

“Supersite” of Zoological institute web-portal — “Beetles (Coleoptera) and coleopterists”

“Суперсайт” портала Зоологического института “Жуки (Coleoptera) и колеоптерологи”

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КЛЮЧЕВЫЕ СЛОВА: жуки, Coleoptera, Интернет, веб-сайт

ABSTRACT. The largest and most visited site on the portal of the Zoological Institute of the Russian Academy of Sciences (ZIN) during the last years is the site “The Beetles (Coleoptera) and coleopterists”. In the end of 2003 it occupied 384 Mb of 563 Mb of the total portal volume, which includes also other 37 sites. In 2004 it has become at least 3 times larger. The site started developing in the end of 1999 as a site of the Coleoptera Department of the Laboratory of Insect Systematics of ZIN. Due to enthusiasm of the founders and makers, appropriate successful design, dynamic renewal of all pages and especially the block of News, beneficial object (beetles!), virtual team of coleopterists and amateurs appeared and now it takes an active part in creation and maintenance of the supersite pages. In December, 2003 the site has achieved volume over 2 822 web-pages with more than 9 460 illustrations. In the English version there are more than 80 % of pages corresponding to the Russian version pages. The site is used to solve a wide range of scientific objectives: broad generalizations of knowledge, easy and obvious presentation of the scientific information dispersed in thousands of publications and manuscripts; creation of new original data bases about beetles; study of biodiversity of the Russian and world faunas; development of new effective methods of identification of insects using the Internet technologies; and also to provide necessary information on numerous applied scientific investigations (in ecology, environmental control, plant protection and forestry, problem of invasive species etc.). The site also involves various sketches about works of art and literature, of applied art and bionics. Support: the grant RFBR (No 02–07–90105).

РЕЗЮМЕ. “Жуки (Coleoptera) и колеоптерологи” в последние годы является крупнейшим и наиболее посещаемым сайтом портала Зоологического института Российской Академии наук. В конце 2003

он занимал 384 МБ из 563 МБ общего объема портала, который включает еще 37 других сайта. В 2004 г. он стал как минимум втрое крупнее. Сайт начал развиваться с 1999 г. Как сайт Отдела жесткокрылых Лаборатории систематики насекомых ЗИНРАН. Благодаря энтузиазму его создателей и наполнителей, весьма удачному дизайну, динамичному обновлению всех страниц и особенно блока Новостей, привлекательному объекту (жукам) возник виртуальный коллектив профессиональных колеоптерологов и любителей, который сейчас активно участвует в создании и поддержании страниц суперсайта. В декабре 2003 г. сайт достиг объема 2 822 веб-страниц с более чем 9 460 иллюстрациями. В английской версии наполнены страницы, соответствующие более 80 % страниц рсской версии. Сайт направлен на решение широкого круга научных проблем: широкие обобщения знаний, легкодоступное и четкое представление научной информации, разбросанной в тысячах публикаций и рукописей, создание новых оригинальных баз данных о жуках; изучение разнообразия Российской и мировой фаун, развитие новых эффективных методов диагностики насекомых с использованием технологии Интернета; а также на обеспечение необходимой информации о многочисленных прикладных научных исследованиях (в экологии, охране природы, защите растений и лесном хозяйстве, проблемах инвазий и т.п). Сайт включает разнообразные очерки о произведениях искусства и литературы, прикладного искусства и бионике. Сайт поддерживается грантом РФФИ (No 02–07–90105).

Appearance and quick progress of networking technology brought about revolutionary changes in the sphere of distribution and exchange of information. Under conditions of easy making of sources of information, quick distribution and easy access to them a real danger of

negative and wrong pieces of information appeared and has a tendency to increase. Nevertheless, the Internet with its many specific opportunities became a very important part of human culture. It penetrated into all fields of the culture and man activity and opened new facilities in presentation and distribution of information in general. This situation reflects on the field of scientific communication, spreading knowledge and storage of facts, theoretical achievements, hypotheses and interpretations. Besides, the democratism of the Internet as a peculiar type of publication made particularly topical the problems of the authors' rights and priorities. As a result, competition of information sources on the Internet is rather keen and much stronger than in any of other ways of scientific and cultural communication. All these circumstances should be taken into consideration by every scientist who wants to spread his study and knowledge by means of the Internet.

Some years ago the Zoological Institute of the Russian Academy of Sciences (ZIN) started to implement a large-scale programme of the computerization of the institute and to participate in different national programmes on the study of biodiversity of Russia and creation of data bases on the biodiversity [Scarlato et al., 1994a, b; Alimov et al., 1997 etc.]. Within the framework of these programmes the site "The beetles (Coleoptera) and coleopterists" was set up 4 years ago (in the end of November 1999). The site was planned as a manifold resource of all aspects of culture concerning beetles: scientific, artistic, aesthetic etc., including representation in a compact view of information dispersed in numerous publications and other resources, creation of new databases on biodiversity of the Russian and World faunas, elaboration of new ways of the identification of the order Coleoptera using the Internet technology, different applied problems in ecology, plant protection, monitoring of the economically significant species etc. The beginning of the site was the preparation of some pages with different interpretations of the system of the order Coleoptera and start of a wide discussion on the most reasonable version of it. This discussion is still continuing and the editorial board considers it advisable to include every proposal on the system of the order with a proper reference, although retains the right to estimate advisability to make the proposed changes in the interpretations of the system represented in the site.

Very soon it became a national site for coleopterists all over Russia, and for other Russian-speaking specialists and amateurs. Two years ago the editorial board started to create the English version of this site and it became accessible for colleagues abroad, to whom the Russian language is not enough familiar. Now it is one of most popular sources on the Internet among the sites dealing with Coleoptera. It is addressed to professional entomologists and students as well as to all people who are interested in beetles and nature as hobby or aesthetic object. The site makers try to use new forms of publications, communication and co-operation. The site is used to solve a wide range of scientific objectives: broad generalizations of knowledge, easy and obvious presen-

tation of the scientific information dispersed in thousands of publications and manuscripts; creation of new original data bases about beetles; study of biodiversity of the Russian and World faunas; elaboration of new effective methods of identification of insects using the Internet technology; and also to provide with necessary information for numerous applied scientific investigations (in ecology, environmental control, plant protection and forestry, problem of invasive species etc.). The site is also involved in various sketches about works of art and literature, of applied art and bionics. Great attention is paid to new information about notable events, which is not easily accessible in places distant from large scientific centers.

By the beginning of 2002 the total volume of this site reached 1142 web-pages with 2 550 illustrations. It was a crucial point in the development of this site because from this time the site got a strong impulse for development due to a special support of the Russian Foundation for Basic Research (grant No 02-07-90105). At present the site allows for rapid search in the huge data arrays for information obtained as a result of coleopterological studies and also for personification of the contribution of the outstanding specialists. By the end of December 2003 the number of pages on the site reached 2822 (63 are empty so far; 98 % of the site have been filled), the total number of illustrations is 9 460 (including 267 portraits), the total number of references to pages of the Internet is 1 300. There is a large number of publications devoted to the site [Kirejtshuk & Lobanov, 2002a, 2002b; Lobanov et al., 2002; Kerzhner & Lobanov, 2002, 2003; Kirejtshuk et al., 2003a, b; etc.]. A new interpretation of classification of the order is developed; names used for families, and subfamilies of recent and extinct beetles and also synonyms are explained. This interpretation is placed in the data base and is currently being developed. Databases are being established on extinct Coleoptera faunas (catalogue of taxa, references, localities and stratigraphy), on biographical data of Russian and foreign coleopterists and also data bases on coleopterous taxa recorded from Russia. The work on the Electronic Atlas of Coleoptera of Russia has been continuing, which will be most complete by number of species, each of them will be illustrated by at least one macrophotograph or scanograph (collective project by the 100th anniversary of the book by G.G. Jacobson "Beetles of Russia and Western Europe" — 2005). The work on developing of the data base on diagnostic characters for taxa of the rank of family, subfamily and tribe for compiling an electronic key to Coleoptera, which will become a supplement to the Atlas, is presented on the site. The keys and all illustrations to fresh water beetles, which preliminarily were published in the 5th volume of "Key to Freshwater Invertebrates of Russia" [2001] as well as the additions and corrections to them are placed on the site. Other parts of the site with personal pages, information on morphology, history of coleopterology, ecology, as well as pages with photo- and video materials, sound records and also pages reflecting the theme of beetles in differ-

