ovo, S. VASCHENKO [VASHCHENKO] leg., coll. A. SALDAITIS.
3. *Acerbia alpina sibirica* O. BANG-HAAS: 6 ♂♂, 2 ♀♀: Russia, Burjatia, [Buryatia] – Mondy env., 03.VI.2002, h-2400 m, ex. ovo, DUZJ [S. DUZ] and R. MISHUSTIN leg., coll. A. SALDAITIS.
4. *Acerbia alpina sibirica* O. BANG-HAAS: 5 ♂♂, 1 ♀: Russia, S. Siberia, E. Sajan, Mondy env., 5.–8.VI.2002, R. MISHUSTIN leg., coll. T. WITT.
5. *Acerbia alpina sibirica* O. BANG-HAAS: 5 ♂♂, 5 ♀♀: Russia, Burjatia [Buryatia], East Sajan Mts., Mondy env., VI.2001, ex. ovo, V. KARDASHOV leg., coll. A. SALDAITIS.
6. *Acerbia alpina sibirica* O. BANG-HAAS: 1 ♂: Chulugaischa [Khulugaisha], Mondy, Sajan mont., Burjat [Buryatia] rep., h-2800 m, ende Juni 1926, coll. T. WITT.
7. *Acerbia alpina sibirica* O. BANG-HAAS: 2 ♂♂, 3 ♀♀: Chulugaischa [Khulugaisha], Mondy, Sajan mont., Burjat rep., h-3100 m, Juli 1926, coll. T. WITT.
8. *Acerbia alpina sibirica* O. BANG-HAAS: 2 ♂♂: Khulugaischa [Khulugaisha], Mts. Sajan, 8. Jul. 1936, coll. T. WITT.
9. *Acerbia alpina sibirica* O. BANG-HAAS: 1 ♂: Siberia, Burjatia [Buryatia], Barguzin Mts., Kedrovo [Kedrovoye Lake], h-1900–2000 m, 28.–30.VI.1996, S. CHURKIN leg., coll. T. WITT.
10. *Acerbia alpina sibirica* O. BANG-HAAS: 1 ♂: Siberia, Burjatia [Buryatia], Barguzin Mts., Kedrovo vill., h-1900–2000 m, 28.–30.VI.1996, S. CHURKIN leg., coll. A. SALDAITIS.
11. *Acerbia alpina sibirica* O. BANG-HAAS: 1 ♀: Siberia, Chita reg., Sokhondo Berg, h-2500 m, 9.VII.1997, L. KOSTJUK, O. KOSTJUK, A. BIDZILA leg., coll. T. WITT.

12. *Acerbia alpina sibirica* O. BANG-HAAS: 1 ♂: Asia centr., Altai Mt., Aktash, H-900 m, 25.VI. 1992, ex. coll. KRUSEK, coll. T. WITT.
13. *Acerbia alpina sibirica* O. BANG-HAAS: 2 ♂♂, 1 ♀: Altai Mts., Ak-Tash [Aktash] , h-1800 m, 20.VII.1992, ex. larva, coll. T. WITT.
14. *Acerbia alpina sibirica* O. BANG-HAAS: 1 ♂, 1 ♀: Altai, Aktash [Aktash], h-2000 m, 20.VII. 1992, S. KUNITZYN leg., coll. T. WITT.
15. *Acerbia alpina sibirica* O. BANG-HAAS: 1 ♂: S. Altai [Kazakhstan], Sarym-Sakty Mts, Upper stream Sarym-Sakty River, 10 km. S. Katon-Karagai vill. h-2500 m, K. KOLESNICHENKO leg., coll. S. CHURKIN.
16. *Acerbia alpina sibirica*: North Sibiria Putorana Plateau SE Lama L. 700-900 m, 03.VIII. 2003, S. SALUK leg., coll. S. CHURKIN.

1. *Acerbia alpina johanseni* O. BANG-HAAS: 1 ♀, Russia, Wrangel isl., Mamontovo env., 17.-27.VII.1986, coll. H. FISCHER.
2. *Acerbia alpina johanseni* O. BANG-HAAS: 1 ♂, 1 ♀: Russia, Wrangel isl., Mamontovaia Bay, 13.-25.VI.1992, coll. A. SALDAITIS.

1. *Acerbia alpina severa* subspec. nov., Paratypus ♀: Chita reg. (Russia, Siberia), Kodar Mts., Leprindo Lake, 6.-15.VII.2002, h-1800 m, coll. S. CHURKIN.
2. *Acerbia alpina severa* subspec. nov., Paratypus 1 ♀: Chita reg. (Russia, Siberia), Kodar Mts., Leprindo Lake, 6.-15.VII.2002, h-1800 m, coll. VASILCHENKO YU.
3. *Acerbia alpina severa* subspec. nov., Holotypus ♀: Chita reg. (Russia, Siberia), Kodar Mts., near Sul'ban River, 10.-17.VII.1997, h-1600-1900 m, CHURKIN S. leg., coll. T. WITT.
4. *Acerbia alpina severa* subspec. nov., Paratypus 1 ♀: Yakutia (Russia, Siberia), Suntar-Chayata Mts., Chandyga [Khandyga] distr., VII.1993, NAGLIS ŠYVIS leg., coll. P. KAUTT.

In total: 45 ♂♂ and 33 ♀♀.

Acerbia alpina alpina QUENSEL, 1902

The length of the wing is 22 mm.
The subspecies is characterized by a large dark basal spot on its hindwings. The ground colour of the hindwings is mostly red (col. pl. V, fig. 1; col. pl. V, figs. 8-10).

