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Michael Fibiger

29 June 1945 – 16 February 2011

"*This is unfortunately my goodbye to you, we have had a splendid life together, and I wish you all the best. Thank you very very much. Michael.*" This is the e-mail message which we received from Michael the day before he passed away. Better than any words, both the timing and content of the message fully reflect the extraordinary spirit of Michael. Ever calm, even at the very end, an absolute master of the situation even with deteriorating health, joyful for the life he had, and thankful to the companions who had the chance to share with him the passion for moths. We all recall his strength during the preparation of the 12th volume of *Noctuidae Europaeae*, when he kept on working on moths daily, and at the same time describing to us the awful things that not only the disease, but also the technology and medication were doing to his body. And he never complained, rather he kept encouraging us…

Noctuidae Europaeae is one of the few multi-volume series on Lepidoptera ever to achieve completion (the last, 13th volume, is on the way with Michael's guidelines for incorporating the major changes in systematics). Fully conceived by him, the determination with which Michael pursued its realization is the only reason for the completion of the series. In addition to writing three volumes in full and a great many chapters, the organizational work which he performed behind the scenes was extraordinary. But it was not just a matter of hard work, as tough as it could be. Rather, it was a result of

Michael and Mariann Fibiger in Villa Adriana (Tivoli, Roma) during Easter 2010.

his special aptitude in establishing good relationships with people, which in a short time led him to be at the crossroad of the world noctuidologist community. After first making contact with him, it would have been difficult not to remain fascinated by his plain, straightforward talking which soon got to the heart of any issue, and of people. Another one of Michael's remarkable features was the trust he placed in people, and people could perceive this confidence he had in them. Professionally he was a psychologist but we do not have any doubts that he became a psychologist because of his personal attitudes and his deep empathy with people. Interestingly, he once defined his psychology as of "*here and now*". He had specialized in managing a vast array of emergency situations from treating survivors soon after an accident to resolving seemingly intractable disputes between employees in a company. Through his professional work, he developed a natural inclination toward solving problems, and after facing harsh disasters in real life, overcoming silly jealousies regarding collecting specimens or scientific rivalries between entomologists was child's play. Michael was thus able to bring together workers from different lepidopterological traditions, establish friendly relationships with a huge number of entomologists, both professional and amateur, and shape a common ground for sharing of information and study material. In passing, it is worth recalling that he was always willing to support anybody with plenty of material from his private collection, literature, advice, useful contacts and suggestions. We would like to emphasize two points: first, in his approach to specimens and collections – he viewed them as objects embedding scientific information which had to be analysed and communicated, otherwise they would have no value. Thus, although not being a professional researcher, his spirit was that of a true man of science. Second, his talents in enabling communication among lepidopterists have been of lasting value. We cannot, for example, underestimate the importance of his "transatlantic" relationship with Donald (Don) J. Lafontaine (Ottawa, Canada). Admittedly, close cooperation between noctuidologists in the northern hemisphere had already started thanks to the efforts of Vladimir S. Kononenko, Kauri Mikkola, and Don, but was essentially dedicated to purely "boreal" matters. With Michael and Don, the cooperation between the two sides of the Atlantic was extended to a great many subjects and, among others, led to common delimitation of Holarctic genera and classification schemes, with particular regard to the 'trifine' groups of the old sense Noctuidae. And, in recent years, the remarkable amount of knowledge accumulated by them provided the basis for two of the keystone papers on the phylogeny

of Noctuoidea, appearing in Esperiana no. 11 (2005) and the Canadian Entomologist no. 138 (2006).

The friendly and cooperative spirit of Michael is self-evident from the long list of works he coauthored with a number of colleagues. Among these we may recall the volumes written with Niels Peder Kristensen (*The Sesiidae (Lepidoptera) of Fennoscandia and Denmark*, 1974), Poul Svendsen (*Danske Natsommerfugle*, 1981; *The Distribution of European Macrolepidoptera, Noctuidae 1*, 1992), and Morten Top-Jensen (*Danske Sommerfugle*, 2009). In addition to these is, of course, *Noctuidae Europaeae* (1990–2011), his *magnum opus* for which Michael was always greatful to the Carlsberg Foundation for its essential financial support. Last but not least, Michael was responsible, with Hermann H. Hacker, for thorough revisions of the checklist of the European Noctuoidea, and for several taxonomic revisions, faunistic and taxonomic papers on the Old World fauna, mostly appearing in the series *Esperiana*. With Vladimir S. Kononenko as editor, Michael contributed to the systematization of knowledge on the Siberian Noctuids with the series *Noctuidae Sibiricae*. Also, after first describing the smallest macrolepidopteran known to this day in 1997, *Micronoctua karsholti* (named in honor of Ole Karsholt for his surprising discovery), Michael was responsible for the detailed, careful work published in four major publications in the journal *Zootaxa* of a totally overlooked group of small-sized noctuoids, the Micronoctuidae, disregarded by workers focused on macromoths because of their micro-like appearance, and by microlepidopterists inasmuch as they were structurally clearly 'macros'!

As every good scientist, Michael met with opposition to some of his scientific thoughts, for example from Herbert Beck on the relevant weight of adult versus larval characters in the classification of Noctuidae, but the polemics, if any, always remained within the boundary of the scientific dialectic between gentlemen and science itself greatly benefited from their contrasting views.

Michael Fibiger was born in Copenhagen on the 29th of June, 1945. From an early age he had developed a strong interest in Lepidoptera, and at the age of 13, he joined the Danish Lepidopterological Society, at the time as the youngest member of the society. Subsequently he joined the Danish Entomological Society and the Societas Europaea Lepidopterologica. In all of these societies he acted at times as a council member, notably in the Danish Entomological Society as the chairman and the SEL as the vice-president. We will never forget his thoughtfulness in stepping down from the latter post when another Dane, N. P. Kristensen, was elected president, in order not to overrepresent a single country in the governing body of our society. Michael deservedly received many tributes, above all from the whole entomological community of his homeland at the Zoological Museum in Copenhagen on the 20th of January, 2011 and by the Linnean Society of London, which in 2011 awarded him the H. H. Bloomer Medal. Of his exceptionally long and rich career in psychology he will be remember for the teaching of several courses, the running of social projects, the coaching and training of students and managers, and the heading of groups, schools, and departments. Michael passed away on the 16th of February, 2011 in Sorø, Denmark, leaving a wonderful family, his wife Mariann and their two sons, Ulrik and Christian. With the assistance of Mariann, Ulrik, and a number of friends, he personally provided

for the return of loans to colleagues and institutions in order to minimize backlog after his passing, and managed the arrangement of his huge collection for its transfer to the Zoological Museum, Danish Museum of Natural History at the Universtiy of Copenhagen, where it is now deposited.

Within such a multifaceted personality it is difficult to single out a single quality which may best summarise what he has left to the community of lepidopterists. There are the sound results of his scientific achievements, there are lessons on how to establish fruitful and long-lasting collaboration between researchers, there is the knowledge and technical expertise he has left to a broad array of workers, pupils, and colleagues. But we would like to emphasize that Michael was after all an amateur lepidopterist, and had he been a professional, facing academic competition for positions or grants, probably he would not have achieved what he did. Totally unaffected by the so-called 'publish or perish syndrome', he published many of his outstanding results without taking into consideration the current ranking of the journal he was selecting for manuscript submission; similary, neither did he like seductive titles for his works. He liked real people, travelling for the discovery of new species, and was interested in real things, as in true moth science.

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Ingvar Svensson

27 July 1919 – 17 February 2011

On his 90th birthday, when his family and colleagues from the Nordic countries gathered to celebrate this happy event, Ingvar Svensson was still enthusiastically engaging in discussions about taxonomy of Lepidoptera. Photo: Hans Karlsson.

Ingvar Svensson was born in Glimåkra, Skåne in the southernmost part of Sweden on the 27th of July, 1919, and he passed away in his sleep at the hospital in Kristianstad on the 17th of February, 2011 after a short illness. He was active as usual until the very end. The day before he died he was planning for next summer's trips and was working on the annual report on Swedish Microlepidoptera, which he had written for the last 38 years! But since his beloved wife Elsa's death in November of 2009, life had become harder and he never fully recovered from this major blow.

As a young boy, in the mid 1930s, Ingvar started collecting butterflies and moths in the rich and beautiful environments of his home area. At an early age he became interested in all animals and plants. This led him to study forestry, completing his formal education after the war in 1946. In the years that followed he was sent to work in many different areas of Sweden, particularly the northern parts. Both while working and in his spare time he made many new remarkable entomological discoveries. He visited and "discovered" many interesting habitats where nobody had ever collected insects before. However, one evening in 1946 he made a different sort of capture, one of criti-

cal importance for his life, when his future wife Elsa was attracted to the light. They rapidly became partners and she gave him unequalled support for the rest of her life. Many of us have met them somewhere in Sweden, Ingvar working in the field and Elsa painting or providing the necessary support.

In February 1953 Ingvar and Elsa settled down in Österslöv, north of Kristianstad, not far from his native village. He then worked as a forest officer for the regional forest authorities until his retirement in 1984. During this period he was able to combine his duties with exploration of remote and less well-known parts of the southern Swedish forests. As a result of his long experience in forestry, Ingvar gradually realized that the clear-cutting method used in Sweden was devastating for the biological diversity and also not compatible with sustainable forestry. He then, with his usual straightforwardness, started strongly advocating alternative practices. This made him less than popular among parts of the industry, but over the years most of his ideas had been shown to be correct.

From the 1950s he had travelled around Sweden every summer, often finding new places where nobody had sampled insects before. He knew his country better than most people and prepared himself carefully for each journey by studying floristic and geological reports on the areas he intended to visit. Soon he discovered his first species new to science. In northern Sweden he found a tineid that was later, in 1953, described as *Tinea bothniella*, alluding to the provinces where he found most of this species' type material.

During the 75 years in which Ingvar collected Lepidoptera, his collection grew to museum-size, containing more than 120,000 exceptionally well-prepared and correctly determined specimens representing more than 3000 species, which are now mostly held by the University of Lund and the Christian-Albrechts-Universität in Kiel. He described 19 species new to science and found further six species that were described by other scientists. He also discovered almost 200 species new to Sweden and recorded more than 2000 species new to different provinces, altogether an unsurpassed accomplishment.

He was extremely rigorous at determining species, both in his own collection and also when he helped colleagues. He would not accept a noteworthy record without carefully examining the specimen in question. He had a rare talent – or intuition – to pick out sibling species, those which others had overlooked. His eye for unusual habitats with interesting flora plus his immense floristic knowledge were a powerful combination which made him an outstanding field entomologist helping him find rare habitats and moths unseen by others. He was also incredibly helpful to less experienced collectors and he willingly joined them when they searched for a specific species. Many of us have heard him saying that "this is a useless plant" if there are no interesting Lepidoptera species feeding on it!

In 2009, while attending the SEL meeting in Cluj, Romania, he was awarded honorary membership in the society, which made him truly happy. He was also an honorary member of several other associations, such as SHILAP in Spain, The Lepidopterological Society in Finland, and The Entomological Society in Lund, Sweden. Ingvar attended most of the SEL meetings over the years. He had a vast network of

colleagues all over the world and was respected as one of the leading taxonomists in the Microlepidoptera with an overview granted only to a privileged few.

A remarkable person with great integrity, an extraordinary eye, and outstanding knowledge of Lepidoptera is no longer with us. We think of Ingvar's great deeds and his family being influenced by his scientific work in different ways, supporting him and joining him in his explorations of life. We miss him greatly!

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Larval head microsculpture in Palaearctic Notodontidae (Noctuoidea) and its significance for the systematics of the family

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Abstract. The larval head microsculpture of each instar of 66 species belonging to 35 genera of Palaeartic notodontids from Ukraine and Far East of Russia (Primorskii krai) was examined with the use of a scanning electron microscope. A comparison with representatives from Lasiocampoidea (Lasiocampidae) and Noctuoidea (Erebidae: Lymantriinae, Arctiinae; Noctuidae) is conducted. Differences in head microsculpture and the transformation during development of different larval instars are discussed. Apomorphic and plesiomorphic states of these characters are also discussed. The results of this study are discussed with reference to recently published classifications of Notodontidae.

Introduction

First studies of head microsculpture in notodontid larvae date back to the last century (Bell 1935, Gardner 1943). A more detailed study of the cranial surface of notodontid larvae was undertaken by Miller (1991). He studied 48 species of notodontid caterpillars that occur in the Palaearctic and the Americas and also examined 13 species from other groups (Doidae; Erebidae: Arctiinae and Lymantriinae; Noctuidae; and Oenosandridae). Miller (1996, 2009a, 2009b) later described the head surface of the Neotropical notodontid caterpillars in the subfamily Dioptinae. Unfortunately, these studies only looked at the final larval instar, making it impossible to draw any conclusions regarding the microsculpture of the larval head as it changes among the different instars.

Materials and Methods

This research is based on material collected in Ukraine and Far East of Russia (Primorskii krai). Eggs were obtained from females captured at light. Hatched larvae were reared to pupae. The epicrania left by caterpillars after moulting, as well as fresh material preserved in alcohol, were studied. The epicranium was examined with a scanning electron microscope (SEM) and a binocular light microscope (MBS 9). The microsculpture of the head of 1st through 5th larval instars belonging to 66 notodontid species from the following genera were studied: *Euhampsonia* Dyar, *Cerura* Schrank, *Furcula* Lamarck, *Uropyia* Staudinger, *Dicranura* Reichenbach, *Harpyia* Ochsenheimer, *Stauropus* Germar, *Cnethodonta* Staudinger, *Fentonia* Butler, *Neopheosia* Matsumura, *Drymonia* Hübner, *Notodonta* Ochsenheimer, *Peridea* Stephens, *Nerice* Walker, *Pheosia*

Hübner, *Leucodonta* Staudinger, *Lophocosma* Staudinger, *Ellida* Grote, *Pheosiopsis* Bryk, *Shaka* Matsumura, *Pterostoma* Germar, *Ptilodon* Hübner, *Lophontosia* Staudinger, *Hagapteryx* Matsumura, *Togepteryx* Matsumura, *Semidonta* Staudinger, *Allodonta* Staudinger, *Epodonta* Matsumura, *Phalera* Hübner, *Spatalia* Hübner, *Gluphisia* Boisduval, *Gonoclostera* Butler, *Pygaera* Ochsenheimer, *Clostera* Samouelle, and *Micromelalopha* Nagano. The taxonomic arrangement of these genera follows Schintlmeister (2008).

In order to clarify the character states and polarity within Notodontidae, representatives of related families belonging to Lasiocampoidea, as well as other members of Noctuoidea (Minet 1994; Kuznetzov & Stekolnikov 2001), were used as outgroup taxa. The following species were studied: *Euthrix potatoria* Linnaeus, *Gastropacha quercifolia* Linnaeus (Lasiocampidae), *Teia dubia* Tauscher, *Arctornis l-nigrum* Müller (Erebidae: Lymantriinae), *Rhyparioides amurensis* Bremer, *Chionarctia nivea* Mėnėtriės (Erebidae: Arctiinae), *Calocasia coryli* Linnaeus, and *Egira conspicillaris* Linnaeus (Noctuidae).

It should be noted that the degree to which microsculpture can be examined and described depends on the microscopic magnification. In this study the term "smooth microsculpture" is used only when microsculpture is not visible with magnifications under 2000x.

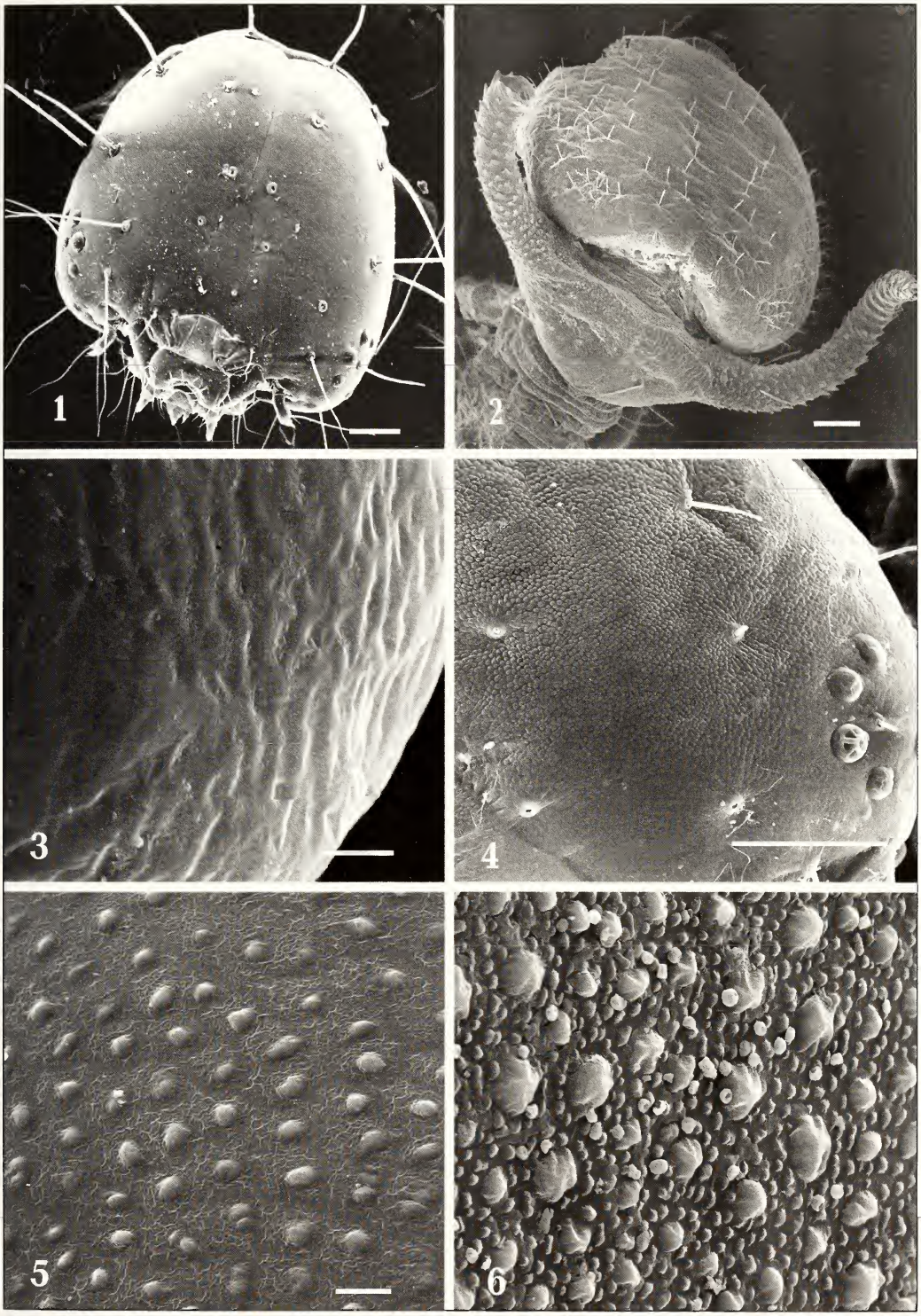
Results

Comparative Morphology of Larval Head Microsculpture

The taxa and characters examined are listed in Table 1. The microsculpture varies from instar to instar. First instar larvae are mostly without distinct microsculpture, with the head surface being smooth (*Ptilodon*, *Pterostoma*, *Spatalia* and others; Fig. 1) or slightly wrinkled (*Harpyia*, *Cnethodonta*; Fig. 2). In some genera, microsculpture is visible in the apical part of the head and partly laterally where it is expressed as slight wrinkles (*Gonoclostera*, *Fentonia*; Fig. 3) or pits (*Gluphisia*). In contrast, in *Pygaera*, *Cerura*, and *Furcula*, the surface bears homogeneous, small, densely situated tubercles. In *Pygaera* these structures are almost indistinct, smooth, and oval. In *Cerura* and *Furcula* these tubercles are very distinct and visible even with a light microscope (Fig. 4).

In 2nd instar, the microsculpture of many genera is still smooth (*Ptilodon*, *Allodonta*). However, sometimes the surface has small, homogeneous, and occasional tubercles arranged on a background of implicated fibrae (*Epodonta*, *Euhampsonia*, *Pheosia*; Fig. 5). In some genera (*Cerura*, *Furcula*, *Uropyia*, *Harpyia*, *Fentonia*) the head shows a background of heterogeneous small tubercles with occasional large tubercles distinguished by plicated edges. The latter are either scattered among smaller ones (Fig. 6) or arranged as more or less distinct groups (Fig. 7).

In 3rd instar some genera have a microsculpture identical to that of preceding instars. It is either smooth (*Phalera*; Fig. 8), slightly wrinkled with almost indistinct



Figs 1–6. Larval head surface of Notodontidae **1.** 1st instar *Ptilodon saturate hoegei*. **2.** 1st instar *Harpyia umbrosa*. **3.** 1st instar *Gonoclostera timoniorum*. **4.** 1st instar *Furcula bicuspis*. **5.** 2nd instar *Epodonta lineata*. **6.** 2nd instar *Fentonia ocypete*. Scale bar 1–4 (100 μ); 5, 6 (10 μ).

Table 1. Character states of the larval head surface of Palaearctic Notodontidae. FH: microsculpture of heterogeneous tubercles sparsely situated on a background of densely implicated fibrae; FO: microsculpture of tubercles sparsely situated on a background of densely implicated fibrae; H: heterogeneously tubercled microsculpture; M: microsculpture with microtrichiae; O: homogeneous microsculpture; P: pitted microsculpture; PO: microsculpture with tubercles in crateriform depressions; S: smooth microsculpture; SH: microsculpture with heterogeneous tubercles sparsely situated on smooth background; SO: microsculpture with homogeneous tubercles sparsely situated on a smooth background; SP: pits developed only on part of head; SW: head surface weakly wrinkled. WO: wrinkled microsculpture with homogeneous tubercles. Abbreviations: cone-shaped protuberances (co); corrugated microsculpture (cor); large tubercles concentrated in distinct groups (g).

	instar 1	instar 2	instar 3	instars 4–5
Notodontidae				
Euhampsonia cristata (Butler)	S	O	H, g	H, g
Euhampsonia splendida (Oberthür)	S	O	H, g	H, g
Cerura erminea (Esper)	O cor	H, cor	H, cor	H, cor,WO[1]
Furcula furcula (Clerck)	O cor	H, cor	H, cor	H, cor
Furcula bicuspis (Borkhausen)	O cor	H, cor	H, cor	H, cor
Furcula bifida (Brahm)	O	H, cor	H,g,cor	H, cor
Uropyia meticulodina (Oberthür)	S	H, g, co	H,g, co	H,g, co
Dicranura ulmi (Denis & Schiffermüller)	S	O	O	O
Harpyia milhauseri (Fabricius)	S	H, co	H, co	H, co
Harpyia umbrosa (Staudinger)	S	H, co	H, co	H, co
Stauropus fagi (Linnaeus)	S	O	O	H, co
Stauropus basalis Moore	S	S	–	–
Cnethodonta grisescens Staudinger	S	O	H, cor	H, cor
Fentonia ocypete (Bremer)	S	H, cor	H,g,cor	H, g, cor
Neopheosia mandschurica (Oberthür)	S	–	–	–
Drymonia dodonaea (Denis & Schiffermüller)	S	O	H	H
Notodonta torva (Hübner)	S	O	H, g	H, g
Notodonta dromedarius (Linnaeus)	S	O	H, g	H, g
Notodonta dembowskii Oberthür	S	O	H, g	H, g
Notodonta tritophus phoebe (Siebert)	S	O	H, g	H, g
Notodonta ziczac (Linnaeus)	S	O	H, g	H, g
Peridea anceps (Goeze)	S	O	H	H
Peridea lativitta (Wileman)	S	O	H	H
Peridea elzet Kiriakoff	S	O	H	H
Peridea graeseri (Staudinger)	S	O	H, co	H, co
Peridea gigantea (Butler)	S	O	H	H
Peridea oberthueri (Staudinger)	S	O	H	H
Peridea moltrechti (Oberthür)	S	O	H	H
Nerice leechi Staudinger	S	O	H, g	H, g
Nerice davidi Oberthür	S	O	H, g	H, g
Pheosia tremula (Clerck)	S	O	O	H
Pheosia grummi (Christoph)	S	–	–	–
Pheosia gnoma (Fabricius)	S	O	O	H
Pheosia rimosa Packard	S	O	O	H
Leucodonta bicoloria (Denis & Schiffermüller)	S	S	SW	SW
Lophocosma atriplaga Staudinger	S	O	H	H
Ellida branickii (Oberthür)	S	–	–	–
Pheosiopsis cinerea (Butler)	S	O	H, g	H, g
Shaka atrovittatus (Bremer)	S	O	H, g	H, g
Pterostoma palpina (Clerck)	S	O	H	H, g
Pterostoma sinica Moore	S	S	O	H, g
Pterostoma griseum (Bremer)	S	S	O	H, g
Ptilodon capucina (Linnaeus)	S	S	O	SO
Ptilodon saturate hoegei (Graeser)	S	S	O	SO

Table 1. Continuation.

	instar 1	instar 2	instar 3	instars 4–5
Notodontidae				
Ptilodon cucullina (Denis & Schiffermüller)	S	S	O	FO
Ptilodon ladislai (Oberthür)	S	S	O	SO, g
Lophontosia cuculus (Staudinger)	S	–	FH	FH, g
Hagapteryx admirabilis (Staudinger)	S	O	H, g	H, g
Togepteryx velutina (Oberthür)	–	–	–	H, g
Semidonta biloba (Oberthür)	S	S	SH	H
Allodonta plebeja (Oberthür)	S	S	O	H
Allodonta leucodera (Staudinger)	S	S	O	H
Epodonta lineata (Oberthür)	S	FO	FO	H, g
Phalera bucephala (Linnaeus)	S	S	S	S
Spatalia argentina (Denis & Schiffermüller)	S	S	H	H
Spatalia doerriesi Graeser	S	O	H	H
Spatalia plusiotis Oberthür	S	–	–	–
Spatalia dives Oberthür	S	S	H	H
Gluphisia crenata (Esper)	S, SP	SP	P	P
Gonoclostera timoniorum (Bremer)	SW	SW	O	PO
Pygaera timon (Hübner)	O	O	O	O
Clostera albosigma curtuloides (Erschoff)	S	S	SW	SW
Clostera pigra (Hufnagel)	S	S	SW	SW
Clostera anachoreta (Denis & Schiffermüller)	S	S	SW	SW
Clostera anastomosis (Linnaeus)	S	S	SW	SW
Micromelalopha troglodyta (Graeser)	S	S	SW	SW
Lasiocampidae				
Euthrix potatoria (Linnaeus)	S	M	M	M
Gastropacha quercifolia (Linnaeus)	S	M	M	M
Erebidae: Lymantrinae				
Teia dubia (Tauscher)	S	S	S	S
Arctornis l-nigrum (Müller)	S	S	–	M
Erebidae: Arctiinae				
Rhyparioides amurensis (Bremer)	S	S	–	S
Chionarctia nivea (Mėnėtriės)	S	S	S	SW
Noctuidae				
Egira conspicillaris (Linnaeus)	S	S	S	SW, O (partly)[2]
Calocasia coryli (Linnaeus)	S	S	S	SW

cells (*Micromelalopha*, *Clostera*, *Leucodonta*; Figs 9–11), pitted (*Gluphisia*; Figs 12, 13), or homogeneously tubercled (*Pheosia*, *Lophontosia*; Fig. 14). Most species have a consistent microsculpture similar to that of the last instar, but less distinct. In *Gonoclostera* the surface shows clearly visible small tubercles on a background of densely interlaced fibrae (Fig. 15). In *Ptilodon* species more or less distinctive tubercles can be observed on a smooth or interlaced fibrae background (Fig. 16). In most genera, the microsculpture becomes heterogeneously tubercled with large tubercles on a background of small homogeneous tubercles. It must be noted that the latter are arranged either randomly among more small tubercles (*Lophocosma*, *Pheosia*, *Spatalia*; Fig. 17) or are concentrated as separate groups (*Notodonta*, *Euhampsonia*, *Epodonta*;

[1] *Cerura erminea*: 'H, cor' refers to head sculpture of 4th instar and 'WO' to that of 5th instar.

[2] in 4th instar head microsculpture is smooth.

Fig. 18) that are more or less distinct. In some genera (*Furcula*, *Fentonia*, *Notodonta*, *Spatalia)* the microsculpture is more complex. In these groups sparsely distributed, large tubercles are found on a background of small tubercles. Sometimes the large tubercles are situated as separate groups (Fig. 19). Sometimes the tubercles are modified to form conical protrusions (*Harpyia*, *Stauropus*, *Peridea graeseri*). In *Harpyia*, conical protrusions become larger towards the apical and lateral sides of the head (Fig. 20).

In 4th and 5th instars the microsculpture is usually the same as in the preceding instar, but is expressed much more distinctly. In some genera the microsculpture changes from homogeneously tubercled to heterogeneously tubercled (*Pheosia*, *Lophontosia*, *Allodonta*, *Pterostoma sinica*, *P. griseum*). In *Gonoclostera* the microsculpture changes in 4th instar. In the background, which is the same as in 3rd instar (Fig. 15), there are large tubercles located in crateriform depressions (Fig. 21). Sometimes in 5th instar a simplification of the microsculpture takes place. For example, the head surface of *Cerura* in 1st instar is homogeneously knobby, in 2nd to 4th instars it changes to heterogeneously knobby. In 5th instar it becomes deeply wrinkled in the area of the epicranial suture, whereas towards the lateral surface it appears as homogeneously oval tubercles concentrated in somewhat separated groups.

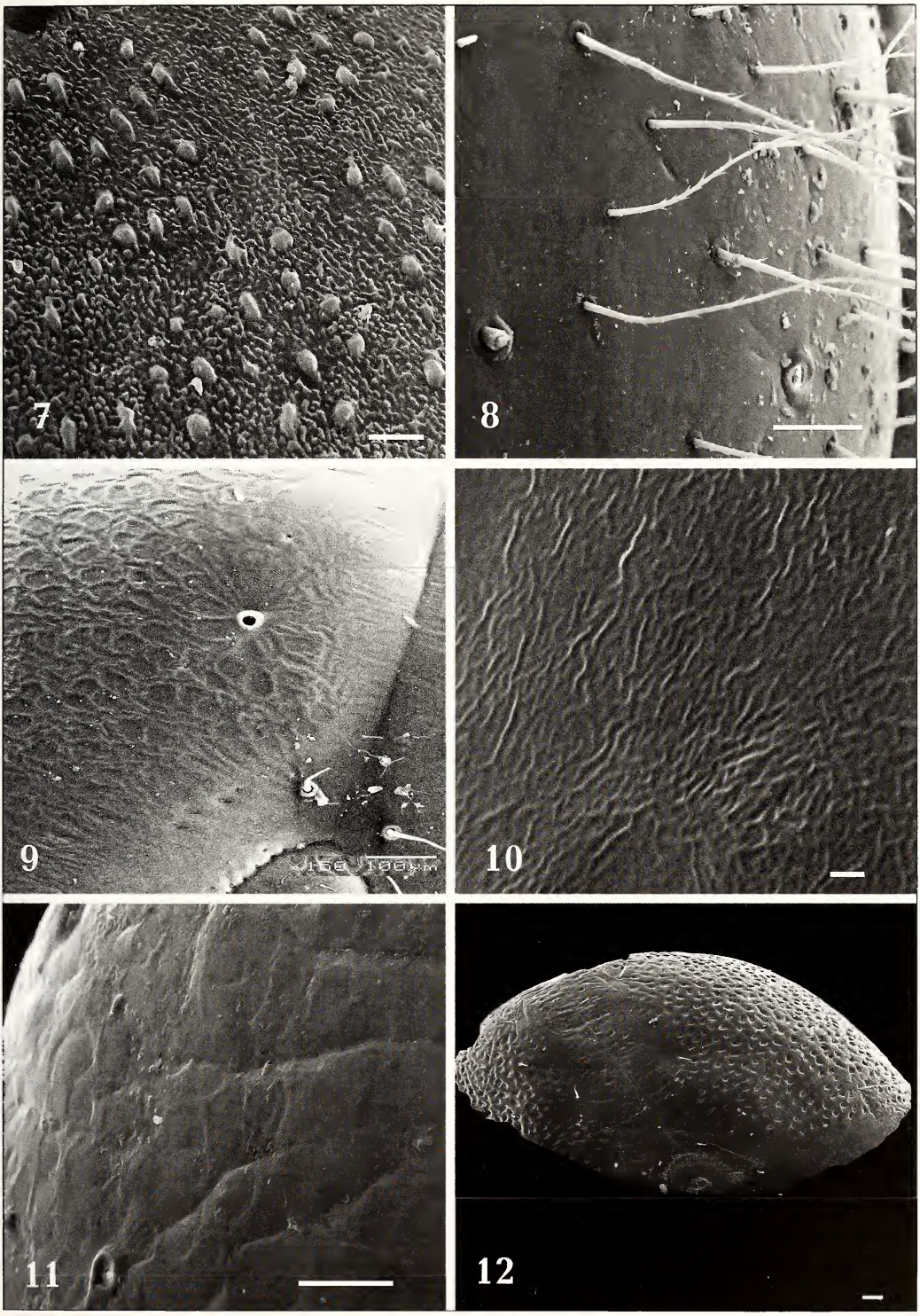
In general, the larval head microsculpture in Notodontidae may be more or less distinct. In the majority of genera it is clearly visible (*Notodonta*, *Pheosia*, *Pheosiopsis*). In *Harpyia*, *Uropyia*, and *Furcula* it is most prominent. In other notodontids (Pygaerinae) it is less prominent. Overall the most prominent microsculpture appears in 4th and 5th instars, while in 1st to 3rd instars it is usually poorly developed.

The head microsculpture is not completely homogeneous on the surface of the head capsule. In most cases it is smoother in the frontal area and around the epicranial suture (Fig. 22). In the vicinity of the stemmata and genae the microsculpture is finer, consisting of homogeneous, densely arranged tubercles (Fig. 23) and it may be more (*Stauropus*) or less expressed than elsewhere. Usually the microsculpture in 3rd to 5th instars consists of the microsculpture characteristic for the stemmatal and genal areas on which larger tubercles appear (Fig. 24).

Main Transformation Types of Head Microsculpture During Larval Development

There are 12 types of head microsculpture that occur in different instars of notodontids:

1. Head surface smooth, unmodified in all instars (*Phalera*).
2. Head surface smooth in 1st and 2nd instars, becoming weakly wrinkled with weakly developed cells in 3rd to 5th instars (*Clostera*, *Micromelalopha*).
3. Head surface smooth in 1st and 2nd instars, developing weak cells in 3rd to 5th instars (*Leucodonta*).
4. Main head surface smooth, but with pits in the apical part of the head and along the sides in 1st and 2nd instars, becoming pitted in 3rd to 5th instars (*Gluphisia*).
5. Head surface mostly smooth but wrinkled in the apical area and laterally in 1st and 2nd instars, developing somewhat expressed tubercles on a background of densely interlaced fibrae in 3rd instar, producing tubercles in crateriform depressions on a background of dense fibrae in 4th and 5th instars (*Gonoclostera*).



Figs 7–12. Larval head surface of Notodontidae. 7. 2nd instar *Furcula bifida*. 8. 3rd instar *Phalera bucephala*. 9. 3rd instar *Micromelalopha troglodyta*. 10. 3rd instar *Clostera anachoreta*. 11. 3rd instar *Leucodonta bicoloria*. 12. 3rd instar *Gluphisia crenata*. Scale bar 9, 11, 12 (100 μ); 7, 8, 10 (10 μ).

6a. Head surface smooth in 1st and 2nd instars, with large tubercles expressed only along the head margins and sparsely distributed on a smooth background in 3rd to 5th instars (*Ptilodon*).

6b. Head surface smooth in 1st and 2nd instars, with large tubercles expressed only along the head margins and sparsely distributed on a background of small tubercles in 3rd to 5th instars (*Allodonta*).