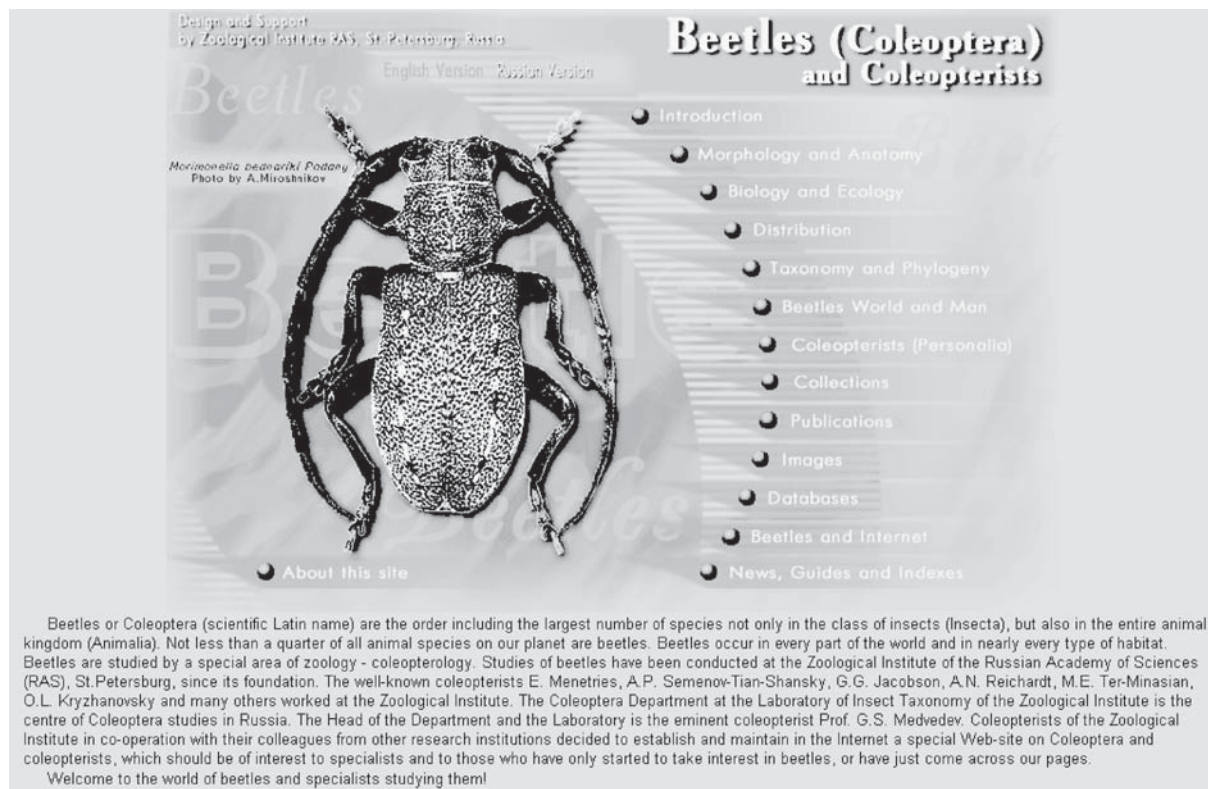


Fig. 1. Title page of site “Beetles (Coleoptera) and Coleopterists”

Рис. 1. Титульная страница сайта “Жуки (Coleoptera) и колеоптерологи”

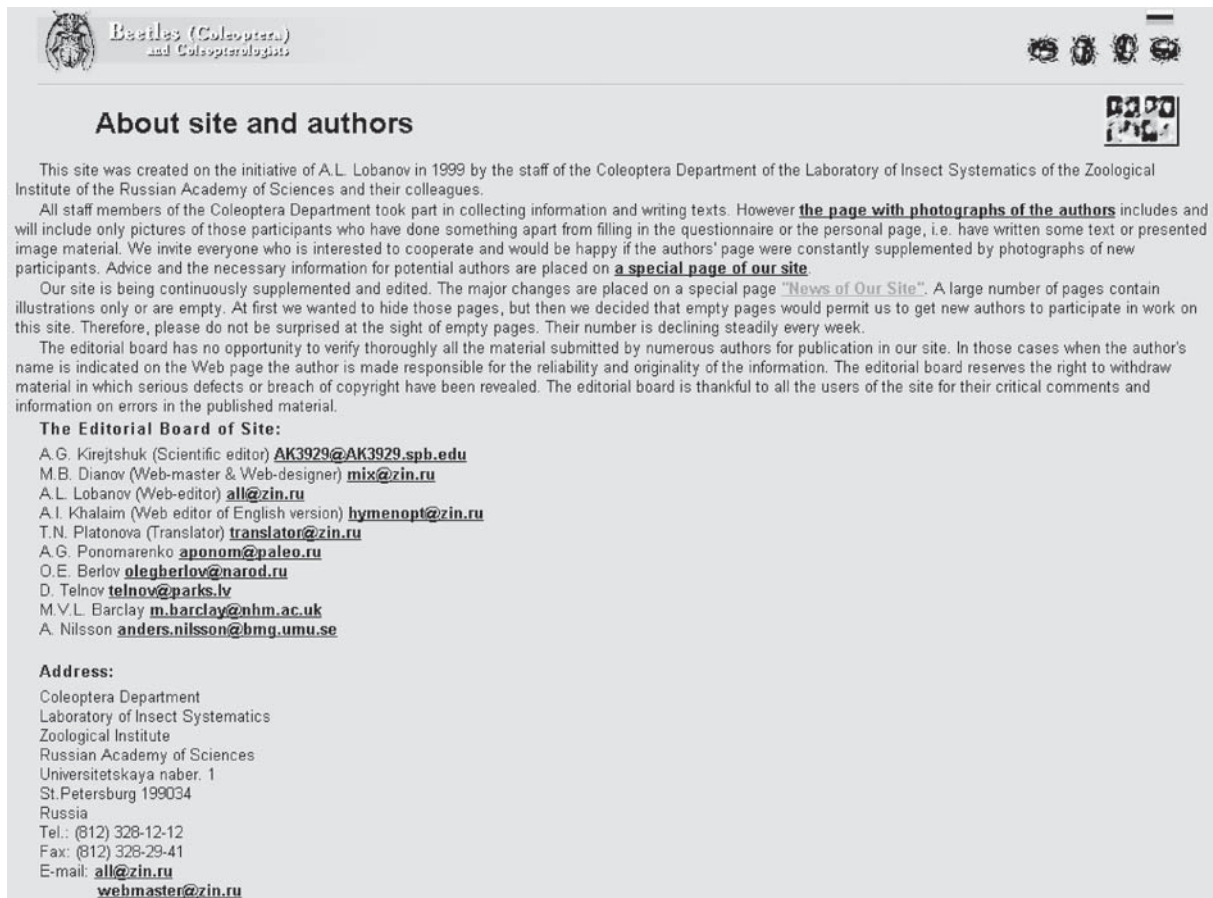
ent areas of culture (in poetry, fiction, sculpture and painting, applied art and children’s creative works). Analysis of queries of the site pages is regularly performed (every 100 days). Average attendance of the site comprises nearly 4 600 hits per day (Fig. 1)