Genitalia
Male. The saccus is round without a pointed process (fig. 2a). The cucullus is ½ the sacculus length. The cucullus in the apical part with a fold, which looks like a lateral process when viewed laterally. The sacculus on the dorsal side has a fold extending the half length of the cucullus. The transtilla is massive, and ½ of its length is covered with long spines. Its ventral side is membraneous with transparent spines. The juxta is without a conspicuous process and spines. The aedeagus (fig. 2b) is long.

Female. The lack of material prevented our investigation.

The subspecies is distributed in the polar region of the Palearctic. We have studied individuals of this subspecies from Scandinavia. In addition, SATOVALTA (1963) and DUBATOLOV (1996) indi-

cate the Urals, Yamal Peninsula and Taimyr Peninsula. SATOVALTA (1980) gives a detailed description of the preimaginal stages of this subspecies from Lapland.

Acerbia alpina sibirica BANG-HAAS, 1927

The length of the wing is 17–21 mm.
It differs from the nominative subspecies with regard to the reduced dark basal spot on the hindwings and also by the ground colour of the hindwings which is orange-red. The ground colour of some individuals is pale yellow (col. pl. V, figs. 3–6; col. pl. VI, figs. 4–9).

Genitalia
Male. *A. alpina alpina* is dfferent according to the sacculus which has a reduced dorsal and hardly visible patch. Less than ½ of the transtilla is covered with spines. The saccus is narrowing with a round process. The juxta has a large blunt process on the apex (figs. 3a, 4a). The aedeagus is longer (figs. 3b, 4b).
Female. Segment 9 is narrow with wide short apophyses. The lamela postvaginalis is very large with a great cleft process. The lamella antevaginalis is narrow, laterally with small rounded apexes. The ductus bursae is sclerotized, short, with inconspicuous cestum. The bursa has two round and spiny signa (fig. 6).

Caterpillar
Acerbia alpina sibirica larvae are of two colour types. The colour of caterpillars of the Tuva population is yellow-black, yellow being predominant. Sides are brown. Caterpillars of the Mondy population are black and grey (col. pl. VII, figs. 1–5; col. pl. VII, figs. 10–15). The caterpilllars of Tuva and Mondy populations differ from black-yellow *Acerbia alpina alpina* caterpillars by brown hair on their heads (SATOVALTA, 1980) and from *A. alpina johanseni* caterpillars (GIBSON, 1920), which have yellow-brown hair.
The skin is black. Anterior hair of segment 1 (on the head) is brown, legs are black, claws are dark brown.

Pupa
20–24 mm in length. Black-brown, black, shining. The cremaster is massive, rough, of equal width lengthwise, with more than 40 divided bunches of long, slender and brown bristles

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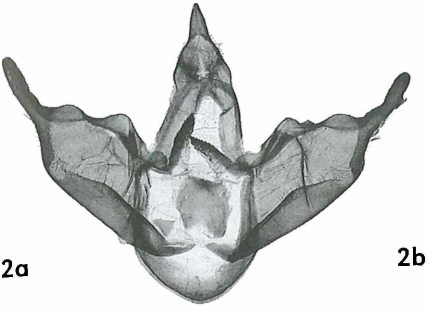
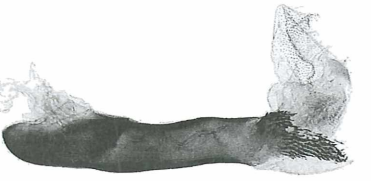
Fig. 2: Male genitalia of *Acerbia alpina alpina* QUENSEL; a – genitalia ventral view, b – aedeagus. Schwedisch Lappland, Umg. Abisko, 8.–22.VII.2000, H–1200 m, leg. HEINZ FISCHER, coll. H. FISCHER.
Fig. 3: Male genitalia of *Acerbia alpina sibirica* O. BANG-HAAS; a genitalia ventral view, b – aedeagus. S. Altai (Russia, Siberia), Sarym-Sakty Mts, Upper stream Sarym-Sakty River, 10 km. S. Katon-Karagai vill. 2500 m, K. KOLESNICHENKO leg., coll. S. CHURKIN.
Fig. 4: Male genitalia of *Acerbia alpina sibirica* O. BANG-HAAS, a genitalia ventral view, b – aedeagus. Russia, Burjatia [Buryatia], Mondy env., 10.VI.2001, ex. ovo, V. KARDASHOV leg., coll. A. SALDAITIS.
Fig. 5: Male genitalia of *Acerbia alpina johanseni* O. BANG-HAAS, a – genitalia ventral view, b – aedeagus. Russia, Wrangel isl., Mamontovaia Bay, 13.–25.VI.1992, coll. A. SALDAITIS.