6c. Head surface smooth in 1st and 2nd instars, with large tubercles sparsely distributed on a background of densely implicated fibrae in 3rd to 5th instars (*Lophontosia*).

7. Head surface smooth in 1st and 2nd instars, with homogeneous microsculpture of small tubercles in 3rd instar, and larger tubercles on a homogeneous background of small tubercles in 4th and 5th instars (*Pterostoma sinica*, *P. griseum*). In *P. palpina* knobby microsculpture appears in 2nd instar.

8. Head surface smooth in 1st instar, with homogeneous microsculpture of small tubercles in 2nd instar, and larger tubercles on a background of homogeneous small tubercles in 3rd to 5th instars (*Euhampsonia*, *Drymonia*, *Notodonta*, *Peridea*, *Nerice*, *Lophocosma*, *Pheosiopsis*, *Shaka*, *Lophontosia*, *Hagapteryx*, *Epodonta*, *Cnethodonta*, *Stauropus*, *Pheosia*). There are some variations on this pattern. In *Pheosia* and *Stauropus* 3rd instar microsculpture is homogeneously tubercled, becoming heterogeneously tubercled only in 4th instar.

9a. Head surface smooth in 1st instar, with larger tubercles on a background of homogeneous small tubercles in 2nd to 5th instars (*Uropyia*, *Harpyia*, *Fentonia*).

9b. Head surface smooth in 1st and 2nd instars, with larger tubercles on a background of homogeneous small tubercles in 3rd to 5th instars (*Semidonta*, *Spatalia*). In *Semidonta* 3rd instar the microsculpture is only weakly expressed, becoming more distinctly visible only in 4th and 5th instars. In *Spatalia* the microsculpture appears only in 3rd instar in two species, *S. argentina* and *S. dives*, while in *S. doerriesi* it is homogeneously tubercled in 2nd instar and becomes heterogeneously tubercled in 3rd instar.

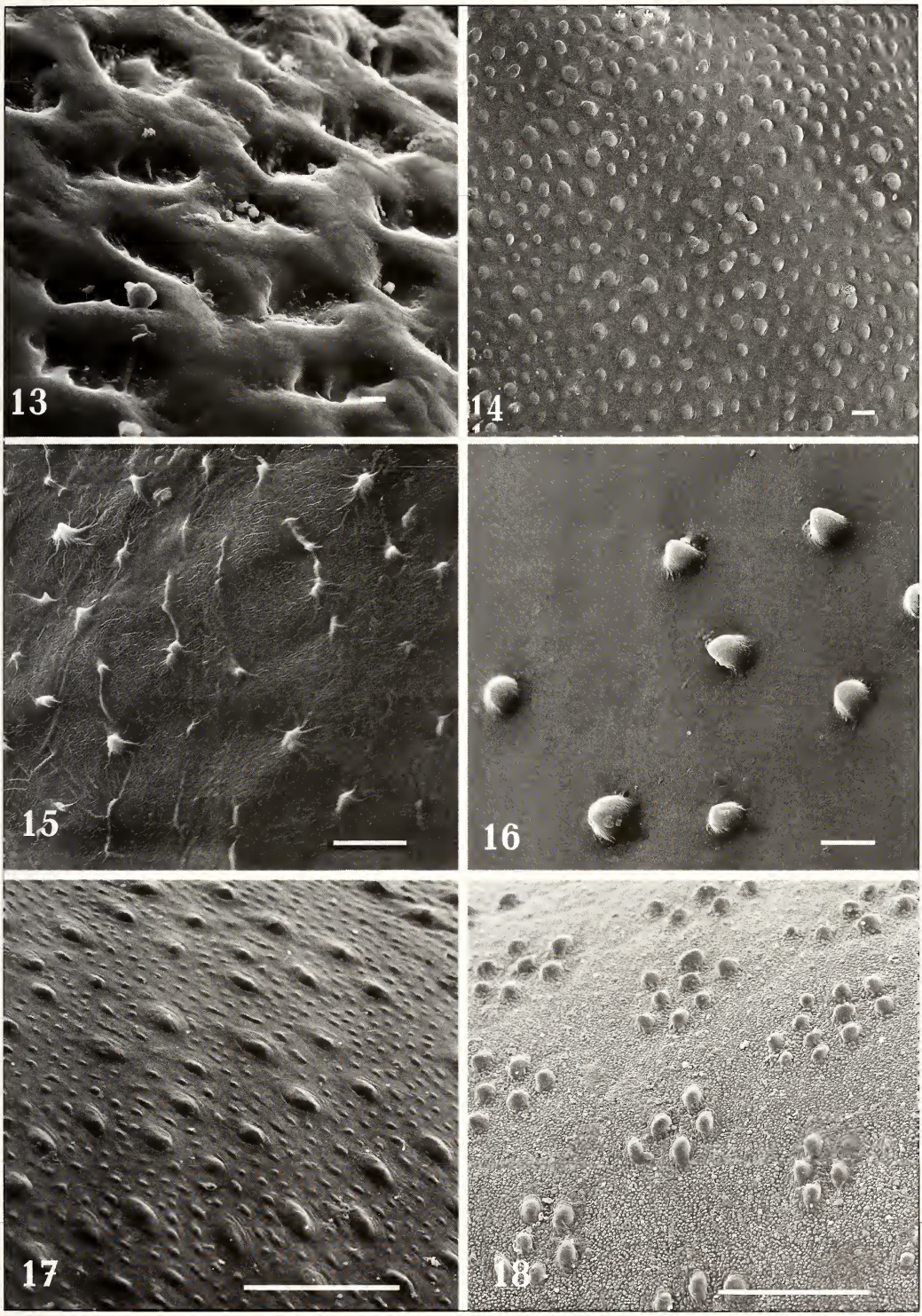
10. Head surface smooth in 1st instar, with very small, weakly expressed, homogeneously dispersed tubercles in 2nd to 5th instars (*Dicranura*).

11. Weakly expressed homogeneous microsculpture of small tubercles without transformation in all instars (*Pygaera*).

12. Distinctly expressed homogeneous microsculpture of small tubercles in 1st instar, with larger tubercles on a background of homogeneous small tubercles in 2nd to 5th instars (*Cerura*, *Furcula*).

Comparative Morphology of Larval Head Microsculpture in Other Families

It should be noted that head microsculpture is also variable in the studied outgroups, as is the case in Notodontidae. It is also modified depending on the instar. In Lasiocampidae that were examined, the head is smooth in 1st instar (*Euthrix potatoria*, *Gastropacha quercifolia*) while later (2nd to 5th instars) it develops microtrichiae (Fig. 25). One species of Lymantriinae has a smooth head in all instars (*Teia dubia*) while another (*Arctornis l-nigrum*) has microtrichia in 4th and 5th instars as in Lasiocampidae.



Figs 13–18. Larval head surface of 3rd instar Notodontidae. 13. *Gluphisia crenata*. 14. *Pheosia gnoma*. 15. *Gonoclostera timoniorum*. 16. *Ptilodon saturate hoegei*. 17. *Lophocosma atriplaga*. 18. *Notodonta dembowskii*. Scale bar 17, 18 (100 μ); 13–16 (10 μ).

In examined Arctiinae the microsculpture is either smooth in all instars (*Rhyparioides amurensis*) or slightly wrinkled in 4th and 5th instars (*Chionarctia nivea*). The head surface of the examined Noctuidae is smooth in 1st through 4th instars. In 5th instar it is weakly wrinkled in *Calocasia coryli* and *Egira conspicillaris*, with a few tubercles in *E. conspicillaris* (Fig. 26).

Discussion

Transformation of Head Microsculpture in Different Instars and Comparison with Representatives from Outgroups

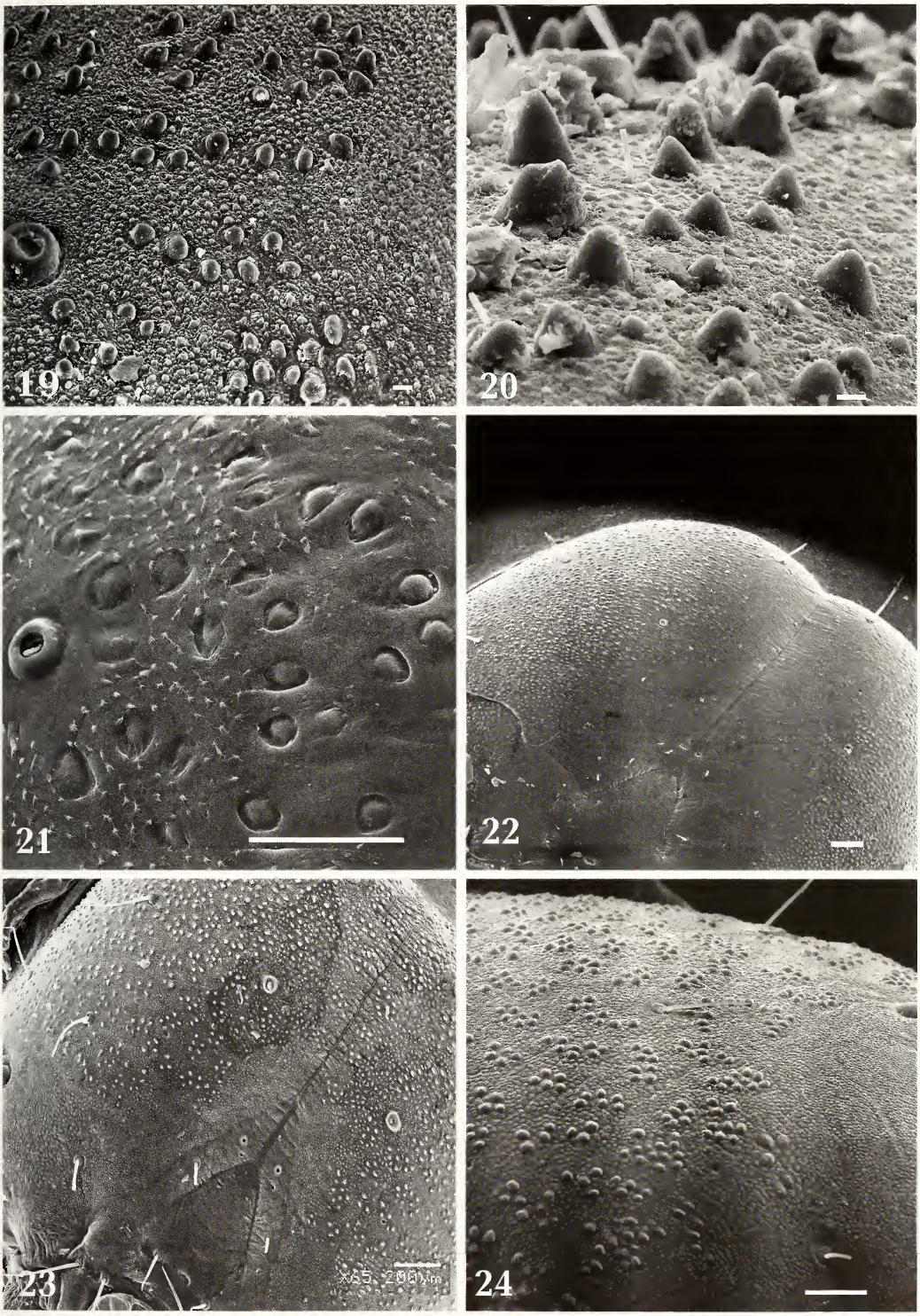
Miller (1991) defined six character states relating to the head surface in Notodontidae: "head surface mostly smooth, with fine creases" (0); "head surface rugose with rugosities in clusters" (1); "head surface covered with pits" (2); "rugosities extremely small" (3); "head surface smooth, glassy" (4); and "head surface spiculate" (5). Miller interpretated these characters as multistate nonadditive, where definite numbers (in brackets) were assigned to each state. He recognised (0) as plesiomorphic and (5) as autapomorphic for Notodontidae.

In many cases I have used the same character states as Miller, but sometimes it was necessary to redefine them. Thus, Miller's "head surface mostly smooth, with fine creases" is here described as weakly wrinkled sculpture, and "head surface rugose with rugosities in clusters" is divided into recognisable types of tuberculous microsculptures: large tubercles situated separately and randomly on a background of small tubercles, or concentrated into separate groups.

According to Miller's interpretation "head surface mostly smooth, with fine creases" is the plesiomorphic state for the family. Pitted sculpture is a derivation of the granulate head type. "Head surface smooth, glassy" in his rank of transformations precedes "head surface spiculate", which is the apomorphic state for the family. In his paper on Dioptinae, Miller (2009) noted that "a smooth, almost glassy head surface" is "a derived condition" compared with the sculpture of the so-called "pebblelike projections".

Following Miller (1991) I also consider that a spiculate sculpture is the apomorphic state for the family. However, I suggest that a weakly wrinkled microsculpture is intermediate between smooth, treated here as plesiomorphic, and tuberculous, which is secondary and more specialized in the morphological series of transformations. I also consider that a pitted sculpture is a derivation of the smooth head type. These notions are developed below.

Smooth head microsculpture in 1st instar was found in the majority of notodontid subfamilies that were examined. Since this character is also found in the examined outgroups (Erebidae: Lymantriinae and Arctiinae; Noctuidae; and Lasiocampidae), this state (smooth head) is considered plesiomorphic relative to other states. An exception is *Phalera*, which differs by having a smooth head microsculpture in each larval instar (Fig. 8), as is the case in some representatives of the outgroup (Lymantriinae,



Figs 19–24. Larval head surface of Notodontidae. **19.** 3rd instar *Furcula bifida*. **20.** 3rd instar *Harpyia milhauseri*. **21.** 4th–5th instars *Gonoclostera timoniorum*. **22.** 4th–5th instars *Spatalia argentina*. **23.** 4th–5th instars *Furcula bicuspis*. **24.** 4th–5th instars *Pterostoma griseum*. Scale bar 19, 21–24 (100 μ); 20 (10 μ).

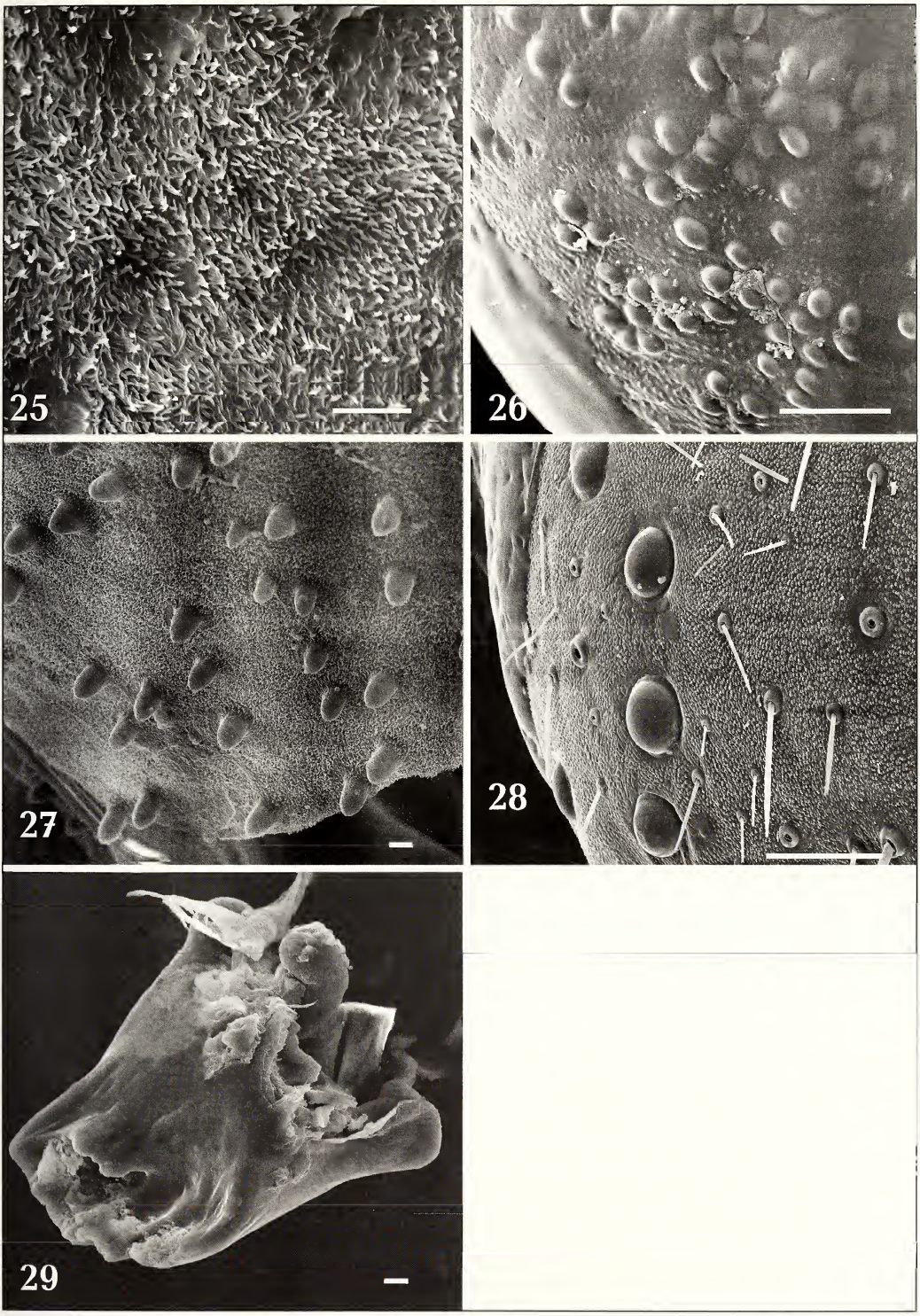
Arctiinae, Noctuidae) which have a smooth head from 1st to 3rd instar or sometimes until the last instar.

Weakly wrinkled head microsculpture in Notodontidae is present in larvae of four genera only. In *Clostera*, *Micromelalopha*, and *Leucodonta* such microsculpture appears in larvae of 3rd to 5th instars, while their larvae have a smooth head in 1st and 2nd instars. Since the representatives of the outgroups (Erebidae: Arctiinae; Noctuidae) have this kind of sculpture only in 4th and/or 5th instars, possessing smooth larval head in 1st to 3rd or 4th instars, the wrinkled microsculpture is considered a derived state (apomorphic). In *Gonoclostera* this type of microsculpture is present only in 1st and 2nd instars (Fig. 3) and is displaced by tubercles in 3rd to 5th instars. Wrinkled microsculpture is considered plesiomorphic relative to tuberculous microsculpture.

Tuberculous head microsculpture was found in the majority of the examined notodontid genera in 2nd to 5th instars, with them having a smooth head in 1st instar. In *Pygaera* such microsculpture is present in all instars. Tuberculous microsculpture is found in the examined outgroups only in 5th instar in *Egira conspicillaris* (Noctuidae), where it is present only in the apical part of the head, whereas in 1st to 4th instars the microsculpture is smooth. Since the majority of notodontid genera have this kind of microsculpture in 2nd to 5th instars, possessing smooth larval head in 1st instar, and since this character is absent in the outgroups (except for *Egira conspicillaris*), the tuberculous microsculpture is considered a derived state. There are several kinds of tuberculous head microsculptures in the studied larvae. The microsculpture with almost indistinct, very small, homogeneous tubercles (*Pygaera*, *Dicranura*; Fig. 28) is considered plesiomorphic. The microsculpture with large, uniform tubercles on a smooth or fibrous surface (*Ptilodon*; Fig. 16) either with tubercles situated randomly on a background of small tubercles (*Spatalia*, *Lophocosma*; Fig. 17), or concentrated in separate groups (*Notodonta*, *Euhampsonia*, *Epodonta*, and some others; Fig. 18) is presumably derived. A further derived state would be a microsculpture with conical projections in groups (*Harpyia*, *Uropyia*, *Stauropus*; Fig. 20).

Pitted head microsculpture in 1st instar is found only in *Gluphisia*. It is also present in 2nd instar and is found in the apical part of the head only, while the rest of the head capsule remains smooth. In later instars the pitted microsculpture extends across the remaining head surface (Figs 12, 13). Based on these observations it appears that such sculpture is secondary relative to the smooth one, and, probably, derived from the latter. The pitted microsculpture has not been observed in any other notodontids or outgroups. However, according to Miller (1991) such sculpture is characteristic for *Datana ministra* (Drury) of the American genus *Datana* Walker, Therefore, pitted microsculpture in *Gluphisia*, on the basis of this study, can be considered as a synapomorphy for these two genera.

Summarizing, the smooth head microsculpture in larvae of different noctuoid families could be treated as a plesiomorphic state. According to a comparative morphological study, the general tendency in its evolutionary transformation within Notodontidae (same as in other families of Noctuoidea) is changing towards a sculptured surface, at first with small-sized and finally large-sized sculptural elements.



Figs 25–29. Larval head surface. **25.** 4th–5th instars *Euthrix potatoria*. **26.** 5th instar *Egira conspicillaris*. **27.** 4th–5th instars *Uropyia meticulodina*. **28.** *Dicranura ulmi*. **29.** Oral surface of left mandible of 2nd instar *Leucodonta bicoloria*. Scale bar 26 (100 μ); 25, 27–29 (10 μ).

Phylogenetic Implications Within Genera

Head microsculpture can be also used for resolving phylogenetic relationships within genera. This is important as there has been insufficient work on this problem in Notodontidae. In *Peridea* the most complex microsculpture is recorded in *P. graeseri*, where tubercles are modified into conical projections. *In P. anceps*, *P. lativitta*, *P. elzet*, *P. gigantea*, *P. oberthueri*, and *P. moltrechti* the microsculpture appears as clearly visible oval tubercles. Based on these results it appears that *P. graeseri* possesses the most derived state of this character. The peculiarities of the head pattern (Dolinskaya 2009) corroborate this hypothesis.

In *Pterostoma*, in addition to the morphological similarity of the various species, the transformation of the microsculpture changes from a simple to a complex one. Thus, in 2nd instars of *P. palpina* the microsculpture is already homogeneously tubercled, whereas in *P. griseum* and *P. sinicum* it is smooth. In 3rd instar, the microsculpture of *P. palpina* becomes heterogeneously tubercled and distinct. In *P. griseum* and *P. sinicum* the microsculpture changes only to homogeneously tubercled. In *P. griseum* the sculpture is very well expressed and distinctive while in *P. sinicum* it is poorly expressed. In 4th and 5th instars the microsculpture of *P. palpina* and *P. griseum* becomes similar: large tubercles concentrated in distinct groups on a background of small ones, while in *P. sinicum* these groups are poorly expressed. Based on these results it appears that *P. palpina* possesses the more derived states of these characters, while *P. sinicum* has the less derived ones. *P. griseum* has an intermediate position between these two species. It should be noted that the morphological characters of the pupa support this hypothesis. The sculpture of the cremaster in *P. griseum* and *P. palpina* is very similar, and it is different in *P. sinicum* (Dolinskaya 1984, 1989).

In *Ptilodon* in addition to the morphological similarity of some species, a transformation of the microsculpture from simple to conical takes place. In *P. capucina* and *P. saturate hoegei* weakly expressed tubercles are randomly located on a smooth surface, while in *P. cucullina* these tubercles are placed on a background of densely implicated fibrae. In *P. ladislai* the latter are concentrated in weakly expressed groups. Based on these observations it appears that *P. ladislai* possesses a more derived states of this character, and *P. capucina* and *P. saturate hoegei* the less derived one, while *P. cucullina* appears to be intermediate.

In *Spatalia,* a transformation of microsculpture from simple to complex takes place. In 2nd instar of *S. doerriesi* the microsculpture appears weakly expressed and homogeneously tubercled while in *S. argentina* and *S. dives* it remains smooth. In 3rd to 5th instars the microsculpture of *S. argentina* appears as small and large oval tubercles arranged on a smooth background. In *S. dives* and *S. doerriesi* the microsculpture is more complex: on a background of small tubercles there are randomly located medium-sized and large tubercles, the latter with plicated edges and sometimes concentrated in poorly defined groups. Based on these observations, *S. doerriesi* appears to possess a more derived state of this character than *S. argentina*, with *S. dives* being intermediate.

The Importance of Larval Head Microsculpture for the Classification of Notodontidae

At present the classification of Notodontidae is in need of improvement. In the systems proposed by different authors the number of subfamilies within the family, as well as the number and generic composition of subfamilies remains uncertain. The most recent classifications are those of Tikhomirov (1981), Miller (1991), and Schintlmeister (2008). Below I discuss the implications of the results presented herein for the classification of the family.

Slightly visible head microsculpture in each larval instar is present in only eight genera. It is either smooth (*Phalera*), weakly wrinkled, looking like weakly expressed cells (*Clostera*, *Micromelalopha*, *Leucodonta*), very small, densely located homogeneous tubercles (*Dicranura*, *Pygaera*), tubercles placed in crateriform depressions (*Gonoclostera*) or pitted (*Gluphisia*). Concerning the genera *Clostera*, *Micromelalopha*, *Gonoclostera*, and *Pygaera* these data coincide with the classifications of the three above-mentioned authors, placing them into the subfamily Pygaerinae. This hypothesis is also supported by an examination of the larval mandible (Dolinskaya 2008).

In Pygaerinae a gradual development of the microsculpture takes place from weakly wrinkled to small-tubercled. In *Micromelalopha* and *Clostera* the head microsculpture remains weakly formed. In 1st and 2nd instars it is smooth, while in 3rd to 5th instars it is already weakly wrinkled or appears as indistinct homogeneous cells (Figs 9, 10). In *Gonoclostera* in 1st and 2nd instars the microsculpture is also smooth; however, apically and also partly laterally it becomes wrinkled (Fig. 3). In 3rd instar the surface appears as small, densely implicated fibrae on a background of weakly expressed, very small tubercles (Fig. 15). In 4th and 5th instars large tubercles are formed, arranged in crateriform depressions on a background of smaller tubercles (Fig. 21). This is likely a transitional state from wrinkled to tubercled microsculpture. In *Pygaera* the microsculpture appears as very small, weakly expressed, densely situated homogeneous tubercles in all instars. This character is considered apomorphic relative to the above-mentioned representatives of subfamily Pygaerinae. Based on these results, as well as an examination of the outgroups, it would appear that the most primitive microsculpture is found in *Clostera* and *Micromelalopha*. Head microsculpture of *Pygaera* and *Gonoclostera* is more derived.

In *Dicranura* in 1st instar the head microsculpture is smooth, and in 2nd to 5th instars it appears as very small, weakly expressed, densely situated homogeneous tubercles as in *Pygaera* (Fig. 28). This character along with mandibular structure (Dolinskaya 2008) supports the close affinity of *Dicranura* to Pygaerinae. Schintlmeister (2008) placed *Dicranura* in Dicranurinae together with *Stauropus*, *Cnethodonta*, and *Harpyia*. However, later in a personal communication he agreed with the conclusions published by Dolinskaya (2008) and acknowledged the need to clarify the taxonomic status of *Dicranura*.

Leucodonta needs additional examination. Tikhomirov (1981) and Schintlmeister (2008) placed it within Notodontinae. The results of this study show that the head

microsculpture of *Leucodonta* is similar to that of *Clostera* and *Micromelalopha*. It shares the same character states as the above genera, namely having smooth microsculpture in 1st and 2nd instars, while in 3rd to 5th instars it appears as almost indistinct cells (Fig. 11). These observations support the placement of *Leucodonta* in Pygaerinae. This hypothesis is augmented by the peculiarities of mandibular structures. A detailed examination of the mandibles using SEM showed the presence of a denticulated mandibular edge and a large retinaculum in 2nd instar (Fig. 29) as is found in *Clostera*, *Gonoclostera*, and *Micromelalopha* (Dolinskaya 2008).

The position of the genus *Gluphisia* within Notodontidae is anomalous. Tikhomirov (1981) placed it within Notodontinae. Miller (1991) also included *Gluphisia* within this subfamily, placing it in Notodontini along with *Cerura* and *Furcula*. Schintlmeister (2008) assigned *Gluphisia* to Pygaerinae. The peculiarities of the pupa and larval mandibles (Dolinskaya 1986, 1989, 2008) corroborate the opinion of Schintlmeister (2008). However, the characters of the larval head surface are not concordant with this hypothesis. Head microsculpture in *Gluphisia* is represented as distinct pits (Figs 12, 13). Such microsculpture is not found in either the ingroup or the examined outgroups. According to Miller (1991), pitted head microsculpture is characteristic for *Datana* (Phalerinae). Therefore it is necessary to carry out a more detailed examination of other taxa to clarify the systematic position of this genus.

The uncertainty of the systematic position of *Phalera* remains. Tikhomirov (1981) included this genus in Notodontinae. Miller (1991) placed *Phalera* in Phalerinae along with *Datana*, *Peridea*, and *Euhampsonia*. Schintlmeister (2008) also included this genus in Phalerinae together with *Phalerodonta*. Unfortunately I was not able to study the larval head microsculpture of *Phalerodonta*. The results of my studies show that in *Phalera* the head microsculpture is smooth in each instar (Fig. 8). The same type of microsculpture in 4th and 5th instars is absent in the rest of the notodontids examined. On the other hand, Miller (1991) noted the presence of 'extremely smooth, almost glassy, head surface' in some *Josia* Hübner and *Cyanotricha* Prout (Dioptinae), and *Didugua* Druce (Nystaleinae). At a later time Miller (2009) noted that this head surface of the final instar is unique for Josiini (Dioptinae). In addition to that Miller (1991), following Gardner (1943), noted that *Phalera* larvae have a pitted surface. However, my results do not support this hypothesis and hence the taxonomic position of this genus should be investigated further.

The majority of the genera in the family have a clearly visible and mainly heterogenously tubercled head microsculpture. Such microsculpture is present in 26 genera, namely *Euhampsonia*, *Cerura*, *Furcula*, *Uropyia*, *Harpyia*, *Stauropus*, *Cnethodonta*, *Fentonia*, *Neopheosia*, *Drymonia*, *Notodonta*, *Peridea*, *Nerice*, *Pheosia*, *Lophocosma*, *Pheosiopsis*, *Shaka*, *Pterostoma*, *Ptilodon*, *Lophontosia*, *Allodonta*, *Hagapteryx*, *Togepteryx*, *Semidonta*, *Epodonta*, and *Spatalia*. *Ptilodon* and *Allodonta* differ from these genera by having the most smoothened microsculpture. The head capsule is smooth medially, with microsculpture expressed only along the head margins. These data partially support the hypothesis of Schintlmeister (2008), who placed *Ptilodon* and *Allodonta* within Ptilodontinae together with *Pterostoma*, *Semidonta*, *Lophontosia*, and *Epodonta*. In these genera there is a tendency towards smooth head microsculpture (Table 1).

In *Cerura* and *Furcula* the head microsculpture is distinctive, being tubercled in 1st instar (Fig. 4). I treat this character state as apomorphic because most representatives of the ingroup as well as all of the examined outgroups have smooth microsculpture in 1st instar. These findings coincide with the systems of Tikhomirov (1981) and Schintlmeister (2008), who separated these genera into the subfamily Cerurinae. Miller (1991) included these genera within Notodontinae together with *Gluphisia*, *Pheosia*, and *Notodonta*. This arrangement is not supported by the results of this study.

In *Cerura*, *Furcula*, *Uropyia*, *Harpyia*, and *Fentonia* the head microsculpture is heterogeneously granulated in 2nd instar, with large tubercles on a background of small tubercles (Figs 6, 27). These findings partly coincide with the point of view of Schintlmeister (2008) in including *Uropyia*, *Harpyia*, and *Fentonia* within Dicranurinae.

Conclusions

Larval head microsculpture can provide useful phylogenetic information within and between genera. Similar types of larval head surface structures support monophyly of a number of groups of genera. Comparative morphological examinations of the larval head microsculpture can be used to determine the direction of morphological transformations. More derived taxa have a more complex microsculpture. For more generalized groups smooth or similar types of the larval head capsule surface are characteristic. Among these characters I have identified notodontid apomorphies (tubercled head microsculpture), as well as apomorphies that are characteristic for various other taxa in the family: 1) presence of tubercled microsculpture in 1st instar (*Cerura*, *Furcula*, *Pygaera*); 2) presence of heterogeneous microsculpture in 2nd instar (*Cerura*, *Furcula*, *Uropyia*, *Harpyia*, and *Fentonia*); and 3) development of conical projections on the head (*Harpyia*, *Uropyia*, *Stauropus*).

It is worth noting that it is possible to determine the larval instar according to head microsculpture. This additional diagnostic character can be used for genera and species together with such characters as the width of the head capsule and the larval head pattern (Dolinskaya 2009). On the basis of peculiarities of the head microsculpture it is also possible to estimate the degree of morphological similarity of species within the polytypic genera.

Acknowledgements

I am deeply indebted to Dr. M. G. Ponomarenko (Institute of Biology and Soil Science, Vladivostok, Russia) for critical reading and useful remarks on this paper. I am very grateful to Dr. J. S. Miller (American Museum of Natural History, New York City) and Dr. S. Passoa (Ohio State University, United States) for their help with literature. I am obliged to Dr. Paul Sokoloff (Kent, UK) and Dr. Bernard Landry (Geneva) for their correction of the English language. The author also thanks Mr. Yu. Geryak (State Natural History Museum, Lvov, Ukraine) and Mr. A.V Zhakov (ZUCTKUM, Zaporosh'e, Ukraine) for sending live females of *Dicranura ulmi*. The study was partly financially supported by grant of the State Fund for Fundamental Reseaches, Ukraine (SFFR No. F40.4/043).

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The original description of *Ephysteris inustella* (Zeller, 1839) (Gelechiidae)

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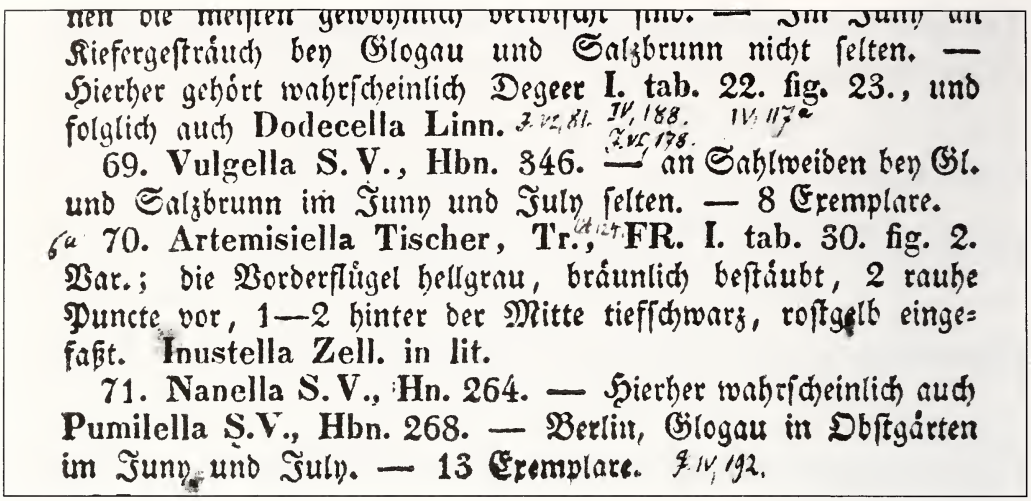
Abstract. Evidence is presented that *Ephysteris inustella* (Zeller) was first validly described in 1839.