At first the site was developing mostly owing to efforts of A.L. Lobanov and A.B. Dianov, and later other colleagues of ZIN joined to these efforts. The editorial board at first included only staff members of this institute, but in 2002 it increased due to involving into the group Russian colleagues from Moscow (A.G. Ponomarenko, Palaeontological Institute of the Russian Academy of Sciences) and Irkutsk (O.E. Berlov) as well as foreign colleagues from London (M.V.L. Barclay, Natural History Museum), Riga (D. Telnov, Entomological Society of Latvia) and Umeå (A. Nilsson, University of Umeå). These changes in the editorial board aim to promote progress in preparing new materials for the site and to increase the number of readers of the site by translating all pages into English, and thereafter to extend the site as bilingual. Nevertheless, the small group of people who work with insertion of new materials into the site cannot supply this process at the desired rate because of the time required for editing and transformation of files to the proper format. Sometimes materials received wait 2-3 months for insertion. Therefore the editors ask the potential authors to send new materials prepared in a form acceptable for this purpose. Participation of colleagues from 12 countries in

the development of this WEB-site allowed us to achieve its current state.

The map of the site was elaborated at the beginning of the establishment. Later different parts of the site were essentially developed with maintenance of this map. At the beginning the site included the following divisions: Introduction, About this site, Morphology and anatomy, Biology and ecology, Distribution, Taxonomy and phylogeny, Beetles world and man, Coleopterists (personalia), Collections, Publications, Images, Databases, Beetles and Internet, News, guides and indexes. All further additions should find some place in one of these divisions. Many pages are structured in different hierarchies and, therefore, each of these pages can be reached by several ways. There may be different ways from the top page to any page, however there should be only one way to move up the hierarchy. Not in every case a page newly created was correspondent to the contents of one of divisions in a proper way, however, the editorial board tried to maintain the initial general structure of the site and tried to find a relevant position in the hierarchic structure of the site.

The site has a strictly “monophyletic” hierarchical structure (with up to 8 levels of hierarchy). This structure allows elaboration of original methods of navigation along pages of the site. The site is provided with different search engines: permutational indication of all words from the page headings, dendrogram scheme of the site as a “systematic list”, index of references to



Beetles (Coleoptera) and Coleopterists

About site and authors

This site was created on the initiative of A.L. Lobanov in 1999 by the staff of the Coleoptera Department of the Laboratory of Insect Systematics of the Zoological Institute of the Russian Academy of Sciences and their colleagues.

All staff members of the Coleoptera Department took part in collecting information and writing texts. However **the page with photographs of the authors** includes and will include only pictures of those participants who have done something apart from filling in the questionnaire or the personal page, i.e. have written some text or presented image material. We invite everyone who is interested to cooperate and would be happy if the authors' page were constantly supplemented by photographs of new participants. Advice and the necessary information for potential authors are placed on **a special page of our site**.

Our site is being continuously supplemented and edited. The major changes are placed on a special page "**News of Our Site**". A large number of pages contain illustrations only or are empty. At first we wanted to hide those pages, but then we decided that empty pages would permit us to get new authors to participate in work on this site. Therefore, please do not be surprised at the sight of empty pages. Their number is declining steadily every week.

The editorial board has no opportunity to verify thoroughly all the material submitted by numerous authors for publication in our site. In those cases when the author's name is indicated on the Web page the author is made responsible for the reliability and originality of the information. The editorial board reserves the right to withdraw material in which serious defects or breach of copyright have been revealed. The editorial board is thankful to all the users of the site for their critical comments and information on errors in the published material.

The Editorial Board of Site:

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Fig. 2. Page of site "Beetles (Coleoptera) and Coleopterists" — "About site and authors"

Рис. 2. Страница сайта "Жуки (Coleoptera) и колеоптерологи" — "О сайте и его авторах"

family names and global search of texts by entry of any word or combination of words (Fig. 2).

The division "About this site" includes general information on the site, namely information on the editorial board and link with special page containing a gallery of the authors of the site, reference to the page with information for potential authors, some comments for usage of the site and current statistics of the site (number of pages, number of illustrations and number of Internet references).

The division "Morphology and anatomy" is planned as a collection of arrays of pages with comprehensive information on character of the general structure and main structural characteristics of beetles through all stages of their ontogenesis, including some organs in their internal organization as well the references to appropriate literature sources. At the moment the site includes only some pages on general structure, with description of the head, male genitalia and inner sac of the penis with illustrations. The description of the inner sac of the penis is supplemented by the pages describing the preparation of the sac in the dried exserted position for permanent storage with some illustrations. The pages devoted to preimaginal stages are only provided with original pictures of larva of the stag-beetle *Sinodendron*

cylindricum and pupa of the predaceous diving beetle *Dytiscus dauricus*.

The division "Biology and ecology" is composed of some subdivisions: Life cycle, Reproduction, Feeding, Behavior and mode of life, Life forms, Phenology, Habitats, Symbiotic relationships, Enemies and parasites. Most these parts are still empty, although some important pages have been already prepared and put on the site. The page on feeding gives a general classification of types of (coleopterous) diet and preferences of different coleopterous groups. The subdivision "Behavior and mode of life" has a hierarchy of pages devoted to flight, communication, parental care, defense structures. Of particular interest are the pages with information on producing different sounds (not only for communication) with some documentaries and records of these sounds. The page on defense structures contains a classification of different types of defense and shows how appearance of a beetle was reflected in the folk names. By this time in the subdivision "Enemies and parasites" there is the only page on interconnections of parasitic wasps of the subfamily Tersilochinae (Ichneumonidae) with other insects, particularly with beetles. The largest subdivision "Habitats" includes some original pages on steppe beetles (particularly on adaptations of arthro-

Species Biodiversity

The animals are divided into:
 (a) belonging to the emperor,
 (b) embalmed, (c) tame, (d) sucking pigs, (e) sirens,
 (f) fabulous, (g) stray dogs,
 (h) included in the present classification,
 (i) frenzied, (j) innumerable,
 (k) drawn with a very fine camelhair brush,
 (l) et cetera, (m) having just broken the water pitcher,
 (n) that from along way off look like flies.

Jorge Luis Borges, "THE ANALYTICAL LANGUAGE OF JOHN WILKINS"
 Works in 3 volumes (in Russian). St. Petersburg, "Polaris", 1994. V. 2. 87.

Borges invented an excellent fantastic example of an absolutely useless classification having a number of faults. The worst of these are several unrelated reasons of the classification and intercrossing of taxa separated in the classification. Actual classifications of beetles are certainly devoid of such obvious drawbacks, but they are far from being ideal. The most vulnerable point in the known systems of the order Coleoptera is selecting characters for separation of taxa at different nodes of the classification tree and establishing criteria for taxonomic categories of different ranks.

A good classification in the first turn should be useful giving an opportunity to reduce the enormous number of species existing in nature to an observable number of groups of species. Such classification is particularly important for beetles. The number of beetle species described approaches 400,000, and about several millions await their description. As is seen from the above diagram, beetles constitute approximately one quarter of all known living organisms on the Earth. It is even difficult to imagine such tremendous number. Modern classifications (or systems) of the order of Coleoptera include approximately 150 families. This is a quite observable number. A good specialist on beetles remembers characters and external appearance of representatives of approximately 100 families. Manipulating with names of these 100 taxa it is much easier to talk with colleagues and find the needed chapter in a key or a catalogue and to get one's bearings in a large collection. It would be difficult to imagine these actions, if a coleopterist had to operate with names of 350-400 thousand species, which no one can remember.