2a



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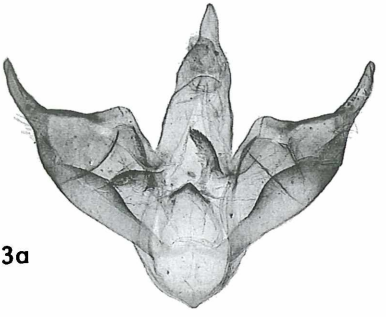
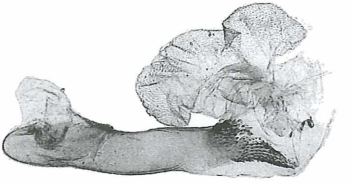


3a



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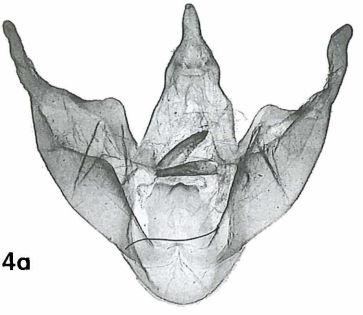
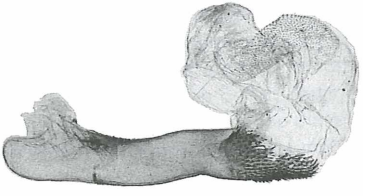


4a



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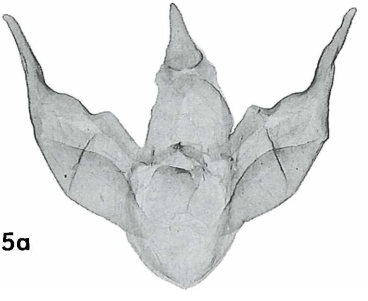
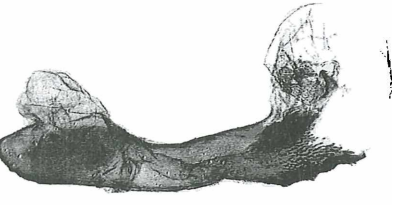


5a



5b

curved or hooked at the end. The end of the cremaster is rounded, ventrally uneven rough, dorsally with deep furrows that apically separate aggregations of hooks (fig. 9a, b, c). *A. a. sibirica* pupa differs from *Acerbia alpina alpina* pupa (fig. 9a, b, c) described by SATOVALTA according to the non-widening cremaster towards the tip and brown bristles.

Cocoon

17–18 × 27–32 × 15 mm. Thin and made up of two layers, oval, grey-white, transparent, mixed with larval hair of which black is markedly predominant, the pupa is readily visible (col. pl. VII, fig. 6; col. pl. VII, figs. 7–9).

We think that these features are sufficient to confirm the correctness of the subspecies *A. alpina sibirica* separated by BANG-HAAS.

Biology

SATOVALTA (1980) mentioned that "BANG-HAAS (1927) collected a number of specimens at Chulugaischa, near Mondy, the Sayan mountains, Buryat Republic, USDR, in 1925 and 1926, and apparently succeeded in ex-ovo rearing" However, no descriptions of the early stages appeared in his published papers.

According to R. MISHUSTIN and S. VASHCHENKO (personal comments), *Acerbia alpina sibirica* prevails in wet areas of the mountainous tundra with stones inserts, at an altitude of 2700–2800 m. *Acerbia alpina sibirica* occurs in the Bargouzin Mts. at similar altitude in stony slopes of tundra, excluding damp areas of tundra (S. CHURKIN, pers. comm).

A female was found in Tuva on 8th June, 2003 and laid eggs until 15th June, 2003. During that time 370 eggs were laid (we are not sure if it did not lay any eggs before). During the first day the female laid about 100 eggs. Caterpillars hatching from the eggs were polyphagous. They fed on *Taraxacum, Sonchus, Urtica, Trifolium, Vicia cracca* L., but mostly preferred *Pisum* and *Anethum*. When brought to the Ukraine, the caperpillars ate *Prunus domestica* L., *Cerasus* and *Armeniaca* leaves, they fed on *Plantago* unwillingly and did not eat *Robinia*.

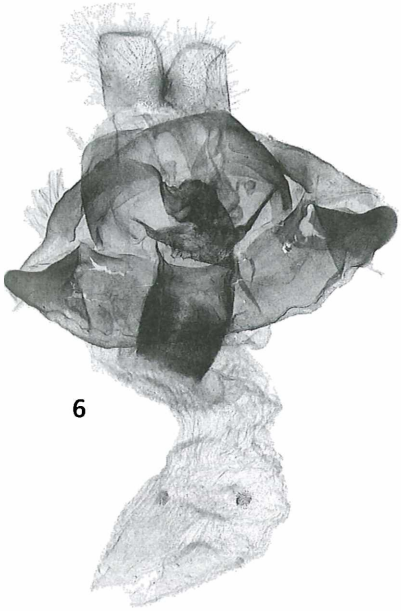
8 instars of the caterpillars were designated and caterpillars moulted 7 times. The duration of I–IV instars is 5–6 days; V–VI instars – 7–8 days; VIII instar – 10 days. The intervals between the instars depended on the temperature and abundance of food. The cocoon stage lasted for 10–15 days. In the Ukraine, the imagines hatched from the end of August until the end of September. It is likely, that nearly adult caterpillars hibernate in natural environment, and become cocoons in spring (R. MISHUSTIN and S. VASHCHENKO, pers. comm.).

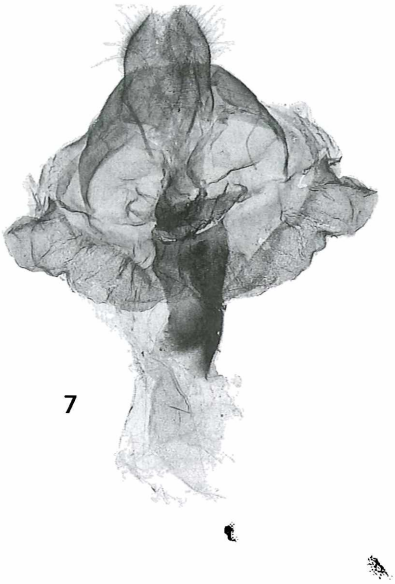
Parasites

Two cocoons were parasitized by *Gonia capitata* DE GEER, 2 ♀♀, Tachinidae, Diptera (det. S. PAKALNIŠKIS).