The name *inustella* was originally proposed as *Gelechia* (*Brachmia*) *artemisiella* var. *inustella* Zeller (1839: 201) and subsequently raised to species rank (Zeller 1847: 853). However, this was mostly overlooked and the name was generally attributed to Herrich-Schäffer (1853: pl. 67, fig. 498; 1854: 171) until the situation was clarified by Sattler (1978: 61). Karsholt (1995: 149) accepted the authorship of Zeller but argued that the species had to date from 1847 as in 1839 it was published in synonymy under *artemisiella* and it was not clear in that paper that Zeller considered *inustella* as a 'Var.' of *artemisiella*. That interpretation is incorrect, as can be seen clearly in Fig. 1. In the first line Zeller cited, under number 70, the name *artemisiella*, which he attributed to von Tischer, followed by references to Treitschke and Fischer von Roeslerstamm. Line 2 begins with the term 'Var.' followed by a description that ends with '*Inustella* Zell. *in lit.*'. There is no doubt that Zeller meant the name *inustella* to apply to that 'variety'; indeed he confirms it in 1847, where he stated under *G. salinella*: '... *Gelechia inustella* Z. which I mentioned in *Isis* 1839. p. 201. 70. as a variety of *Gel. artemisiella* and which almost certainly is a distinct species ...' (,... *Gelechia inustella* Z., die ich Isis 1839. S. 201. 70. als Varietät der *Gel. artemisiella* aufgeführt habe, und die doch wohl eigene Art ist; ...') (Fig. 2). It may have confused Karsholt that Zeller in 1839 had placed the name *inustella* after the description rather than at its beginning, as is customary. However, were it not meant to apply to the variety, it could only apply to *artemisiella* itself, but in that case Zeller would have placed *inustella* in brackets after the references as he had done in several other examples of *in litteris* names in the same paper. If one were to accept Karsholt's view one would have to assume that Zeller in 1847 misinterpreted what he had done in 1839, a rather unlikely scenario.

Regrettably Karsholt's interpretation was followed by Huemer & Karsholt (2010: 217) in their important recent volume of *Microlepidoptera of Europe*, making it necessary to rectify the matter here before it gains wider acceptance. At the same time Huemer & Karsholt also consider *inustella* Z. 1839 to be a misidentification of *Scrobipalpa artemisiella* (Treitschke, 1833); however, for the purposes of availability it is irrelevant that the presumed var. *inustella* is not conspecific with *artemisiella*. The description in 1839 clearly fulfils all the requirements of the *Code* and there is no valid reason for rejecting it.



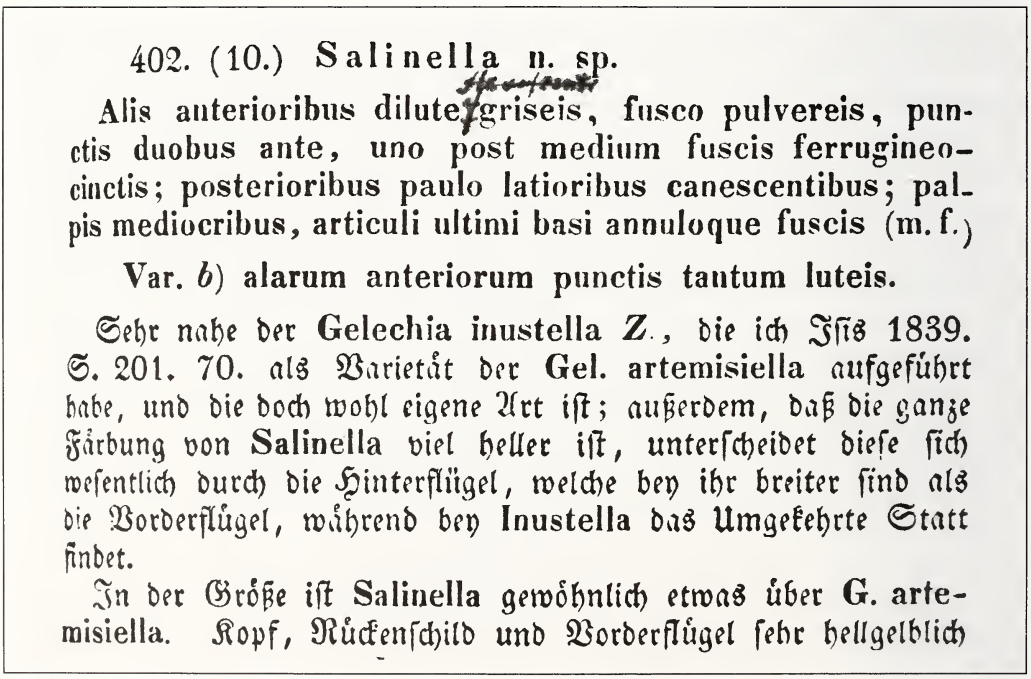
nen die meisten gewöhnlich beisammen sind. — Im Juny an Kiefergesträuch bey Glogau und Salzbrunn nicht selten. — Hierher gehört wahrscheinlich Degeer I. tab. 22. fig. 23., und folglich auch Dodecella Linn.

69. Vulgella S. V., Hbn. 346. — an Sahlweiden bey Gl. und Salzbrunn im Juny und July selten. — 8 Exemplare.

70. Artemisiella Tischer, Tr., FR. I. tab. 30. fig. 2. Var.; die Vorderflügel hellgrau, bräunlich bestäubt, 2 rauhe Puncte vor, 1—2 hinter der Mitte tiefschwarz, rostgelb eingefaßt. Inustella Zell. in lit.

71. Nanella S. V., Hn. 264. — Hierher wahrscheinlich auch Pumilella S.V., Hbn. 268. — Berlin, Glogau in Obstgärten im Juny und July. — 13 Exemplare.

Fig. 1. *Isis* 1839: 201.



402. (10.) Salinella n. sp.

Alis anterioribus dilute griseis, fusco pulvereis, punctis duobus ante, uno post medium fuscis ferrugineo-cinctis; posterioribus paulo latioribus canescentibus; palpis mediocribus, articuli ultimi basi annuloque fuscis (m. f.)

Var. *b*) alarum anteriorum punctis tantum luteis.

Sehr nahe der Gelechia inustella Z., die ich Isis 1839. S. 201. 70. als Varietät der Gel. artemisiella aufgeführt habe, und die doch wohl eigene Art ist; außerdem, daß die ganze Färbung von Salinella viel heller ist, unterscheidet diese sich wesentlich durch die Hinterflügel, welche bey ihr breiter sind als die Vorderflügel, während bey Inustella das Umgekehrte Statt findet.

In der Größe ist Salinella gewöhnlich etwas über G. artemisiella. Kopf, Rückenschild und Vorderflügel sehr hellgelblich

Fig. 2. *Isis* 1847: 171.

The words *in litteris* in Zeller's first description indicate that he may have communicated that manuscript name in correspondence or in the form of named specimens to fellow lepidopterists as was common practice in those days. Perhaps unaware of Zeller's original description and subsequent reference, Herrich-Schäffer attributed *inustella* to 'FR' (Fischer von Roeslerstamm), from whom he may have received one or more specimens under that name.

Zeller did not mention a type-locality for *inustella* in 1839 or 1847, nor was it fixed when a lectotype was designated (Sattler 1978: 61), but the assumption that *inustella* was collected in then German Silesia (Huemer & Karsholt 2010: 218) is here accepted. None of the Zeller specimens in BMNH bears a locality label and I did not find the name *inustella* mentioned in Zeller's quite detailed field diaries up to and including the year 1839. However, as the writing in the diaries, which are in old German script, is minuscule I might easily have overlooked the name. Herrich-Schäffer (1854: 171) gave the distribution as 'Schlesien', and amongst four specimens coming from Herrich-Schäffer, via the Hofmann collection, two are labelled respectively 'Schlesien' and 'Glogau'. It is highly likely that those specimens originated from Zeller, who lived in Glogau and for many years collected extensively in that area. Glogau, a town in the then German province of Schlesien, which was separated from Germany after World War 2, is now part of western Poland: Lower Silesia, Głogów (51°40′ N 16°06′ E).

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Les Hill, Zoë Randle, Richard Fox & Mark Parsons 2010. Provisional Atlas of the UK's Larger Moths. – Butterfly Conservation, Wareham, Dorset, U.K., 454 pp. ISBN 978-0-9562216-4-3. Paperback, format 210 × 295 mm, Price: £ 20.

There has been a funded project entitled "Moths Count" in the U.K. since 2006, and this book presents the outcomes of this project in the form of mapped records for each of the species of larger Lepidoptera known to occur in the United Kingdom.

The book contains just four pages of introductory text and one of acknowledgements, then there are 869 maps showing the distribution of species in the UK, two to each A4 page. Records are divided into pre-2000 shown as open circles and 2000 onwards as solid circles, each covering a 1-km square of the British national grid. The coverage of the maps is impressive and represents 11.3 million records, mostly supplied by amateur recorders.

Traditionally biological recording has covered the whole of the British Isles, including the Republic of Ireland, but in this atlas only Northern Ireland features. The Channel Islands are included although some would regard them as biogeographically more akin to France.

At first glance the maps appear to provide an accurate current range for each species, and comparison with pre-2000 records shows clearly which species are in sharp decline.

Thirty-three of the maps show no record since 2000 and a further 11 show recent records only from the Channel Islands. A number of maps are supplied for species which have only appeared very rarely in the UK, mostly scarce migrant species. Two former resident taxa are not mapped together with three scarce migrant species, but this appears to be a random selection. To give so much space to non-resident species seems a little strange since it is largely a matter of chance where they are recorded.

When one looks more carefully at the maps it is necessary to understand the caveats and constraints which are described in the introductory pages. It is tempting to compare the maps with those published volumes of *The Moths and Butterflies of Great Britain and Ireland* but then the historic records are not the same. Not all early records are included, but some others are. The reason for this is that the data incorporated are just those submitted by the County Recorder for each county in the United Kingdom. Such people are amateur volunteers often with other demands upon their time. The result, as stated, is that the coverage is patchy. What we have here are raw data, but it is expressly stated that analysis of trends for species should not be calculated from these maps.

Examples of a few species may illustrate the situation. *Zygaena viciae* has a map showing the historic locality in the south of England, although it is well known that this species is now resident only in Scotland, but this does not appear on its map. Similarly *Pyropteron chrysidiformis* has pre-2000 records, but none more recent, although I believe it is still resident in Kent.

Taxonomic debate is not entered into, and in cases of uncertainty this is stated; where species pairs are hard to separate a map is given for the complex of species as well as of records of the individual species, e.g. for *Mesapamea secalis/secalella* and *Amphipyra pyramidea/berbera*. A map is supplied with records of *Schrankia intermedialis* even though this has been shown to be a hybrid taxon.

Scientific names (without author) are used without synonyms, and English names are given and synonyms where they have been in recent use.

The choice of solid circles for records from 2000 onwards means that it is not evident from these maps alone which species are spreading, which is a pity.

When a project attracts funding from public sources there is often felt to be a need to show the outcome in a way such as this book. It does demonstrate the vast amount of recording effort that has gone into it, but it would be more useful if time were taken to ensure that all past and present records were included. This is recognised by the authors and the stated purpose is to encourage further recording. There must be some doubt as to whether similar funding would be available to publish comprehensive maps at some date in the future, or to manage the research which would enable such a project.

David J. L. Agassiz

A new species of *Epinotia* Hübner, 1825 ("1816") from southwestern Bulgaria (Tortricidae: Olethreutinae)

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Abstract. *Epinotia nigristriana* **sp. n.** is described from the male holotype and a female paratype collected at two neighbouring localities in the Struma River valley of southwestern Bulgaria in October 2008. Adults together with male and female genitalia are illustrated.

Introduction

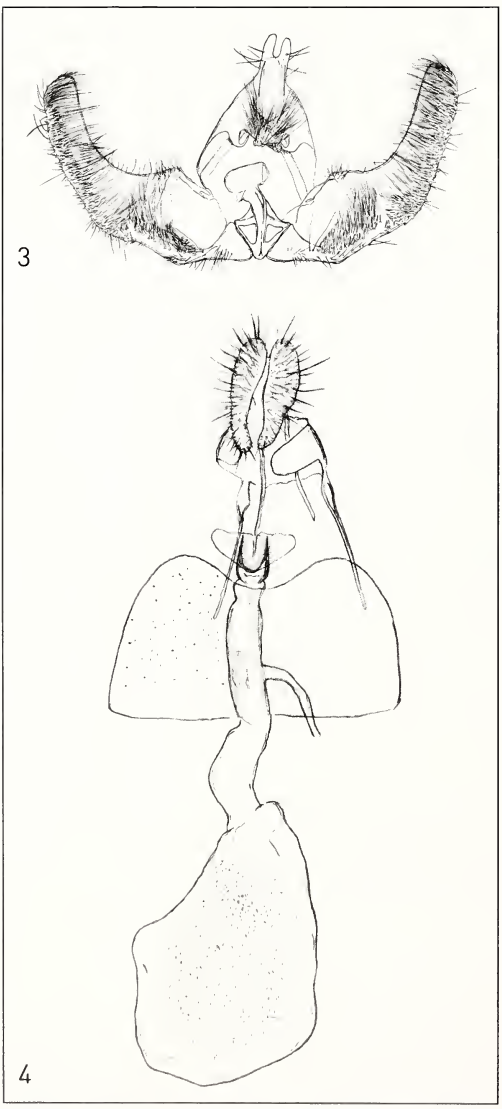
The genus *Epinotia* Hübner, 1825 ("1816") (Tortricidae: Olethreutinae: Eucosmini) has a worldwide distribution and includes 172 described species (Brown 2005), with approximately 100 of them in the Palaearctic region and 40 in Europe (Razowski 2003). Most are univoltine and overwinter in the larval or egg stage, with adults present in summer or autumn. The larvae of most feed on buds, spun leaves or branches of arboreal plants (Kuznetzov 1978). The genus has been subdivided into several subgenera by various authors (e.g., Bradley et al. 1979, Kuznetzov 1978), but most recently, Razowski (1989) disregarded the subgeneric classification.

Two specimens of an unidentified tortricid moth were collected from two neighbouring localities during a field trip to southwestern Bulgaria in 2008. Based on the genitalia and wing pattern these specimens undoubtedly belong to *Epinotia*. However, no similar specimens were found after comparison with the type and non-type material deposited in the collection of the National Natural History Museum (Sofia, Bulgaria), Zoological Institute, Russian Academy of Sciences (St. Petersburg, Russia) and Zoological Museum of the Taras Shevchenko National University (Kiev, Ukraine). The moths show diagnostic differences from all species represented in these collections. In the main literature sources devoted to the Palaearctic Eucosmini (Kuznetzov 1978, 2001; Razowski 2003) no identical species could be found. On this basis, we consider these moths to belong to an undescribed species.

Methods

The moths were collected by attracting them to a "light tower" consisting of a 160-Watt mercury vapour lamp (type MBFT) and an 8-Watt black light tube suspended within a net cylinder. The genitalia were dissected using standard methodology (Robinson 1976) and embedded in Euparal in plastic containers attached to the speci-

Figs 1, 2. *Epinotia nigristriana* sp. n. **1.** Male (holotype). **2.** Female (paratype). Scale bar = 5 mm.



Figs 3, 4. Genitalia of *Epinotia nigristriana* sp. n. **3.** Male (holotype). **4.** Female (paratype).

mens (Zlatkov 2011). The type material will be deposited in the National Natural History Museum, Sofia (NMNH).

Epinotia nigristriana sp. n. (Figs 1–4)

Material. Holotype ♂, 'SW Bulgaria, Strouma Valley, | Kresna Gorge near Sheytan Dere (= Oshtavska) River, | 300 m, N 41°45.63′, E 023°09.29′, | 10.10.2008, at light, | leg. B. Zlatkov & O. Sivilov', 'BC SB Lep 0081', 'HOLOTYPUS | *Epinotia nigristriana* | det. Budashkin & Zlatkov, 2010' (NMNH). – Paratype: ♀, 'SW Bulgaria, Strouma Valley, | Roupite place near Petrich – | volcanic hill of Kozhuh, | 200 m, N 41°27.72′, E 023°15.50′, | 24.10.2008, at light, | leg. B. Zlatkov & O. Sivilov', 'BC SB Lep 0082', 'PARATYPUS | *Epinotia nigristriana* | det. Budashkin & Zlatkov, 2010' (NMNH).

Description. Adult (Figs 1, 2). Sexual dimorphism undetected. Forewing length in male 7.7 mm, in female 8.4 mm. Head, antennae, labial palpi and thorax grey. Forewing without costal fold, relatively wide, with prominent costal and external edges and with apex drawn to a point; upperside ground colour grey with clear brownish-ochreous tint; markings poorly defined; two blackish, relatively long and wide longitudinal streaks present, one extending from wing base for about 1/3 of forewing length and the second of subequal length and located in area of discal cell; an additional, equally ill-defined linear marking stretching from distal tip of

Fig. 5. Locus typicus in Kresna Gorge, 05.04.2009. The green trees are mostly *Juniperus excelsa* M. B.

discal cell to wing apex; large, round, black spot at apex; speculum poorly-defined, consisting of 4 or 5 thin, barely discernible horizontal lines; costal strigulae whitish-grey with silver lustre, pairs 1–3 poorly defined; a larger black line situated approximately at 1/4 length from base to apex. Cilia grey with some dirty-white sections and dirty-white basal line. Forewing underside pale brownish-grey with darker costa; five pairs of costal strigulae well defined. Hindwing upperside brownish-grey, more or less uniformly coloured, with hardly darker apical and terminal areas; overlapping area whitish; cilia brownish-grey with dirty-white basal line. Abdomen grey.

Male genitalia (Fig. 3). Uncus broad basally, with terminally rounded bifurcation. Tegumen trapezoidal, relatively narrow. Socii more or less wide-triangular, moderately long. Valva broadest at base, almost without incision of the lower edge, with long and narrow cucullus. Sacculus obtuse angled with well-developed, short, thorn-shaped setae on angle and well-developed lower angle. Aedeagus short, without cornuti in the vesica (no sockets were found).

Female genitalia (Fig. 4). Papillae anales membranous, relatively long and wide, covered with moderately long setae. Posterior and anterior apophyses comparatively long. Caudal edge of sternum VII faintly concave. Ostium bursae more or less semicircular, medium in width, situated at front edge of large semioval postvaginal plate. Antrum weakly sclerotised, cup shaped. Ductus bursae long and broad, membranous, with oblong sclerotised inclusion next to ductus seminalis opening. Corpus bursae membranous, without signa, but with large patch of tiny spines on dorsal surface.

Diagnosis. Externally, the new species is similar to some grey forms of the polymorphic *Epinotia nisella* (Clerck, 1759), but differs in the presence of black longitudinal and oblique (subterminal) streaks in the forewing pattern. The male genitalia of

Epinotia nigristriana sp. n. are similar to those of the Chinese *Epinotia abnormana* Kuznetzov, 1973 (Kuznetzov 1973: 683–684, fig. 3), but they have a much shallower incision on the lower edge of the valva (between the sacculus and the cucullus), a slenderer bifurcation of the uncus and smaller socii, and a much shorter aedeagus. The female genitalia of the new species are characterised by the absence of signa, and in this respect they resemble the Far Eastern *Epinotia coryli* Kuznetzov, 1970 (Kuznetzov 1970: 437–440, fig. 8). They differ from that species in having shorter anterior apophyses, a semicircular ostium, and no cingulum.

Etymology. The name *nigristriana* is derived from two Latin words: niger – black, and stria – line, band; it is based on the presence of black streaks on the forewings.

Habitat. Both localities are warm, dry, rocky habitats. The locality in Kresna Gorge (Fig. 5) is a sparse community of *Juniperus excelsa* M. B. (Cupressaceae) with other Mediterranean plants – *Phillyrea latifolia* L. (Oleaceae), *Pistacia terebinthus* L. (Anacardiaceae), *Quercus pubescens* Willd. (Fagaceae), *Paliurus spina-christi* Mill. (Rhamnaceae), *Juniperus oxycedrus* L. and *Carpinus orientalis* Mill. (Betulaceae) growing on crystalline schist. The other locality is a remnant of an extinct volcano consisting mainly of volcanic rocks but also marble in the highest northern parts. This habitat includes the same tree species (with the exception of *J. excelsa* M. B.), also *Jasminum fruticans* L. (Oleaceae), *Coronilla emerus* L. (Fabaceae), etc., but also has small open grassy areas.

Life history. Host plants of this species are unknown. Moths were collected on October 10 and 24.

Distribution. The species is known only from southwestern Bulgaria.

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Furumi Komai, Yutaka Yoshiyasu, Yoshitsugu Nasu & Tosihisa Saito (eds) 2011. A Guide to the Lepidoptera of Japan. – Tokai University Press, Hadano, Kanagawa, Japan. xx + 1307 pp. (incl. 248 colour plates). ISBN 978-4-486-01856-8. Hard cover, format 180 × 255 mm. Price: 40,000 Yen (postage included). Contact: E. Ina, email: inaair@tsc.u-tokai.ac.jp

Although written in Japanese, this wonderful, richly illustrated book should be of interest to many lepidopterists in Europe and elsewhere in the world. Indeed, captions are in English for all figures and plates throughout most of the book (from p. 67 onwards). Only the first chapter has figure captions in Japanese, but, in the morphology section, the abbreviations placed on the drawings correspond to Latin or English words and are usually easy to understand.

After a few introductory pages (with, in particular, authorship indications for certain figures), the book includes three main chapters, namely: I. Morphology and biology (pp. 1–56); II. Phylogeny and higher classification (pp. 57–496); III. Diversity of Japanese Lepidoptera (pp. 497–930). Chapter I deals with lepidopteran morphology (34 pp.; three authors), feeding habits (12 pp.; author: Y. Nasu), and sex pheromone chemistry and evolution (8 pp.; author: T. Ando). Chapter II, which is much longer, starts with six pages (by F. Komai) about the history of the higher classification of the Lepidoptera: the systems proposed by different authors are clearly presented, with tables and a cladogram which include both Japanese and Latin names. This cladogram is that considered by N. P. Kristensen, M. J. Scoble and O. Karsholt in 2007 (*Zootaxa* **1668**: 699–747), i.e. a tree essentially based, for the Ditrysia, on my 1991 *Entomologica Scandinavica* paper and, for non-ditrysian Lepidoptera, on the excellent research work of Niels P. Kristensen, long realized in collaboration with the late Ebbe S. Nielsen. It corresponds to the classification adopted in the Guide to the Lepidoptera of Japan (published in February 2011, i.e. before an important, innovative article that came out later in 2011: Nieukerken *et al.* in Zhang's *Zootaxa* issue about animal biodiversity and classification). Pages 65–496 of the Guide treat, in detail, the morphology and classification of all lepidopteran families and subfamilies occurring throughout the world. This part of the book is illustrated with numerous, high-quality line drawings and photographs, which represent all life-cycle stages. As a rule, the nomenclature of the family-group taxa is quite reliable, although the authors should not have preferred "Amphitheridae Meyrick" to the senior, widely used name "Roeslerstammiidae Bruand" (issue discussed in *Nota lepidopterologica* **29**: 113–120). Between pages 480 and 483, one finds a large foldout with a well-made table that compares the systems considered by many authors for the classification of the quadrifid Noctuoidea: it starts with "Hampson, 1900–1920" and ends with "Zahiri *et al.*, 2010" (2011 actually – *Zoologica Scripta* **40**: 158–173), although the system chosen in the Guide is more conservative than the latter. Chapter III is subdivided into four sections: "Lepidopteran fauna of Japan" (13 pp. by U. Jinbo; with a table showing, for every family, the number of species recorded from Japan), "Lepidopterous pests in Japan" (9 pp. by Y. Nasu and U. Jinbo), "Key to the families and to some subfamilies of Japanese Lepidoptera" (28 nicely illustrated pp.) and "Biology of Japanese Lepidoptera" (pp. 549–930). This last section – in Japanese like the rest of the text – covers about 992 species selected among all moth families known to occur in Japan. It includes host-plant Latin names and a number of figures illustrating the pre-imaginal morphology of certain species (most of which belong to the Gelechioidea). Pages 931–1180 correspond to 248 superb colour plates showing, for each of the above-mentioned 992 species, at least larva(e) and one or two imagos, often also eggs, the pupa and/or cocoon, the resting posture of the imago, etc. Then follow a long list of references (mostly not in Japanese), an "Index to scientific names" (i.e. Latin and Japanese names of moths and butterflies), a "General index" (including, in particular, English or Latin morphological terms), a "Host index" (with Latin and Japanese names of host-plants), and the list of the 27 contributors, which includes the four editors.

Non-Japanese entomologists will find in this handbook detailed information about host-plants and an abundant, high-quality artwork that documents, for example, the larval chaetotaxy, the head capsule ornamentation, the pupal morphology, and the imaginal wing venation (illustrated for, respectively, about 100, 90, 180, and 175 species). It should be emphasized that the 490 (usually numbered) text-figures of the book correspond, in fact, to approximately 1930 line drawings, 79% of which are original drawings. This Guide can thus be warmly recommended to all those interested in the biology, early stages and comparative morphology of the Lepidoptera.

Joël Minet

Torticinae aus der Sammlung Shchetkin des Museums für Naturkunde Berlin (Tortricidae)

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Abstract. Tajikistan Torticinae from the Shchetkin collection at the Museum für Naturkunde Berlin have been examined. The material comprises 90 individuals which are identified as 15 described species, three further morphospecies, as well as one newly described species, *Cochylimorpha irmhildae* **sp. n.**, from the Gissar Mountain Range.

Zusammenfassung. Die tadschikischen Tortricinae aus der Shchetkin Sammlung am Museum für Naturkunde Berlin wurden untersucht. Dieses Material umfasst 90 Individuen, die 15 bekannten Arten, drei weiteren Morphospezies sowie einer neu zu beschreibenden Art, *Cochylimorpha irmhildae* **sp. n.** aus dem Gissargebirge, angehören.

Einleitung

Y. L. Shchetkin war ein russischer Lepidopterologe, der als junger Mann in Samarkand (Usbekistan) lebte, dort Biologie studierte und von 1948 bis zu seinem Tode 1995 in Duschanbe (Tadschikistan) ansässig war. Als wissenschaftlicher Mitarbeiter an der tadschikischen Akademie der Wissenschaften beschäftigte er sich anfangs mit Themen der angewandten Entomologie, später hauptsächlich mit der Systematik und Faunistik der Makrolepidopteren Mittelasiens und speziell Tadschikistans. Von ihm beschriebene Arten (offenbar Typen) befinden sich teilweise im Institut für Zoologie und Parasitologie in Duschanbe. Zahlreiche Expeditionen führten Shchetkin in verschiedene Gebirgsketten Tadschikistans und andere Regionen Mittelasiens (Nikolajev et al. 2004). Dabei sammelte er auch gelegentlich Kleinschmetterlinge, meistens jedoch nur die größeren Arten der Zünsler (Pyraloidea) und Wickler (Tortricidae). Wenige Tiere waren bestimmt, manchmal wurde nur die Gattung festgestellt. Ansonsten waren die Tiere nicht bestimmt und wohl als Beifänge eingetragen worden. Die Sammlung ist nach seinem Tod von seinem Sohn Yuri (Taganrog) verkauft worden. Davon sind die Kleinschmetterlinge 1999 an das Museum für Naturkunde Berlin gelangt.

Material und Methoden

Die Shchetkin Sammlung am Museum für Naturkunde in Berlin enthält 90 Individuen Torticinae. Die Tiere stammen aus der Zeit zwischen 1947 und 1967. Auf den Fundortetiketten findet sich einige Male der Name „Stalinabad“. Es handelt sich um das heutige Duschanbe. Die bekannten Verbreitungsangaben zu den einzelnen Arten wurden den Werken von Razowski (1965, 1970, 1979, 2001, 2002, 2008, 2009) entnommen, wenn nicht ausdrücklich auf eine andere Quelle verwiesen wurde. Alle untersuchten Tiere befinden sich, soweit nicht anders vermerkt, in der Sammlung des Museums für Naturkunde Berlin. Die mikroskopischen Präparate für die Genitaluntersuchungen wur-

den vom Autor angefertigt. Die Angabe der Pärparatenummern folgt der Abkürzung „GU HB".

Ergebnisse

Phtheochroa variolosana Christoph, 1887

Material. 1♀, **Tadschikistan**, Handschriftliches Fundortetikett nicht lesbar, 07.4.1963, leg. Shchetkin, GU HB 1426.

Verbreitung. 'Turkmenien, Ala Tau'; Kasachstan, Usbekistan, Iran, Afghanistan (Razowski 1970).

Cochylimorpha irmhildae sp. n. **Abb. 1a–e**

Material. Holotypus ♂: **Tadschikistan** | „Gissargebirge | Paß Ansob 3379 m | Shchetkin 27.8.1967"|; GU HB 1271. – Paratypus ♂: |"Tadschikistan| Gissargebirge | Paß Ansob | 26.8.1967 3400 m"| (handschriftliches Fundortetikett) GU HB 1429, coll. Blackstein.

Beschreibung. Flügelspannweite: 35 mm, Vorderflügel 16 mm. Labialpalpen ca. 2,5 mal so lang wie Augendurchmesser, gebogen, innen und oben weißlich, außen hellbraun, Kopf und Stirn cremefarben. Vorderflügel sehr lang gestreckt, schlank. Costa am Abdomen wenig gebogen, sonst fast gerade bis leicht konkav. Außenrand sehr schräg, Apex ziemlich spitz wirkend. Grundfarbe der Vorderflügel hellbräunlich bis hellocker. An der Costa von der Wurzel bis etwa zur Flügelmitte ein weißlicher bis silberfarbener schmaler Streif. An der Wurzel ist der Silberstreif mit hellockerfarbenen Schuppen überdeckt. Ein weißlicher bis silberfarbener Längsstreifen durchzieht die gesamte Flügelfläche und endet kurz unterhalb des Apex. Er reicht etwas verschwommen bis an den Saum. Der Längsstreifen ist außen verbreitert und zur Wurzel hin gegabelt. Ein zweiter geschwungener Längsstreifen endet am Tornus. Zwischen diesem und dem oberen besteht eine Verbindung als gleichfarbiger Schrägstrich, annähernd parallel zum Außenrand. Im Mittelfeld des Flügels zwischen den Längsstreifen, im Saumfeld und in der Partie oberhalb des weißen Längsstreifens treten gehäuft bräunliche Schuppen auf. Die Fransen sind weißlich, am Apex und Tornus leicht cremefarben bis hellbräunlich. Hinterflügel hellgrau, Fransen weißlich.

♂ Genital (Abb. 1 c–e). Tegumen breit, Socii nach unten gerichtet, relativ unscheinbar kurz bis mittel lang, nur leicht sklerotisiert; Transtilla-Mittelteil breit, rund und oben etwas abgeflacht, kräftig sklerotisiert mit nach oben gerichteten Dornen bestückt. Valve länglich kompakt, Sacculus reicht geradeso über die Hälfte der Valvenlänge; Phallus schlank mit langem ventralen Endfortsatz, einer in der Mitte gelegenen Caulis und zwei in der Vescia befindlichen fast gleich großen Cornuti.

♀ Genital. Unbekannt.

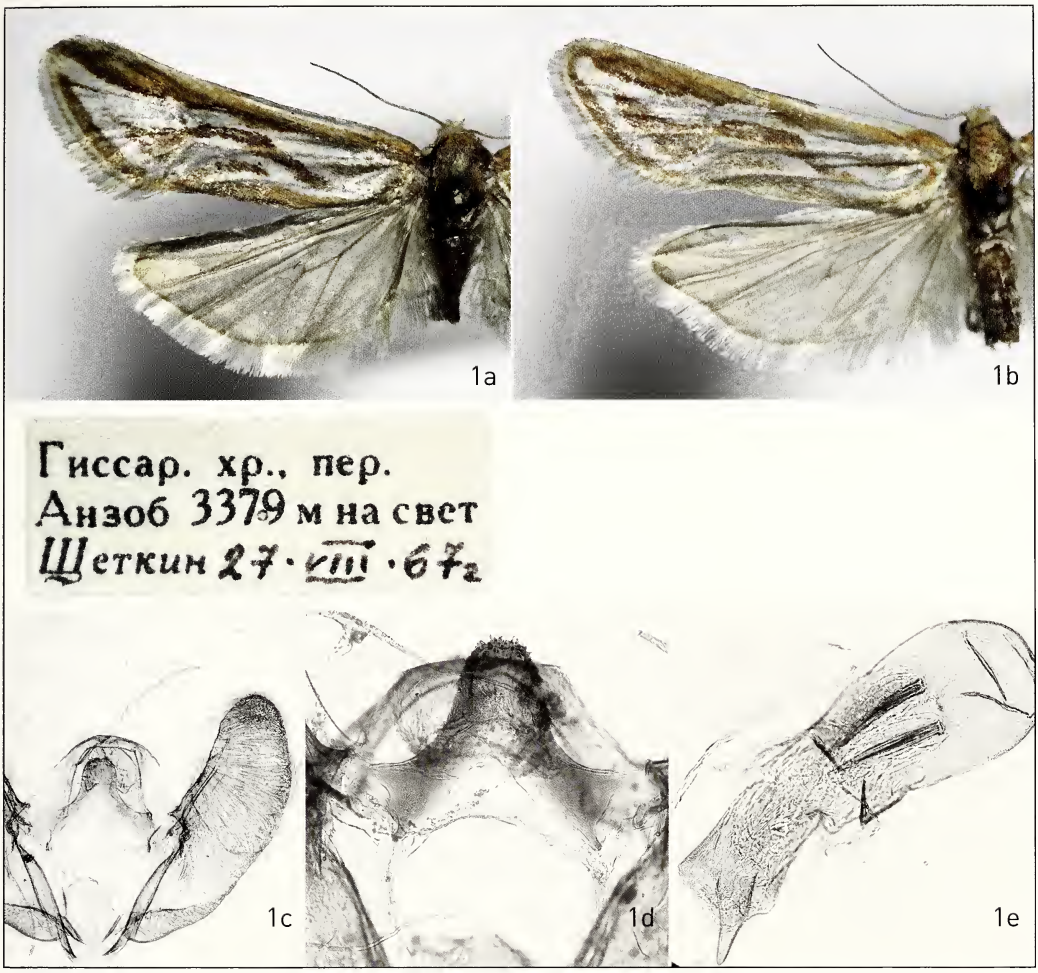

Abb. 1a–e. *Cochylimorpha irmhildae* sp. n., **1a.** Holotypus ♂ mit Fundortetikett. **1b.** Paratypus ♂. **1c–e.** ♂ Genital.

Diagnose. Die neue Art steht der *Cochylimorpha stataria* (Razowski, 1970) nahe, unterscheidet sich aber wie folgt: Grundfarbe der Vorderflügel hellbräunlich bis hellockerfarben (weißlich, hellgraugelblich getönt bei *C. stataria*), Zeichnung weiß bis silberfarben (ocker bis rostfarbig bei *C. stataria*) und *C. irmhildae* ist deutlich größer als *C. stataria*. Im männlichen Genital ist der Mittelteil der Transtilla nach außen gerundet (bei *C. strataria* nach innen) und im Phallus sind die Cornuti gleich lang (bei *C. stataria* ungleich lang).

Etymologie. Ich widme die neue Art meiner lieben Frau, Irmhild Blackstein, die stets Verständnis für meine lepidopterologischen Aktivitäten hat, in großer Dankbarkeit.

Bemerkungen. Die neue Art wird der Gattung *Cochylimorpha* zugeordnet, die sich durch folgende Merkmale auszeichnet (Razowski 1970), welche auch bei der neuen Art vorhanden sind: Im Vorderflügel reicht die Ader ax nicht über das Ende der Mittelzelle hinaus; im männlichen Genital ist das Mittelteil der Transtilla breit und die Socii sind herabhängend.

***Cochylimorpha nodulana* (Möschler, 1862)**

Material. 1♂, 4♀, **Tadschikistan**, Wachsch.(skoi Tal), Dschilikulia, 3.9.1948, 19.6.1949 (coll. Blackstein), 27.7.1949, 28.7.1949, leg. Shchetkin; 1♀, Gissargebirge, 28.6.1948, leg Shchetkin, GU HB 1278 (♂); 1448, 1449 (♀).

Verbreitung. In sieben südlichen Regionen Russlands (Sinev & Nedoshivina, 2008) sowie Kaukasus, Transkaukasien, Kasachstan, Tuva und Mongolei (Razowski, 1970, 2002).