The rules of building classifications (or systems of taxa) are the subject of a special division of zoology - systematics. To be able to talk about classification seriously it is important to understand clearly at least two terms - a systematic category and a taxon. One more issue to be understood is that any classification is subjective and conventional. Only species exist in nature. Combining of these species is the result of man's speculation. Thus, systematic (or taxonomic) category is a general term to denote one of the levels of joining species in a classification. Similar species are joined into genera, close genera into families, similar families into orders, orders into classes, classes into phyla, phyla of all animals are joined in one kingdom Animalia. Listed here are only the major obligatory levels of zoological classification. There are at least forty intermediate levels - intermediate systematic categories. A taxon means a possible placement of concrete species into one systematic category. An "order" is a systematic category and "the order of beetles" is a taxon. A "family" is a systematic category and the family of leaf-eating beetles is a taxon. Because many beetle families comprise a large number of species (thousands and dozens of thousands of species) two systematic categories are of particular importance in their systematics, i.e. a subfamily and a tribe that are between a family and a genus: subfamily and tribe.

Fig. 3. Page of site “Beetles (Coleoptera) and Coleopterists” — “Taxonomy and Phylogeny”
 Рис. 3. Страница сайта “Жуки (Coleoptera) и колеоптерологи” — “Таксономия и филогения”

pod that inhabited chalk outcrops), a couple of pages on fungivorous beetles with a detailed classification of feeding regimes, as well as many pages on fresh water beetles. The last part embraces the sketches on morphology, bionomy, methods of collecting and study, keys to families of water beetles of Russia (for adults, larvae and pupae), and also web-version of the Coleoptera part in the 5th volume “Key to fresh-water invertebrates of Russia and adjacent lands” [St. Petersburg, Nauka, 2001] and corrigenda and addenda to this book.

The division “Distribution” now has only a few pages. One of them considers different general principles of the zoogeography relevant to distribution of beetles and current approaches being recently used by scientists. Some other pages are devoted to the coleopterous faunas of extremely small territories with of all coleopterous species collected from two small localities in the Kirov and Yaroslavl’ regions (Fig. 3).

The division “Taxonomy and phylogeny” is the largest in the site and seems to be more important and valuable. It has the following subdivisions: Scientific essays on coleopterous families, The best known classifications of beetles, Our original classifications of beetles, Vexed questions of the macrosystem of the order Coleoptera, Illustrated classification of beetles, Atlas of

beetles of Russia, Phylogeny of beetles, Palaeontological discoveries of beetles, Key to beetles and biological diagnostics, Pictures of hundreds beetles on the site “Probert Encyclopedia” is one more view on biodiversity of beetles, International Code of Zoological Nomenclature (Fourth edition, Russian translation), Russian names of beetles, News of systematics and faunistics of beetles. The subdivision “Scientific essays on coleopterous families” should cover all coleopterous families nowadays recognized and interactively link all sketches devoted to any family. At this moment this subdivision includes 21 essays.

The subdivisions dealing with general classification of the order Coleoptera are particularly large and are very popular among the visitors of the site, who study insects of this order. “The best known classifications of beetles” contains interpretations of the system of the order Coleoptera published by R.A. Crowson [1981] as well as by J.F. Lawrence and A.F. Newton [1995] with lists of the families recognized by them in the above-mentioned publications. The subdivision “Our original classifications of beetles” has two parts. One of them represents a detailed interpretation of the system of the order proposed by A.G. Kirejtshuk [1992] covering both extinct and recent groups of it. Another is the project of a simple interpretation of practical classification intended for pro-

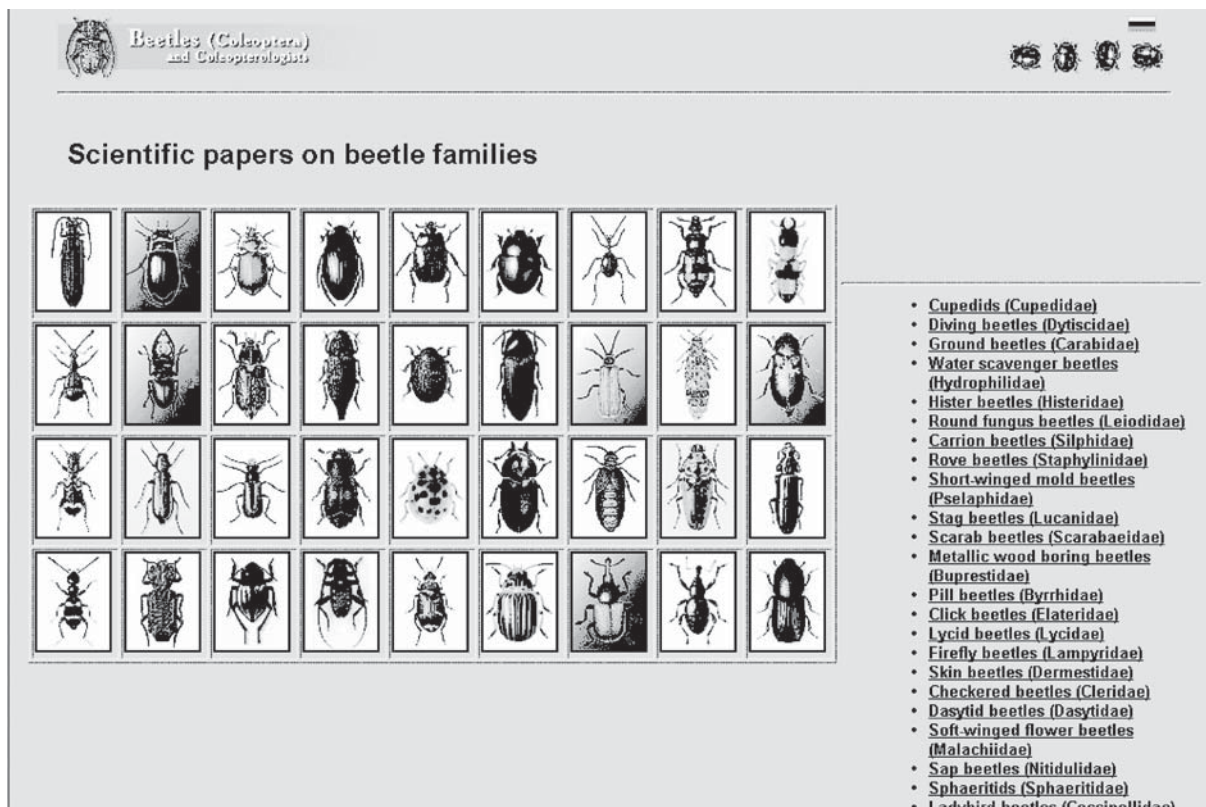


Fig. 4. Page of site “Beetles (Coleoptera) and Coleopterists” — “Scientific papers of beetle families”

Рис. 4. Страница сайта “Жуки (Coleoptera) и колеоптерологи” — “Научные статьи о семействах жуков”

professionals and amateurs who need only a general inquiry about family names and their grouping. The “Vexed questions of the macrosystem of the order Coleoptera” deals with problems and discussions around different interpretations and opinions. At the moment it has one page on position of *Agnathus decoratus* (Lagriidae, Cononotidae, Pyrochroidae, Pythidae or Anthicidae) and another with consideration of position of Platypodinae (a review of one recent publication devoted to composition of Platypodinae, Scolytinae and Cossoninae from Curculionidae). The “Illustrated classification of beetles” is in preparation, and it will contain the characteristic representatives of each family (Fig. 4).