Distribution

We studied individuals of this subspecies from the southern Siberian mountains: the Altai Mts., West Tanuola Mts., Barguzin Mts., East Sajan mountain system, the Putorana Plateau. The individual from Putorana Plateau slightly differs from typical *A. alpina sibirica*. Its forewings are covered with white tiny spots (such pattern is typical to *A. alpina johanseni*), whereas hindwings do not differ from those of *A. alpina sibirica*. Only one individual is known from this area. In the future, with accumulation of more material, the systematic status of *A. alpina* can be specified.





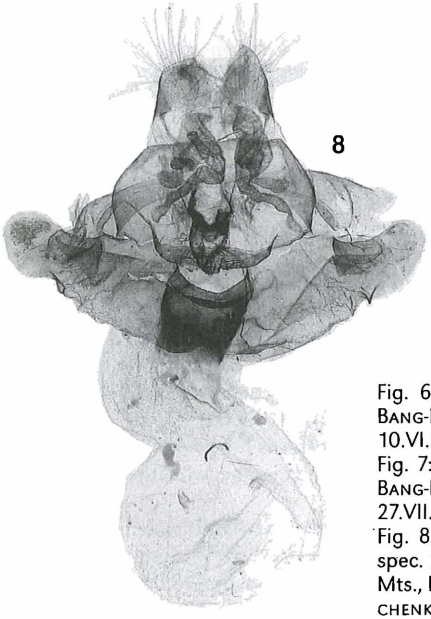


Fig. 6: Female genitalia of *Acerbia alpina sibirica* O. Bang-Haas. Russia, Burjatia [Buryatia], Mondy env., 10.VI.2001, ex.ovo, V. Kardashov leg, coll. A. Saldaitis.
Fig. 7: Female genitalia of *Acerbia alpina johanseni* O. Bang-Haas. Russia, Wrangel isl., Mamontovo env., 17.–27.VII.1986, coll. H. Fischer.
Fig. 8: Female genitalia of *Acerbia alpina severa* subspec. nov., Holotypus. Chita reg. (Russia, Siberia), Kodar Mts., Leprindo Lake, 6.–15.VII.2002, h-1800 m, coll. Vasilchenko Yu.

Dubatolov (1966) also points out North Mongolia; Satovalta (1965) indicates "USSR: top of Mt. Great Tuk-san, Yablonovoy Mts. (10.VII.) 1914? Touva, Verchovia" This locality is possibly erraneous, because the Yablonovoy Mts. are located not in Tuva.

Acerbia alpina johanseni Bang-Haas, 1927

The length of the wing is 19–22 mm.
It differs from the nominate subspecies according to the reduced basal spot on the hindwings. Spots marking the light pattern of the hindwings are yellow-white, nearly white, whereas that of the nominate subspecies are yellow (col. pl. I, fig. 7; col. pl. VI, fig. 10). The respective spots of *A. alpina sibirica* are lemon yelow. The ground colour of the hindwings is more often yellow, whereas that of *A. alpina alpina* is red and that of *A. alpina sibirica* is orange yellow.

Genitalia
Male. The valva is elongated. The cucullus is narrow and pointed at the apex. It is nearly twice as long as that of *A. alpina alpina* and *A. alpina sibirica*. The apex of the transtilla with spines. The wall of the juxta has a few short spines (fig. 5).

Female. The lamella postvaginalis has a double fold in its central part, the lamella antevaginalis possesses short lateral patches. The apophysis anterioris is wide and short (fig. 7).

Gibson (1920) indicates that the brown-yellow hair of the caterpillars of this subspecies distinguishes them from yellow-black *A. alpina alpina* caterpillars as well as from *A. alpina sibirica* caterpillars that are yellow-black, brown or grey-black.
We suggest that the features of genitalia structure and caterpillars themselves are sufficient to confirm the correctness of the subspecies *A. alpina johanseni* separated by Bang-Haas.

Our investigated individuals from Wrangel Island match the description of the suspecies by Bang-Haas. We think that the population living in Wrangel Island should be attributed to subspecies *A. alpina johanseni*. Satovalta invoking Gibson's (1920) authority, presents peculiarities of this subspecies, though in his opinion differences are still unsufficient for the complete investigation of this subspecies, and synonimizes it with *Acerbia alpina alpina*. Dubatolov (1996) ascribed the individuals from Wrangel Island to the nominate subspecies without any explanations.
The lepidoptera fauna of Wrangel is only slightly investigated - but in some available publications it was shown (outlined) that at least in some aspects this fauna is more related to that of Alaska than to the neighbouring part of continental Russian Far East. The distribution of *Grammnia philipiana* Fergusson (Arctiidae) (Saldaitis & Ivinskis, 2001), *Colias nastes* Boisduval (Pieridae) (Churkin et al., 2001) as well as of other species is the evidence for this. Probably, it is based on the history of the whole region and connected with the existance of Beringia land during the glazed period.

Distribution
We studied individuals of this subspecies from Wrangel Island. Gibson (1920) also indicates North Alaska.