***Cochylimorpha meridiolana* (Ragonot, 1894)**

Material. 1♂, **Tadschikistan**, Komdara, 28 km von Stalinabad entfernt, 27.6.1948, leg. Shchetkin,GU HB 1272 (♂).

Verbreitung. In Zentralasien weit verbreitet, bereits aus Tadschikistan bekannt (Razowski 2009).

***Cochylimorpha discolorana* (Kennel, 1899)**

Material. 3♀, **Tadschikistan**, Wachsch(skoi Tal), Dschilikulia, 19., 21., 23.4.1949 (1♀ coll. Blackstein), leg. Shchetkin, GU HB 1280 (♀).

Verbreitung. Rumänien, europäischer Teil Russlands, Kaukasus, Aserbaidschan, Kasachstan, Altai, Iran und Afghanistan (Razowski 2009).

***Aethes moribundana* (Staudinger, 1859)**

Material. 1♀, **Tadschikistan**, Kondara(schluchten), 18.6.1956, leg. Shchetkin, GU HB 1364 (♀).

Verbreitung. Algerien, in Europa von der Iberischen Halbinsel und den Britische Inseln bis zum Ural, Kleinasien, Kaukasus, Iran, Usbekistan, Kirgisien, Kasachstan, Xinjiang (China), Sibirien, Mongolei (Razowski 2009).

***Aethes kasyi* Razowski, 1962**

Material. 1♀, **Tadschikistan**, Wachschskoi (Tal), 10.5.1951, leg. Shchetkin, GU HB 1363 (♀).

Verbreitung. Bulgarien, Mazedonien, Krim, Jordanien, Afghanistan und Iran (Razowski 2009).

***Cochylis amoenana* Kennel, 1899**

= *Cochylis apricana* Kennel, 1899

Material. 1♀, **Tadschikistan**, Kondara(schluchten) 28 km von Stalinabad entfernt, 26.6.1948, leg. Shchetkin.

Verbreitung. Kleinasien, Transkaukasien, Iran, Usbekistan, Tadschikistan (Razowski 2009), Kirgisien: Toktogul area (Trematerra 2010), Afghanistan und Pakistan (Razowski 2009).

Acleris variegana (Denis & Schiffermüller, 1775)

Material. 1♂, **Tadschikistan**, Kondara(schluchten) 15.5.1955, leg. Shchetkin, GU HB 1292 (♂).

Verbreitung. Palaearktische Art; eingeführt in Nordamerika (Razowski 2008).

Acleris hastiana (Linnaeus, 1758)

Material. 1♂, **Tadschikistan**, Wachschskoi (Tal), 4.11.1951,leg. Shchetkin, GU HB 1293 (♂).

Verbreitung. Holarktisch, weit verbreitet (Razowski 2008).

Acleris napaea (Meyrick, 1912)

Material. 3♂, 6♀, **Tadschikistan**, Wachschskoi (Tal) 5.7.,5.9.,17.10.,2.11.(coll. Blackstein), 4.11.1951 (teilweise ex pupa), leg. Shchetkin; 1♂, 2♀ Umg. Dushanbe ,5. und 6.3.1965,leg. Shchetkin; 1♂, 2♀, handschriftliches Fundortetikett, nicht lesbar, 7.11.1949 und 18.5.1956 (coll. Blackstein),leg. Shchetkin, GU HB 1276 (♂), 1285 (♀), 1290 (♂), 1291 (♂), 1450 (♀), 1451 (♀).

Verbreitung. Südosteuropa, Armenien, Iran, Usbekistan, Turkmenistan, Afghanistan, Pakistan (Razowki 2008).

Eana samarcandae Razowski, 1958

Material. 1♂, **Tadschikistan**, Kondara (Schluchten), 1100 m, 30.6.1956, leg. Shchetkin, GU HB 1436 (♂).

Verbreitung. Usbekistan bei Samarkand (Typusfundort) (Razowski, 1965); neuere Funde wurden aus Kirgisien gemeldet. Toktogul, 15 km nordöstlich von Karakul, 1300–1400 m, 17.06.2000 (2 Tiere) und Süd-Chatkal bei Aflatun, 1350 m, 19.06.2000 (12 Tiere) leg S. Churkin (Trematerra 2010).

Cnephasia zelleri (Christoph, 1877) **Abb. 2a–c**

Material. 10♀, **Tadschikistan**, Peski Kaschka-Kum, Wachsch.(skoi Tal), 26.4.1952, (alle am gleichen Tag gefangen) leg. Shchetkin (2♀ in coll. Blackstein), GU 1283, 1329, 1422, 1431 (♀♀). Abb. 2b und c.

Verbreitung. Turkmenistan (Razowski 1965), Nordostpersien (Kennel 1921).
Anmerkung. Die Tiere sind etwas abgeflogen und da es sich ausnahmslos um Weibchen handelt, war die Determination etwas schwierig. Alle Merkmale des weiblichen Genitals entsprechen der Abb. 13 für *C. zelleri* bei Razowski (1965: 228), doch fehlt

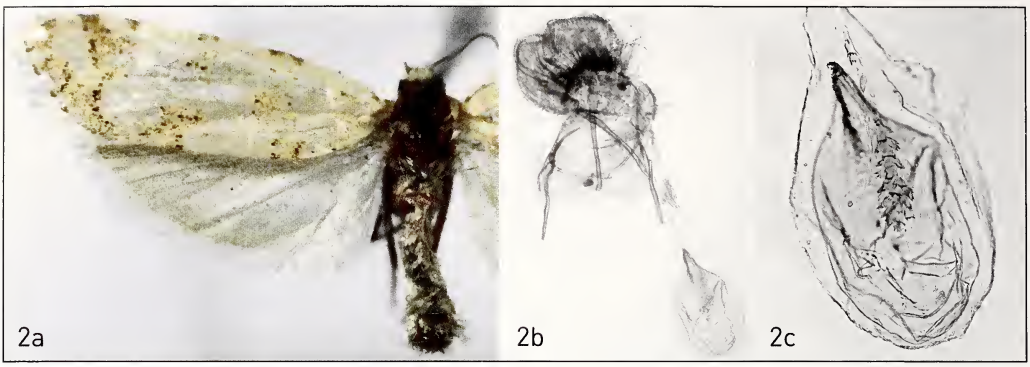

Abb. 2a–c. *Cnephasia zelleri* (Christoph, 1877), **2a.** Imago ♀, **2b–c.** ♀ Genital.

dort das Signum im Corpus bursae. Letzteres ist allerdings typisch für die Arten der Gattung *Cnephasia* und auch bei den mir vorliegenden Tieren vorhanden. Bei einem gut erhaltenen und zweifelsfrei bestimmten Tier der Sammlung des ZMB fand ich bei der Untersuchung des weiblichen Genitals ebenfalls ein Signum im Corpus bursae (Exemplar ohne Fundortetikett, GU HB 1452). Es scheint somit sicher zu sein, dass die Abb. bei Razowski (1965) korrigiert werden muss.

Pandemis chondrillana (Herrich-Schäffer, 1860)

Material. 3♂, **Tadschikistan**, Gissargebirge, (ex pupa), 8.5. 1955 (coll. Blackstein), 15.5.1962 (coll. Blackstein), 24.5.1962; leg. Shchetkin; 1 Tier (ohne Hinterleib), Duschanbe („Stalinabad"), 31.5.1955, leg. Shchetkin; 1 ♂ und 1 ♀, jeweils mit nicht lesbaren Fundortetiketten26.5.1947 und 1.7.1955 (2000 m), leg. Shchetkin, GU HB 1286 (♂), 1287 (♂), 1428 (♂).

Verbreitung. Frankreich, Rumänien, Bulgarien, Ukraine, Russland, Kleinasien, Kasachstan, Mongolei, Nordwest-China (Razowski 2002), Kirgisien (Trematerra 2010), Afghanistan (Razowski 2002, Pakistan (Kuznetsov et al. 1996).

Clepsis sarthana Ragonot, 1894

Material. 1♂, **Tadschikistan**, Gissargebirge, Konbara 1200 m, 12.5.1954, leg. Shchetkin; 1♀ und 1 Tier ohne Hinterleib (det. Danilevski) Gissargebirge, Konbara 1100 m, 8.5.1955 und 17.5.1955, leg. Shchetkin; 1♀ Warsob, 1130 m, 16.5.1955, leg. Shchetkin; 2♂ mit handschriftlichen nicht lesbaren Fundortetiketten, 27.6.1948 (coll. Blackstein) und 31.5.1958 (2200 m),leg. Shchetkin, GU HB 1275 (♂).

Verbreitung. Zentralasien (Samarkand und Alai Gebirge) (Razowski 1979).

Clepsis gerasimovi Danilevski, 1962

Material. 4♂, 4♀ **Tadschikistan**, Wachsch.[skoi Tal], Dschilikulia, 10.5., 14.6. und 17.6.1949 (♂), 23.4., 15.6., 24.6. u. 18.8.1949 (♀) leg. Shchetkin; 3♀ Wachschskoi Tal, Kirsan-Tjube, 28.4.1951, 3.9.1951, 9.5.1958 (coll. Blackstein), leg. Shchetkin; 1♂, handschriftliches Fundortetikett, nicht lesbar, 4.4.1949 (coll. Blackstein), leg. Shchetkin, GU HB 1289 (♂), 1327 (♂), 1435 (♂),1277 (♀).

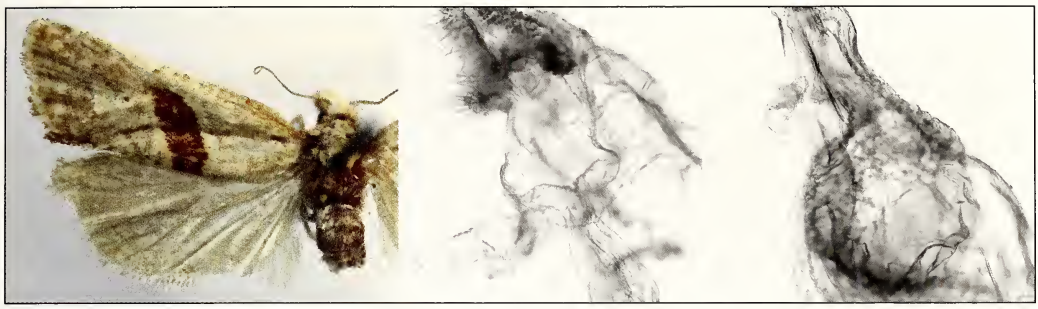

Abb. 3a–c. *Cochylimorpha* sp. **3a.** Imago ♀, **3b–c.** ♀ Genital.

Verbreitung. Usbekistan (Buchara und Chiva) (Razowski 1979).

Die folgenden drei Arten kann ich nicht eindeutig zuordnen. Die Tiere sind entweder in schlechtem Zustand, oder es handelt sich um Einzeltiere, oder es stehen nur Weibchen zur Verfügung. Für eine sichere Artdiagnose reicht das nicht aus. Es werden hier die Tiere und ihre Genitalapparate mit dem Ziel abgebildet, den Stand der Dinge darzustellen, um eine spätere Bestimmung zu erleichtern.

***Cochylimorpha* sp.** **Abb. 3a–c**

Material. 2♀, **Tadschikistan**, Wachsch.(skoi Tal) Dschilikulia 21.08.1949 und 24.8.1948 leg. Shchetkin, GU HB 1430 Abb. 3b und c.

Anmerkung. Ich habe für die Bestimmung nur die beiden Weibchen zur Verfügung. Die nächst verwandten Arten dürften *C. halophila* (Christoph, 1872), *C. hilarana* (Herrich-Schäffer, 1851) und *C. jaculana* (Snellen, 1883) sein. Die letzten beiden unterscheiden sich allerdings durch relativ konstante äußere Merkmale von dem hier abgebildeten Tier. Falls es sich nicht um eine separate Art handelt, was bei dem wenigen vorliegenden Material nicht endgültig beurteilt werden kann, handelt es sich vielleicht doch um *C. halophila* (Christoph, 1872). Diese Art wurde wegen ihrer beachtlichen Variabilität bereits in drei Subspecies unterteilt (Razowski 2009).

Während *C. halophilana adriatica* Huemer, 2000 von Salzwiesen der Adria stammt, wurde *C. halophilana haliphilana* Christoph auch in den Gebirgen Zentralasiens bis auf 2100 m Seehöhe beobachtet. (Razowski 2009).

***Cochylimorpha* sp.** **Abb. 4a–d**

Material. 1♀, **Tadschikistan**, Kondara (Schlucht), 28 km v. Stalinabad, 24.6.1948, leg. Shchetkin, GU HB 1427 (♀).

Anmerkung. Fast alle äußeren Merkmale des Tieres passen zu *Cochylimorpha nuristana* (Razowski, 1967). Nach Razowski (1970) besteht in Flügelfärbung und -zeichnung eine gewisse Variabilität, so dass auch das vorliegende Tier der Art zugeordnet

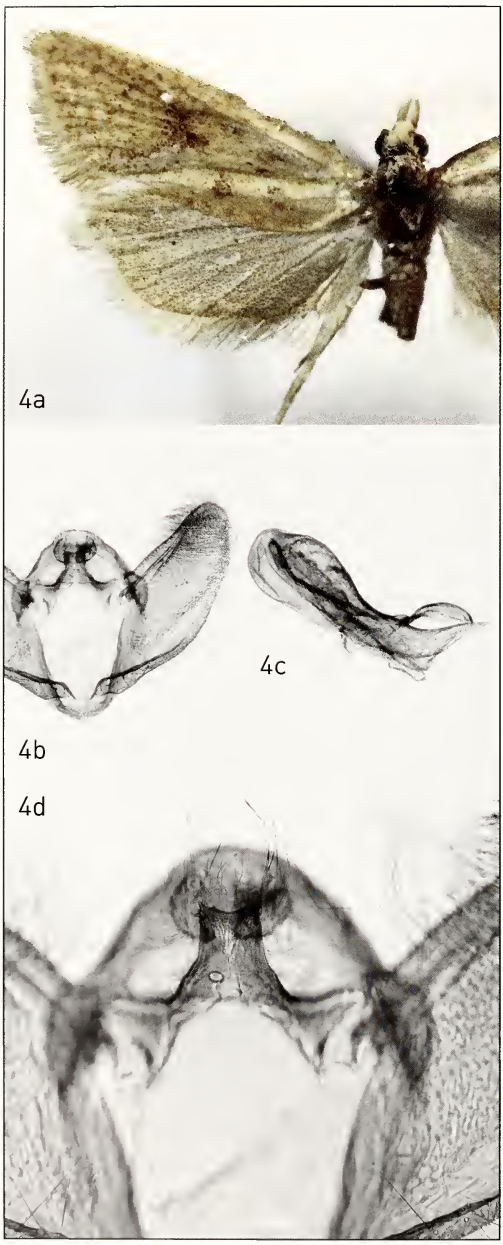

Abb. 4a–d. *Cochylimorpha* sp. **4a.** Imago ♂, **4b.** ♂ Genital. **4c–d.** ♂ Genital Mittelteil mit Transtilla und Phallus.

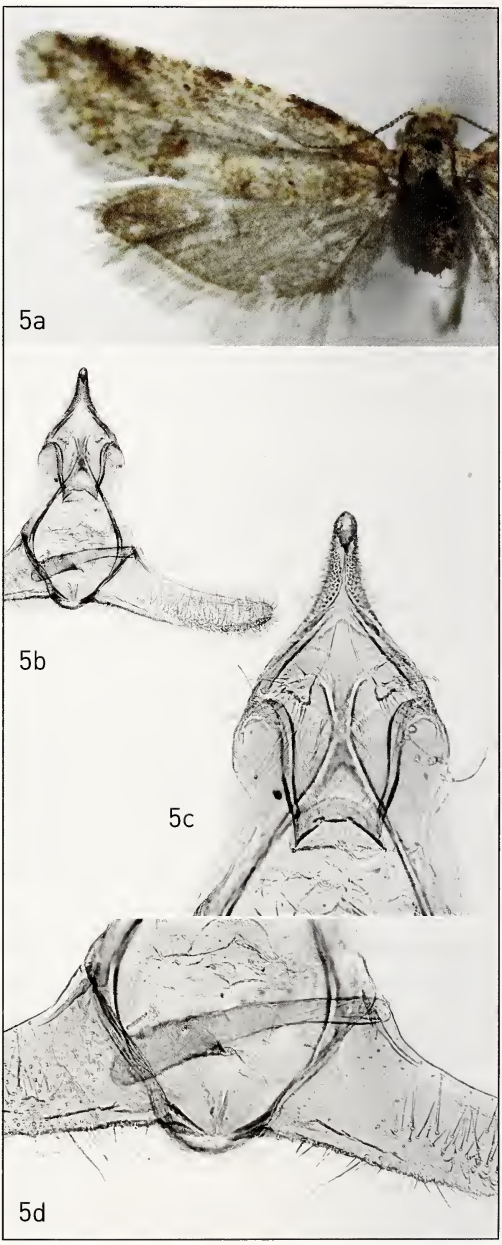

Abb. 5a–d. *Cnephasia* sp. **5a.** Imago ♂, **5b.** ♂ Genital Gesamtansicht, **5c–d.** Ausschnitte.

werden könnte. Allerdings weicht das männliche Genital (Abb. 4b–d) in der Form der Transtilla deutlich von den Abbildungen bei Razowski (1970: Taf. 50, Abb.78 und 2009: 138, Taf. 9, Abb. 96) ab. Möglicherweise handelt es sich hierbei um eine noch nicht beschriebene Art. Um dies zu beurteilen, müsste mehr Material zur Verfügung stehen. Somit bleibt eine eindeutige Bestimmung des Einzeltieres noch offen.

***Cnephasia* sp.** **Abb. 5a–d**

Material. 1♂, **Tadschikistan**, Handschriftliches Fundortetikett nicht lesbar, 26.4.1947, leg. Shchetkin, GU HB 1437 (♂).

Anmerkung. Wahrscheinlich gehört das Tier in die Nähe von *Cnephasia sedana* (Constant, 1884) bzw. *Cnephasia heinemanni* Obraztsov, 1956. Die Differenzierung zu diesen Arten wird insbesondere in der Gestalt der Gnathos im männlichen Genital sichtbar. Razowski (2001) äußert sich zu *C. sedana* wie folgt: „... die asiatischen Formen können Subspecies oder eigene Species repräsentieren". Klarheit kann hier nur neues Material bringen.

Danksagung

Herrn Dr. Wolfram Mey, Museum für Naturkunde Berlin, danke ich für die Möglichkeit, die Tortricinae der Shchetkin-Sammlung aus dem Zoologischen Museum zu bearbeiten. Für die sehr freundliche Unterstützung bei der Anfertigung von Genitalfotos danke ich Herrn Dr. Matthias Nuss und Herrn Richard Mally, Senckenberg Museum für Tierkunde Dresden. Herrn Dr. Timm Karisch, Museum für Naturkunde und Vorgeschichte Dessau, danke ich für wertvolle Hinweise zur Determination einiger Arten und Herrn Rolf Schwieger, Rathenow für die Übersetzung eines russischen Textes.

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Fauna of butterflies (Papilionoidea) in the National Park Galičica, Republic of Macedonia

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Abstract. The butterfly fauna (Papilionoidea) of the National Park Galičica is relatively well known. However, the literature data on species found by numerous authors are generally without listed localities, for example only mentioning Galičica, Ohrid, etc. Research results on butterfly fauna in the National Park Galičica is based on a review of the material from the Macedonian Museum of Natural History (SKO), and of all literature data which were accessible to us, as well as many years of continuous investigations into this group of insects. As a result of investigations carried out, two species have been removed and 10 species not previously recorded in the National Park Galičica have been added to the list. There are 21 species of skippers (Hesperiidae), 6 species of swallowtails (Papilionidae), 21 species of whites (Pieridae), 68 species of brush-footed butterflies (Nymphalidae), and 50 species of blues, coppers and hairstreaks (Lycaenidae). This study provides for the first time complete data on 166 species of butterflies in the National Park Galičica.

Résumé. Les papillons de jour (Papilionoidea) du Parc national de Galičica sont relativement bien connus, mais les localités des données bibliographiques des différents auteurs sont en général peu précises, comme par exemple les seules mentions de Galičica, Ohrid, etc. Les résultats de ce travail sur la faune des papillons de jour du Parc national de Galičica se basent sur l'examen de la collection du Muséum (SKO), la revue des données de la littérature, ainsi que nos investigations de terrain ces dernières années. Il en résulte la suppression de deux espèces et l'ajout de 10 espèces qui n'avaient pas encore été notées comme présentes dans le Parc national de Galičica. Au bilan, les hespéries (Hesperiidae) sont représentées par 21 espèces, les papilionidés (Papilionidae) par 6 espèces, les piérides (Pieridae) par 21 espèces, les lycènes par 50 espèces (Lycaenidae) et les nymphalidés (Nymphalidae) par 68 espèces. Ce papier présente une synthèse complète des données sur ces 166 espèces de papillons de jour du Parc national de Galičica.

Introduction

The National park Galičica is located in the southwestern part of the Republic of Macedonia, close to Albania and Greece (Fig.1). The Galičica Mountain stretches north to south between two lakes: Lake Ohrid and Lake Prespa. Its situation and its variety of biotopes make Galičica a study area of the Societas Europaea Lepidopterologica.

This paper presents all information related to the butterfly fauna (Papilionoidea) of the National Park Galičica, based on literature data and on our field investigations. We also added data from the samples deposited in the collections of the Macedonian Museum of Natural History (SKO).

Material and methods

Over 4000 specimens of butterflies from the National Park Galičica represented in the SKO collection were examined. Recorded data, material collected and prepared, labelled and identified in our own investigation are deposited in the SKO collection as well. Records that come from observations only are listed as "Field data". The classification and nomenclature used in this paper are same as those used in Fauna Europaea online database (2010).

Area of investigation. Roughly situated between 41°07' N, 20°48' E and 40°56' N, 20°57' E, the National Park Galičica covers a surface area of about 25.000 ha. The western part of the National park (Ohrid side) is dominated by rocky terrain with steppe-like vegetation, the rest being covered with woodland. The eastern side (Prespa Lake) is mostly covered with woodlands and meadows. From a phytocenologic view, this mountain range has 38 vegetation communities. From the topographic view (Fig. 2), the National Park and the mountain Galičica are divided into two parts: Small Galičica (covering Mountains Istok and Petrina) and Old Galičica (covering the southern part of the massive). The highest parts of the mountain range at Galičica are three peaks: Magaro (2254 m), Lako Signoj (1984 m) (Fig. 4) and Goga (1737 m). The geological structure is composed of stony landscapes with karst erosion as in localities Suvo Pole, Asanđura (Fig. 5), Đafa and Vardulj.

Results

166 species of butterflies have been recorded in the National Park Galičica: 21 species of skippers (Hesperiidae); 6 species of swallowtails (Papilionidae); 21 species of whites (Pieridae); 68 species of brush-footed butterflies (Nymphalidae), and 50 species of blues, coppers and hairstreaks (Lycenidae). These are detailed below. The localities listed in Table 1 are indicated on the map (Fig. 3).

Species list for the National Park Galičica

Family HESPERIIDAE Latreille, 1809

1. *Erynnis tages* (Linnaeus, 1758). Literature data: Galičica Mt. (as *Nisoniades tages* L., Rebel & Zerny 1931: 85); near Ohrid, Petrina Mt. and Asanđura (as *Thanaos tages* L., Thurner, 1938: 137); Galičica Mt. (Thurner 1964: 52); Galičica Mt. (Jakšić 1988: 32). SKO: Gradište, 25.07.1980, P. Meškovski; Ohrid: Gorica, 12.04.1983 and 17.04.1983, S. Jakonov; Galičica Mt.: Asanđura, 10.06.2008, and 12.06.2008, 1500 m, M. Ivanov; Galičica Mt.: Asanđura, 12.06.2008, 13.06.2008 and 14.06.2008, 1500 m, V. Krpač; Galičica Mt.: Konjski Merizi, 25.06.2009, 1484 m, V. Krpač.

2. *Erynnis marloyi* (Boisduval, 1834). SKO: Galičica Mt.: Asanđura, 10.06.2008, 1500 m, M. Ivanov.

3. *Carcharodus alceae* (Esper, 1780). Literature data: Galičica Mt. (Rebel & Zerny 1931: 82); Ohrid, in July, Petrina Mt. (Thurner 1938: 137); Galičica Mt. (Thurner 1964: 49); Galičica Mt. (Jakšić 1988: 29).

Table 1. Localities in the National Park Galičica.

Loc. nr.	Locality	Latitude	Longitude	Alt (m)
1	Galičica Mt.: Asanđura (Šarboica)	41°01'37"	20°51'57"	1470
2	Galičica Mt.: Doupkana	41°03'31"	20°51'23"	1463
3	Galičica Mt.: Đafa	41°04'17"	20°51'13"	1560
4	Galičica Mt.: Glajša	40°59'16"	20°48'50"	1010
5	Galičica Mt.: Krstec	41°04'45"	20°50'56"	1524
6	Galičica Mt.: Lake Đafa	41°04'49"	20°52'19"	1500
7	Galičica Mt.: Mali Kazani - Magaro	40°55'48"	20°48'48"	2125
8	Galičica Mt.: under Lako Signoj	40°57'33"	20°49'18"	1680
9	Galičica Mt.: over v. Stenje	40°58'04"	20°53'42"	995
10	Galičica Mt.: over v. Velestovo	41°05'56"	20°50'13"	1159
11	Galičica Mt., pass	40°57'18"	20°49'04"	1595
12	Galičica Mt.: Preseka	41°00'09"	20°53'02"	1609
13	Galičica Mt.: Preslap	40°57'07"	20°49'38"	1595
14	Galičica Mt.: Ski Liftovi	40°59'14"	20°52'07"	1485
15	Galičica Mt.: Tri Bora	40°58'47"	20°51'42"	1507
16	Galičica Mt.: v. Ramne	41°06'34"	20°50'13"	964
17	Galičica Mt.: v. Stenje to v. Konjsko	40°56'05"	20°56'35"	964
18	Galičica: Korita	40°58'01"	20°48'52"	1364
19	Golemi Kazani	40°55'00"	20°49'05"	2032
20	Gradište	40°59'46"	20°48'08"	744
21	Near cave Samatska Dupka	41°01'44"	20°51'18"	1485
22	Ohrid Lake, on the Border Albania – Macedonia	40°54'44"	20°44'15"	701
23	Ohrid, Sveti Naum	40°54'53"	20°44'36"	697
24	Ohrid, v. Peštani.	41°00'57"	20°48'40"	869
25	Ohrid: Gorica	41°05'04"	20°48'28"	690
26	Ohrid: v. Elšani	41°01'36"	20°48'58"	892
27	Ohrid: v. Konsko	41°03'04"	20°48'47"	1085
28	Ohrid: v. Trpeica	40°57'37"	20°46'59"	740
29	Oteševo	40°58'37"	20°54'49"	861
30	Oteševo: Grnčarska Kolonija	40°59'10"	20°55'05"	863
31	Petrina Mt., (Istok Mt.) v. Danilovo	41°04'59"	20°53'00"	1565
32	Prespa Lake: Carina	40°57'38"	20°53'57"	855
33	Stara Galičica Mt.: Lipana livada	40°57'04"	20°49'49"	1610
34	Stara Galičica Mt.: Propas	40°56'37"	20°49'37"	1862
35	Tomoros	40°59'26"	20°52'36"	1661
36	v. Velestovo	41°05'12"	20°49'42"	1051
37	Zdravec	41°04'38"	20°53'42"	1562

4. *Carcharodus lavatherae* (Esper, 1783). Literature data: Ohrid, Petrina Mt., in July (Thurner 1938: 137); Ohrid, Petrina Mt. (Thurner 1964: 49); Galičica Mt. (Jakšić 1988: 30). Collection data: Galičica Mt.: Glajša, 27.06.2009, coll. V. Krpač.

5. *Carcharodus flocciferus* (Zeller, 1847). Literature data: Tomoros (as *Carcharodus altheae* Hb., Doflein 1921: 541, 590); Galičica Mt. (as *Carcharodus altheae* Hb., Rebel & Zerny 1931: 83); Ohrid, Petrina Mt. (as Carcharodus altheae Hb., Thurner 1938: 137); Ohrid, Petrina Mt., Galičica

Mt. (as *Carcharodus althaeae* Hübner, Thurner 1964: 49); Galičica Mt. (as *Carcharodus floccifer*us Zeller 1847, Jakšić 1988: 31).

6. *Carcharodus orientalis* Reverdin, 1913. Literature data: Ohrid, Petrina Mt., in June-September and Asanđura in June (Thurner 1938: 137); Ohrid, Petrina Mt., Asanđura, Letnica, Tomoros (Thurner 1964: 49); Tomoros, 24.07.1918 (Daniel, Foster, Osthelder 1951: 17); Galičica Mt. (Jakšić 1988: 31); Galičica Mt. 10.06.1979 (Scheider & Jakšić 1989: Taf. 2, fig. 3). SKO: Ohrid: Gorica, 17.04.1983, S. Jakonov; Galičica Mt., Asanđura (Šarboica), 26.06.2009, M. Ivanov.

7. *Spialia phlomidis* (Herrich-Schäffer, 1845). Literature data: near Ohrid, middle of June (*Hesperia phlomidis* H. S., Thurner 1938: 137); Ohrid, Petrina Mt., Letnica (Thurner 1964: 50); Galičica Mt., pass (Jakšić & Ristić 1999: 67).

8. *Spialia orbifer* (Hübner, 1823). Literature data: Galičica Mt. (as *Hesperia orbifer* H. S., Rebel & Zerny 1931: 84); Ohrid and Petrina Mt., June (*Hesperia orbifer* Hb., Thurner 1938: 137); Ohrid, 10.–20.06.1954. (Michieli 1963: 22); near Ohrid (Thurner 1964: 49); Galičica Mt. (Jakšić 1988: 25); near Ohrid (Scheider & Jakšić 1989: pl. 1, fig. 10). SKO: Ohrid: Petrina Mt., 09.06.1942, K. Tuleschkow; near Ohrid, 15.06.1954, J. Thurner; Galičica Mt.: Tomoros, 13.08.1978, S. Jakonov; Galičica Mt., 10.06.1979, S. Jakonov; Galičica Mt.: Korita, 25.06.2003 and 14.06.2008, V. Krpač; Galičica Mt.: Korita, 25.06.2003, M. Ivanov; Galičica Mt.: over v. Velestovo, 11.06.2008, M. Ivanov.

9. *Muschampia tessellum* (Hübner, 1803). Literature data: Ohrid, middle of June (as *Hesperia tessellum* Hb., Thurner 1938: 137); Galičica Mt., Ohrid (Thurner 1964: 50).

10. *Pyrgus carthami* (Hübner, 1813). Literature data: Galičica Mt., 1400–1600 m (as *Hesperia carthami* Hb. als. major Rbl., Rebel & Zerny 1931: 84); near Ohrid (as *Hesperia carthami* Hb., Thurner 1938: 137); Ohrid, Galičica Mt., Petrina Mt., 1400–1600 m (Thurner 1964: 50); Galičica Mt. (Jakšić 1988: 22). SKO: Prespa Lake: Oteševo, 15.08.1979, S. Jakonov, Prespa Lake: Oteševo, 20.07.1980, S. Jakonov, Galičica Mt.: Tomoros, 17.07.1980, S. Jakonov.

11. *Pyrgus sidae* (Esper, 1784). Literature data: Galičica Mt. (as *Hesperia sidae* Esp., Rebel & Zerny 1931: 84); Ohrid, Petrina Mt. and Asanđura, in June (as *Hesperia sidae* Esp., Thurner 1938: 137); Ohrid, Petrina Mt., Asanđura, Tomoros (Thurner 1964: 51); Tomoros, 24.07.1918 (as *Hesperia sidae* Esp., Daniel, Foster, Osthelder 1951: 18); Galičica Mt. (Jakšić 1988: 20); Galičica Mt., 12.07.1980 (Scheider & Jakšić 1989: Taf. 1, fig. 8). SKO: Galičica Mt., 09.07.1918, 1000 m, A. Drenowski; Galičica Mt.: Tomoros, 17.07.1980, S. Jakonov; Galičica Mt.: Korita, 25.06.2003, 1350 m, V. Krpač; Galičica Mt.: Korita, 25.06.2003, 1350 m, M. Ivanov; Galičica Mt.: Asanđura, 10.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 13.06.2008, 1500 m, M. Ivanov; Galičica Mt.: Konjski Merizi, Zdravec, 25.06.2009, V. Krpač; Galičica Mt., Konjski Merizi, 25.06.2009, 1484 m, V. Krpač.Galičica Mt., Asanđura, (Šarboica), 26.06.2009, M. Ivanov.

12. *Pyrgus malvae* (Linnaeus, 1758). Literature data: Petrina Mt., May-June (as *Hesperia malvae* Rbr. Ab. Taras Bgstr., Thurner 1938: 137); Galičica Mt. (Jakšić 1988: 16). SKO: Galičica Mt.: Korita, 09.06.2008, 1350 m, V. Krpač; Galičica Mt.: Korita, 09.06.2008, 1350 m, M. Ivanov; Galičica Mt.: Asanđura, 10.06.2008, 12.06.2008 and 10.09.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 10.06.2008 and 14.06.2008, 1500 m, M. Ivanov; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, V. Krpač; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, M. Ivanov; Galičica Mt.: Glajša, 14.06.2008, 1010 m, V. Krpač; Galičica Mt.: Korita, 01.06.2009, V. Krpač; Golemi Kazani, 26.06.2009, P. Jakšić; Galičica Mt.: Glajša, 27.06.2009, 1000 m, M. Ivanov.

13. *Pyrgus serratulae* (Rambur, 1839). Literature data: Galičica Mt. (as *Hesperia serratulae* Rbr., Rebel & Zerny 1931: 84); Ohrid, May-June, Petrina Mt., Asanđura (as *Hesperia serratulae major* Stgr., Thurner 1938: 137); Ohrid, Petrina Mt., Asanđura (as *Hesperia serratulae* Rambur *major* Staudinger, Thurner 1964: 50); Galičica Mt. (Jakšić 1988: 19). SKO: Galičica Mt.: Korita, 21.07.2009, 1361 m, V. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač.

Fig. 1. The location of Galičica in the Republic of Macedonia.

14. *Pyrgus cinarae* (Rambur, 1839). Literature data: Tomoros (as *Hesperia cinare* Rbr., Doflein 1921: 541, 590); Galičica Mt., Tomoros (as *Hesperia cinarae* Rbr., Rebel & Zerny 1931: 84); Petrina Mt., middle of July (as *Hesperia cinarae* Rbr. f. *atrata* Thur., Thurner 1938: 137); Ohrid, Petrina Mt., Letnica, Asanđura (Thurner 1964: 51); Tomoros, 24.07.1918 (as *Hesperia cinarae* Rmb., Daniel, Foster, Osthelder 1951: 17); Galičica Mt. (Jakšić 1988: 21); Ohrid, Petrina Mt., 06.08.1934 (Scheider & Jakšić 1989: Taf. 1, fig. 6). SKO and field data: Ohrid: Gradište, 25.07.1980, P. Meškovski; Galičica Mt.: Korita, 25.06.2003, 1350 m, V. Krpač; Galičica Mt.: Galičica Mt., pass, 27.07.2007, 1600 m, C. Darcemont; Galičica Mt.: Asanđura, 10.09.2008, 1500 m, V. Krpač;

15. *Pyrgus armoricanus* (Oberthür, 1910). Literature data: Petrina Mt., July and near Ohrid, June (as *Hesperia armoricanus* Obth., Thurner 1938: 137); Ohrid, Petrina Mt., Letnica, Istok (Thurner 1964: 51); Galičica Mt. (Jakšić 1988: 18). SKO: Ohrid: Petrina Mt., 09.06.1942, K. Tuleschkow.