The subdivision “Atlas of beetles of Russia” is the largest in the division and in the site. It was planned to cover all species recorded from Russia, each of them should get some macropictures or scanned images of a high quality as well as the most important information on the considered species and necessary references. The atlas has also hierarchic structure according to the taxonomic rank, from the order to a particular species (through the suborder, superfamily, family, tribe and genus). By the end of 2003 the list of prepared pages approached 500, most of them prepared by E.Ya. Berlov, O.E. Berlov, M.L. Danilevsky, A. Herrmann, A.I. Miroshnikov and S. Ziarko, although the total number of the project participants approached two dozens. When this list covers over 2 000 species, the editorial board plans to put on the site keys to the groups represented by

the species in the illustrated Atlas. These keys should be supplied with some additional morphological illustrations. The editorial board hopes that it will happen during 2005 (100th anniversary of publication of the book by G.G. Jacobson “Beetles of Russia and Western Europe”). This subdivision has also electronic copies of all tables with the color illustrations included by G.G. Jacobson in his book (Fig. 5). The “Phylogeny of beetles” has the only page with a short discussion on principles, which can be used for phylogenetic reconstructions. Among other subdivisions devoted to different versions and interpretations of classifications of the order, the “Palaeontological discoveries of beetles” is the most original and unique, containing extremely important information on all extinct beetles (catalogue, list of localities and list of publications), as well as review on the whole historical development of the order, atlas of fossils with representatives of extinct families and a page on the Quaternary insects with a long list of appropriate references (Fig. 6).

The subdivision “Key to beetles and biological diagnostics” has a large page with a detailed review of different traditional and computer types of keys with large list of important references. This page is linked with 24 pages in various parts of the site which have different keys (mainly to adults extinct and recent families of Archostemata, to larvae, pupae and adults of all families, genera and most species of water beetles of Russia, to adults of some groups of ground beetles). The

The screenshot shows the website header with the logo 'Beetles (Coleoptera) and Coleopterists' and a navigation menu. The main heading reads 'Atlas of beetles of Russia (a project dedicated to the 100th anniversary of G.G. Jacobson's book "Beetles of Russia")'. Below this is a conceptual design for the atlas cover, which includes the title 'АТЛАС жуков России' and 'КОЛЛЕКТИВНЫЙ ПРОЕКТ к 100-летию книги Г.Г. Якобсона "Жуки России"'. To the right of the cover design is a text block titled 'Joint project of coleopterists of Russia' which describes the project's goals and lists participants like Oleg Eduardovich Berlov, Szczepan Ziarko, and D.G. Kasatkin. At the bottom of the page, there is a call for participation: 'The collective project "Atlas of beetles of Russia is dedicated to the 100th anniversary of the first publication of the grandiose work by G.G. Jacobson, his monograph "Beetles of Russia, Western Europe and Neighbouring Countries" (1905-1916). Everyone is invited to participate in this project: those who are interested in beetles and have an opportunity to photograph and scan their own specimens, who can send beetles for scanning, who can compile lists of genera and species of fauna of Russia, and write species essays. Sponsors and advertisers are also invited.'

Fig. 5. Page of site “Beetles (Coleoptera) and Coleopterists” — “Atlas of the beetles of Russia (a project dedicated to the 100th anniversary of G.G. Jacobson’s book "Beetles of Russia")”

Рис. 5. Страница сайта “Жуки (Coleoptera) и колеоптерологи” — “Атлас жуков России (проект, посвящённый 100-летию выпуска книги Г.Г. Якобсона "Жуки России")”

extraction of the British site put in the part “Pictures of hundreds beetles on the site “Probert Encyclopedia” — one more view on biodiversity of beetles” includes 700 pictures of representatives of different families of the European beetles. The subdivision “International Code of Zoological Nomenclature (Fourth edition, Russian translation)” gives an announcement about the above publication and comments to this edition by I.M. Kerzhner, member of the International Commission of the Zoological Nomenclature. The “Russian names of beetles” explains the principles of the Editorial Board for choice of Russian names of beetles recognized and/or recommended for usage and considers why some of names should be ignored or at least regarded as undesirable for usage. The part “News of systematics and faunistics of beetles” comprises brief reports on the most interesting publications on systematics and faunistic studies of beetles. The “Curious facts of beetle nomenclature” shows some curious names in sounding or semantic sense, and also history of the naming of the rove beetle *Boriaphilus komsomolka* Shavrin et Anitschenko, 2000.

The division “Beetles world and man” consists of the following parts: Best known beetles, Beetles in art

and literature, Beetles and human health, Coleopterous pests control measures against them, Beetles useful to mankind, Beetles — “record-holders”, Popular essays on families of beetles, Beetles in Red Data Books, Rearing and keeping of beetles, Beetles in popular science publications, Beetles in scientific works of schoolchildren, Beetles in advertisement, Beetles in personal computer games, Beetles at the kitchen and on the dinner table, Curious facts of beetle nomenclature. A considerable part of materials in this division was gathered and prepared by M.N. Kulikova under the pseudonym Rita Snipe. There are some sketches on 14 most popular and famous coleopterous species. The “Beetles in art and literature” has many pages on the topics associated with usage of beetles in painting, decorative art, post-stamps, jewelry, as well as in the literature, prose, poetry, mythology, and in music, cinema and theatre, and also caricatures and funny stories about beetles and coleopterologists. Particularly many pages are devoted to the scarab *Scarabaeus (Scarabaeus) sacer* L. and stag beetles. The subdivision “Beetles and human health” contains a general paper on the problem and a publication on *Ulomoides dermestoides* (Tenebrionidae) submitted by the amateurs R. Diem-

Beetles (Coleoptera) and Coleopterists			
Taxonomic list of fossil beetles of suborders Cupedina and Carabina (part 1 of catalogue)			
<u>A.G. Ponomarenko, A.G. Kirejtshuk</u>			
<i>Preliminary variant of catalogue. This page is under edition...</i>			
Ordo Scarabaeida Laicharting, 1781 (=Coleoptera Linnaeus, 1758; ex Scarabaeides Laicharting, 1781)			
Subordo Cupedina Laporte, 1836 (=Archostemata Kolbe, 1908; Myxophaga Crowson, 1955)			
Infraordo Cupedomorpha Laporte, 1836			
+Superfamilia Tshekardocoleoidea Rohdendorf, 1944			
+Tshekardocoleidae Rohdendorf, 1944			
	P1ar	P2kz	
Boscoleus Kukalova, 1969	P1ar, Obora		
blandus Kukalova, 1969	P1ar, Obora		
Eocoleus Kukalova, 1969	P1ar, Obora		
scaber Kukalova, 1969	P1ar, Obora		
Votocoleus Kukalova, 1969	P1ar, Obora		
submissus Kukalova, 1969	P1ar, Obora		
Avocoleus Ponomarenko, 1969	P1ar, Obora		
fractus (Kukalova, 1969)	P1ar, Obora		
neglegens (Kukalova, 1969)	P1ar, Obora		
perditus (Kukalova, 1969)	P1ar, Obora		
Moravocoleus Kukalova, 1969	P1ar, Obora		
permanus Kukalova, 1969	P1ar, Obora		
Retelytron Kukalova, 1965	P1ar, Obora		
conopeum Kukalova, 1965	P1ar, Obora		
Prosperocoleus Kukalova, 1969	P1ar, Obora		
prosperus Kukalova, 1969	P1ar, Obora		
Umoricoleus Kukalova, 1969	P1ar, Obora		
perplex Kukalova, 1969	P1ar, Obora		
Tshekardocoleus Rohdendorf, 1944	P1kg, Tshek		

Fig. 6. Page of site “Beetles (Coleoptera) and Coleopterists” — “Taxonomic list of fossil beetles of suborders Cupedina and Carabina (part)”