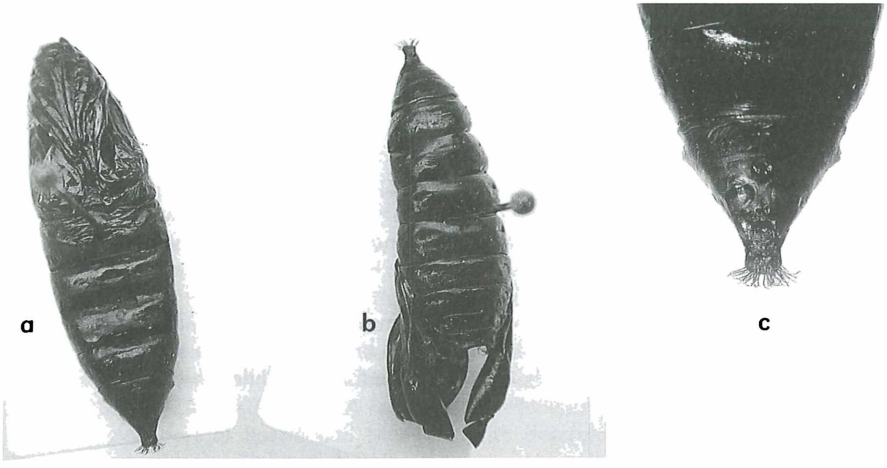


Fig. 9: *Acerbia alpina sibirica* pupal shell: a - ventral side, b - dorsal side, c - cremaster.

***Acerbia alpina severa* subspec. nov.**

Type material
Holotypus ♀: Chita reg. (Russia, Siberia), Kodar Mts., Leprindo Lake, 6.-15.VII.2002, h-1800 m, VASILCHENKO Yu. leg., in coll. Museum T. WITT, Munich.
Paratypes: 1 ♀, Chita reg. (Russia, Siberia), 50 km. SWW. from Novaya Chara train station, Kodar Mts., near Sul'ban River, 10.-17.VII.1997, h-1900-2200 m, CHURKIN S. leg., coll. S. CHURKIN. 1 ♀, Chita reg. (Russia, Siberia), Kodar Mts., Leprindo Lake, 6.-15.VII.2002, h-1800 m, VASILCHENKO Yu. leg, coll. VASILCHENKO Yu. 1 ♀, Yakutia (Russia, Siberia), Suntar-Chayata Mts., Chandyga [Khandyga] distr., VII.1993. NAGLIS ŠYVIS leg., coll. P. KAUTT.

Description
Female. The length of the forewing of the holotype is 25 mm. The pattern of the wings is typical to *Acerbia alpina*. However, the obtained individuals are much bigger. Light spots on the forewing are reduced to a greater extent than that of the nominate or other *Acerbia alpina* subspecies. They are pale yellow. Black colour dominates on the hindwings, the red colour obtained only on the edges of the hindwings. The body is black (col. pl. VI, fig. 1).

The male is unknown. In the future, upon finding males, the systematic status of this taxon might change.

Female. Paratypes. The length of the forewing is 25-26 mm. One individual from Jakutia looks like the holotype, only the spots on the forewings are nearly white. Another two paratypes from Kodar exhibit forewings equal to the holotype, though the hindwings have more red colour (col. pl. VI, figs. 2, 3).

Female Genitalia. The lamella postvaginalis with a double patched membraneous structure. Segment IX is laterally markedly narrowing with hardly visible apophyses. The lamella antevaginalis laterally is markedly narrowing with cephalic apices. The ductus bursae is short and wide. The bursa has two large, oval, and spiny signa and one small signum of the same kind (fig. 8).

Biology
All individuals were found during day time. The one female from Kodar Mts. was found under a stone in day time (S. CHURKIN pers. comm). Preimaginal stages are not known.

Biotope
Acerbia alpina severa lives in biotopes which are natural to other *A. alpina* subspecies. One paratype was found in the Kodar Mts. at an altitude of 2000 m in bare stony tundra areas (S. CHURKIN, pers. comm.) (col. pl. VIII). Other individuals were found a bit lower (1800 m) in stony tundra areas.

Discussion
Acerbia alpina severa subspec. nov. is distinguished from the nominate and other *Acerbia alpina* subspecies by its size. The average forewing length of *Acerbia alpina* is 20 mm, whereas that of *A. a. severa* is 26 mm. Also, it differs by the dominating black colour of the body, hindwings and forewings. The genitalia of females differ by a very short and wide ductus bursae, a wide segment IX, a very developed lamella antevaginalis with wide cephalic lateral prosesses twice as wide as that of the other two compared subspecies. *Acerbia a. sibirica* is distinct from *Acerbia a. johanseni* according to wider patches of lamella postvaginalis and cestum at the base of bursae.
DUBATOLOV in his work (1996) mentions *Acerbia alpina* from the Stanovoi Mts. without presenting more detailed data. We believe that *Acerbia alpina* from this locality should belong to the subspecies *A. alpina severa*.
Also, DUBATOLOV on his website presents the photo of a *Acerbia alpina*-♀ from Jakutia. We think that this specimen also belongs to the newly described subspecies. FAJÈIK (2003, colour table XXXVII nr. 749) displays the photo of one female from Jakutia, which also corresponds to the subspecies described here. We believe, that the distribution of the new subspecies is similar to that of some Rhopalocera species, e. g. *Plebeius (idas) tancrei* GRAESER (CHURKIN & ZHDANKO, 2003) and *Boloria banghaasi* SEITZ (CHURKIN & BOGDANOV, 2003).