16. *Pyrgus alveus* (Hübner, 1803). Literature data: Ohrid and Petrina Mt. (as *Hesperia alveus* Hb., Thurner 1938: 137); Ohrid, Petrina Mt. (Thurner 1964: 51); Galičica Mt. (Jakšić 1988: 17). SKO: Galičica Mt.: Korita, 21.07.2009, 1361 m., V. Krpač.

17. *Thymelicus lineola* (Ochsenheimer, 1808). Literature data: Galičica Mt., 1000–1600 m (as *Adopaea lineola* O., Rebel & Zerny 1931: 82); Ohrid, Petrina Mt. (as *Adopaea lineola* O., Thurner 1938: 136); Ohrid, Petrina Mt. (as *Adopaea lineola* Ochsenheimer, Thurner 1964: 52); Tomoros, 24.07.1918 (as *Adopaea lineola* O., Daniel, Foster, Osthelder 1951: 18); Galičica Mt. (as *Thymelicus lineolus* Ochsenheimer, 1808, Jakšić 1988: 34); Tomoros, 1918. (as *Thymelicus lineolus* O., Scheider & Jakšić 1989: Taf. 1, fig. 7). SKO: Galičica Mt., 26.07.1918, 1400–1600 m, A. Drenowski; Ohrid: Gorica, 17.04.1983, S. Jakonov; Galičica Mt.: Glajša, 14.06.2008, 1010 m, V. Krpač; Galičica Mt.: Glajša, 27.06.2009, 1000 m, V. Krpač; Oteševo: Grnčarska Kolonija, 28.06.2009, V. Krpač; Galičica Mt.: Tri Bora, 28.06.2009, V. Krpač; Galičica Mt.: v. Stenje to v. Konjsko, 22.07.2009, V. Krpač.

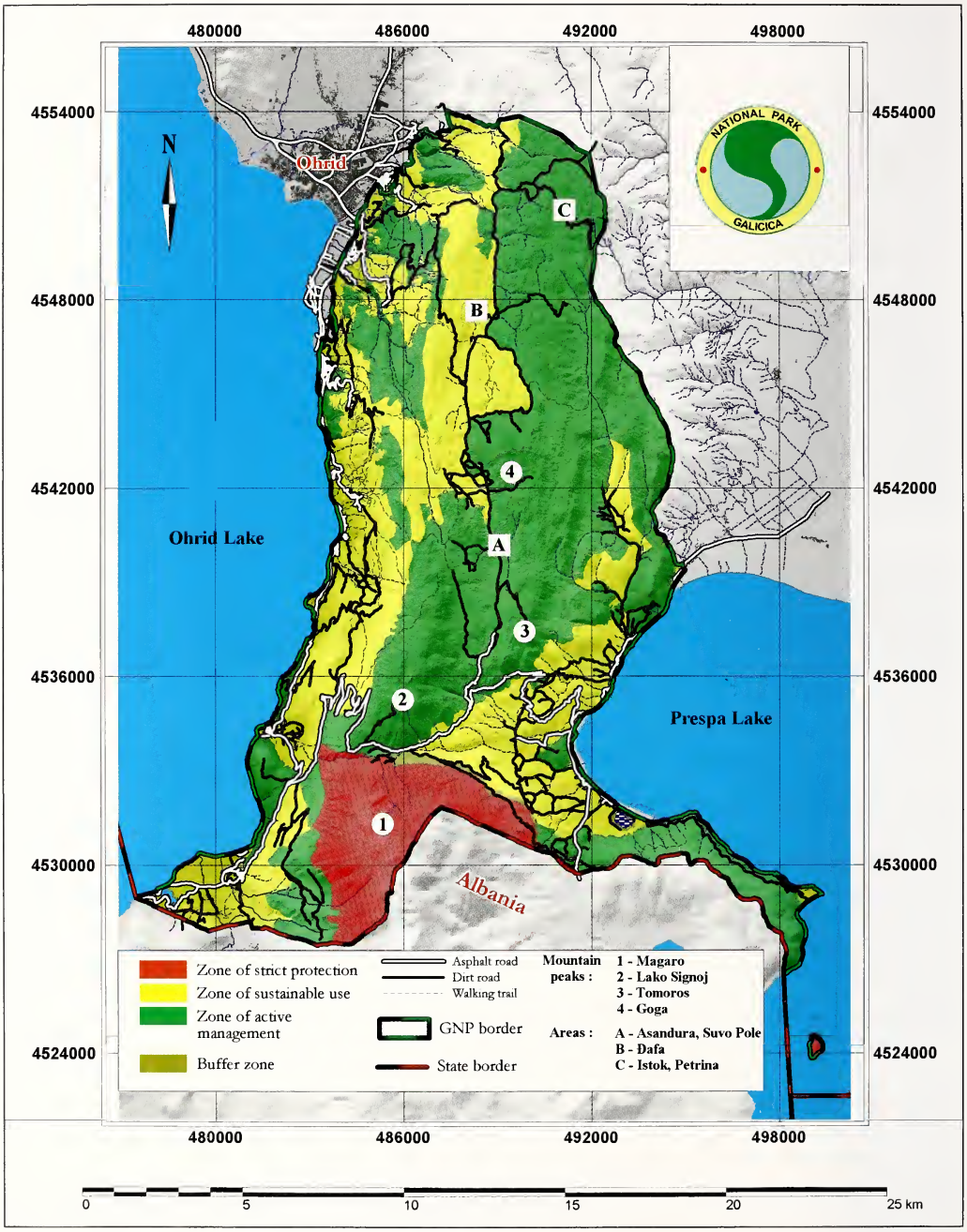

Fig. 2. Topographic map of National Park Galičica.

18. *Thymelicus sylvestris* (Poda, 1761). Literature data: Ohrid, Petrina Mt. (as *Adopaea flava fulminans* Rbl. u Z., Thurner 1938: 136); Galičica Mt. (as *Adopaea flava* Brünnich *fulminans* Rebel u. Zerny, Thurner 1964: 52); Galičica Mt. (Jakšić 1988: 35). SKO: Galičica Mt.: Tomoros, 05.08. 1978, S. Jakonov; Ohrid: Gradište, 01.08.1981, P. Meškovski; Galičica Mt.: Glajša, 14.06. 2008, 1010 m, V. Krpač; Galičica Mt.: Asanđura, 25.06.2009, 1450 m, V. Krpač; Galičica Mt.:

Fig. 3. Localities referenced.

Konjski Merizi, Zdravec, 25.06.2009, P. Jakšić; Galičica Mt.: Asanđura (Šarboica), 26.06.2009, M. Ivanov; Galičica Mt.: Glajša, 27.06.2009, 1000 m, V. Krpač; Oteševo: Grnčarska Kolonija, 28.06.2009, V. Krpač; Galičica Mt.: Tri Bora, 28.06.2009, V. Krpač; Galičica Mt.: v. Stenje to v. Konjsko, 28.06.2009, V. Krpač.

Fig. 4. Locality Lako Signoj.

19. *Thymelicus acteon* (Rottemburg, 1775). Literature data: Galičica Mt. (Rebel & Zerny 1931: 83); Galičica Mt. (as *Adopaea acteon* Rott., Thurner 1938: 136); Petrina Mt. (as *Adopaea acteon* Rottemburg, Thurner 1964: 52); Galičica Mt. (as *Thymelicus heydeni* Plotz 1884, Jakšić 1988: 33). SKO: Oteševo: Grnčarska Kolonija, 28.06.2009, V. Krpač.

20. *Hesperia comma* (Linnaeus, 1758). Literature data: Galičica Mt. (as *Erynnis comma* L., Rebel & Zerny 1931: 82); Ohrid, Petrina Mt. (as *Augiades comma* L., Thurner 1938: 127); Ohrid, Petrina Mt., Galičica Mt., 08.08.1983 (Thurner 1964: 52); Galičica Mt. (Jakšić 1988: 36); Galičica Mt., 1800 m, 08.08.1983 (Scheider & Jakšić 1989: Taf. 2, fig. 11). SKO: Galičica Mt.: Tomoros, 15.08.1976, S. Jakonov; Galičica Mt., 15.08.1976, S. Jakonov; Galičica Mt.: Tomoros, 05.08. 1979 and 13.08.1979, S. Jakonov.

21. *Ochlodes sylvanus* (Bremer & Grey, 1853). Literature data: Galičica Mt. (as *Augiades sylvanus* Esp., Rebel & Zerny 1931: 83); Ohrid, in June, Petrina Mt. (as *Augiades sylvanus* Esp., Thurner 1938: 137); Galičica Mt. (as *Ochlodes venata* Bremer u. Grau *esperi* Verity, Thurner 1964: 52); Galičica Mt. (Jakšić 1988: 37). SKO: Ohrid: Petrina Mt. 09.06.1942, K. Tuleschkow; Ohrid: v. Trpeica, 28.07.1980, P. Meškovski; Galičica Mt.: Korita, 23.06.2003, V. Krpač; Oteševo: Grnčarska Kolonija, 28.06.2009, V. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač.

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22. *Zerynthia (Zerynthia) polyxena* (Denis & Schiffermüller, 1775). Literature data: Galičica Mt. (Rebel & Zerny 1931: 65); near Ohrid (as *Thais polyxena* Schiff., Thurner 1938: 127); Ohrid (as *Zerynthia hypsiphile* Schulze (*Thais polyxena* Schiffermüller) Thurner 1964: 18); Galičica Mt. (Jakšić 1988: 42).

23. *Zerynthia* (*Allancastria*) *cerisyi* (Godart, 1824). Literature data: Galičica Mt. (as ssp. *ferdinandi* Stich., Rebel & Zerny 1931: 64); near Ohrid (as *Zerynthia cerisyi ferdinandi* Stichel, Thurner

Fig. 5. Locality Asanđura.

1938: 127); Ohrid (Silbernagel 1944); Ohrid, 10.–20.06.1954 (*Zerynthia cerisyi ferdinandi* Stichel, Michieli 1963: 17); Galičica Mt., Dren; Ohrid, 05.05.1982 (as *Allancastria cerisyi ferdinandi* Stichel, Thurner 1964: 18); Galičica Mt. (Jakšić 1988: 43); Ohrid, 05.05.1982 (as *Allancastria cerisyi* God., Scheider & Jakšić 1989: Taf. 4, fig. 4). SKO: Ohrid, 25.05.1918; Ohrid, 02.06.1936, Silbernagel.

24. *Parnassius mnemosyne* (Linnaeus, 1758). Literature data: Galičica Mt., 700–1000 m (Rebel & Zerny 1931: 65); Petrina Mt.; Asanđura (as *Parnassius mnemosinae parvasii* Tur., Thurner 1938: 127); Ohrid Lake, on the border Albania–Macedonia (as ssp. *psyche* Eisner, paratyp, 06.1935, Sheljuzhko 1962: 102); near Ohrid Lake; Gopeš, Petrina Mt.; Galičica Mt., 09.06.1979 (Thurner 1964: 19); Ohrid (Daniel Foster, Osthelder 1951: 6); Galičica Mt. (Jakšić 1988: 44); Galičica Mt., 09.06.1979 (as *Parnassius mnemosyne psyche* Eisner, Scheider & Jakšić 1989: Taf. 6, fig. 3 and 5). SKO: Galičica Mt., 10.06.1977, B. Mihajlova; Galičica Mt., 10.06.1979, S. Jakonov; Galičica Mt.: Tomoros, 17.07.1980, S. Jakonov; Galičica Mt., 08.06.1995, V. Krpač; Galičica Mt.: Asanđura, 10.06.2008, 12.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 10.06.2008 and 13.06.2008, 1500 m, M. Ivanov; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, V. Krpač; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, M. Ivanov; Galičica Mt.: Konjski Merizi, 25.06.2009, 1484 m, V. Krpač; Golemi Kazani, 26.06.2009, P. Jakšić.

25. *Parnassius apollo* (Linnaeus, 1758). Literature data: Galičica Mt., 900–1700 m (Rebel & Zerny 1931: 65); Petrina Mt., (Istok Mt.) v. Danilovo (as *Parnassius apollo dardanus* Rebel, Thurner 1938: 127); Petrina Mt., (Istok Mt.) (as *Parnassius apollo dardanus* Rebel, Thurner 1964: 19); Galičica Mt. (as *Parnassius apollo* (Linnaeus 1758) ssp. *macedonicus* Bollow 1831, Jakšić 1988: 40). SKO: Ohrid, Gorica, 15.06.1978, J. Čingovski; Galičica Mt., 03.08.1979, S. Jakonov; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač.

26. *Iphiclides podalirius* (Linnaeus, 1758). Literature data: Galičica Mt. (Rebel & Zerny 1931: 64); Ohrid; Petrina Mt. f. *zanclaeus* Zeller (Thurner 1938: 126); Ohrid, 10.–20.06.1954 (as *Iphiclides podalirius intermedia* Grund, Michieli 1963: 17); Galičica Mt. (Thurner 1964: 18); Galičica

Mt. (Jakšić 1988: 41). SKO: Galičica Mt., 15.08.1976, S. Jakonov; Ohrid: Gradište, 23.07.1980, P. Meškovski; Galičica Mt., 20.05.1982, N. Topukova; Ohrid, Gorica, 17.04.1983, S. Jakonov; Oteševo, 23.07.2009, V. Krpač.

27. *Papilio machaon* Linnaeus, 1758. Literature data: Galičica Mt. (Rebel & Zerny 1931: 64); Ohrid (Thurner 1938: 126); Galičica Mt. (Thurner 1964: 17); Tomoros, 23.07.1918 (Daniel, Foster, Osthelder 1951: 5); Galičica Mt. (Jakšić 1988: 39). SKO and field data: Ohrid: v. Trpeica, 08.05. 1971, J. Čingovski; Tomoros, 29.08.2009, 1660 m, C. Darcemont; Galičica Mt.: Đafa, 29.08. 2009, 1560 m, C. Darcemont.

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28. *Leptidea sinapis* (Linnaeus, 1758). Literature data: Galičica Mt. (Rebel & Zerny 1931: 67); Ohrid, Petrina Mt. (Thurner 1938: 128); Galičica Mt. (Thurner 1964: 23); Galičica Mt. (Jakšić 1988: 64). SKO: Galičica Mt., 18.06.1918, 1600 m, A. Drenowski; Ohrid: v. Trpeica, 08.05.1971, J. Čingovski; Ohrid, 15.05.1975, J. Čingovski; Ohrid: Gradište, 20.04.1980, P. Meškovski; Galičica Mt., 20.05.1982, N. Topukova; Ohrid: Gorica, 17.04.1983, S. Jakonov; Galičica Mt., 25.04.1983, S. Jakonov; Galičica Mt.: Asanđura, 12.06.2008, 1500 m, V. Krpač; Galičica Mt.: Glajša, 14.06.2008, 1010 m, V. Krpač.

29. *Leptidea duponcheli* (Staudinger, 1871). Literature data: Galičica Mt. (Rebel & Zerny 1931: 67); near Ohrid, Petrina Mt., May-June and as f. *aestiva* Stgr. (Thurner 1938: 128); Ohrid (Thurner 1964: 24); Galičica Mt. (Jakšić 1988: 65). SKO: Galičica Mt., 08.06.1995, V. Krpač; Galičica Mt.: over v. Velestovo, 11.06.2008, V. Krpač; Galičica Mt.: Glajša, 14.06.2008, 1010 m, V. Krpač; Oteševo, 23.07.2009, 861 m, V. Krpač.

30. *Anthocharis cardamines* (Linnaeus, 1758). Literature data: Galičica Mt. (Rebel & Zerny 1931: 64); Petrina Mt., May-June; Asanđura (as *Euchloe cardamines* L., Thurner 1938: 128); Galičica Mt., 10.06.1979 (as *Anthocharis cardamines* Linnaeus *meridionalis* Verity, Thurner 1964: 21); Galičica Mt. (Jakšić 1988: 56); Galičica Mt., 10.06.1979 (Scheider & Jakšić 1989: Taf. 11, fig. 4). SKO: Galičica Mt., 10.06.1977, B. Mihajlova; Ohrid: Gorica, 17.04.1983, S. Jakonov; Galičica Mt., 25.04.1983, S. Jakonov.

31. *Anthocharis damone* Boisduval, 1836. Literature data: Galičica Mt. (Jakšić 1988: 57); Galičica Mt., 30.05.1980 (as *Anthocharis damone hollaenderi* Seyer, Scheider & Jakšić 1989: Taf. 11, fig. 7). SKO: Galičica Mt., 25.04.1983, S. Jakonov.

32. *Anthocharis gruneri* Herrich-Schäffer, 1851. Literature data: Galičica Mt., 1200–1500 m, 23.04. (Rebel & Zerny 1931: 67); v. Velestovo, Petrina Mt., in May-June (as *Anthocharis grüneri macedonica* Buresch, Thurner 1938: 128); Ohrid, Petrina Mt., Galičica Mt., Asanđura (as *Anthocharis gruneri* Staudinger *macedonica* Buresch, Thurner 1964: 21); Galičica Mt., 30.05. 1980 (Scheider & Jakšić 1989: Taf. 11, fig. 7); Galičica Mt. (Jakšić 1988: 58). SKO: Galičica Mt., 25.04.1983, S. Jakonov.

33. *Euchloe (Euchloe) ausonia* (Hübner, 1804). Literature data: Ohrid, May-June (as *Euchloe belia* Cr., Thurner 1938: 128); Ohrid, 10.–20.06.1954 (as *Euchloe belia graeca* Verity, Michieli 1963: 17); Ohrid (as *Euchloe orienthalis* Brechmer (*belia* Cramer) *graeca* Verity, Thurner 1964: 21); Galičica Mt. (Jakšić 1988: 54); Ohrid, v. Trpeica (Jakšić 1998: 41). SKO: Ohrid: v. Trpeica, 08.05.1971, J. Čingovski; Ohrid: Gorica, 06.04.1983, 10.04.1983, 12.04.1983 and 17.04.1983, S. Jakonov.

34. *Euchloe (Elphinstonia) penia* (Freyer, 1851). SKO: Ohrid: Gorica, 17.04.1983, S. Jakonov.

35. *Aporia crataegi* (Linnaeus, 1758). Literature data: Galičica Mt. (Rebel & Zerny 1931: 65); Galičica Mt. (Thurner 1938: 127); Galičica Mt., Thurner (1964: 19); Galičica Mt. (Jakšić 1988: 45). SKO: Ohrid: v. Elšani, 20.05.1977, J. Čingovski; Galičica Mt.: Tomoros, 17.07.1980, S. Jakonov,

Galičica Mt., 20.05.1982, N. Topukova; Ohrid, 20.07.1986, B. Mihajlova; Galičica Mt.: Asanđura, 12.06.2008, 1500 m, V. Krpač; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, V. Krpač; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, M. Ivanov; Galičica Mt.: Tomoros, 25.06.2009, P. Jakšić; Galičica Mt.: Glajša, 27.06.2009, V. Krpač; Galičica Mt.: Tri Bora, 28.06.2009, V. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač.

36. *Pieris brassicae* (Linnaeus, 1758). Literature data: Galičica Mt. (Rebel & Zerny 1931: 65); Galičica Mt., in lowland Garden (Thurner 1938: 127); Ohrid, 10.–20.06.1954 (Michieli 1963: 17); Galičica Mt., Thurner (1964: 20); Galičica Mt. (Jakšić 1988: 46). SKO: Ohrid: v. Trpeica, 08.05.1971, J. Čingovski; Galičica Mt.: Tomoros, 15.08.1976, S. Jakonov; Ohrid: Gorica, 17.04.1983, S. Jakonov.

37. *Pieris krueperi* Staudinger, 1860. SKO: Galičica: Korita, 14.06.2008, 1350 m, V. Krpač.

38. *Pieris mannii* (Mayer, 1851). Literature data: Ohrid, in May (*Pieris mannii* v. *rossi* Stgr., Thurner 1938: 128); Ohrid (Thurner (1964: 20); Galičica Mt. (Jakšić 1988: 51). SKO: Galičica Mt.: Korita, 14.06.2008, 1350 m, V. Krpač; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, V. Krpač; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, M. Ivanov.

39. *Pieris rapae* (Linnaeus, 1758). Literature data: Galičica Mt. (Rebel & Zerny 1931: 66); Ohrid, in July (summer form *metra* Stph., Thurner 1938: 128); Galičica Mt. Thurner (1964: 20); Galičica Mt. (Jakšić 1988: 50). SKO: Ohrid, 22.05.1918, 23.05.1918, 25.05.1918 and 25.06.1918, A. Drenowski; Galičica Mt., 12.06.1918, 18.06.1918 and 26.07.1918, 1600 m, A. Drenowski; Ohrid: v. Trpeica, 08.05.1971, J. Čingovski; Ohrid: v. Elšani, 28.03.1975, J. Čingovski; Galičica Mt., 10.06.1977, B. Mihajlova; Galičica Mt., 23.07.1982, P. Meškovski; Ohrid: Gorica, 06.04.1983 and 17.04.1983, S. Jakonov; Galičica Mt., 25.04.1983, S. Jakonov; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600m, V. Krpač; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, M. Ivanov; Galičica Mt.: Asanđura, 10.09.2008, 1500 m, V. Krpač; Galičica Mt.: Dolga, 26.06.2009, 761 m, M. Krpač; Galičica Mt.: Korita, 21.07.2009., V. Krpač; Galičica Mt.: v. Stenje to v. Konjsko, 22.07.2009, V. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač; Galičica Mt.: Asanđura, 10.09.2008, 1500 m, V. Krpač.

40. *Pieris ergane* (Geyer, 1828). Literature data: Ohrid, Sveti Naum, Petrina Mt. (Thurner 1938: 128); Ohrid, Petrina Mt., Sveti Naum (Thurner 1964: 20); Galičica Mt. (Jakšić 1988: 49). SKO: Galičica Mt., 25.04.1983, S. Jakonov.

41. *Pieris napi* (Linnaeus, 1758). Literature data: Galičica Mt. (Rebel & Zerny 1931: 66); Ohrid, Petrina Mt. (Thurner 1938: 128); Ohrid, 10.–20.06.1954 (Michieli 1963: 17); Ohrid, 25.08.1968 (Thurner 1964: 20); Galičica Mt. (as *Artogeia napi* L. 1758, Jakšić 1988: 47); Ohrid, 25.08.1968 (Scheider & Jakšić 1989: Taf. 9 and 9[a], fig. 2 and 2[a]). SKO: Ohrid: v. Elšani, 28.03.1975, J. Čingovski; Ohrid: Gradište, 01.08.1981, P. Meškovski; Oteševo, 11.09.1981, J. Čingovski; Galičica Mt., 23.07.1982, P. Meškovski.

42. *Pieris balcana* Lorković, 1970. SKO: Ohrid: Gorica, 06.04.1983, 10.04.1983 and 17.04.1983, S. Jakonov; Galičica Mt., 25.04.1983, S. Jakonov.

43. *Pontia edusa* (Linnaeus, 1758). Literature data: Ohrid, 800–1000 m, 13.08. (Rebel & Zerny 1931: 64); Galičica Mt., in hills (as *Pieris daplidice* L. f. *bellidice* O., Thurner 1938: 128); Ohrid, 10.–20.06.1954 (Michieli 1963: 17); Galičica Mt. (Thurner 1964: 20–21); Galičica Mt. (as *Pieris daplidice* L. 1758, Jakšić 1988: 52). SKO: Ohrid: Petrina Mt., 09.06.1942, K. Tuleschkow; Ohrid: Gradište, 13.07.1980, 18.07.1980, 19.07.1980 and 01.08.1981, P. Meškovski; Ohrid: Gorica, 17.04.1983, S. Jakonov; Galičica Mt.: v. Stenje to v. Konjsko, 22.07.2009, V. Krpač.

44. *Colias croceus* (Fourcroy, 1785). Literature data: Galičica Mt. (ab. *helice*), Rebel & Zerny 1931: 67); Petrina Mt. (*Colias croceus* Fourc. *edusa* F., Thurner 1938: 128); Galičica Mt. (*Colias croceus* Fourcroy (*edusa* Linnaeus), Thurner 1964: 23); Galičica Mt. (as *Colias crocea* Geoffrey et Fourcroy 1758, Jakšić 1988: 61). SKO: Galičica Mt., 18.06.1918, 1600 m, A. Drenowski;

Prespa Lake: Carina; 26.07.1968, J. Čingovski; Ohrid: v. Trpeica, 08.05.1971, J. Čingovski; Galičica Mt., 15.08.1976, 10.06.1979, 17.07.1980, S. Jakonov; Galičica Mt.: Tomoros, 17.07. 1980, Ohrid: Gorica, 06.04.1983; 10.04.1983 and 17.04.1983. Ohrid: Gradište, 08.1979, 13.07. 1980, 18.07.1980, 25.07.1980 and 21.07.1981, P. Meškovski; Galičica Mt., 23.07.1981, P. Meškovski; Galičica; 08.06.1995, V. Krpač; Galičica Mt.: over v. Velestovo, 11.06.2008, V. Krpač; Galičica Mt.: Ski Liftovi, 25.07.2008, V. Krpač; Galičica Mt.: Asanđura, 10.09.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 25.06.2009, 1450 m, V. Krpač; Galičica Mt.: Glajša, 27.06.2009, 1000 m, V. Krpač; Galičica Mt.: Tri Bora, 28.06.2009, V. Krpač; Galičica Mt.: v. Stenje to v. Konjsko, 22.07.2009, V. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač; Galičica Mt.: Krstec, 29.08.2009, M. Krpač.

45. *Colias alfacariensis* Ribbe, 1905. Literature data: Ohrid, Petrina Mt. (as *Colias australis* Verity ssp. *rumelica* Reissinger, Thurner 1964: 23); Galičica Mt. (Jakšić 1988: 59). SKO and field data: Galičica Mt., 23.08.1918, 1600 m, A. Drenowski; Ohrid: v. Trpeica, 08.05.1971, J. Čingovski; Galičica Mt., 17.07.1975, J. Čingovski; Oteševo, 15.08.1979 and 20.07.1980, S. Jakonov; Ohrid: Gradište, 19.07.1980, 23.07.1980 and 25.07.1980, P. Meškovski; Galičica Mt., 25.04. 1983, S. Jakonov; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, M. Ivanov; Galičica Mt.: Ski Liftovi, 26.08.2009, 1172 m, C. Darcemont; Galičica Mt.: Tri Bora, 28.06.2009, 1489 m, M. Krpač; Galičica Mt.: Korita, 21.07.2009, 1361 m, V. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač; Galičica Mt.: Krstec, 29.08.2009, 1570 m, M. Krpač.

46. *Gonepteryx rhamni* (Linnaeus, 1758). Literature data: Galičica Mt. (Rebel & Zerny 1931: 67); Petrina Mt. (Thurner 1938: 128); Ohrid, 10.–20.06.1954 (Michieli 1963: 18); Galičica Mt. (Thurner 1964: 22); Galičica Mt. (Jakšić 1988: 62). SKO: Galičica Mt., 17.07.1975, J. Čingovski; Ohrid: Gorica, 17.04.1983, S. Jakonov; Galičica Mt., 25.04.1983, S. Jakonov; Galičica Mt.: Preseka, 25.06.2003, V. Krpač; Galičica Mt.: Korita, 25.06.2003, M. Ivanov; Galičica Mt.: Dolga, 26.06.2009, 761 m, M. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač.

47. *Gonepteryx farinosa* (Zeller, 1847). Literature data: Ohrid, Peštani, 12.07.1980 (Thurner 1964: 22); Ohrid, June (Thurner 1956: 237); Ohrid, Galičica-Naturpark (Scheider 1980: 66–67); Galičica Mt. (Jakšić 1988: 63); Ohrid, v. Peštani., 12.07.1980 (Scheider & Jakšić 1989: Taf. 13, fig. 3).

48. *Gonepteryx cleopatra* (Linneaus, 1767). Literature data: Ohrid: Gorica (Krpač & Mihajlova 1997: 113–116). SKO: Ohrid: Gorica, 17.04.1983, S. Jakonov.

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49. *Hamearis lucina* (Linnaeus, 1758). Literature data: Galičica Mt. (as *Nemeobius lucina* L., Rebel & Zerny 1931: 77); Ohrid, Petrina Mt., June and July (Thurner 1938: 134); Ohrid, Petrina Mt., Letnica (Thurner 1964: 38); Galičica Mt. (Jakšić 1988: 121). SKO: Galičica Mt.: Asanđura, 10.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 10.06.2008, 1500 m, M. Ivanov.

50. *Lycaena phlaeas* (Linnaeus, 1761). Literature data: Ohrid and Petrina Mt., June-July (as *Chrysophanus phlaeas eleus* F., Thurner 1938: 135); Ohrid, 10.–20.06.1954. (Michieli 1963: 21); Galičica Mt. (Thurner 1964: 41); Galičica Mt. (Jakšić 1988: 66). SKO: Ohrid: v. Trpeica, 08.05.1971, J. Čingovski; Ohrid: Gorica, 17.04.1983, S. Jakonov; Galičica Mt.: Konjski Merizi, 25.06.2009, 1484 m, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 25.06.2009, 1450 m, M. Ivanov; Galičica Mt.: over v. Stenje, 28.06.2009, V. Krpač.

51. *Lycaena dispar* (Haworth, 1802). Literature data: Ohrid, June (as *Chrysophanus dispar rutilus* Wernburg, Thurner 1938: 134); Ohrid (as *Chrysophanus dispar* Haworth rutilus Wernburg, Thurner 1964: 40); Galičica Mt. (Jakšić 1988: 67).

52. *Lycaena virgaureae* (Linnaeus, 1758). Literature data: Tomoros (as *Chrysophanus virgaureae* L., Doflein 1921: 537); Galičica Mt. (as *Chrysophanus virgaureae* L., Rebel & Zerny 1931: 78);

Petrina Mt. (as *Heodes virgaureae balcanicola* Graves, Thurner 1938: 134); Petrina Mt., Letnica, Istok (as *Heodes virgaureae* Linnaeus *balcanicola* Graves, Thurner 1964: 39–40); Tomoros, 22.07.1918 (as *Chrysophanus virgaurea* Linnaeus *balcanicola* Graves, Daniel, Foster, Osthelder 1951: 14); Galičica Mt. (Jakšić 1988: 68). SKO and field data: Galičica Mt.: Tomoros, 05.08. 1979, S. Jakonov; Galičica Mt.: Ski Liftovi, 20.07.2006, 1600 m, M. Ivanov; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 29.08.2009, 1470 m, C. Darcemont.

53. *Lycaena tityrus tityrus* (Poda, 1761). Literature data: Petrina Mt., Asanđura, June-July (as *Polyommatus dorilis* Hufn., Thurner 1938: 135); Galičica Mt. (as *Heodes tityrus* Poda, Thurner 1964: 41); Galičica Mt. (Jakšić 1988: 69). SKO and field data: Galičica Mt.: pass, 01.08.2007, 1600 m, C. Darcemont; Galičica Mt.: Korita, 14.06.2008, 1350 m, V. Krpač; Galičica Mt.: Konjski Merizi, 25.06.2009, 1484 m, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 29.08.2009, 1470 m, C. Darcemont.

54. *Lycaena alciphron* (Rottemburg, 1775). Literature data: Petrina Mt. (Letnica, Istok); Petrina Mt., June-July, Ohrid (as *Lycaena alciphron chairemon* Fruhst., Thurner 1938: 134); Ohrid, Petrina Mt., Letnica, Istok (as *Lycaena alciphron* Rottenburg *chairemon* Fruhstorfer, Thurner 1964: 41); Galičica Mt. (Jakšić 1988: 71); Galičica Mt., 12.07.1980. (as *Lycaena alciphron chairemon* Fruhst., Scheider & Jakšić 1989: Taf. 15, fig. 10). SKO: Galičica Mt.: Tomoros, 17.08.1980, S. Jakonov; Galičica Mt.: over v. Stenje, 28.06.2009., V. Krpač.

55. *Lycaena candens* (Herrich-Schäffer, 1844). Literature data: Galičica Mt., 900–1700 m (as *Chrysophanus hippothoe* (L.) *leonhardi* Fruhst., Rebel & Zerny 1931: 79); Petrina Mt., June-July (as *Chrysophanus hippothoe leonhardi* Fruhst., Thurner 1938: 134); Petrina Mt., Letnica, Asanđura (as *Paleochrysophanus hippothoe* Linnaeus *leonhardi* Fruhstorfer, Thurner 1964: 40); Galičica Mt. (Jakšić 1988: 75). SKO: Galičica Mt.: Tomoros, 17.07.1980, S. Jakonov; Galičica Mt.: Asanđura, 10.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 25.06.2009, 1450 m, V. Krpač; Galičica Mt.: Konjski Merizi, Zdravec, 25.06.2009, V. Krpač; Galičica Mt.: Konjski Merizi, 25.06.2009, 1484 m, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 25.06.2009, 1450, V. Krpač.

56. *Lycaena thersamon* (Esper, 1784). Literature data: Galičica Mt. (as *Chrysophanus thersamon* Esp., Rebel & Zerny 1931: 78); Petrina Mt. and Galičica Mt. (as *Chrysophanus thersamon* Esp., Thurner 1938: 134); Ohrid, Petrina Mt., Letnica, Galičica Mt., Tomoros (as *Thersamonia thersamon* Esp., Thurner 1964: 40); Tomoros, 22.07.1918. (as *Chrysophanus thersamon* Esp. f. *omphale* Klug, Daniel, Foster, Osthelder 1951: 14); Galičica Mt. (Jakšić 1988: 72).

57. *Favonius quercus* (Linnaeus, 1758). Literature data: Tomoros (as *Cephyrus querqus* L., Doflein 1921: 590); Galičica Mt., Tomoros (as *Zephyrus querqus* L., Rebel & Zerny 1931: 78); Galičica Mt. (as *Zephyrus querqus* L., Thurner 1938: 134); Petrina Mt., Letnica (as *Thecla querqus* Linnaeus, Thurner 1964: 39); Tomoros, 24.07.1918 (as *Zephyrus querqus* L., Daniel, Foster, Osthelder 1951: 14); Galičica Mt. (as *Quercusia quercus* L. 1758, Jakšić 1988: 76).

58. *Callophrys rubi* (Linnaeus, 1758). Literature data: Galičica Mt. (as *Callophrys rubi* (L.) *virgatus* Ver., Rebel & Zerny 1931: 78); Ohrid, end of May (as *Callophrys rubi* Linnaeus *virgatus* Verity, Thurner 1938: 134); Ohrid (as *Callophrys rubi* Linnaeus *virgatus* Verity, Thurner 1964: 38); Galičica Mt. (Jakšić 1988: 82). SKO: Ohrid: Petrina Mt., 09.06.1942, K. Tuleschkow; Ohrid: Gorica, 10.04.1983, S. Jakonov; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, M. Ivanov; Galičica Mt.: Korita, 01.06.2009, 1350 m, V. Krpač.

59. *Satyrium spini* (Denis & Schiffermüller, 1775). Literature data: Tomoros (as *Thecla spini* Schiff., Doflein 1921: 537, 590); Ohrid, Petrina Mt., June-July (as *Thecla spini* Schiff., Thurner 1938: 134); Ohrid, Petrina Mt. (as *Strymon spini* Schiff., Thurner 1964: 38); Tomoros, 24.07.1918 (as *Thecla spini* Schiff., Daniel, Foster, Osthelder 1951: 14); Galičica Mt. (Jakšić 1988: 81). SKO: Ohrid: Gradište, 13.07.1980, 15.07.1980, 17.07.1980 and 19.07.1980, P. Meškovski; Ohrid: Trpeica, 28.07.1980, P. Meškovski; Prespa Lake: Oteševo, 28.06.2003, M. Ivanov.