Рис. 6. Страница сайта “Жуки (Coleoptera) и колеоптерологи” — “Список ископаемых жуков подотрядов Cupedina и Carabina (часть)”

inger and A. Davydenko from Argentina on usage of the mentioned coleopterous species for treatment of different diseases of man. The subdivisions “Coleopterous pests and pest control” and “Beetles useful to mankind” have only few illustrations to the expected texts. The subdivision “Beetles — “record-holders”” contains some data on the extreme showings known among analogous indicators for the beetles. The “Popular essays on families of beetles” has a large hierarchy of pages with many pictures and popular essays on the whirligig beetles, predaceous diving beetles, carrion beetles, stag beetles, fireflies, furniture beetles and long-horned beetles. Particularly many and very diverse pages are devoted to the stag and long-horned beetles, including sound records, tales and short stories. The “Beetles in Red Data Books” contains general information on some editions: Red Data Books of the USSR, Beetles in the Red Data Book of the USSR, The Red Data Book of the Russian Federation, Beetles in the Red Data Book of the USSR, Materials for the Red Data Book of Leningrad Region, List of beetles from the Red Data Book of Latvia, Materials for the Red Data Book of Novosibirsk Region, Materials for the Red Data Book of Tuva, To the Red Data Book of Chita Region, Rare and relict

Coleoptera of Cisbaikalia and Transbaikalia. The subdivision “Rearing and keeping of beetles” includes many different pages with information on the insectary in ZIN as well as with information on rearing of the ground beetles and scarabs with many color illustrations. The subdivision “Beetles in popular science publications” consists of some reviews on the interesting science fiction and stories, namely: Yu. Linnik “A parallel universe”, N. Arnold “Beetles”, as well as S.S. Izhevsky “Mysterious world of beetles”, I.A. Zakharov “Sexual life of ladybird”, V.G. Babenko et al. “Under rays of the Helios”, and also story how D. Telnov called beetle in honor of Riga, his native city. The “Beetles in scientific works of schoolchildren” tells the circle, study group of schoolchildren of St. Petersburg under supervision of A.K. Zagulyaev, and also includes two children’s works, who won the city school olympiad. The subdivisions “Beetles in advertisement”, “Beetles in personal computer games” and “Beetles at the kitchen and on the dinner table” have different sketches on subjects of beetles in social and private life. In the end of this division the subdivision “Curious facts of beetle nomenclature” is placed, which is also structured in the previous division (“Taxonomy and phylogeny”).

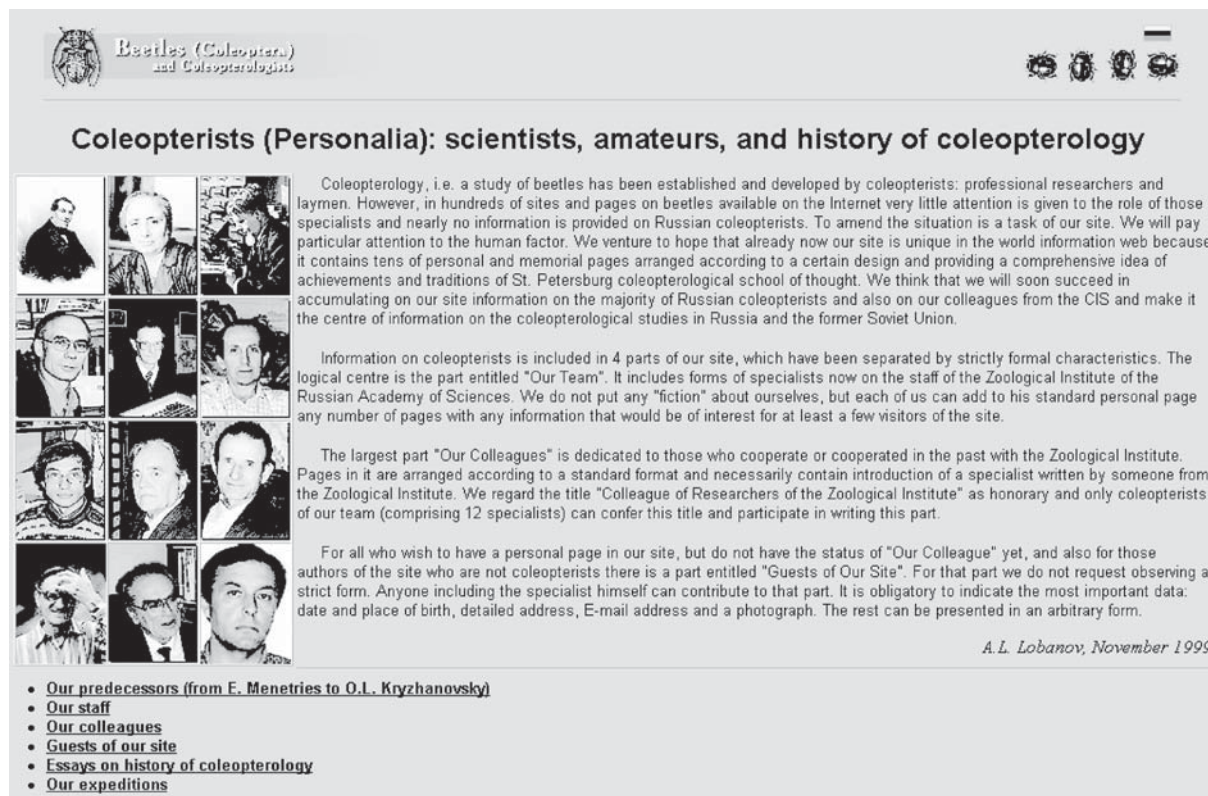


Fig. 7. Page of site “Beetles (Coleoptera) and Coleopterists” — “Coleopterists (Personalia): scientists, amateurs, and history of coleopterology”

Рис. 6. Страница сайта “Жуки (Coleoptera) и колеоптерологи” — “Колеоптерологи (очерки): учёные, любители и история колеоптерологии”

A significant part of the site considers outstanding people, who devoted their efforts to the development of collections, study or artistic use of beetles. Considerable attention is paid to the history of coleopterology, biographical essays and portrait galleries with professional coleopterists, other biologists and amateurs interested in beetles (at present the site has over 20 such galleries). The division “Coleopterists (Personalia)” or “Coleopterists (Personalia): scientists, amateurs, and history of coleopterology” includes four galleries, which are devoted to Our predecessors (from E. Menetries to O.L. Kryzhanovsky), Our staff, Our colleagues and Guests of our site as well as to the subdivisions on the Essays on the history of coleopterology and Our expeditions (Fig. 7). Each person represented in these galleries is supplied by a personal page or some pages arranged in hierarchic order. These pages have information on the creative activities and life of every person, his (her) main achievements, complete list of publications as well as some pictures made in the laboratory, field, at meetings with colleagues etc. In 2003 the subdivision “Essays on the history of coleopterology” included three parts: (1) History of the collection of Coleoptera in ZIN, started from the first deposition of insects in the Kunstkammer [Koelreuter, 1765] and first works on the fauna of Russia, based on this collection [Pallas, 1781, 1796]; (2) History of studies on insects in the Leningrad Region traced from first studies on this territory made

by I. Laxman, I. Beber and I. Tzedergilm and (3) History of coleopterology in Kharkov, beginning from 1805, when F.A. Delavin bought first specimens for the collection of the Kharkov University.