Etymology
The subspieces is named *severa* which in latin means severe, hardened. This name is given to the new subspecies because it is found in the Siberian mountains with extreme climatic conditions.

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We are thankful to Mr. HEINZ FISCHER, Mr. PETER KAUTT and Mr. THOMAS WITT for the provided access to their collection material and the photos. We wish to thank Mr. SERGEI V. CHURKIN for the possibility to use his collection material, for zoogeographical and biological information and the photos made. Also, we would like to express our gratitude to Mr. R. MISHUSTIN and Mr. S.

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Explanation of colour plate V (p. 161):

Fig. 1: *Acerbia alpina alpina* QUENSEL, ♀, Fennia, Le. Enl: Kilpisjarii, ex. larva, XI.1978, O. SOTAVALTA, S. KORPERA, coll. T. WITT.
Fig. 2: *Acerbia alpina alpina* QUENSEL, ♀, Finland, Urtasparta, ex. larva, 1977, leg. KORPELA, coll. T. WITT.
Fig. 3: *Acerbia alpina sibirica* O. BANG-HAAS, ♂, Altai Mts. (Russia, Siberia), Ak-Tash, h-1800 m, 20.VII.1992, ex. larva, coll. T. WITT.
Fig. 4: *Acerbia alpina sibirica* O. BANG-HAAS, ♀, Altai Mts. (Russia, Siberia), Ak-Tash, h-1800 m, 20.VII.1992, ex. larva, coll. T. WITT.
Fig. 5: *Acerbia alpina sibirica* O. BANG-HAAS, ♂, Russia, S. Siberia, E. Sajan, Mondy env., 5.-8.VI.2002, MISHUSTIN leg., coll. T. WITT.
Fig. 6: *Acerbia alpina sibirica* O. BANG-HAAS, ♂, Russia, S. Siberia, E. Sajan, Mondy env., 5.-8.VI.2002, MISHUSTIN leg., coll. T. WITT.
Fig. 7: *Acerbia alpina johanseni* O. BANG-HAAS, ♀, Russia, Wrangel isl., Mamontovaia Bay, 13.-25.VI.1992, coll. H. FISCHER.
Fig. 8: *Acerbia alpina alpina* QUENSEL, ♀, white form, Schwedisch Lappland, Umg. Abisko, 8.-22.VII.2000, h-1200 m, leg. HEINZ FISCHER, coll. H. FISCHER.
Fig. 9: *Acerbia alpina alpina* QUENSEL, ♀, Schwedisch Lappland, Umg. Abisko, 8.-22.VII.2000, h-1200 m, leg. HEINZ FISCHER, coll. H. FISCHER.
Fig. 10: *Acerbia alpina alpina* QUENSEL, ♂, Schwedisch Lappland, Umg. Abisko, 8.-22.VII. 2000, 1200 m, leg. HEINZ FISCHER, coll. H. FISCHER.
Picture made by THOMAS WITT (figs. 1-6) and HEINZ FISCHER (figs. 7-10).

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Explanation of colour plate VI (p. 163):

Fig. 1: *Acerbia alpina severa* subspec. nov., Holotypus ♀, Chita reg. (Russia, Siberia), Kodar Mts., Leprindo Lake, 6.-15.VII.2002, H-1800 m, VASILCHENKO YU. leg., in coll. Museum T. WITT, Munich.
Fig. 2: *Acerbia alpina severa* subspec. nov., Paratypus ♀, Chita reg. (Russia, Siberia), Kodar Mts., near Sul'ban River, 10.-17.VII.1997, h-1600-1900 m, CHURKIN S. leg. coll. S. CHURKIN.
Fig. 3: *Acerbia alpina severa* subspec. nov., Paratypus ♀, Yakutia (Russia, Siberia), Suntar-Chayata Mts., Chandyga distr., VII.1993, NAGLIS ŠYVIS leg., coll. P. KAUTT.
Fig. 4: *Acerbia alpina sibirica* O. BANG-HAAS, ♂, S. Altai (Russia, Siberia), Sarym-Sakty Mts, Upper stream Sarym-Sakty River, 10 km. S. Katon-Karagai vill., h-2500 m, K. KOLESNICHENKO leg.
Fig. 5: *Acerbia alpina sibirica* O. BANG-HAAS, ♀, dark form, Russia, Burjatia, Mondy env., 03.VI. 2002, h-2400 m, ex. ovo, DUZJ and MISHUSTIN leg.
Fig. 6: *Acerbia alpina sibirica* O. BANG-HAAS, ♀, Russia, S.W. Tuva, West Tanuola Mts., Sagly River Valley, 5.-15.VI.2003, h-2700 m, ex. ovo, VASCHENKO leg.
Fig. 7: *Acerbia alpina sibirica* O. BANG-HAAS, ♂, Russia, S.W. Tuva, West Tanuola Mts., Sagly River Valley, 5.-15.VI.2003, h-2700 m, ex. ovo, VASCHENKO leg.

	3		7	10
			6	
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		5		
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Fig. 8: *Acerbia alpina sibirica* O. BANG-HAAS, ♂, Russia, Burjatia, Mondy env., 03.VI.2002, h-2400 m, ex. ovo, DUZJ and MISHUSTIN leg.
Fig. 9: *Acerbia alpina sibirica* O. BANG-HAAS, ♀, Russia, Burjatia, Mondy env., 03.VI.2002, h-2400 m, ex.ovo, DUZJ and MISHUSTIN leg.
Fig. 10: *Acerbia alpina johanseni* O. BANG-HAAS, ♂, Russia, Wrangel isl., Mamontovaia Bay, 13.-25.VI.1992.
Picture made by AIDAS SALDAITIS.