60. *Satyrium ilicis* (Esper, 1779). Literature data: Tomoros (as *Thecla ilicis* Esp., Doflein 1921: 537, 590); Ohrid, 13.08, Galičica Mt. (as *Thecla ilicis* Esp., Rebel & Zerny 1931: 77–78); Ohrid, Petrina Mt., June-July (as *Thecla ilicis cerri* Hb., Thurner 1938: 134); Ohrid, Petrina Mt., Galičica Mt. (as *Strymon ilicis* Esper, Thurner 1964: 39); Tomoros, 24.07.1918 (as *Thecla ilicis* Esp f. *cerri* Hbn., Daniel, Foster, Osthelder 1951: 14); Galičica Mt. (as *Nordmannia ilicis* Esper 1779, Jakšić 1988: 77). SKO and field data: Oteševo, 20.07.1980, S. Jakonov; Galičica Mt.: Glajša, 27.06. 2009., coll. V. Krpač.

61. *Satyrium acaciae* (Fabricius, 1787). Literature data: Galičica Mt. (as *Thecla acaciae* F., Rebel & Zerny 1931: 78); Galičica Mt. (as *Thecla acaciae* F., Thurner 1938: 134); Petrina Mt. (as *abdominalis* Gerhard von Slbn. Thurner 1964: 39); Tomoros, 24.07.1918 (as *Thecla acaciae* F., Daniel, Foster, Osthelder 1951: 14); Galičica Mt. (as *Nordmannia acaciae* F. 1787, Jakšić 1988: 78). SKO and field data: Galičica Mt.: Tomoros, 17.07.1980, S. Jakonov; Galičica Mt.: Galičica Mt., pass, 01.08.2007, 1600 m, C. Darcemont; Oteševo: Grnčarska Kolonija, 28.06.2009, V. Krpač; Galičica Mt.: Korita, 21.07.2009, 1361 m, V. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač.

62. *Lampides boeticus* (Linnaeus, 1767). Literature data: Ohrid, 10.–20.06.1954 (Michieli 1963: 21); Ohrid (Thurner 1938: 135); Ohrid (as *Cosmolice boeticus* Linne, Thurner 1964: 41); Prespa Lake, Oteševo, 15.09.1993 (Beškov 1993: 462); Galičica Mt. (Jakšić 1988: 85). Field data: Galičica Mt., pass, 01.08.2007, 1600 m, C. Darcemont.

63. *Leptotes pirithous* (Linnaeus, 1767). Literature data: Ohrid, June (as *Lampides telicanus* Lang., Thurner 1938: 135); Ohrid, Tomoros (as *Syntaricus pyrithous* Linnaeus, Thurner 1964: 41); Tomoros, 23.–24.07.1918 (as *Syntarucus telicanus* Lang., Daniel, Foster, Osthelder 1951: 15); Galičica Mt. (as *Syntarucus pirithous* L. 1767, Jakšić 1988: 84).

64. *Tarucus balkanica* (Freyer, 1844). Literature data: Ohrid, May-July (as *Lampides balcanicus* Frr., Thurner 1938: 135); Ohrid (as *Syntarucus theophrastus* Fabricius *balcanica* Freyer, Thurner 1964: 41); Galičica Mt. (as *Tarucus balcanicus* Freyer 1844, Jakšić 1988: 83).

65. *Cupido* (*Cupido*) *minimus* (Fuessly, 1775). Literature data: Ohrid, Petrina Mt., Asanđura, in June (as *Lycaena minima* Fuessly, Thurner 1938: 136); Ohrid, Petrina Mt., Asanđura, Letnica (Thurner 1964: 42); Galičica Mt. (Jakšić 1988: 86). SKO: Ohrid: Petrina Mt., 09.06.1942, K. Tuleschkow; Galičica Mt.: Asanđura, 10.06.2008 and 14.06.2008, 1500 m, V. Krpač; Galičica Mt.: Glajša, 14.06.2008, 1010 m, V. Krpač; Galičica Mt.: Ski Liftovi, 01.06.2009, V. Krpač; Galičica Mt.: Konjski Merizi, 25.06.2009, 1484 m, V. Krpač.

66. *Cupido* (*Cupido*) *osiris* (Meigen, 1829). Literature data: Galičica Mt., 1600–1700 m (as *Lycaena sebrus* B., Rebel & Zerny 1931: 82); Ohrid, Petrina Mt., Asanđura, Galičica Mt., May-June (as *Lycaena sebrus* B., Thurner 1938: 136); Galičica Mt. (Jakšić 1988: 87). SKO: Prespa Lake: Prespa, 10.06.1979, S. Jakonov; Prespa Lake: Oteševo, 20.07.1980, S. Jakonov; Galičica Mt.: Korita, 09.06.2008, 1350 m, V. Krpač; Galičica Mt.: Asanđura, 10.06.2008, 1500 m, V. Krpač.

67. *Cupido* (*Everes*) *argiades* (Pallas, 1771). Literature data: Ohrid, June, Galičica Mt. (as *Lucaena argiades* Pall., Thurner 1938: 135); Galičica Mt., Petrina Mt. (Thurner 1964: 42); Galičica Mt. (as *Cupido argiades* Pallas 1771, Jakšić 1988: 88). SKO: Prespa Lake: Prespa, 10.06.1979, S. Jakonov; Prespa Lake: Oteševo, 20.07.1980, S. Jakonov.

68. *Cupido* (*Everes*) *decolorata* (Staudinger, 1886). Literature data: Ohrid, Petrina Mt., Asanđura, Letnica, Galičica Mt. (as *Cupido* (*Lycaena*) *sebrus* Hübner 1824, Thurner 1964: 42); Galičica Mt. (Thurner 1964); (as *Cupido decoloratus* Staudinger 1886, Jakšić 1988: 89).

69. *Cupido* (*Everes*) *alcetas* (Hoffmannsegg, 1804). Literature data: Ohrid, 10.–20.06.1954 (Michieli, 1963: 21); Galičica Mt. (Thurner 1964); Galičica Mt. (as Cupido alcetas Hoffmannsegg 1804, Jakšić 1988: 73). SKO: Prespa Lake: Prespa, 10.06.1979, S. Jakonov; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač.

70. *Celastrina argiolus* (Linnaeus, 1758). Literature data: Galičica Mt. (as *Lycaena argiolus* L., Rebel & Zerny 1931: 82); Ohrid in June, Galičica Mt. (as *Lycaena argiolus* L., Thurner 1938: 136); Ohrid, Petrina Mt., 800–1000 m (as *Lycaenopsis argiolus* Linnaeus, Thurner 1964: 48); Galičica Mt. (Jakšić 1988: 90). SKO: Ohrid: Gorica, 17.04.1983, S. Jakonov; Galičica Mt.: Tri Bora, 28.06.2009, 1489 m, M. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač.

71. *Pseudophilotes vicrama schiffermuelleri* (Hemming, 1929). Literature data: Petrina Mt. (as *Lucaena baton schiffermuelleri* Hemming. Thurner 1938: 135); Ohrid, Petrina Mt., Galičica Mt. (as *Phylotes vicrama* Moore *schiffermuelleri* Hemming, Thurner 1964: 44); Galičica Mt. (Jakšić 1988: 91). SKO: as *Pseudophilotes baton* (Bergsträsser 1779), Ohrid: Gorica, 17.04.1983, S. Jakonov; Galičica Mt.: over v. Velestovo, 11.06.2008, V. Krpač; Galičica Mt.: Glajša, 14.06.2008, 1010 m, V. Krpač.

72. *Scolitantides orion* (Pallas, 1771). Literature data: Petrina Mt., June, Istok, Ohrid (as *Lycaena orion* Pall., Thurner 1938: 135); Ohrid, Petrina Mt. (Thurner 1964: 44); (Jakšić 1988: 92). SKO: Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, V. Krpač; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, M. Ivanov.

73. *Glaucopsyche* (*Glaucopsyche*) *alexis* (Poda, 1761). Literature data: Galičica Mt. (as *Lycaena cyllarus* Rott., Rebel & Zerny 1931: 82); Ohrid, May-June, Petrina Mt., Asanđura, in June (as *Lycaena cyllarus* Rott., Thurner 1938: 136); Ohrid (Petrina Mt.); Galičica Mt. (Thurner 1964: 48); Galičica Mt. (Jakšić 1988: 94). SKO: Ohrid: Gorica, 10.04.1983 and 17.04.1983, S. Jakonov; Galičica Mt.: Asanđura, 10.06.2008, 1500 m, M. Ivanov; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, V. Krpač; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, M. Ivanov; Galičica Mt.: Glajša, 14.06.2008, 1010 m, V. Krpač; Galičica Mt.: Konjski Merizi, 25.06.2009, 1484 m, V. Krpač.

74. *Iolana iolas* (Ochsenheimer, 1816). Literature data: Galičica Mt. (as *Lycaena jolas* O., Rebel & Zerny 1931: 81); Ohrid, June and Galičica Mt. (as *Lycaena jolas* O., Thurner 1938: 136); Ohrid, Galičica Mt. (as *Jolana jolas* Linnaeus, Thurner 1964: 47); Galičica Mt. (Jakšić 1988: 99).

75. *Phengaris arion* (Linnaeus, 1758). Literature data: Galičica Mt. (as *Lycaena arion* (L.) *antesion* Fruhst., Rebel & Zerny 1931: 82); Ohrid, Petrina Mt., 1000–1200 m (as *Lycaena arion antesion* Fruhst., Thurner 1938: 136); Petrina Mt., Istok (as *Maculinea arion* Linne *antesion* Fruhstorfer, Thurner 1964: 48); Galičica Mt. (Jakšić 1988: 96).

76. *Phengaris alcon* (Denis & Schiffermüller, 1775). Literature data: Petrina Mt. (as *Lycaena alcon sevastos* Rbl. u. Z., Thurner 1938: 136); Petrina Mt., Istok (as *Maculinea alcon* Schiffermiller *sevastos* Rebel. u. Zerny, Thurner 1964: 48); Galičica Mt. (Jakšić 1988: 95).

77. *Plebejus* (*Plebijides*) *sephirus* (Frivaldzky, 1835). Literature data: Galičica Mt., 1300–1800 m (as *Lycaena zephyrus* Friv., Rebel & Zerny 1931: 79); Petrina Mt., Istok, Galičica Mt., Asanđura (as *Lycaena sephyrus* Friv., Thurner 1938: 135); Oteševo, 10.–20.06.1954 (*Plebejides pylaon sephyrus* Friv., Michieli 1963: 21); Petrina Mt., Letnica, Asanđura (Thurner 1964: 43); Galičica Mt. (as *Plebejus sephyrus* Frivaldzky 1835, Jakšić 1988: 98); Galičica Mt., 12.07.1980 (Scheider & Jakšić 1989: Taf. 18, fig. 10 and 13). SKO: Galičica Mt.: Korita, 09.06.2008, 1350 m, V. Krpač; Galičica Mt.: Asanđura, 10.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 10.06. 2008, 1500 m, M. Ivanov; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, V. Krpač; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, M. Ivanov; Galičica Mt.: Glajša, 14.06.2008, 1010 m, V. Krpač.

78. *Plebejus* (*Plebejus*) *argus* (Linnaeus, 1758). Literature data: Tomoros (as *Lycaena argus* L., Doflein 1921: 537); Ohrid and Petrina Mt. (as *Lycaena argus* f. *hipochiona* Rbr., Thurner 1938: 135); Ohrid, Petrina Mt. (Thurner 1964: 42); Tomoros, 07.1918 (as *Polyommatus (Plebejus) argus* L., Daniel, Foster, Osthelder 1951: 16); Galičica Mt. (Jakšić 1988: 100). SKO and field data: Galičica Mt.: Konjski Merizi, Zdravec, 25.06.2009, V. Krpač; Galičica Mt.: Tomoros, 25.06. 2009, V. Krpač; Galičica Mt.: Asanđura, 25.06.2009, 1450 m, V. Krpač; Galičica Mt.: Glajša, 27.06.2009, V. Krpač; Galičica Mt.: Glajša, 27.06.2009, 1000 m, M. Ivanov; Galičica Mt.:

Korita, 21.07.2009, 1361 m, V. Krpač; Galičica Mt.: Ramne, 28.08.2009, 900 m, C. Darcemont.

79. *Plebejus* (*Plebejus*) *idas* (Linnaeus, 1761). Literature data: Galičica Mt., 10.06.1979 (Scheider & Jakšić 1989: Taf. 18, fig. 14). SKO: Galičica Mt.: Konjski Merizi, 25.06.2009, 1484 m, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 25.06.2009, 1450 m, M. Ivanov; Galičica Mt.: Tri Bora, 28.06.2009, 1489 m, M. Krpač; Galičica Mt.: v. Stenje to v. Konjsko, 22.07.2009, V. Krpač.

80. *Plebejus* (*Plebejus*) *argyrognomon* (Bergsträsser, 1779). Literature data: Galičica Mt. (as *Lycaena argyrognomon* Bgstr., Rebel & Zerny 1931: 79); Petrina Mt., June (as *Lycaena argyrognomon* Bgstr., Thurner 1938: 135); Petrina Mt.; Galičica Mt. (*as Lycaeidas argyrognomon* Bergersträsser *eurgetes* Stauder, Thurner 1964: 43); Galičica Mt. (Jakšić 1988: 101). SKO: Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 12.06.2008, 1500 m, V. Krpač; Galičica Mt.: Glajša, 14.06.2008, 1010 m, V. Krpač.

81. *Aricia eumedon* (Esper, 1780). Literature data: Petrina Mt. and Asanđura (as *Lycaena eumedon meridionalis* Stauder., Thurner 1938: 135); Galičica Mt., Petrina Mt. (as *Eumedonia chiron* Rottemburg *meridionalis* Stauder (stauderi Bollow) Thurner 1964: 45); Galičica Mt. (as *Eumedonia eumedon* Esper 1780, Jakšić 1988: 105); Galičica Mt. 10.06.1979 (as *Eumedonia eumedon rumeliensis* Eitschberger & Schteiner, Schaider & Jakšić 1989: Taf. 19, fig. 3). SKO: Galičica Mt.: Asanđura, 12.06.2008, 1500 m, M. Ivanov; Galičica Mt.: Asanđura, 25.06.2009, 1450 m, V. Krpač.

82. *Aricia agestis* (Denis & Schiffermüller, 1775). Literature data: Tomoros (as *Lycaena astrarche* Bgstr., Doflein 1921: 537, 590); Galičica Mt. (as *Aricia medon* Hufn., Rebel & Zerny 1931: 80); Ohrid, Petrina Mt. (as *Lycaena astrarche* Bgstr. (*medon* Hufn.), Thurner 1938: 135); Galičica Mt. (Thurner 1964: 44); Galičica Mt. (Jakšić, 1988: 102). SKO and field data: Galičica Mt.: pass, 27.07.2007, 1600 m, C. Darcemont; Galičica Mt.: Asanđura, 10.06.2008, 1500 m, M. Ivanov; Galičica Mt.: Glajša, 14.06.2008, 1010 m, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 25.06.2009, 1450 m, M. Ivanov; Oteševo: Grnčarska Kolonija, 28.06.2009, V. Krpač.

83. *Aricia artaxerxes* (Fabricius, 1793). Literature data: Galičica Mt. (as *Aricia allous* Geyer 1837, Jakšić 1988: 104). SKO: Galičica Mt., 20.05.1982, N. Topukova.

84. *Aricia anteros* (Freyer, 1838). Literature data: Galičica Mt. (as *Lycaena anteros* Frr., Rebel & Zerny 1931: 82); Petrina Mt., June-August and Galičica Mt., Asanđura (Thurner 1938: 135); Ohrid (Silbernagel 1944); Petrina Mt., Galičica Mt., Letnica, Istok, Asanđura (f. *asandjurae* Silbernagel) (Thurner 1964: 45); Galičica Mt. (Jakšić 1988: 97); Galičica Mt., 10.06.1979 (Scheider & Jakšić 1989: Taf. 19, fig. 1). Field data: Galičica Mt., pass, 27.07.2007, 1600 m, C. Darcemont; Ohrid, Sveti Naum, 28.08.2009, 700 m, C. Darcemont; Galičica Mt.: Doupkana, 29.08. 2009, 1460 m, C. Darcemont; Galičica Mt.: Asanđura, 29.08.2009, 1500 m, C. Darcemont.

85. *Cyaniris semiargus semiargus* (Rottemburg, 1775). Literature data: Galičica Mt. (as *Lycaena semiargus* Rott., Rebel & Zerny 1931: 82); Ohrid, Petrina Mt. and Asanđura, June-July (as *Lycaena semiargus* Rott., Thurner 1938: 136); Galičica Mt. (Thurner 1964: 48); Galičica Mt. (Jakšić 1988: 108); Galičica Mt., 10.06.1979 (Scheider & Jakšić 1989: Taf. 19, fig. 7). SKO and field data: Galičica Mt., 10.06.1979, S. Jakonov; Galičica Mt.: Korita, 09.06.2008, 1350 m, V. Krpač; Galičica Mt.: Korita, 09.06.2008, 1350 m, M. Ivanov; Galičica Mt.: Asanđura, 10.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 10.06.2008, 1500 m, M. Ivanov; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, V. Krpač; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, M. Ivanov; Galičica Mt.: Asanđura, 14.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 14.06.2008, 1500 m, M. Ivanov; Galičica Mt.: Glajša, 14.06.2008, 1010 m, V. Krpač; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, V. Krpač; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, M. Ivanov; Galičica Mt.: Korita, 14.06.2008, 1350 m, V. Krpač; Galičica Mt.: Korita, 01.06.2009, 1350 m, V. Krpač; Galičica Mt.: Konjski Merizi, 25.06.2009, 1484 m, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 25.06.2009, 1450 m, M. Ivanov; Ohrid, Sveti Naum, 28.08.2009, 700 m, C. Darcemont.

86. *Polyommatus* (*Polyommatus*) *dorylas* (Denis & Schiffermüller, 1775). Literature data: Galičica Mt., 1300–1600 m (as *Lycaena hylas* Esp., Rebel & Zerny 1931: 81); Ohrid, Petrina Mt. and Asanđura, June-August (as *Lycaena hylas* Esp., Thurner 1938: 136); Ohrid, Petrina Mt., Asanđura, Galičica Mt., Tomoros (as *Lysandra hylas* Esper, Thurner 1964: 46); Galičica Mt. (as *Plebicula dorylas* Denis & Schiffermüller 1775, Jakšić 1988: 114). SKO and field data: Prespa Lake: Oteševo, 15.08.1975, 04.08.1979 and 20.07.1980, S. Jakonov; Galičica Mt.: Tomoros, 05.08.1979, S. Jakonov; Galičica Mt.: Tomoros, 17.07.1980, S. Jakonov; Galičica Mt.: Asanđura, 10.06.2008, 1500 m, V. Krpač; Galičica Mt.: Konjski Merizi, Zdravec, 25.06.2009, V. Krpač; Galičica Mt.: Konjski Merizi, 25.06.2009, 1484 m, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 26.06.2009, 1450 m, M. Ivanov; Galičica Mt.: Tri Bora, 28.06.2009, 1489 m, M. Krpač; Galičica Mt.: Korita, 21.07.2009, 1361 m, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 29.08.2009, C. Darcemont.

87. *Polyommatus* (*Polyommatus*) *amandus* (Schneider, 1792). Literature data: Petrina Mt., July (as *Lycaena amandus* Schneid., Thurner 1938: 135); Oteševo, 10.–20.06.1954 (as *Lysandra icarius* Esp., Michieli 1963: 22); Petrina Mt., Asanđura (as *Lysandra icarius* Esp., Thurner 1964: 46); Galičica Mt. (as *Agrodiaetus amanda* Schneider 1792, Jakšić 1988: 111). SKO: Galičica Mt.: Korita, 09.06.2008, 1350 m, M. Ivanov; Galičica Mt.: Asanđura, 10.06.2008, 12.06.2008 and 14.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 10.06.2008, 12.06.2008, 1500 m, M. Ivanov; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, V. Krpač; Galičica Mt.: over v. Velestovo, 11.06.2008, 1500 m, V. Krpač; Galičica: near cave Samatska Dupka, 14.06.2008, 1600 m, M. Ivanov; Galičica Mt.: Ski Liftovi, 01.06.2009, V. Krpač; Galičica Mt.: Asanđura, 25.06.2009, 1450 m, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 25.06.2009, 1450 m, V. Krpač and M. Ivanov; Galičica Mt.: Mali Kazani-Magaro, 26.06.2009, V. Krpač; Galičica Mt.: Tri Bora, 28.06. 2009, 1489 m, M. Krpač.

88. *Polyommatus* (*Polyommatus*) *thersites* (Cantener, 1835). Literature data: Petrina Mt. and Asanđura (as *Lycaena thersites* Cant., Thurner 1938: 135); Petrina Mt., Asanđura, Tomoros (Thurner 1964: 45); Tomoros, 23.07.1918 (as *Polyommatus (Lysandra) thersites* Cant., Daniel, Foster, Osthelder 1951: 16); Galičica Mt. (as *Agrodietus thersites* Cantener 1834, Jakšić 1988: 112). SKO and field data: Ohrid: Petrina Mt., 09.06.1942, K. Tuleschkow; Galičica Mt.: pass, 27.07. 2007, 1600 m, C. Darcemont.

89. *Polyommatus* (*Polyommatus*) *icarus* (Rottemburg, 1775). Literature data: Ohrid, 13.08, Galičica Mt. (as *Lycaena icarus* Rott., Rebel & Zerny 1931: 80); Ohrid and Asanđura (as *Lycaena icarus* Rott., Thurner 1938: 135); Ohrid, 10.–20.06.1954 (Michieli 1963: 22); Galičica Mt. (Thurner 1964: 45); Galičica Mt., (Jakšić 1988: 118); Galičica Mt., 20.06.1979 (Scheider & Jakšić 1989: Taf. 21, fig. 5). SKO and field data: Ohrid: Petrina Mt., 09.06.1942, K. Tuleschkow; Ohrid: v. Trpeica, 08.05.1971, J. Čingovski; Galičica Mt.: Korita, 01.06.2009, 1350 m, V. Krpač; Galičica Mt.: v. Stenje to v. Konjsko, 22.07.2009, V. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač; Galičica Mt.: Đafa, 29.08.2009, 1600 m, C. Darcemont; Stara Galičica Mt.: Lipana livada, 01.09.2009, 1600 m, C. Darcemont.

90. *Polyommatus eros eroides* (Frivaldszky, 1835). SKO: Galičica Mt., 17.07.1980, S. Jakonov; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, M. Ivanov; Galičica Mt.: Asanđura, 12.06.2008, 1500 m, V. Krpač; Galičica Mt.: Glajša, 14.06.2008, 1010 m, V. Krpač; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, M. Ivanov; Galičica Mt.: Konjski Merizi, Zdravec, 25.06.2009, P. Jakšić.

91. *Polyommatus eros eros* (Ochsenheimer, 1808). SKO: Galičica Mt.: Korita, 01.06.2009, 1361 m, V. Krpač; Galičica Mt.: Korita, 21.07.2009, 1361 m, V. Krpač.

92. *Polyommatus* (*Meleageria*) *daphnis* (Denis & Schiffermüller, 1775). Literature data: Galičica Mt. (as *Lycaena meleager* Esp., Rebel & Zerny 1931: 81); Petrina Mt., middle of July (as *Lycaena meleager* Esp. f. *steeveni* Tr., Thurner 1938: 136); Petrina Mt., 1300 m (Thurner 1964: 46); Galičica Mt. (Jakšić, 1988: 117). SKO and field data: Prespa Lake: Oteševo, 20.07.1980, S.

Jakonov; Ohrid: Gradište, 23.07.1980 and 01.08.1981, P. Meškovski; Ohrid: v. Trpeica, 28.07. 1980, P. Meškovski; Galičica Mt.: Ski Liftovi, 25.07.2008, V. Krpač; Galičica Mt.: Korita, 21.07.2009, 1361 m, V. Krpač; Oteševo: Grnčarska Kolonija, 28.06.2009, 861 m, V. Krpač; Stara Galičica Mt.: Lipana livada, 01.09.2009, 1600 m, C. Darcemont.

93. *Polyommatus* (*Lysandra*) *bellargus* (Rottemburg, 1775). Literature data: Galičica Mt. (as *Lycaena tetis* Rott., Rebel & Zerny 1931: 81); Ohrid (as *Lycaena bellargus* Rott. (*thetis* Rott.), Thurner 1938: 136); Galičica Mt., 10.06.1979 (as *Lycaena bellargus* Rottemburg, Thurner 1964: 46); Galičica Mt. (as *Lysandra bellargus* Rottemburg 1775, Jakšić 1988: 116); Galičica Mt., 10.06. 1979 (as *Lycaena bellargus* Rott., Scheider & Jakšić 1989: Taf. 20, fig. 10). SKO and field data: Prespa Lake: Oteševo, 15.08.1979, S. Jakonov; Ohrid: v. Trpeica, 28.07.1980, P. Meškovski; Galičica Mt., 23.07.1982, P. Meškovski; Galičica Mt.: Korita, 09.06.2008, 1350 m, V. Krpač; Galičica Mt.: Tri Bora, 24.08.2009, 1489 m, M. Krpač; Ohrid, Sveti Naum, 28.08.2009, 700 m, C. Darcemont; Galičica Mt.: Đafa, 29.08.2009, 1600 m, C. Darcemont; Stara Galičica Mt.: Lipana livada, 01.09.2009, 1600 m, C. Darcemont.

94. *Polyommatus* (*Lysandra*) *coridon coridon* (Poda, 1761). Literature data: Galičica Mt. (as *Lycaena corydon* Poda., Rebel & Zerny 1931: 80); Petrina Mt., middle of July and Ohrid (as *Lycaena corydon* Poda, Thurner 1938: 136); Petrina Mt. (as *Lycaena corydon* Poda, Thurner 1964: 47); Galičica Mt. (as *Lysandra corydon* Poda 1761, Jakšić 1988: 115). SKO and field data: Galičica Mt.: Tomoros, 13.08.1979, S. Jakonov; Ohrid: v. Trpeica, 28.07.1980, P. Meškovski; Ohrid: Gradište, 21.07.1981 and 01.08.1981, P. Meškovski; Galičica Mt., 23.07.1982, P. Meškovski; Galičica Mt.: Galičica Mt., pass, 27.07.2007, 1600 m, C. Darcemont; Galičica Mt.: Korita, 21.07.2009, 1361 m, V. Krpač; Galičica Mt.: Tri Bora, 24.08.2009, 1489 m, M. Krpač; Galičica Mt.: Doupkana, 29.08.2009, 1460 m, C. Darcemont; Galičica Mt.: under Lako Signoj, 31.08.2009, 1680 m, C. Darcemont; Stara Galičica Mt.: Propas, 01.09.2009, 1860 m, C. Darcemont.

95. *Polyommatus* (*Agrodiaetus*) *admetus* (Esper, 1783). Literature data: Tomoros (as *Lycaena admetus* (Esp.), Doflein 1921: 537, 590); Galičica Mt., 1400–1600 m (as *Lycaena admetus* (Esp.), Rebel & Zerny 1931: 80); Ohrid, 10.–20.06.1954 (Michieli 1963: 22); Petrina Mt., Galičica Mt., Tomoros (Thurner 1964: 47); Galičica Mt. (Jakšić 1988: 110). SKO: Prespa Lake: Oteševo, 20.07.1980, S. Jakonov; Galičica Mt.: Korita, 01.06.2009, 1350 m, V. Krpač; Oteševo, 23.07. 2009, 861 m, V. Krpač.

96. *Polyommatus* (*Agrodiaetus*) *ripartii ripartii* (Freyer, 1830). Literature data: Ohrid and Petrina Mt., July–August (as *Lycaena admetus ripartii* Frr., Thurner 1938: 136); Tomoros, 23.07.1918, eine kleine Serie (as *Polyommatus* (*Agrodiaetus*) *ripartii* Frr., Daniel, Foster, Osthelder 1951: 17); Petrina Mt., Galičica Mt. (Thurner 1964: 47); Galičica Mt. (Jakšić 1988: 109); Ohrid, 28.07.1974, (JP), (Sijarić 1991: 261). SKO and field data: Galičica Mt.: Tomoros, 05.08.1979, S. Jakonov; Prespa Lake: Oteševo, 20.07.1980 and 15.08.1980, S. Jakonov; Ohrid: Gradište, 01.08.1981, P. Meškovski; Galičica Mt., 23.07.1982, P. Meškovski; Galičica Mt.: pass, 27.07.2007, 1600 m, C. Darcemont; Galičica Mt.: Korita, 21.07.2009, 1361 m, V. Krpač.

97. *Polyommatus* (*Agrodiaetus*) *aroaniensis* (Brown, 1976). Literature data: Galičica Mt. (Lafranchis 2004: 153).

98. *Polyommatus* (*Agrodiaetus*) *damon* (Denis & Schiffermüller, 1775). Literature data: Galičica Mt., 25.07 (as *Lycaena damon* Schiff., Rebel & Zerny 1931: 81); Petrina Mt. (as *Lycaena damon* Schiff., Thurner 1938: 136); Petrina Mt. (as *Lycaena damon* Schiffermüller *ausonia* Verity, Thurner 1964: 47); Galičica Mt. (Jakšić 1988: 107); Ohrid, 26.07.1974, (JP) (Sijarić 1991: 261). SKO: Galičica Mt.: Tomoros, 05.08.1979 and 13.08.1979, S. Jakonov; Ohrid: Gradište, 01.08.1981, P. Meškovski; Galičica Mt., 23.07.1982, P. Meškovski; Galičica Mt.: Korita, 21.07. 2009, 1361 m, V. Krpač.

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99. *Libythea celtis* (Laicharting, 1782). Literature data: Ohrid, May-June (Thurner 1938: 134); Ohrid (Thurner 1964: 38); Galičica Mt. (Jakšić 1988: 122). SKO: Galičica Mt., 17.07.1975, J. Čingovski; Prespa Lake: Oteševo, 23.06.2003, M. Ivanov.

100. *Argynnis* (*Argynnis*) *paphia* (Linnaeus, 1758). Literature data: Galičica Mt. (Rebel & Zerny 1931: 71); Ohrid, Petrina Mt. and Sveti Naum (as Argynnis paphia v. velestina Esp., Thurner 1938: 130); Galičica Mt. (as Argynnis paphia magnata Verity, Thurner 1964: 37); Galičica Mt. (Jakšić 1988: 133). SKO: Prespa Lake: Carina, 26.07.1968, J. Čingovski; Ohrid: Gradište, 29.07.1980, 21.07.1981, P. Meškovski; Galičica Mt., 23.07.1981, P. Meškovski; Petrina Mt., 18.07.1987, P. Meškovski; Prespa Lake: Oteševo, 23.06.2003, V. Krpač; Galičica Mt.: Ski Liftovi; 20.07. 2006, 1600 m, M. Ivanov; Galičica Mt.: Ski Liftovi, 25.07.2008, 1600 m, V. Krpač; Galičica Mt.: Dolga, 26.06.2009, M. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač; Galičica Mt.: v. Ramne, 28.08.2009, 896 m, V. Krpač.form. *valesina*: Ohrid: Gradište, 24.07.1980 and 01.08.1981, P. Meškovski; Galičica Mt.: Ski Liftovi, 20.07.2006, 1600 m, M. Ivanov.

101. *Argynnis* (*Pandoriana*) *pandora* (Denis & Schiffermüller, 1775). Literature data: Galičica Mt. (Rebel & Zerny 1931: 71); Ohrid, end of June and Petrina Mt. (Thurner 1938: 130); Galičica Mt. (as *Pandorina maja* Cramer, Thurner 1964: 38); Galičica Mt. (Jakšić 1988: 134). SKO: Prespa Lake: Oteševo, 15.08.1979, S. Jakonov; Oteševo, 11.09.1981, J. Čingovski; Ohrid: Gorica, 17.04.1983, S. Jakonov; Prespa Lake: Oteševo, 23.06.2003, V. Krpač.

102. *Argynnis* (*Mesoacidalia*) *aglaja* (Linnaeus, 1758). Literature data: Galičica Mt., (Rebel & Zerny, 1931: 71); Ohrid and Petrina Mt. (Thurner 1938: 129); Galičica Mt. (Thurner 1964: 37); Tomoros, 24.07.1918 (Daniel, Foster, Osthelder 1951: 13); Galičica Mt. (Jakšić 1988: 135). SKO: Galičica Mt., 17.07.1975, J. Čingovski; Galičica Mt.: Tomoros, 15.08.1976 and 17.07.1980, S. Jakonov; Galičica Mt., 20.07.1982, S. Jakonov; Galičica Mt., 03.08.1981 and 23.07.1982, P. Meškovski; Prespa Lake: Oteševo, 23.06.2003, V. Krpač; Galičica Mt.: Ski Liftovi, 25.07.2008, V. Krpač; Galičica Mt.: Glajša, 27.06.2009, 1000 m, V. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač.

103. *Argynnis* (*Fabriciana*) *adippe* (Denis & Schiffermüller, 1775). Literature data: Ohrid and Petrina Mt., in June (as *Argynnis adippe* f. *cleodoxa* O., Thurner 1938: 129); Ohrid, Petrina Mt., Tomoros (Thurner 1964: 37); Tomoros, 24.07.1918 (as *Argynnis cydippe* L. (= *adippe* L.), Daniel, Foster, Osthelder 1951: 13–14); Galičica Mt. (Jakšić 1988: 137). SKO: Galičica Mt., 15.08. 1976, S. Jakonov; Prespa Lake: Oteševo, 15.08.1979, S. Jakonov; Galičica Mt.: Tomoros, 17.07. 1980, S. Jakonov; Ohrid: Gradište, 13.07.1980, 23.07.1980, 25.07.1980 and 29.07.1980, P. Meškovski; Galičica Mt.: Tomoros, 17.07.1980, S. Jakonov; Ohrid: v. Trpeica, 28.07.1980, P. Meškovski; Galičica Mt., 23.07.1982, P. Meškovski; Galičica Mt.: Glajša, 27.06.2009, 1000 m, V. Krpač and M. Ivanov; Galičica Mt.: over v. Stenje, 28.06.2009, V. Krpač.

104. *Argynnis* (*Fabriciana*) *niobe* (Linnaeus, 1758). Literature data: Ohrid and Petrina Mt. (*Argynnis niobe* f. *eris* Meig., Thurner 1938: 129); Galičica Mt. (as *Argynnis niobe laranda* Fruhstorfer, Thurner 1964: 37); Tomoros, 24.07.1918 (as *Arginis niobe laranda* Fruhst., Daniel, Foster, Osthelder 1951: 13); Galičica Mt. (Jakšić 1988: 136). SKO: Galičica Mt.: Tomoros, 17.07.1980, S. Jakonov; Galičica Mt., 25.06.2003, V. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač.

105. *Issoria* (*Issoria*) *lathonia* (Linnaeus, 1758). Literature data: Galičica Mt. (*Arginis latonia* forma *biede* H.-S., 900 m, Drenowski 1920: 165); Galičica Mt. (Arginis *latonia* ab. *biede* (H. S.), Drenowski 1921: 218); Galičica Mt. (Rebel & Zerny 1931: 71); Ohrid and Petrina Mt. (as *Argynnis lathonia* L., Thurner 1938: 129); Ohrid, 10.–20.06.1954 (Michieli 1963: 20); Galičica Mt. (Thurner 1964: 37); Galičica Mt. (Jakšić 1988: 138). SKO and field data: Galičica Mt., 15.08.1976 and 25.04.1983, S. Jakonov; Galičica Mt., 30.07.1980, P. Meškovski; Galičica Mt., 08.06.1995, V. Krpač; Prespa Lake: Oteševo, 23.06.2003, M. Ivanov; Galičica Mt.: Preseka, 25.06.2003, V.

Krpač; Galičica Mt.: Asanđura, 10.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 10.06. 2008, 1500 m, M. Ivanov; Galičica Mt.: Asanđura, 25.06.2009, 1450 m, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 25.06.2009, 1450 m, V. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 29.08.2009, 1480 m, C. Darcemont.