The division “Collections” concerns the following subdivisions: Our collection (History of the collection of Coleoptera in ZIN), History of studies on insects of the Leningrad Region (collections and check-lists), Other important collections, Methods of collecting beetles, Compiling collections of beetles. The subdivisions “Our collection” and “History of study of insects of Leningrad Region (collections and check-lists)” are reached from the “Coleopterists (Personalia)” (see above). The subdivision “Other important collections” is devoted to general description of other public collections of the world, however, in 2003, there is only the information on the Natural History Museum in London (British Museum of Natural History); Paleontological Institute of the Russian Academy of Sciences, Moscow; Siberian Zoological Museum at the Institute of Systematics and Ecology of Animals of the Siberian Branch of the Russian Academy of Sciences, Novosibirsk; Lvov Natural History Museum; and also the Collection of beetles at the Nature Reserve “Galich’ya Gora”, Lipetsk Region. The part “Methods of collecting beetles” includes one page with general info on this topic and three parts with different numbers of pages: Classification of methods of collecting beetles, Methods of collecting inverte-

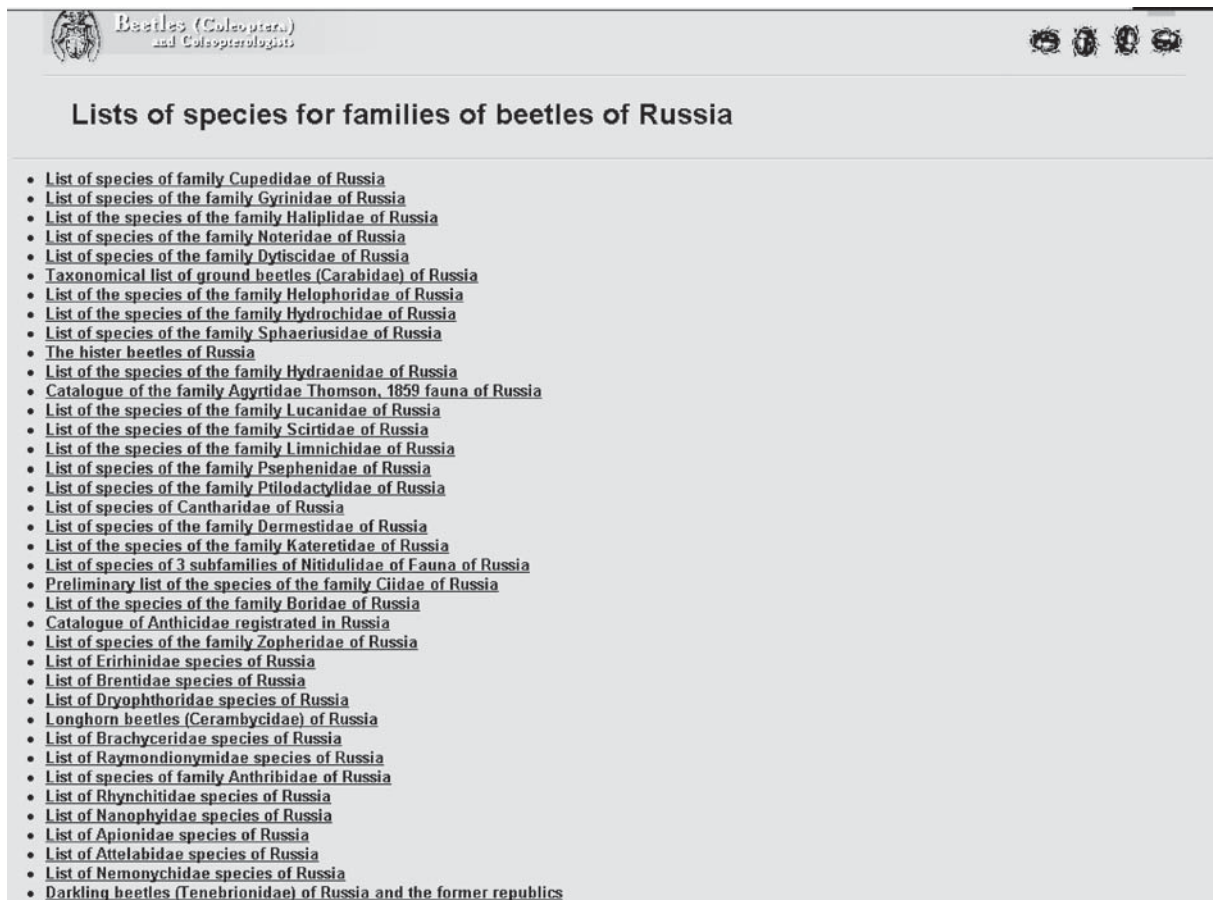


Fig. 8. Page of site “Beetles (Coleoptera) and Coleopterists” — “List of species for families of beetles of Russia”
 Рис. 6. Страница сайта “Жуки (Coleoptera) и колеоптерологи” — “Список видов семейств жуков России”

brates-stratobionts from porous substrate, Catching insects from car. The particularly comprehensive “Classification of methods of collecting beetles” by M.N. Tzurikov has many descriptions of field equipment and about 50 illustrations of figures of devices, which can be used for collecting beetles.

The division “Publications” includes 12 parts of pages: Fauna of Russia (Fauna of USSR), Identification keys, Catalogues and lists of beetles, Revisions of separate taxa, Journals including a large number of our papers, Abstracts of theses on Coleoptera, CD-ROM – computer compact-disks, The most important publications by other authors on beetles, Our book shelf (new and old books on beetles and not only about them), Our library, Coleoptera in proceedings of congresses of the Russian entomological society, Congresses, symposia and conferences (Coleoptera). The editorial board is preparing reviews of the most important publications as they are received, and different comments on all coleopterological problems. Each of these subdivisions has some pages, although the “Revisions of separate taxa” in the end of 2003 was empty. The frequently visited subdivision is “Catalogues and lists of beetles” with reviews on four newly published catalogues on the World Palaearctic and Nearctic faunas, which are very

expensive and not available in many cities of Russia. The “Abstracts of theses on Coleoptera” represents a very important part of this division, because it has information on the theses on beetles recently defended with scanned copies of main pages of the abstract and also a review on the theses or their abstracts. The “Journals including a large number of our papers” has very valuable reviews on some entomological magazines and other editions, including a list of the coleopterological papers in “Entomologicheskoye obozrenie” and “Zoosystematica Rossica”. The “CD-ROM – computer compact-disks” contains reviews of six published compact-disks, which are devoted to Coleoptera in general or to separate group(s) of this order. The part “Our book shelf” includes 18 reviews of important publications (monographs) devoted to general problems of zoology, coleopterology, zoogeography, ecology, history of science and collections. The part “Our library” in the end of 2003 had electronic copies of many important papers and descriptions published by O.L. Kryzhanovskij and I.K. Lopatin.

The part “Images of beetles” combines the subdivision “Atlas of beetles of Russia...” shared with the division “Taxonomy and phylogeny” as well as Illustrated atlases of beetles on our site (collage indexes by

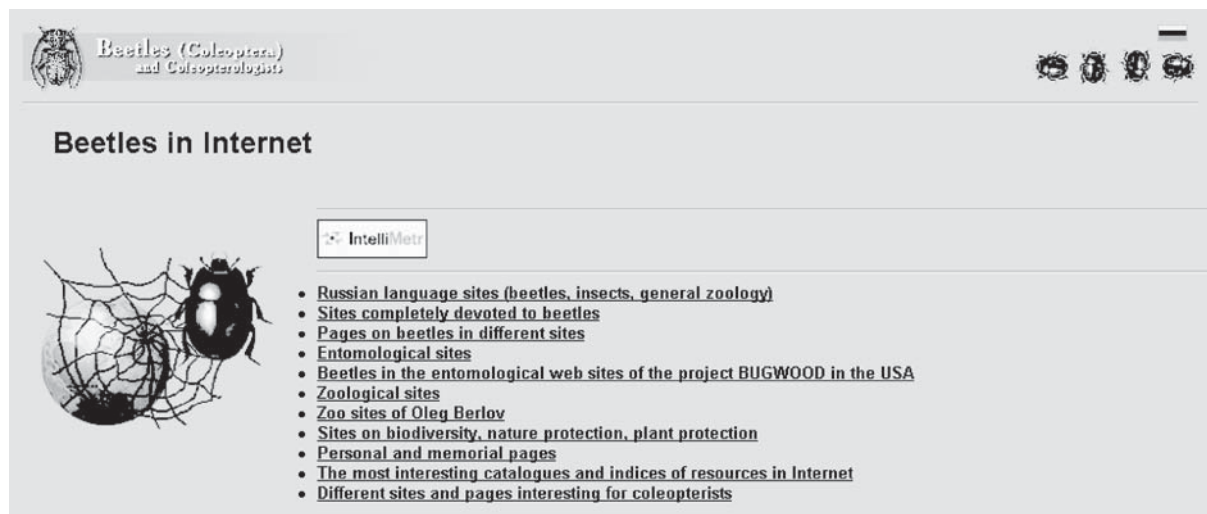


Fig. 9. Page of site “Beetles (Coleoptera) and Coleopterists” — “Beetles in Internet”

Рис. 9. Страница сайта “Жуки (Coleoptera) и колеоптерологи” — “Жуки в Интернете”

Pavel Korzunovich), Artists and drawings of beetles, Photographers and photos of beetles, The most completely illustrated books on beetles, Documentaries on beetles. The subdivision “Artists and drawings of beetles” has portrait gallery of 18 artists and the pages with their creations.