Explanation of colour plate VII (p. 165):

Acerbia alpina sibirica O. BANG-HAAS: Russia, S.W. Tuva, West Tanuola Mts., Sagly River Valley, 5.-15.VI.2003, h-2700 m, VASCHENKO leg.
Figs. 1-3: caterpillars.
Figs. 4, 5: exuviae from caterpillars.
Fig. 6: cocoon of pupa.
Acerbia alpina sibirica O. BANG-HAAS: Russia, Burjatia, Mondy env., 03.VI.2002, h-2400 m, DUZJ and MISHUSTIN leg.
Figs. 7-9: cocoons.
Figs. 10-15: caterpillars.

1	2	3	4	5	
		6			
		7	8	9	
10	11	12	13	14	15

Explanation of colour plate VIII (p. 167):

Biotope of *Acerbia alpina severa*: Chita reg. (Russia, Siberia), 50 km SWW from Novaya Chara train station, Kodar Mts., near Sul'ban River. S. CHURKIN phot.
Fig. 1: Altitude 1600-1700 m.
Fig. 2: Altitude 1900-2000 m.

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Addresses of the authors

AIDAS SALDAITIS
Bendorëliai 252, Aviþieniø p-tas
Lt-4043, Vilnius reg.
Lithuania

Dr. POVILAS IVINSKIS
Vilnius University, Institute of Ecology
Akademijos str. 2
08412 Vilnius
Lithuania
e-mail: entlab@centras.lt

Colour plate V

SALDAITIS, A. & P. IVINSKIS: Some notes about *Acerbia alpina* with the description of a new subspecies, *A. alpina severa* (Lepidoptera, Arctiidae). – Atalanta **35** (1/2): 91–103.

Fig. 1: *Acerbia alpina alpina* QUENSEL, ♀, Fennia, Le. Enl: Kilpisjarii, ex. larva, XI.1978, O. SOTAVALTA, S. KORPERA, coll. T. WITT.
Fig. 2: *Acerbia alpina alpina* QUENSEL, ♀, Finland, Urtasparta, ex. larva, 1977, leg. KORPELA, coll. T. WITT.
Fig. 3: *Acerbia alpina sibirica* O. BANG-HAAS, ♂, Altai Mts. (Russia, Siberia), Ak-Tash, H–1800 m, 20.VII.1992, ex. larva, coll. T. WITT.
Fig. 4: *Acerbia alpina sibirica* O. BANG-HAAS, ♀, Altai Mts. (Russia, Siberia), Ak-Tash, H–1800 m, 20.VII.1992, ex. larva, coll. T. WITT.
Fig. 5: *Acerbia alpina sibirica* O. BANG-HAAS, ♂, Russia, S. Siberia, E. Sajan, Mondy env., 5.–8.VI.2002, MISHUSTIN leg., coll. T. WITT.
Fig. 6: *Acerbia alpina sibirica* O. BANG-HAAS, ♂, Russia, S. Siberia, E. Sajan, Mondy env., 5.–8.VI.2002, MISHUSTIN leg., coll. T. WITT.
Fig. 7: *Acerbia alpina johanseni* O. BANG-HAAS, ♀, Russia, Wrangel isl., Mamontovaia Bay, 13.–25.VI.1992, coll. H. FISCHER.
Fig. 8: *Acerbia alpina alpina* QUENSEL, ♀, white form, Schwedisch Lappland, Umg. Abisko, 8.–22.VII.2000, H–1200 m, leg. HEINZ FISCHER, coll. H. FISCHER.
Fig. 9: *Acerbia alpina alpina* QUENSEL, ♀, Schwedisch Lappland, Umg. Abisko, 8.–22.VII.2000, H–1200 m, leg. HEINZ FISCHER, coll. H. FISCHER.
Fig. 10: *Acerbia alpina alpina* QUENSEL, ♂, Schwedisch Lappland, Umg. Abisko, 8.–22.VII. 2000, 1200 m, leg. HEINZ FISCHER, coll. H. FISCHER.
Pictures made by THOMAS WITT (figs. 1–6) and by HEINZ FISCHER (figs. 7–10).

1	2
3	4
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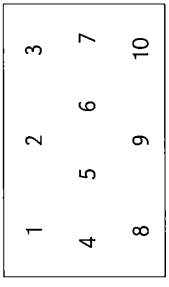
Colour plate V

Colour plate VI

SALDAITIS, A. & P. IVINSKIS: Some notes about *Acerbia alpina* with the description of a new subspecies, *A. alpina severa* (Lepidoptera, Arctiidae). – Atalanta **35** (1/2): 91–103.