106. *Brenthis daphne* (Denis & Schiffermüller, 1775). Literature data: Galičica Mt. (Rebel & Zerny 1931: 71); Ohrid and Sveti Naum (as *Argynnis daphne* Schiff., Thurner 1938: 129); Galičica Mt., Petrina Mt., Istok, Sv. Naum (Thurner 1964: 37); Galičica Mt. (Jakšić 1988: 140). SKO: Galičica Mt., 10.06.1977, B. Mihajlova; Galičica Mt.: Ski Liftovi, 20.07.2006, M. Ivanov; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, M. Ivanov; Galičica Mt.: Ski Liftovi, 25.07.2008, V. Krpač; Galičica Mt.: over v. Stenje, 28.06.2009, V. Krpač; Oteševo, 23.07.2009, 861 m, M. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač.

107. *Brenthis hecate* (Denis & Schiffermüller, 1775). Literature data: Ohrid, June-July (as *Argynnis hecate caucasica* Stgr., Thurner 1938: 129); Ohrid (as *Brenthis hecate* Esper *caucasica* Staudinger, Thurner 1964: 37); Galičica Mt. (Jakšić 1988: 139). SKO: Galičica Mt.: Tomoros, 25.06.2009, V. Krpač.

108. *Boloria* (*Clossiana*) *euphrosyne* (Linnaeus, 1758). Literature data: Galičica Mt. (as *Argynnis euphrosine* L., Rebel & Zerny 1931: 70); Ohrid, Petrina Mt., June and Asanđura (Thurner 1938: 129); Ohrid, Petrina Mt. (Thurner 1964: 36); Galičica Mt. (as *Boloria euphrosynae* L. 1758, Jakšić 1988: 146); Galičica Mt., 10.07.1979 (Scheider & Jakšić 1989: Taf. 27, fig. 12). SKO and field data: Galičica Mt., 10.06.1979, S. Jakonov; Galičica Mt.: Korita, 09.06.2008, 1350 m, V. Krpač; Galičica Mt.: Korita, 09.06.2008, 1350 m, M. Ivanov; Galičica Mt.: Asanđura, 10.06.2008, 12.06.2008 and 13.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 10.06.2008, M. Ivanov; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, V.Krpač; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, M. Ivanov; Galičica Mt.: Korita, 14.06. 2008, 1350 m, V. Krpač; Galičica Mt.: Glajša, 14.06.2008, 1010 m, V. Krpač; Galičica Mt.: Korita, 01.06.2009, 1350 m, V. Krpač; Galičica Mt.: over v. Stenje, 28.06.2009, V. Krpač; Galičica Mt.: Ski Liftovi, 24.08.2009, C. Darcemont.

109. *Boloria* (*Clossiana*) *dia* (Linnaeus, 1767). Literature data: Galičica Mt. (Thurner 1964: 36).

110. *Boloria* (*Boloria*) *graeca* (Staudinger, 1870). Literature data: Galičica Mt. (Jakšić 1988: 123); Galičica Mt., 11.07.1979 (as *Boloria graeca balcanica* Rebel, Scheider & Jakšić 1989: Taf. 27, fig. 5). SKO: Galičica Mt.: Tomoros, 15.08.1976 and 17.07.1980, S. Jakonov; Galičica Mt., 03.08.1979 and 20.07.1982, S. Jakonov; Golemi Kazani, 26.06.2009, V. Krpač; Galičica Mt.: Mali Kazani - Magaro, 26.06.2009, V. Krpač.

111. *Vanessa atalanta* (Linnaeus, 1758). Literature data: Galičica Mt. (as *Pyramenes atalanta* L., Rebel & Zerny 1931: 68); Galičica Mt. (as *Pyrameis atalanta* L., Thurner 1938: 128); Ohrid (Thurner 1964: 33); Ohrid 15.09.1917 (as *Pyrameis atalana* L., Daniel, Foster, Osthelder 1951: 11); Galičica Mt. (Jakšić, 1988: 129). SKO: Galičica Mt., 15.08.1976, S. Jakonov; Galičica Mt.: Asanđura, 10.06.2008, 1500 m, V. Krpač.

112. *Vanessa cardui* (Linnaeus, 1758). Literature data: Galičica Mt. (as *Pyramenes cardui* L., Rebel & Zerny 1931: 68); Galičica Mt. (as *Pyrameis cardui* L., Thurner 1938: 128); Galičica Mt. (Thurner 1964: 33); Galičica Mt. (Jakšić 1988: 130). SKO: Galičica Mt., 26.07.1918, 1600 m, A. Drenowski; Galičica Mt., 15.08.1976, S. Jakonov; Galičica Mt.: Tomoros, 15.08.1976, S. Jakonov; Galičica Mt., 10.06.1977, B. Mihajlova; Ohrid: Gradište, 13.07.1980, P. Meškovski; Ohrid: Gorica, 17.04.1983, S. Jakonov; Galičica Mt.: Asanđura, 12.06.2008, 1500 m, V. Krpač; Galičica Mt.: Glajša, 14.06.2008, 1010 m, V. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač.

113. *Inachis io* (Linnaeus, 1758). Literature data: Galičica Mt. (as *Vanessa io* L., Rebel & Zerny 1931: 67); Galičica Mt., Petrina Mt. (Thurner 1964: 33); Galičica Mt. (Jakšić 1988: 128). SKO: Prespa Lake: Oteševo, 23.06.2003, M. Ivanov; Galičica Mt.: Preseka, 25.06.2003, V. Krpač; Galičica Mt.: Glajša, 27.06.2009, 1000 m, V. Krpač; Galičica Mt.: over v. Stenje, 28.06.2009, V. Krpač.

114. *Aglais urticae* (Linnaeus, 1758). Literature data: Galičica Mt. (Rebel & Zerny 1931: 68); Galičica Mt. (Thurner, 1938: 128); Galičica Mt. (Thurner, 1964: 33); Galičica Mt. (Jakšić 1988: 131). SKO: Galičica Mt., 10.06.1979, S. Jakonov; Galičica Mt., 08.06.1995, V. Krpač; Galičica Mt.: Preseka, 25.06.2003, M. Ivanov; Galičica Mt.: Asanđura, 10.06.2008, 12.06.2008 and 14.06. 2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 10.06.2008, 1500 m, M. Ivanov; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 25.06.2009, 1450 m, M. Ivanov; Galičica Mt.: over v. Stenje, 28.06.2009, 1450 m, V. Krpač.

115. *Polygonia c-album* (Linnaeus, 1758). Literature data: Galičica Mt. (Thurner, 1964: 33); Tomoros, 24.07.1918 (Daniel, Foster, Osthelder 1951: 12); Galičica Mt. (Jakšić 1988: 132). SKO: Ohrid: v. Konsko, 13.04.1969, J. Čingovski; Galičica Mt.: over v. Velestovo, 11.06.2008, V. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač.

116. *Polygonia egea* (Cramer, 1775). Literature data: Ohrid (Thurner 1938: 129); Petrina Mt. (Thurner 1964: 34); Galičica Mt. (Jakšić 1988: 126).

117. *Araschnia levana* (Linnaeus, 1758). Literature data: Galičica Mt., v. Elšani, 23.07.2004 (Melovski 2004: 274).

118. *Nymphalis antiopa* (Linnaeus, 1758). Literature data: Galičica Mt. (as *Vanessa antiopa* L., Rebel & Zerny 1931: 68); Ohrid (as *Vanessa antiopa* L., Thurner 1938: 129); Ohrid (Thurner 1964: 33); Galičica Mt. (Jakšić 1988: 127). SKO: Ohrid: v. Konsko, 13.04.1969, J. Čingovski; Galičica Mt.: Glajša, 27.06.2009, V. Krpač.

119. *Nymphalis polychloros* (Linnaeus, 1758). Literature data: Galičica Mt. (as *Vanessa polychloros* L., Rebel & Zerny 1931: 68); Ohrid (as *Vanessa polychloros* L., Thurner 1938: 129); Galičica Mt. (Thurner 1964: 33); Galičica Mt. (Jakšić 1988: 124). SKO: Galičica Mt.: Glajša, 27.06.2009, V. Krpač; Oteševo: Grnčarska Kolonija, 28.06.2009, 861 m, V. Krpač.

120. *Nymphalis xanthomelas* (Esper, 1781). Literature data: Ohrid; Petrina Mt. (as *Vanessa xanthomelas* Esp., Thurner 1938: 129); Ohrid, Gorica, Petrina Mt., Letnica, Istok (Thurner 1964: 33); Galičica Mt. (Jakšić 1988: 125).

121. *Euphydryas aurinia* (Rottemburg, 1775). SKO: Galičica Mt.: Korita, 09.06.2008, 1350 m, V. Krpač; Galičica Mt.: Korita, 09.06.2008, 1350 m, M. Ivanov; Galičica Mt.: Asanđura, 10.06.2008, 1500 m, M. Ivanov; Galičica Mt.: over v. Velestovo, 11.06.2008, V. Krpač; Galičica Mt.: over v. Velestovo, 11.06.2008, M. Ivanov; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, M. Ivanov; Galičica Mt.: Asanđura, 12.06.2008, 1500 m, V. Krpač; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, V. Krpač; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, M. Ivanov; Galičica Mt.: Korita, 14.06.2008, 1350 m, V. Krpač; Galičica Mt.: Ski Liftovi, 01.06.2009., V. Krpač; Galičica Mt.: Konjski Merizi, Zdravec, 25.06.2009, P. Jakšić; Galičica Mt.: Asanđura (Šarboica), 25.06.2009., 1450 m, V. Krpač and M. Ivanov; Galičica Mt.: Konjski Merizi, 25.06.2009., 1484 m, V. Krpač.

122. *Melitaea cinxia* (Linnaeus, 1758). Literature data: Galičica Mt. (Rebel & Zerny 1931: 69); Petrina Mt., in June, 1400–1600 m and Asanđura (as *Melitaea cinxia* L. var. *balcanica* Zllich, Thurner 1938: 129); Ohrid, 10.–20.06.1954 (Michieli, 1963: 20); Ohrid, Petrina Mt., Asanđura (Thurner 1964: 34); Galičica Mt. (Jakšić 1988: 151); Galičica Mt., 09.06.1979 (Scheider & Jakšić 1989: Taf. 27,fig. 13). SKO: Ohrid, 24.04.1918, A. Drenowski; Galičica Mt., 12.06.1918, A. Drenowski; Galičica: Asanđura, 10.06.2008, 12.06.2008 and 13.06.2008, 1500 m, V. Krpač; Galičica: Asanđura, 10.06.2008, M. Ivanov; Galičica: Lake Đafa, 11.06.2008, 1500 m, M. Ivanov; Galičica: near cave Samatska Dupka, 14.06.2008, 1600 m, V. Krpač; Galičica: Glajša, 14.06. 2008, 1010 m, V. Krpač; Galičica Mt.: Konjski Merizi, Zdravec, 25.06.2009, V. Krpač; Galičica Mt.: Asanđura, 25.06.2009, 1450 m, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 25. and 26.06.2009, 1450 m, V. Krpač and M. Ivanov; Galičica Mt.: Tri Bora, 24.08.2009, 1489 m, V. Krpač.

123. *Melitaea phoebe* (Denis & Schiffermüller, 1775). Literature data: Galičica Mt., middle of June (Thurner 1938: 129); Galičica Mt. (Thurner 1964: 34); Ohrid, 10.–20.06.1954 (Michieli 1963: 20); Galičica Mt. (Jakšić 1988: 150). SKO: Ohrid: Petrina Mt., 09.06.1942, K. Tuleschkow; Ohrid: Gradište, 08.1979, P. Meškovski; Galičica Mt., 20.05.1982, J. Čingovski; Prespa Lake: Oteševo, 20.07.1982, S. Jakonov; Galičica Mt.: Asanđura, 10.06.2008, 1500 m, V. Krpač; Galičica Mt.: Ski Liftovi, 01.06.2009, V. Krpač; Galičica Mt.: Asanđura, 25.06.2009, 1450 m, V. Krpač; Golemi Kazani, 26.06.2009, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 25 and 26.06.2009, 1450 m, M. Ivanov; Galičica Mt.: Tri Bora, 28.06.2009, 1489 m, V. Krpač; Galičica Mt.: Tomoros, 29.08.2009, V. Krpač.

124. *Melitaea arduinna* (Esper, 1783). SKO and field data: Galičica Mt.: Asanđura, 10.06.2008, 1500 m, V. Krpač; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, V. Krpač; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, M. Ivanov; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, V. Krpač; Galičica Mt.: Ski Liftovi, 15.06.2010, 1494 m, C. Darcemont.

125. *Melitaea trivia* (Denis & Schiffermüller, 1775). Literature data: Galičica Mt. (Rebel & Zerny 1931: 69); Ohrid, Petrina Mt., in July (Thurner 1938: 129); Galičica Mt. (Thurner 1964: 35); Galičica Mt. (as *Melitaea fascelis* Esper 1784, Jakšić 1988: 148). SKO: f. *fascelis* (Esper [1784]) Prespa Lake: Oteševo, 15.08.1979, S. Jakonov; Galičica Mt.: Tomoros, 17.07.1980, S. Jakonov; Ohrid: Gradište, 08.1979, P. Meškovski; Galičica Mt.: Asanđura, 10.06.2008, 12.06.2008 and 13.06.2008, 1500 m, V. Krpač; Galičica; Asanđura, 10.06.2008, 1500 m, M. Ivanov; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, V. Krpač; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, M. Ivanov; Galičica Mt.: over v. Velestovo, 11.06.2008, V. Krpač; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, V. Krpač; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, M. Ivanov; Galičica Mt.: Glajša, 14.06.2008, 1010 m, V. Krpač; Galičica Mt.: Asanđura, 25.06.2009, 1450 m, V. Krpač; Galičica Mt.: Konjski Merizi, 25.06.2009, 1484 m, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 25 and 26.06.2009, 1450 m, V. Krpač and M. Ivanov; Galičica Mt.: over v. Stenje, 28.06.2009, 1450 m, V. Krpač; Galičica Mt.: Tri Bora, 28.06.2009, 1489 m, V. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač; Galičica Mt.: Tomoros, 29.08.2009, V. Krpač.

126. *Melitaea didyma* (Esper, 1778). Literature data: Galičica Mt. (Rebel & Zerny 1931: 69); Ohrid, Petrina Mt. (*Melitaea didyma meridionallis* Stgr., Thurner 1938: 129); Ohrid, 10.–20.06.1954 (as *Melitaea didyma dalmatina* Stgr., Michieli 1963: 20); Galičica Mt. (Thurner 1964: 35); Galičica Mt. (Jakšić 1988: 147). SKO and field data: Galičica: Tomoros, 17.07.1980, S. Jakonov; Galičica: Asanđura, 10.06.2008 and 13.06.2008, 1500 m, V. Krpač; Galičica: near cave Samatska Dupka, 14.06.2008, 1600 m, V. Krpač; Galičica: near cave Samatska Dupka, 14.06.2008, 1600 m, M. Ivanov; Galičica Mt.: Konjski Merizi, Zdravec, 25.06.2009, V. Krpač; Galičica Mt.: Tomoros, 25.06.2009, V. Krpač; Golemi Kazani, 26.06.2009, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 25 and 26.06.2009, 1450 m, V. Krpač and M. Ivanov; Galičica Mt.: over v. Stenje, 28.06.2009, 1450 m, V. Krpač; Galičica Mt.: Tri Bora, 28.06.2009, 1489 m, V. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač; Galičica Mt.: Đafa, 29.08.2009, 1560 m, C. Darcemont.

127. *Melitaea diamina* (Lang, 1789). Literature data: Ohrid, June (as *Melitaea dyctinna* Esp., Thurner 1938: 129); Ohrid (Thurner 1964: 35); Galičica Mt. (Jakšić 1988: 152).

128. *Melitaea aurelia* Nickerl, 1850. Literature data: Galičica Mt. (Lafranchis 2004: 225). SKO: Galičica Mt.: Konjski Merizi, Zdravec, 25.06.2009, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 25.06. 2009, 1450 m, V. Krpač.

129. *Melitaea athalia athalia* (Rottemburg, 1775). Literature data: Galičica Mt. (Rebel & Zerny 1931: 69); Ohrid, June (Thurner 1938: 129); Ohrid, Galičica Mt. (as Melitaea athalia Rottemburg scardona Fruhstorfer, Thurner 1964: 35); Galičica Mt. (Jakšić 1988: 153). SKO: Galičica Mt., 10.06.1979, S. Jakonov; Ohrid: Gorica, 10.04.1983, S. Jakonov; Galičica Mt.: Asanđura, 10.06. 2008 and 11.06.2008, 1500 m, V. Krpač; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, V.

Krpač; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, M. Ivanov; Galičica Mt.: over v. Velestovo, 11.06.2008, V. Krpač and M. Ivanov; Galičica Mt.: Asanđura, 12.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 12.06.2008, 1500 m, M. Ivanov; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, M. Ivanov; Galičica Mt.: Glajša, 14.06.2008, 1010 m, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 25 and 26.06.2009, 1450 m, V. Krpač and M. Ivanov; Oteševo: Grnčarska Kolonija, 28.06.2009, 861 m, V. Krpač; Galičica Mt.: Tri Bora, 28.06.2009, 1489 m, V. Krpač.

130. *Limenitis camilla* (Linnaeus, 1764). Literature data: Ohrid, Petrina Mt. (Thurner 1938: 128).

131. *Limenitis reducta* Staudinger, 1901. Literature data: Ohrid, Petrina Mt. (as *Limenitis anonyma* Lewis, Thurner 1964: 32); Galičica Mt. (Jakšić 1988: 160); Ohrid, 28.06.1979 (JP) (Sijarić 1991: 299). SKO: Prespa Lake: Oteševo, 20.07.1980, S. Jakonov; Prespa Lake: Oteševo, 23.06.2003, M. Ivanov; Galičica Mt.: Ski Liftovi, 20.07.2006, 1600 m, M. Ivanov; Oteševo, 23.07.2009, 861 m, M. Krpač.

132. *Neptis rivularis* (Scopoli, 1763). Literature data: Galičica Mt. (Rebel & Zerny 1931: 68); Galičica Mt. (Thurner 1964); Galičica Mt. (Jakšić 1988: 162).

133. *Apatura ilia* (Denis & Schiffermüller, 1775). Literature data: Ohrid (Thurner 1938: 128); Ohrid (Thurner 1964: 32); Galičica Mt. (Jakšić 1988: 158).

134. *Apatura iris* (Linnaeus, 1758). SKO: Galičica Mt., 15.08.1976, S. Jakonov.

135. *Kirinia roxelana* (Cramer, 1777). Literature data: Galičica Mt. (as *Perarge roxelana* Cr., Rebel & Zerny 1931: 75); Ohrid (as *Perarge roxelana* Cr., Thurner 1938: 132); Ohrid, Petrina Mt., Galičica Mt. (Thurner 1964: 29); Galičica Mt. (Jakšić 1988: 210); Ohrid (Jakšić 1998: 114). SKO: Prespa Lake: Oteševo, 15.08.1979, S. Jakonov; Ohrid: Gradište, 24.07.1980, P. Meškovski; Galičica Mt.: over v. Stenje, 28.06.2009, V. Krpač.

136. *Kirinia climene* (Esper, 1783). Literature data: Petrina Mt., Istok (as *Perarge climene* Esp., Thurner 1938: 132); Petrina Mt., Istok, 1000–1600 m (Thurner 1964: 30); Galičica Mt., 2♂, 1♀, 01.–05.07.1986 and 22.07.1982. (Scheider & Jakšić 1989: Taf. 46, fig. 1, 2 and 3).

137. *Pararge aegeria* (Linnaeus, 1758). Literature data: Istok, Petrina Mt. (Thurner 1938: 132); Ohrid (Thurner 1964: 29); Galičica Mt. (Jakšić 1988: 206). SKO: Ohrid: Gradište, 24.07.1980, P. Meškovski; Galičica Mt.: Glajša, 27.06.2009, 1000 m, V. Krpač.

138. *Lasiommata megera* (Linnaeus, 1767) Literature data: Galičica Mt. (as *Perarge megera* L., Rebel & Zerny 1931: 75); Ohrid, Petrina Mt. (as *Perarge megera lyssa* B., Thurner 1938: 132); Galičica Mt. (as *Perarge megera* Linnaeus *lyssa* Boisduval, Thurner 1964: 30); Galičica Mt. (Jakšić 1988: 207). SKO and field data: Galičica Mt., 15.07.1976 and 25.04.1983, S. Jakonov; Ohrid: Gorica, 17.04.1983, S. Jakonov; Ohrid: v. Trpeica, 08.05.1971, J. Čingovski; Ohrid: Gradište, 08.1979, P. Meškovski; Ohrid: Gradište, 24.07.1980; P. Meškovski; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, V. Krpač; Galičica Mt.: v. Stenje – v. Konjsko, 22.07.2009, V. Krpač; Galičica Mt.: Ramne, 28.08.2009, 900 m, C. Darcemont.

139. *Lasiommata petropolitana* (Fabricius, 1787). Literature data: Galičica Mt., (as *Perarge hiera* (F.) ssp. *arnauta* Rebel & Zerny 1931: 75); Ohrid, June-July and Petrina Mt. (as *Perarge hiera arnauta* Rebel & Zerny, Thurner 1938: 132); Ohrid, Petrina Mt. (as *Perarge petropolitana* Fabricius *arnauta* Rebel & Zerny, Thurner 1964: 30); Galičica Mt. (Jakšić 1988: 209). SKO: Ohrid: Petrina Mt., 09.06.1942, K. Tuleschkow.

140. *Lasiommata maera* (Linnaeus, 1758). Literature data: Galičica Mt. (as *Perarge maera* L., Rebel & Zerny 1931: 75); Ohrid, 10.–20.06.1954 (as *Dira maera silymbria* Fruhst., Michieli 1963: 19); Galičica Mt. (Jakšić 1988: 208). SKO: Galičica Mt., 10.06.1979, S. Jakonov; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, V. Krpač; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, M. Ivanov.

141. *Coenonympha arcania* (Linnaeus, 1761). Literature data: Galičica Mt. (Rebel & Zerny 1931: 76); Petrina Mt. (as *Coenonympha arcania insubrica* F., Thurner 1938: 133); Ohrid, 10.–20.06.1954 (Michieli 1963: 19); Ohrid, Petrina Mt. 10.06.1979 and 11.07.1979 (as *Coenonympha arcania* Linnaeus *insubrica* Fabricius, Thurner 1964: 31); Galičica Mt. (Jakšić 1988: 205). SKO: Galičica Mt.: Korita, 01.06.2009, 1350 m, V. Krpač; Galičica Mt.: Glajša, 27.06.2009, 1000 m, V. Krpač and M. Ivanov; Oteševo: Grnčarska Kolonija, 28.06.2009, 861 m, V. Krpač.

142. *Coenonympha leander* (Esper, 1784). Literature data: Galičica Mt. (Drenowski 1920: 166); Galičica Mt. (Drenowski, 1921: 218); Galičica Mt. 1400–1650 m (Rebel & Zerny 1931: 76); Petrina Mt., Asanđura, in June (Thurner 1938: 133); Petrina Mt., Asanđura, Istok (Thurner 1964: 31); Galičica Mt. (Jakšić 1988: 203); Galičica Mt. 10.06.1979 and 11.07.1979 (Scheider & Jakšić 1989: Taf. 44, fig. 12, 13 and 14). SKO and field data: Galičica Mt.: Tomoros, 17.07.1980, S. Jakonov; Galičica Mt.: Korita, 09.06.2008, 1350 m, V. Krpač; Galičica Mt.: Korita, 09.06.2008, 1350 m, M. Ivanov; Galičica Mt.: Asanđura, 10.06.2008 and 13.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 10.06.2008, 1500 m, M. Ivanov; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 12.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asan đura, 12.06.2008, 1500 m, M. Ivanov; Galičica Mt.: near cave Samatska Dupka, 14.06. 2008, 1600 m, V. Krpač; Galičica Mt.: Asanđura, 25.06.2009, 1450 m, V. Krpač; Galičica Mt.: Konjski Merizi, 25.06.2009, 1484 m, V. Krpač; Galičica Mt.: Mali Kazani-Magaro, 26.06.2009, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 25.06.2009, 1450 m, M. Ivanov; Galičica Mt.: over v. Stenje, 28.06.2009, V. Krpač; Galičica Mt.: Preslap, 13.06.2010, 1577 m, C. Darcemont.

143. *Coenonympha pamphilus* (Linnaeus, 1758). Literature data: Galičica Mt. (as *Coenonympha pamphilus australis* Verity., Rebel & Zerny 1931: 77); Ohrid, Petrina Mt., July-August (as *Coenonympha pamphilus australis* Ver., Thurner 1938: 134); Ohrid, 10.–20.06.1954 (as *Coenonympha pamphilus australis* Verity., Michieli 1963: 19); Galičica Mt. (as *Coenonympha pamphilus australis* Verity., Thurner 1964: 32); Galičica Mt. (Jakšić 1988: 202). SKO and field data: Prespa Lake: Oteševo, 15.08.1979, S. Jakonov; Ohrid: Gorica, 17.04.1983, S. Jakonov; Ohrid: v. Trpeica, 08.05.1971, J. Čingovski; Galičica Mt.: Korita, 09.06.2008 and 14.06.2008, 1350 m, V. Krpač; Galičica Mt.: Korita, 09.06.2008, 1350 m, M. Ivanov; Galičica Mt.: Asanđura, 10.06.2008 and 13.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 10.06.2008, 1500 m, M. Ivanov; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 01.06.2009, 1500 m, V. Krpač; Galičica Mt.: Ski Liftovi, 01.06.2009, V. Krpač; Galičica Mt.: Asanđura, 25.06.2009, 1450 m, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 25.06.2009, 1450 m, M. Ivanov; Galičica Mt.: Ski Liftovi, 24.08.2009, 1500 m, C. Darcemont; Galičica Mt.: Ramne, 28.08.2009, 900 m, C. Darcemont; Galičica Mt.: Đafa, 29.08.2009, 1560 m, C. Darcemont; Galičica Mt.: Asanđura, 29.08.2009, 1480 m, C. Darcemont; Galičica Mt.: Tomoros, 29.08.2009, 1670 m, C. Darcemont.

144. *Pyronia* (*Pyronia*) *tithonus* (Linnaeus, 1771). Literature data: Galičica Mt. (Rebel & Zerny 1931: 76); Ohrid (as Epinephele tithonus L., Thurner 1938: 133); Ohrid, Petrina Mt., Galičica Mt., Sveti Naum (Thurner 1964: 30); Galičica Mt. (Jakšić 1988: 200). SKO: Ohrid: Gorica, 17.04.1983, S. Jakonov; Ohrid: v. Elšani, 31.07.1987, P. Meškovski; Ohrid: Sv. Naum, 03.08. 1987, P. Meškovski; Galičica Mt.: Tomoros, 29.08.2009, 1670 m, V. Krpač.

145. *Aphantopus hyperantus* (Linnaeus, 1758). Literature data: Galičica Mt., (Rebel & Zerny, 1931: 76); Petrina Mt. and Istok, June-July, (Thurner, 1938: 133); Petrina Mt., Letnica, Istok, (Thurner, 1964: 30); Galičica Mt., (Jakšić, 1988: 199).

146. *Maniola jurtina* (Linnaeus, 1758). Literature data: Galičica Mt., Ohrid, 13.08 (as *Epinephele jurtina* L., Rebel & Zerny 1931: 76); Ohrid, Petrina Mt. (as *Epinephele jurtina* L. v. *nuragiformis* Ver., Thurner 1938: 133); Ohrid, 10.–20.06.1954 (Michieli 1963: 19); Galičica Mt. (*Maniola jurtina* Linnaeus *phormia* Fruhstorfer, Thurner 1964: 31); Galičica Mt. (Jakšić 1988: 196). SKO and field data: Galičica Mt., 12.06.1918 and 26.07.1918, 1600 m, A. Drenowski; Ohrid: Petrina Mt., 09.06.1942, K. Tuleschkow; Prespa Lake: Oteševo, 15.08.1979, S. Jakonov; Ohrid: Gra-

dište, 08.1979, P. Meškovski; Ohrid: Gradište, 13.07.1980 and 16.07.1980, P. Meškovski; Ohrid: v. Trpeica, 28.07.1980, P. Meškovski; Galičica Mt., 08.09.1980, J. Čingovski; Prespa, Oteševo, 14.06.1985, B. Mihajlova; Galičica Mt.: Ski Liftovi, 20.07.2006, 1600 m, M. Ivanov, Galičica Mt.: Korita, 14.06.2008, 1350 m, V. Krpač; Galičica Mt.: Glajša, 14.06.2008, 1010 m, V. Krpač; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, V. Krpač; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, M. Ivanov; Galičica Mt.: Dolga, 26.06.2009, M. Krpač; Galičica Mt.: Glajša, 27.06.2009, 1000 m, V. Krpač; and M. Ivanov; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač; Galičica Mt.: Ramne, 28.08.2009, 900 m, C. Darcemont; Galičica Mt.: Đafa, 29.08.2009, 1560 m, C. Darcemont; Galičica Mt.: Asanđura, 29.08.2009, 1480 m, C. Darcemont.

147. *Hyponephele lycaon* (Rottemburg, 1775). Literature data: Tomoros (as *Epinephele lycaon* Rott., Doflein 1921: 541, 590); Galičica Mt., Ohrid, 13.08 (as *Hyponephele lycaon* (Rott.) *salona* Fruhst., Rebel & Zerny 1931: 76); Petrina Mt., (as *Hyponephele lycaon salona* Fruhst., Thurner 1938: 133); Petrina Mt. (Istok, Asanđura, Tomoros, Letnica) (as *Hyponephele lycaon* Kühne *salona* Fruhstorfer, Thurner 1964: 31); Tomoros 24.07.1918, eine kleine Serie (as *Epinephele lycaon* Kühne *salona* Fruhst., Daniel, Foster, Osthelder 1951: 11); Galičica Mt. (Jakšić 1988: 197). SKO and field data: Galičica Mt., 26.07.1918, 1600–1650 m, A. Drenowski; Galičica Mt.: Tomoros, 15.08.1976 and 05.08.1979, S. Jakonov; Galičica Mt., 10.08.1979, S. Jakonov; Galičica Mt., 30.07.1980 and 23.07.1982, J. Čingovski; Galičica Mt., pass, 27.07.2007, 1600 m, C. Darcemont; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač; Galičica Mt.: Tri Bora, 24.08.2009, 1489 m, M. Krpač; Galičica Mt.: Đafa, 29.08.2009, 1560 m, C. Darcemont; Galičica Mt.: Asanđura, 29.08.2009, 1480 m, C. Darcemont.

148. *Hyponephele lupinus* (O. Costa, 1836). Literature data: Ohrid, in June (Thurner 1938: 133); Ohrid, 10.–20.06.1954 (Michieli 1963: 19); Ohrid (Thurner 1964: 31); Galičica Mt. (as *Hyponephele lupina* Costa 1836, Jakšić 1988: 198). SKO and field data: Galičica Mt.: Tomoros, 05.08.1979, S. Jakonov; Galičica Mt., 10.08.1979, S. Jakonov; Galičica Mt.: Ski Liftovi, 24.08.2009, 1500 m, C. Darcemont; Galičica Mt.: under Lako Signoj, 31.08.2009, 1680 m, C. Darcemont.

149. *Erebia ligea* (Linnaeus, 1758). Literature data: Galičica Mt., 900–1700 m (Rebel & Zerny 1931: 73); Galičica Mt., 10.06.1979 (as *Erebia ligea herculeana* Warren, Scheider & Jakšić 1989: Taf. 39, fig. 1).

150. *Erebia medusa* (Denis & Schiffermüller, 1775). Literature data: Galičica Mt. (Drenowski 1920: 166); Galičica Mt. (Drenowski 1921: 218); Galičica Mt. (Rebel & Zerny 1931: 72); Petrina Mt., June (Thurner 1938: 131); Petrina Mt., 1400 m (Thurner 1964: 24); Galičica Mt. (Jakšić 1988: 185). SKO: Galičica Mt., 10.06.1977, B. Mihajlova; Galičica Mt., 10.06.1979, S. Jakonov; Galičica Mt.: Tomoros, 17.07.1980, S. Jakonov; Galičica Mt., 08.06.1995, 1350 m, V. Krpač; Galičica Mt.: Korita, 09.06.2008, V. Krpač; Galičica Mt.: Korita, 09.06.2008, 1350 m, M. Ivanov; Galičica Mt.: Asanđura, 10.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 10.06. 2008, 1500 m, M. Ivanov; Galičica Mt.: Lake Đafa, 11.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 12.06.2008, 1500 m, V. Krpač; Galičica Mt.: Asanđura, 12.06.2008, 1500 m, M. Ivanov; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, V. Krpač; Galičica Mt.: near cave Samatska Dupka, 14.06.2008, 1600 m, M. Ivanov; Galičica Mt.: Korita, 01.06.2009, 1350 m, V. Krpač; Galičica Mt.: Asanđura (Šarboica), 25.06.2009, 1450 m, M. Ivanov; Galičica Mt.: Konjski Merizi, 25.06.2009, 1484 m, V. Krpač.

151. *Erebia melas* (Herbst, 1796). SKO and field data: Galičica Mt., 03.08.1979, S. Jakonov; Galičica Mt.: Tomoros, 05.08.1979, S. Jakonov; Stara Galičica Mt.: Propas, 01.09.2009, 1860 to 1930 m, C. Darcemont.

152. *Erebia oeme* (Hübner, 1804). Literature data: Istok, Petrina Mt., Asanđura, in June (*Erebia oeme vetulonia* Fruhst., Thurner 1938: 131); Petrina Mt., Asanđura, Istok (*Erebia oeme* Hübner *vetulonia* Fruhstorfer, Thurner 1964: 24–25); Galičica Mt. (Jakšić1988: 192).

153. *Melanargia russiae* (Esper, 1783). Literature data: Galičica Mt., 1200 m (*Melanargia japygia* Cyr. and *M. j. caucasica* Stgr., Drenowski 1920: 165); Galičica Mt. (*Melanargia japygia* Cyr. and ssp. *caucasica* (Stgr.), Drenowski 1921: 218); Ohrid and Petrina Mt. (as *Melanargia japygia* Cyr., Thurner 1938: 130); Petrina Mt., Asanđura, 11.07.1979 (as *Melanargia russiae japygia* Cyrilli, Thurner 1964: 27); Galičica Mt., 11.07.1979 (Scheider & Jakšić 1989: Taf. 42, fig. 3 and 4); Galičica, 26.07.1971 (ssp. *japygia* Cyrillo 1787, Sijarić 1991: 321). SKO: Petrina Mt., 16.07.1936, Silbernagel; Galičica Mt., 15.08.1976, 03.08.1979 and 20.07.1982, S. Jakonov; Galičica Mt.: Tomoros, 15.08.1976, 17.07.1980 and 25.04.1983, S. Jakonov; Galičica Mt.: Preseka, 25.06.2003, M. Ivanov; Galičica Mt.: Konjski Merizi, 25.06.2009, 1484 m, V. Krpač; Galičica Mt.: Golemi Kazani, 26.06.2009, V. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač; Galičica Mt.: Tri Bora, 24.08.2009, 1489 m, M. Krpač.

154. *Melanargia galathea* (Linnaeus, 1758). Literature data: Galičica Mt. (Drenowski 1920: 166); Galičica Mt. (Rebel & Zerny 1931: 72); Ohrid and Petrina Mt. (as *Melanargia galathea synthelia* Fruhst., Thurner 1938: 130); Petrina Mt. (as *Melanargia galathea synthelia* Fruhstorfer, Thurner 1964: 26); Galičica Mt. (Jakšić 1988: 193); Ohrid, 28.06.1979 (JP) (f. *typica*, Sijarić 1991: 322). SKO: Galičica Mt.: Tomoros, 13.08.1976, S. Jakonov; Galičica Mt., 20.07.1982, S. Jakonov; Galičica Mt.: Ski Liftovi, 25.07.2008, V. Krpač.