The division “Databases” includes the List of families of beetles of Russia, Lists of species for families of beetles of Russia, Lists of beetles of the Leningrad Region (St. Petersburg Province), Lists of species of separate families for different areas, Regional lists of coleopterous species, and finally the ZInsecta, a new site of the Zoological Institute with entomological databases (Fig. 8). The “List of families...” is provided with references to sources of information used in this list. The subdivision “Lists of species for families of beetles of Russia” already contains lists for 39 families uniting over than 5000 species, including large families as such Dytiscidae, Carabidae, Nitidulidae, Tenebrionidae, Cerambycidae. The “Lists of beetles of the Leningrad Region...” in the end of 2003 has the lists of three groups [long-horned beetles (Cerambycidae), leaf beetles (Chrysomelidae), bark beetles (Scolytidae)] and the lists of literature sources on beetles of the Leningrad region. The “Lists of species of separate families for different areas” includes 16 lists on Haliplidae, Gyrinidae, Noteridae, Dytiscidae, Carabidae, Leiodidae, Colonidae, Hydraenidae, aquatic Hydrophiloidea, Aphodiini (Scarabaeidae), aquatic Byrrhoidea, Cantaridae, Nitidulidae, Anthicidae, Vesperidae, Cerambycidae, Bruchidae of different territories of the Palearctic region. The subdivision “Regional lists of coleopterous species” is devoted to more or less complete lists including all coleopterous species recorded in any particular area or at least any group, which join species of some related families or species associated with a peculiar ecological circumstances and belonging to some families. It has seven lists of beetles registered in Latvia, Belarus, Asian part of Russia as well as lists of smaller

territories, such as Altai, Khakassia and Tuva, or even smaller parts like Kirov, Yaroslavl’ and Rostov regions. The “ZInsecta” provides with the interactive connection with the mentioned site of ZIN.

The division “Beetles and Internet” refers to the various web-sites arranged according to: Russian language sites (beetles, insects, general zoology), Sites completely devoted to beetles, Pages on beetles in different sites, Entomological sites, Beetles in the entomological web sites of the project BUGWOOD in the USA, Zoological sites, Zoo sites of Oleg Berlov, Sites on biodiversity, nature protection, plant protection, Personal and memorial pages, The most interesting catalogues and indices of resources on the Internet, Different sites and pages interesting for coleopterists (Fig. 9).

Finally, the “News, guides and indexes” consist of the following subdivisions: News of our site, Context search through all pages of the site, Alphabetical index of families of beetles of the Palearctic region (records of the pages of the site), Analysis of attendance of the site: current rating of pages and authors, Entertainment page, 20th century — the major achievements of coleopterology, How our site is organized (map of the site), Hierarchical list of pages (tree of the site), Everyone is invited to cooperate as a potential author, For those who wish to be included in the part “Our Colleagues”, Notices board and Permutation index of all pages of the site (Fig. 10). The very important subdivision “News of our site” reflects all changes in the site, including the registration of the web-pages newly appeared, and also all changed, enlarged and completed pages. In the end of this subdivision there are links with some pages containing the archives of all previous “news”, which allow to trace the development and progress from the very beginning. The “Context search through all pages of the site” provides users with a very efficient way of searching every sort of information included in the site by asking key words for this block of information. The “Alphabetical index of families of beetles of the Palearctic region (records of

Beetles (Coleoptera) and Coleopterists

News of our site

Most popular authors of our site (from August, 18 to November, 25 of 2003)

Oleg Berlov Rita Snipe Pavel Korzunovich Szczepan Ziarko Eduard Berlov Kirill Makarov Oleg Kabakov

• 29.03.04

- New pages:
 - [Robert Constantin, France](#) - personal page
 - [Robert Constantin: Curriculum Vitae](#)
 - [Frank Thorsten Krell, United Kingdom](#) - personal page
 - [Frank Thorsten Krell: complete list of publications](#)
 - [M.Yu. Gildenkov](#) - personal page
 - [Beetles of the tribe Apotomini \(Carabidae\): atlas of beetles of Russia](#)
 - [Ground beetles of the genus Callistus \(Carabidae\): atlas of beetles of Russia](#)
 - [Anoplotrupes stercorosus \(Hartmann, 1791\) \(Geotrupidae\) - atlas of Geotrupidae of Russia](#)
 - [I.I. Kabakov: complete list of scientific publications](#)
 - [K.V. Makarov](#) - personal page
 - [K.V. Makarov - a list of scientific publications](#)
 - [V.I. Gumenuk: best photographs of beetles 2002](#)

• 22.03.04

- New pages:
 - [E.Ya. Berlov](#)
 - [Tribe Hydroporini \(Coleoptera, Dytiscidae\) \(atlas of beetles of Russia\)](#)
 - [Subgenus Acatodes Thomson, 1859 \(Coleoptera, Dytiscidae\) \(atlas of beetles of Russia\)](#)
 - [Subgenus Agabus Leach, 1817 \(Coleoptera, Dytiscidae\) \(atlas of beetles of Russia\)](#)
 - [Agabus serricornis \(Paykull, 1799\)](#)
 - [Subgenus Gaurodytes Thomson, 1859 \(Coleoptera, Dytiscidae\) \(atlas of beetles of Russia\)](#)
 - [Agabus \(Gaurodytes\) bipustulatus \(Linnaeus, 1767\)](#)
 - [Genus Ilybius Erichson, 1832 \(Coleoptera, Dytiscidae\) \(atlas of beetles of Russia\)](#)

Fig. 10. Page of site “Beetles (Coleoptera) and Coleopterists” — “News of our site”

Рис. 6. Страница сайта “Жуки (Coleoptera) и колеоптерологи” — “Новости нашего сайта”

the pages of the site)” allows to find all links with the pages, where any peculiarity of every coleopterous family recorded in the Palaearctic region is considered. The “Analysis of attendance of the site: current rating of pages and authors” registered the results of the analysis of queries of the site pages during every 100 days with the comments of the editorial board and shows the dynamics of the interest of visitor through the time from the beginning (9 pages, every page devoted to the respective 100 days). The “Entertainment page” is structured into the (1) New Year cards of 2004, (2) feasts and events of the previous years and (3) Christmas animated cards. The “20th century — the major achievements of coleopterology” contains the answers of visitors on different paragraphs of the questionnaire of the editorial board. The subdivisions “How our site is organized (map of the site)”, “Hierarchical list of pages (tree of the site)” and “Permutation index of all pages of the site” serve for references to the structure of site for visitors and authors. The “Notices board” is devoted to all announcements about the congresses. The subdivision “Everyone is invited to cooperate as a potential author” and “For those who wish to be included in the part “Our Colleagues” aim to encourage all coleopterists to become authors of the site. The site is open for every professional or amateur to get a personal page.

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