Fig. 1: *Acerbia alpina severa* subspec. nov., Holotypus ♀, Chita reg. (Russia, Siberia), Kodar Mts., Leprindo Lake, 6.–15.VII.2002, h-1800 m, VASILCHENKO Yu. leg., in coll. Museum T. WITT, Munich.
Fig. 2: *Acerbia alpina severa* subspec. nov., Paratypus ♀, Chita reg. (Russia, Siberia), Kodar Mts., near Sul'ban River, 10.–17.VII.1997, h-1600–1900 m, CHURKIN S. leg. coll. S. CHURKIN.
Fig. 3: *Acerbia alpina severa* subspec. nov., Paratypus ♀, Yakutia (Russia, Siberia), Suntar-Chayata Mts., Chandyga distr., VII.1993, NAGLIS ŠYVIS leg., coll. P. KAUTT.
Fig. 4: *Acerbia alpina sibirica* O. BANG-HAAS, ♂, S. Altai (Russia, Siberia), Sarym-Sakty Mts, Upper stream Sarym-Sakty River, 10 km. S. Katon-Karagai vill. h-2500 m, K. KOLESNICHENKO leg.
Fig. 5: *Acerbia alpina sibirica* O. BANG-HAAS, ♀, dark form, Russia, Burjatia, Mondy env., 03.VI. 2002, h-2400 m, ex. ovo, DUZJ and MISHUSTIN leg.
Fig. 6: *Acerbia alpina sibirica* O. BANG-HAAS, ♀, Russia, S.W. Tuva, West Tanuola Mts., Sagly River Valley, 5.–15.VI.2003, h-2700 m, ex. ovo, VASCHENKO leg.
Fig. 7: *Acerbia alpina sibirica* O. BANG-HAAS, ♂, Russia, S.W. Tuva, West Tanuola Mts., Sagly River Valley, 5.–15.VI.2003, h-2700 m, ex. ovo, VASCHENKO leg.
Fig. 8: *Acerbia alpina sibirica* O. BANG-HAAS, ♂, Russia, Burjatia, Mondy env., 03.VI.2002, h-2400 m, ex. ovo, DUZJ and MISHUSTIN leg.
Fig. 9: *Acerbia alpina sibirica* O. BANG-HAAS, ♀, Russia, Burjatia, Mondy env., 03.VI.2002, h-2400 m, ex.ovo, DUZJ and MISHUSTIN leg.
Fig. 10: *Acerbia alpina johanseni* O. BANG-HAAS, ♂, Russia, Wrangel isl., Mamontovaia Bay, 13.–25.VI.1992.
Picture made by AIDAS SALDAITIS.

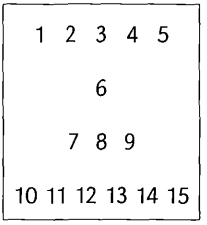


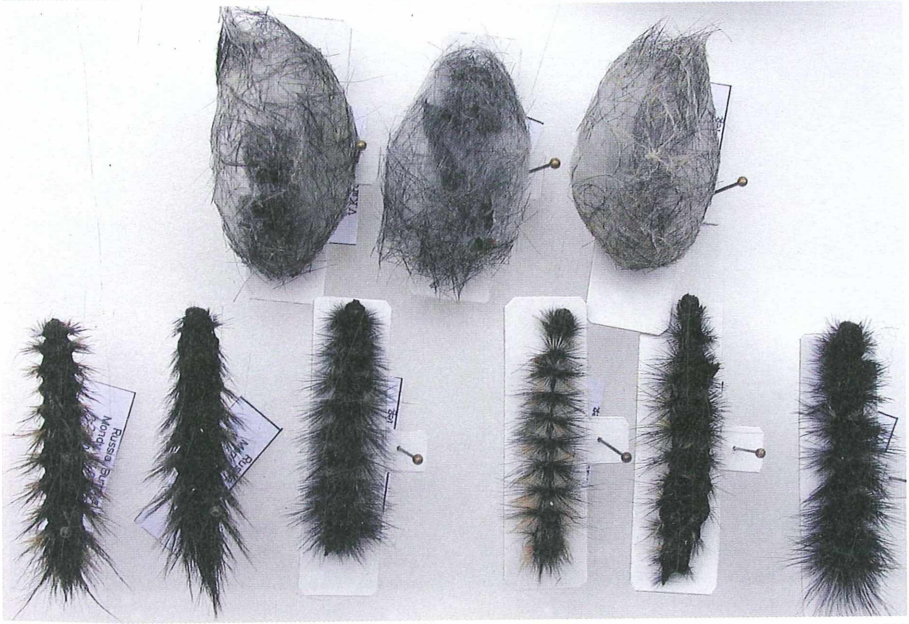
Colour plate VI

Colour plate VII

SALDAITIS, A. & P. IVINSKIS: Some notes about *Acerbia alpina* with the description of a new subspecies, *A. alpina severa* (Lepidoptera, Arctiidae). - Atalanta **35** (1/2): 91–103.

Acerbia alpina sibirica O. BANG-HAAS: Russia, S.W. Tuva, West Tanuola Mts., Sagly River Valley, 5.–15.VI.2003, h-2700 m, VASCHENKO leg.
Figs. 1–3: caterpillars.
Figs. 4, 5: exuviae from caterpillars.
Fig. 6: cocoon of pupa.
Acerbia alpina sibirica O. BANG-HAAS: Russia, Burjatia, Mondy env., 03.VI.2002, h-2400 m, DUZJ and MISHUSTIN leg.
Figs. 7–9: cocoons.
Figs. 10–15: caterpillars.





165

Colour plate VII

Colour plate VIII

SALDAITIS, A. & P. IVINSKIS: Some notes about *Acerbia alpina* with the description of a new subspecies, *A. alpina severa* (Lepidoptera, Arctiidae). – Atalanta **35** (1/2): 91–103.

Biotope of *Acerbia alpina severa*: Chita reg. (Russia, Siberia), 50 km SWW from Novaya Chara train station, Kodar Mts., near Sul'ban River. S. CHURKIN phot.
Fig. 1: Altitude 1600–1700 m.
Fig. 2: Altitude 1900–2000 m.

Colour plate VIII