155. *Melanargia larissa* (Geyer, 1828). Literature data: Galičica Mt. (Drenowski 1920: 166); Tomoros (as *Melanargia larissa* f. *taurica*, Doflein 1921: 541, 590); Galičica Mt. (Rebel & Zerny 1931: 72); Ohrid and Petrina Mt., June-July (Thurner 1938: 131); Galičica Mt. (Thurner 1964: 27); Tomoros, 07.1918, eine kleine Serie, (Daniel, Foster, Osthelder 1951: 9); Galičica Mt. (Jakšić 1988: 195); Ohrid, 28.06.1979 (JP) (Sijarić 1991: 322); Ohrid (as *Melanargia larissa larissa* Geyer 1828, Jakšić 1998: 102). SKO and field data: Ohrid: Galičica Mt., 03.08.1979, S. Jakonov; Galičica Mt., 03.08.1979, S. Jakonov; Ohrid: Gradište, 13.07.1980, P. Meškovski; Galičica Mt.: Tomoros, 17.07.1980, S. Jakonov; Galičica Mt., 23.07.1982, P. Meškovski; Ohrid, 24.07.1986, B. Mihajlova; Petrina Mt., 18.07.1987, P. Meškovski; Galičica Mt.: over v. Stenje, 28.06.2009, V. Krpač; Galičica Mt.: over v. Velestovo, 23.06.2010, 1198 m, C. Darcemont.

156. *Satyrus ferula* (Fabricius, 1793). Literature data: Tomoros (as *Satyrus actaea cordula* Fabr., Doflein 1921: 541, 590); Galičica Mt., 1200–1600 m (Rebel & Zerny 1931: 75); Petrina Mt., middle of July (Thurner 1938: 132); Ohrid, (Silbernagel 1944); Petrina Mt., Tomoros, 1800 m, 23.07.1918 (as *Satyrus actaea petrina* Silbernagel, = *Satyrus ferula* (Esper 1783) *petrina* Silbernagel, Thurner 1964: 29); Tomoros, 23.07.1918, eine kleine Serie (as *Satyrus ferula* F. (= *cordula* F.), Daniel, Foster, Osthelder 1951: 10); Galičica Mt. (Jakšić 1988: 163). SKO and field data: Galičica Mt., 13.06.1918 and 26.07.1918, 1200–1600 m, A. Drenowski; Galičica Mt.: Tomoros, 15.08.1976, J. Čingovski; Galičica Mt., 30.07.1980, 03.08.1981 and 23.07.1982, P. Meškovski; Galičica Mt., 20.06.1982, S. Jakonov; Galičica Mt.: Tomoros, 20.07.1982, S. Jakonov; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač; Galičica Mt.: Ramne, 28.08.2009, 900 m, C. Darcemont; Galičica Mt.: Đafa, 29.08.2009, 1560 m, C. Darcemont; Stara Galičica Mt.: Propas, 01.09.2009, 1860 m, C. Darcemont.

157. *Hipparchia* (*Hipparchia*) *fagi* (Scopoli, 1763). Literature data: Tomoros (as *Satyrus hermione* L., Doflein, 1921: 541, 590); Galičica Mt., (as *Satyrus fagi* Scop. (*hermione* L.), Rebel & Zerny 1931: 73); Petrina Mt. (Thurner 1964: 27). SKO: Galičica Mt., 26.07.1918, 1600 m, A. Drenowski; Galičica Mt., 15.08.1976, S. Jakonov; Galičica Mt.: Tomoros, 17.07.1980, S. Jakonov; Galičica Mt., 03.08.1981, P. Meškovski; Oteševo, 23.07.2009, 861 m, V. Krpač.

158. *Hipparchia* (*Hipparchia*) *syriaca* (Staudinger, 1871). Literature data: Tomoros (as *Hipparchia syriaca* Staudinger (*alcyone* Fabriciüs), Thurner 1964: 28); Tomoros 24.07.1918, enige kleine Serie (as *Satyrus syriaca* Stgr., Daniel, Foster, Osthelder 1951: 9); Galičica Mt. (Jakšić 1988: 168). SKO and field data: Oteševo, 23.07.2009, 861 m, V. Krpač; Galičica Mt.: v. Stenje to v. Konjsko, 22.07.2009, V. Krpač; Galičica Mt.: Ski Liftovi, 24.08.2009, 1500 m, C. Darcemont.

159. *Hipparchia* (*Parahipparchia*) *senthes* (Fruhstorfer, 1908). Literature data: Galičica Mt. (Rebel & Zerny 1931: 74); Ohrid, 06.1935 (Thurner 1938: 132); Ohrid, 10.–20.06.1954 (Michieli 1963:

18); Galičica Mt. (Thurner 1964: 28); Tomoros, 24.07.1918 (as *Satyrus semele* L. *rase senthes* Fruhst., Daniel, Foster, Osthelder 1951: 9); Galičica Mt. (Jakšić 1988: 169). SKO: Galičica Mt., 25.04.1983, S. Jakonov; Galičica Mt.: v. Ramne, 28.08.2009, 896 m, V.Krpač.

160. *Hipparchia* (*Neohipparchia*) *statilinus* (Hufnagel, 1766). Literature data: Ohrid, 13.08, 800–1000 m; Galičica Mt. (as *Satyrus statilinus* Hufn., Rebel & Zerny 1931: 74); Ohrid, August (as *Satyrus statilinus* Hufn., Thurner 1938: 132); Ohrid, 10.–20.06.1954 (*Hipparchia statilinus burgeffi* Forster, Michieli 1963: 17); Galičica Mt. (*Hipparchia statilinus burgeffi* Forster, Thurner 1964: 28); Ohrid (as *Satyrus statilinus burgeffi* n. ssp., Daniel, Foster, Osthelder 1951: 9–10); Galičica Mt. (as *Neohipparchia statilinus* Hufnagel 1776, Jakšić 1988: 172). SKO and field data: Galičica Mt., 12.07.1918, 12.08.1918 and 16.08.1918, 1500–1600 m, A. Drenowski; Ohrid, 28.07.1918, A. Drenowski; Galičica Mt., 15.08.1976, S. Jakonov; Prespa Lake: Oteševo, 15.06.1979, S. Jakonov; Galičica Mt., 08.09.1980, J. Čingovski; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač; Galičica Mt.: Ramne, 28.08.2009, 900 m, C. Darcemont; Galičica Mt.: Đafa, 29.08.2009, 1560 m, C. Darcemont; Galičica Mt., pass, 31.08.2009, 1600 m, C. Darcemont.

161. *Hipparchia* (*Neohipparchia*) *fatua* (Freyer, 1844). Literature data: Ohrid (Thurner 1964: 28); Galičica Mt. (as *Neohipparchia fatua* Freyer 1844, Jakšić 1988: 173). SKO: Galičica Mt.: Tomoros, 15.08.1976, 05.08.1979 and 13.08.1979, S. Jakonov; Galičica Mt., 03.08.1979 and 17.07.1980, S. Jakonov; Galičica Mt.: v. Ramne, 28.08.2009, 896 m, V. Krpač; Galičica Mt.: Krstec, 29.08.2009, 1570 m, M. Krpač.

162. *Arethusana arethusa* (Denis & Schiffermüller, 1775). Literature data: Galičica Mt. (as *Satyrus aretusa* Esp. ssp. *strumata*, Rebel & Zerny 1931: 73); Petrina Mt. (as *Satyrus arethusa strumata* Buresch, Thurner 1938: 132); Petrina Mt. (Thurner 1964: 28); Galičica Mt. (Jakšić 1988: 166); Galičica Mt., 08.08.1983 (as *Arethusana arethusa strumata* Buresch, Scheider & Jakšić 1989: Taf. 35, fig. 1). SKO and field data: Galičica Mt., 26.07.1918 and 23.08.1918, 1600 m, A. Drenowski; Galičica Mt.: Tomoros, 15.08.1976, 05.08.1979 and 13.08.1979, S. Jakonov; Galičica Mt., pass, 27.07.2007, 1600 m, C. Darcemont; Galičica Mt.: Tri Bora, 24.08.2009, 1489 m, M. Krpač; Galičica Mt.:Đafa, 29.08.2009, 1560 m, C. Darcemont; Galičica Mt.: Asanđura, 29.08.2009, 1470 m, C. Darcemont; Galičica Mt.: Tomoros, 29.08.2009, 1670 m, C. Darcemont; Galičica Mt.: Lako Signoj, 31.08.2009, 1680–1820 m, C. Darcemont; Stara Galičica Mt.: Propas, 01.09.2009, 1850–1950 m, C. Darcemont.

163. *Brintesia circe* (Fabricius, 1775). Literature data: Ohrid, Petrina Mt. and Istok (as *Satyrus circe* F., Thurner 1938: 132); Ohrid, Petrina Mt., Istok, Tomoros (as *Brintesia circe* Fabricius *pannonica* Fruhstorfer, Thurner 1964: 27); Tomoros 07.07.1918. (as *Satyrus circe pannonia* Fruhst., Daniel, Foster, Osthelder 1951: 9); Galičica Mt. (Jakšić 1988: 165). SKO and field data: Galičica Mt., 15.08.1976, S. Jakonov; Galičica Mt.: Ski Liftovi, 25.07.2008, V. Krpač; Galičica Mt.: Ski Liftovi, 01.06.2009, V. Krpač; Galičica Mt.: Glajša, 27.06.2009, 1000 m, V. Krpač; Oteševo, 23.07.2009, 861 m, V. Krpač; Galičica Mt.: Preslap, 24.07.2009, 1573 m, V. Krpač; Galičica Mt.: Tri Bora, 24.08.2009, 1489 m, M. Krpač; Galičica Mt.: Ramne, 28.08.2009, 900 m, C. Darcemont.

164. *Chazara briseis* (Linnaeus, 1764). Literature data: Tomoros (as *Satyrus briseis minor* Oberth., Doflein 1921: 541, 590); Galičica Mt. (as *Satyrus briseis* L., Rebel & Zerny 1931: 74); Ohrid (as *Satyrus briseis albanica* Rbl., Thurner 1938: 132); Galičica Mt. (as *Chazara briseis* Linnaeus *albanica* Rebel u. Zerny, Thurner 1964: 28); Tomoros 24.07.1918 (as *Satyrus briseis albanica* Rbl. und Zerny, Daniel, Foster, Osthelder 1951: 9); Galičica (Jakšić 1988: 174); Ohrid, Plašani, 18.07.1985 (MČ) (Sijarić 1991: 306); Ohrid (leg. Rogulja) (Jakšić 1993: 93); Ohrid (Jakšić 1998: 14). SKO: Prespa Lake: Oteševo, 15.06.1979, S. Jakonov; Galičica Mt., 14.09.1979 and 08.09.1980, J. Čingovski; Galičica Mt., 23.07.1981, P. Meškovski; Galičica Mt.: Krstec, 29.08.2009, 1570 m, M. Krpač.

165. *Pseudochazara geyeri* (Herrich-Schäffer, 1846). Literature data: Galičica Mt., 1609–1900 m (as *Satyrus geyeri* H.-S., Drenowski 1920: 165); Galičica Mt., 24.07.1918 (as *Satyrus geyeri* H.-S.

ssp. *occidentalis*, Rebel & Zerny 1931: 74); Petrina Mt., Letnica, Istok and v. Konjsko (as *Satyrus geyeri occidentalis* Rebel & Zerny, Thurner 1938: 132); Petrina Mt.; Galičica Mt., 1600-1700 m (as *Pseudochazara geyeri* Schäfer *occidentalis* Rebel u. Zerny, Thurner 1964: 28); Galičica Mt. (Jakšić 1988: 176); Galičica, 10.08.1977, (Lasan), Istok Mt., 27.07.1979 (Sijarić 1991: 306). SKO and field data: Galičica Mt.: Tomoros, 15.08.1976, S. Jakonov; Galičica Mt., 20.07.1982, S. Jakonov; Galičica Mt., pass, 27.07.2007 and 01.08.2007, 1600 m, C. Darcemont; Galičica Mt.: Ski Liftovi, 01.08.2007, 1490 m, C. Darcemont; Galičica Mt.: Tomoros, 29.08. 2009, V. Krpač; Galičica Mt.: Krstec, 29.08.2009, 1570 m, M. Krpač; Galičica Mt.: Lako Signoj, 31.08.2009, 1680–1820 m, C. Darcemont.

166. *Pseudochazara anthelea* (Hübner, 1825). Literature data: Galičica Mt. (as *Satyrus anthelea* Hb., Rebel & Zerny 1931: 74); Ohrid, June-August (*Satyrus anthelea amalthea* Friv., Thurner 1938: 132); Galičica Mt. (as *Pseudochazara anthelea* Hufnagel *amalhtea* Frivaldszky., Thurner 1964: 29); Galičica Mt. (Jakšić, 1988: 175).

The following records have not been taken into account:

1. *Colias hyale* Linnaeus, 1758. Literature data: Galičica Mt. (as *Colias hyale* L., Rebel & Zerny, 1931: 67); Galičica Mt. (as *Colias hyale* L., Thurner, 1938: 128); Galičica Mt., (Jakšić, 1988: 57). Galičica is outside the known distribution of this species and no material is available to support this record.

2. *Euchloe belemia* (Esper, 1798). SKO: Ohrid Gorica, 17.04.1983, S. Jakonov. The closest known record is in Turkey and we believe that the material originated in Spain, and has been incorrectly labelled.

Discussion and Conclusions

These investigations complemented the list of recorded species in the National Park Galičica with 10 species not previously recorded. The following are new records: *Erynnis marloyi* (Boisduval, 1834) (Hesperiidae); *Euchloe penia* (Freyer, 1851), *Pieris krueperi* Staudinger, 1860 and *Pieris balcana* Lorković, 1970 (Pieridae); *Polyommatus eros eroides* (Frivaldszky, 1835) and *Polyommatus eros eros* (Ochsenheimer, 1808) (Lycaenidae); and *Euphydryas aurinia* (Rottemburg, 1775), *Melitaea arduinna* (Esper, 1783), *Apatura iris* (Linnaeus, 1758) and *Erebia melas* (Herbst, 1796) (Nymphalidae).

Especially important are protected species: Six EU Directive (Annex II and Annex IV) species of butterflies in the National Park Galičica: *Zerynthia polyxena* (Denis & Schiffermüller, 1775), *Parnassius mnemosyne* (Linnaeus, 1758), *Parnassius apollo* (Linnaeus, 1758), *Lycaena dispar* (Haworth, 1802), *Maculinea arion* (Linnaeus, 1758) and *Euphydryas aurinia* (Rottemburg, 1775).

Six species from the Bern Convention (Annex II): *Zerynthia polyxena* (Denis & Schiffermüller, 1775), *Parnassius mnemosyne* (Linnaeus, 1758), *Parnassius apollo* (Linnaeus, 1758), *Lycaena dispar* (Haworth, 1802), *Maculinea arion* (Linnaeus, 1758) and *Euphydryas aurinia* (Rottemburg, 1775). *Lycaena dispar* (Haworth, 1802) is on the list Natura 2000, and *Parnassius apollo* (Linnaeus, 1758) is on the CITES list of species.

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A note on the status of the rare species *Kirinia climene* (Esper, 1783) (Nymphalidae) in Serbia

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Abstract. In field surveys through eastern Serbia in 2010, two new colonies of *Kirinia climene* (Esper, 1783) were found on Stara Planina Mt. and Svrljiške Planine Mts. These findings, together with an unpublished record from the vicinity of Zaječar, represent valuable new data for the Serbian butterfly fauna. The exact localities and habitat description are provided together with a map of the currently known distribution of *K. climene* in Europe.

Introduction

Kirinia climene (Esper, 1783) ranges from the Middle East (Turkey, Syria, Iraq, Iran), Ukraine, Caucasus, southern Russia to southeastern Europe (Tshikolovets 2003). Towards its western limit, in the Balkan Peninsula, it is known from Romania, Bulgaria, Greece, Macedonia, Albania and Serbia (Tolman & Lewington 2008). The species inhabits small clearings in deciduous or mixed woodlands, keeping close to the forest edge and being fond of resting in the forest canopy (Essayan & Jugan 1993).

In all five of the Balkan countries records are scarce, and *K. climene*'s distribution can be described as fragmented (Fig. 1). Moreover, this appears to be one of those species that very often remain undetected or overlooked due to its lack of prominent colours and markings. A good example of this is the situation with *K. climene* in Bulgaria (Kolev 2003). For a long time a single specimen in the Museum of Natural History in Sofia, collected by Haberhauer in 1896, was the only proof of the existence of this species in the country. Decades passed without new records, so descriptions such as "extremely rare" and "probably extinct" were repeatedly used. It came as a surprise when, between 1990 and 1992, this species was "rediscovered" (Essayan & Jugan 1993), and in the period that followed the species was recorded in several localities in surprising numbers. The situation was similar in Greece, whose fauna has been extensively studied, where the species was first recorded only in the 1970s (Willemse 1977).

The history of the species in Serbia mostly followed the same pattern. For a long time it was known from a single locality only, Mt. Stol (Zečević 2002, Stojanović pers. comm.). Recent entomological surveys provided one additional record from Mt. Rtanj (Jakšić 2008).

Fig. 1. Distribution map of *Kirinia climene* in Serbia and neighbouring countries. Colonies considered extinct are marked in yellow, and new records are in red.

Results

Svrljiške Planine Mts., Južni Izvor village – 0610899 E, 4805885 N, 34 T, 556 m. The assumption that *K. climene* is more widespread than previously considered proved to be correct for Serbia in 2010, when the authors, together with Duncan Trew, visited some poorly researched areas and some totally unknown localities. The first new record came on June 22, from the village of Južni Izvor (0610899 E, 4805885 N, 34 T, 556 m). First to be noticed was a mating couple (Fig. 2), and further collecting produced another three males and one female. The same place was revisited on July 3 when only one tattered male was found. The habitat of this butterfly in this location represents an intermediate stage in succession from pasture or agricultural land towards a deciduous forest. The area consists mostly of bushes, interspersed with grass and rock clearings. The surrounding area is being cultivated, and no dense forest is to be found in the vicinity. Somewhat similar habitats were reported from nearby Bulgaria (Kolev 2003) and Macedonia (Franeta pers. comm.), where the butterflies were found in grassy meadows with young trees, surrounded by deciduous forest.

Mt. Stara Planina, pastures above Rudinje village – 0628256 E, 4795341 N, 34 T, 836 m. Another locality where *K. climene* was discovered is Stara Planina Mt. This is a large massif spreading through Serbia and Bulgaria and it is known for its exceptional butterfly diversity. The *K. climene* population was discovered on July 9, 2010,

Fig. 2. Mating couple of *Kirinia climene*, Južni Izvor village, 22.vi.2010 (photo M. Đurić).

some 20 km from the first site, in the mountain pastures above the village of Rudinje. The habitat consisted of xerothermic grassland and rocky clearings surrounded by deciduous oak forest (mostly *Quercus petrea*) and some conifer plantations of *Larix* sp. This time, only one male specimen was found resting in the lower parts of an oak tree.

Zaječar, Beli Breg – 0600939 E, 4864800 N, 34 T, 170 m. The third finding came as a surprise while second author was browsing through his butterfly collection. The review of the collection resulted in one female labeled "SERBIA, Zaječar, Beli breg; July 16. 2001". The locality marked that way actually denotes a *Quercus* sp. plantation in Markovo Polje. The surrounding area consists of agricultural land and abandoned meadows, not being mowed for at least 10 years.

Discussion

Current literature gives an altitude range of 700–1600 m (Tolman & Lewington 2008, Lafranchis 2004), and the new record from above Rudinje (836 m) comes within this range, but the Južni Izvor (556 m) and Zaječar (170 m) fall outside that altitude span, which may require a revision of the cited altitude range. With suitable lowland habitats present throughout eastern Serbia, new records of this butterfly are highly likely.

New records of *K. climene* are important at the national level since the species is included in the Red Data Book of Serbian Butterflies (Jakšić 2003) as rare (R), and is therefore strictly protected in Serbia. At the same time, it is categorized as least concern (LC) in the European Red List of Butterflies (Van Swaay et al. 2010) and not included in European Habitats directive. Although the habitats of the species seem to be widespread and not threatened at the moment in eastern Serbia, the noticeable depopulation in this region will inevitably lead to habitat loss due to disappearance of low intensity grazing. This, in the long run, will result in closed canopy forests dominating the region and in habitat loss for most of the rare butterfly species. An appropriate solution could be an encouragement of traditional agriculture, but is unlikely to be implemented in a foreseeable future due to the political and economic situation in Serbia.

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Relocation of primary types of butterflies (Papilionoidea) described by S. K. Korb in the Y. B. Kosarev collection

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Abstract. The primary types of *Paralasa alajense* Korb, 2004, *Paralasa jordana tolkieni* Korb, 2009 (Nymphalidae: Satyrinae), *Athamanthia alexandra melkor* Korb, 2003, *Maculinea alcon aulendil* Korb, 2009, *Albulina tshatkala* Korb, 1997, *Agrodiaetus ishkashimicus alajanus* Korb, 1997 and *Polyommatus kirgisorum gorthaur* Korb, 2009 (Lycaenidae) are transferred from the private collection of Y. B. Kosarev to the Zoological Museum of Moscow University. Illustrations of these types are provided.

On August 13th, 2008 one of the well-known Russian amateur entomologists, Yuri Kosarev, passed away. I had known him for 20 years and during that time maintained an active and very good relationship with him. Some of my descriptions of new butterfly taxa were based on his material and so the primary types were included in his private collection. Currently access to the collection of Y. Kosarev is limited, and so all primary types present have been transferred to the Zoological Museum of Moscow State University (ZMMU). I am sincerely grateful to O. Kosarev, the son of Y. Kosarev, for the opportunity of retrieving these type specimens, as well as for their transfer to ZMMU.

List of the primary types from the Y. Kosarev collection relocated to the ZMMU

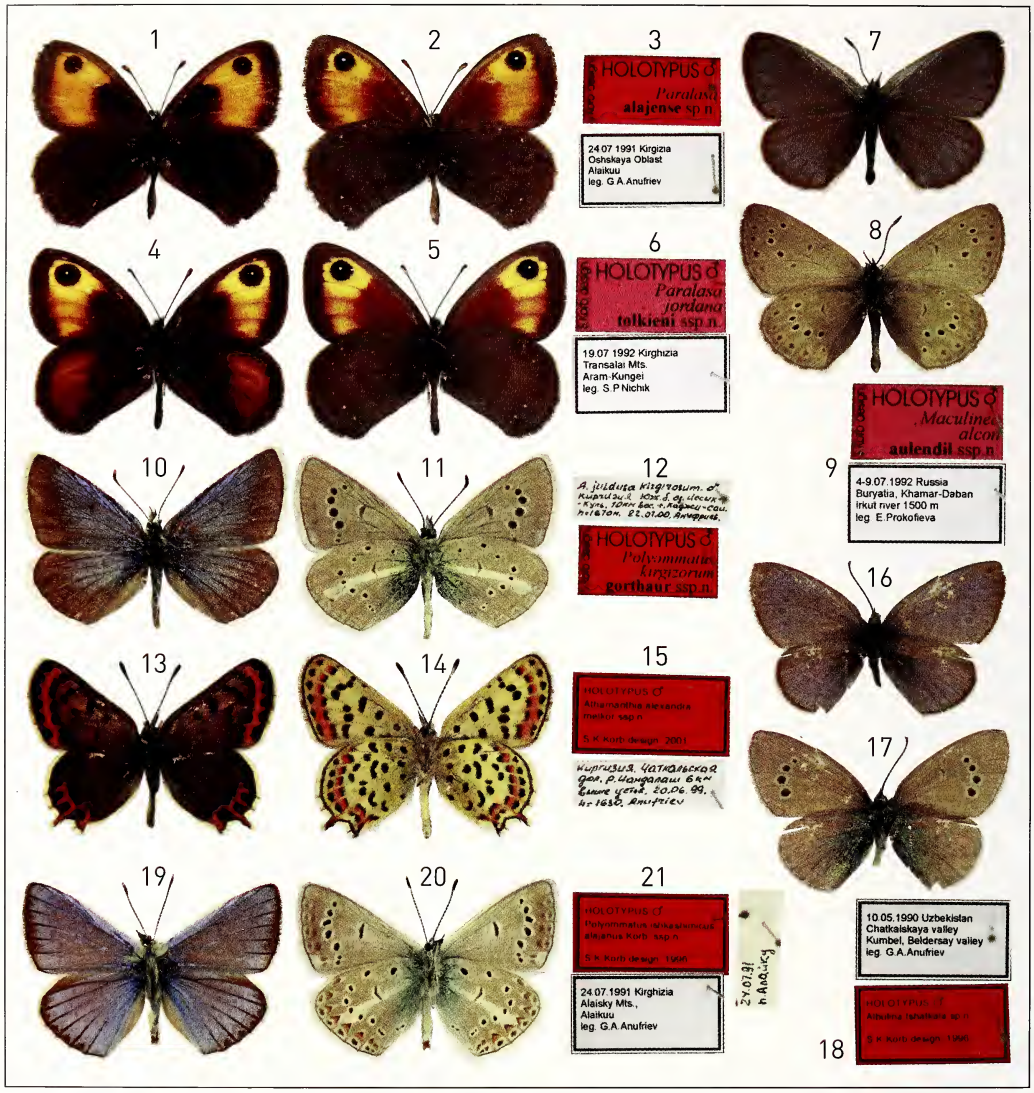
Paralasa alajense Korb, 2004 (Figs 1–3). Korb, 2004: 116, fig. 2. Holotype ♂, '24.07.1991 Kirgizia | Oschskaya Oblast | Alaikuu | leg. G. A. Anufriev', 'HOLOTYPUS ♂ | *Paralasa* | alajense sp.n.' | S. Korb design.'

Paralasa jordana tolkieni Korb, 2009 (Figs 4–6). Korb, 2009a: 146–148. Holotype ♂, '19.07.1992 Kirghizia | Transalai Mts. | Aram-Kungei | leg. S. P. Nichik', 'HOLOTYPUS ♂ | *Paralasa* | *jordana* | tolkieni ssp.n. | S. Korb design.'

Maculinea alcon aulendil Korb, 2009 (Figs 7–9). Korb, 2009b: 133–134. Holotype ♂, '4.–9.07.1992 Russia | Buryatia, Khamar-Daban | Irkut river 1500 m | leg. E. Prokofieva', 'HOLOTYPUS ♂ | *Maculinea* | *alcon* | aulendil ssp.n. | S. Korb design.'

Polyommatus kirgisorum gorthaur Korb, 2009 (Figs 10–12). Korb, 2009c: 215–216. Holotype ♂, 'A. juldusa kirgirosum [sic!] ♂ | Киргизия Юж.[ный] б.[ерег] оз.[ера] Иссык- | Куль. 10 км вос. [точнее] г. Каджи-Сай. | h = 1670 m. 22.07.[20]00. Ануфриев' [Kirghizia, southern coast of Issyk-Kul lake, 10 km E of Kadzhi-Say, 1670 m, 22.07.2000, leg. G. A. Anufriev] (Y. Kosarev's handwriting), 'HOLOTYPUS ♂ | *Polyommatus* | *kirgizorum* | gorthaur ssp.n. | S. Korb design.'

Athamanthia alexandra melkor Korb, 2003 (Figs 13–15). Korb, 2003: 47. Holotype ♂, 'Киргизия. Чаткальская | дол.[ина] р.[ека] Чандалаш 6 км | выше устья. 20.06.[19]99 | h = 1630 m. Anufriev' [Kirghizia, Chatkalskaya valley, Chandalash River 6 km upstream from the mouth, 1630 m, 20.06. 1999, leg. G. A. Anufriev] (Y. Kosarev's handwriting), 'HOLOTYPUS ♂ | Athamanthia alexandra | melkor ssp.n. | S. K. Korb design. 2001'



Figs 1–21. Primary types of butterflies described by Korb relocated from the Kosarev collection to the ZMMU. **1.** *Paralasa alajense* Korb, 2004. Holotype male, upperside. **2.** *Paralasa alajense* Korb, 2004. Holotype male, underside. **3.** *Paralasa alajense* Korb, 2004. Holotype male, labels. **4.** *Paralasa jordana tolkieni* Korb, 2009. Holotype male, upperside. **5.** *Paralasa jordana tolkieni* Korb, 2009. Holotype male, underside. **6.** *Paralasa jordana tolkieni* Korb, 2009. Holotype male, labels. **7.** *Maculinea alcon aulendil* Korb, 2009. Holotype male, upperside. **8.** *Maculinea alcon aulendil* Korb, 2009. Holotype male, underside. **9.** *Maculinea alcon aulendil* Korb, 2009. Holotype male, labels. **10.** *Polyommatus kirgisorum gorthaur* Korb, 2009. Holotype male, upperside. **11.** *Polyommatus kirgisorum gorthaur* Korb, 2009. Holotype male, underside. **12.** *Polyommatus kirgisorum gorthaur* Korb, 2009. Holotype male, labels. **13.** *Athamanthia alexandra melkor* Korb, 2003. Holotype male, upperside. **14.** *Athamanthia alexandra melkor* Korb, 2003. Holotype male, underside. **15.** *Athamanthia alexandra melkor* Korb, 2003. Holotype male, labels. **16.** *Albulina* (*Pamiria*) *tshatkala* Korb, 1997. Holotype male, upperside. **17.** *Albulina* (*Pamiria*) *tshatkala* Korb, 1997. Holotype male, underside. **18.** *Albulina* (*Pamiria*) *tshatkala* Korb, 1997. Holotype male, labels. **19.** *Agrodiaetus ishkashimicus alajanus* Korb, 1997. Holotype male, upperside. **20.** *Agrodiaetus ishkashimicus alajanus* Korb, 1997. Holotype male, underside. **21.** *Agrodiaetus ishkashimicus alajanus* Korb, 1997. Holotype male, labels.

Albulina (*Pamiria*) *tshatkala* Korb, 1997 (Figs 16–18). Korb, 1997: 436, fig. 3. Holotype ♂ (genitalia lost), '10.05.1990 Uzbekistan | Chatkalskaya valley | Kumbel, Beldersay valley | leg. G. A. Anufriev', 'HOLOTYPUS ♂ | Albulina tshatkala sp.n. | S. K. Korb design. 1996'

Agrodiaetus ishkashimicus alajanus Korb, 1997 (Figs 19–21). Korb, 1997: 434–436, figs 1, 2. Holotype ♂, '24.07.1991 Kirghizia | Alayski Mts. | Alaikuu | leg. G. A. Anufriev', '24.07.[19]91 | п. Алайку' [24.07.1991, Alaikuu] (Y. Kosarev's handwriting), 'HOLOTYPUS ♂ | Polyommatus ishkashimicus | alajanus Korb, ssp.n. | S. K. Korb design. 1996'.

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New subspecies of *Parnassius nomion* from Northern Kazakhstan

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Abstract. The new subspecies *Parnassius nomion bayansulu* **ssp. n.**, described from Northern Kazakhstan (the Bayan-Aul Mountains), represents an isolated population, strongly separated from the main distribution area, with a number of external characters that readily distinguish it from the related subspecies *Parnassius nomion korshunovi* Kreuzberg & Pljustsh, 1992.

Introduction

While processing material from the territory of the Pavlodarskaya oblast (Northern Kazakhstan), RVY found a small series of *Parnassius nomion* Fischer de Waldheim, 1824, collected in the Bayan-Aul Mountains (the Bayan-Aul State National Nature Park) (Fig. 1) (Titov & Tarasovskaya 2009). This finding widens the distribution of this species in the Eastern Palaearctic to the southwest and represents a population (Fig. 2) somewhat isolated from the main area of the species' distribution, which is almost unbroken in Eastern Siberia and Manchuria and extends to the Urals. The individuals belonging to this population can be easily distinguished from those from other *P. nomion* populations and hence we describe here a new subspecies from this material.

Abbreviation list:

RYB	collection of Roman Yakovlev (Barnaul, Russia)
SZMN	Siberian Zoological Museum (Novosibirsk, Russia)
RECPU	Research Centre for Environmental Monitoring at Pavlodar State University named after S. Toraigyrov (Kazakhstan)

Parnassius nomion bayansulu ssp. n. (Figs 3–6)

Material. Holotype, ♂, Kazakhstan, Pavlodar Reg., Bayan-Aul distr., Bayan-Aul Mts., near Sabyndykol' lake, 10.VIII.2007, leg. Kaman Ulykpan (SZMN). Paratypes: 3 ♂♂, 1 ♀, same data (RECPU, RYB).

Description. Forewing length (base-apex) 35 mm in male and 36 mm in female. Ground colour pale-cream, almost white. Forewing broad, rounded apically; basally with a small shaded area; a dense suffusion of black scales along costa; discal cell with two large black spots, one in center, one in cell apex; three postdiscal spots, one in M1–M2, one in Cu2–2A (sometimes with red centre in males), and one in R2+3 –

Fig. 1. Bayan-Aul Mts., June 14, 2009 (photo by S. Titov).

Fig. 2. Distribution of *Parnassius nomion* Fischer de Waldheim, 1824 (western part of the range).

R4 cell (always red-centred); submarginal row forming an almost uninterrupted grey band; marginal area broad, covered with sparse grey scales, semitransparent, with white dashes between veins. Hindwing with a pair of red, white-centred spots bordered with black; anal margin with broad irregular black area; along anal edge towards tornus with an elongate black spot that is usually separated with a pale interspace at vein Cu2; submarginal row consisting of semicircle with somewhat defined spots; marginal zone with grey semitransparent spots at veins and broad white areas between them; fringe black at veins, with small white interspaces between them. Hindwing underside pattern almost identical to upperside, except for small red black-edged spots basally and two red black-edged spots corresponding to the elongate one on upperside anal area; spot in cell Cu2–2A often with white centre. Female with widened grey and black elements and enlarged red spots compared to male; small sphragis.

Figs 3–6. *Parnassius nomion bayansulu* ssp. n.: ♂, holotype, upperside (3) and underside (4) (SZMN); ♀, paratype, upperside (5) and underside (6) (SZMN).

Notes. The new subspecies is very different from the subspecies *korshunovi* Kreuzberg & Pljustsh, 1992 reaching the west part of the range of this species (the Altai and the Sayans). The type series includes several specimens from the Middle and Northern Urals (Kreuzberg & Pljustsh 1992). The Ural *P. nomion* subspecies' membership cannot be confirmed because we have not studied the material and, in spite of the fact that the Ural fauna is well studied, this noticeable species has not been found in the Urals recently. That is why (taking into account questionable specimens found in the Urals) the latest literature attributes subspecies *korshunovi* (the holotype occurs in the Altai Mountains near the Katun' river) to the population from the Altai-Sayan mountain area (Korshunov & Gorbunov 1995, Sorimachi 1995, Kaabak et al. 1997, Yakovlev & Nakonechnyi 2001, Korshunov 2002, Korb 2005, Zhdanko 2005). Several publications synonymize *korshunovi* as a nominate subspecies, described from Dauria (Weiss

2005, Tshikolovets et al. 2009). The material collected farthest to the west of Altai was in the suburbs of Zyryanovsk and in the mountains between the Buhtarma and the Naryn rivers (Zhdanko 2005, Lukhtanov et al., 2007).

Diagnosis. The new subspecies differs from the related *korshunovi* Kreuzberg & Pljustsh, 1992 in the following characters: 1) the presence of the red-centered black spot in cell R2+3 – R4 on the forewing in both males and females; 2) the clearer submarginal row of dark spots on the hindwing in males; 3) the better defined black spot in the cell M1–M2 on the forewing; 4) a slight increasing of dark elements of the pattern in general.

Etymology. The new subspecies is named after a legendary Kazakh beauty Bayan-Sulu, who according to legend washed her hair in the Sabyndy-kol' lake.

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