XIV International Symposium on Trichoptera

Vladivostok, Russia

July 2-7, 2012

PROGRAM
&
ABSTRACTS
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INVESTIGATION INTO THE TRICHOPTERA FAUNA OF THE OPA STREAM IN ILE–IFE, SOUTHWESTERN NIGERIA

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The species composition and abundance of caddisflies in association with some water quality parameters (pH, water temperature and conductivity) in Opa Stream in Ile-Ife, Nigeria were investigated from October 2009 – August 2010. One hundred and ninety adult caddisflies collected from the stream represent six species in six genera and three families. Hydropsychidae had three species, which is higher than those of other families. The caddisflies showed a relative mean abundance of 62% and 38.9% in the wet and dry season respectively. Caddisfly abundance was positively correlated with pH and conductivity but there was a negative relationship between water temperature and the abundance of caddisflies in the stream.
MOLECULAR AND MORPHOLOGICAL PHYLOGENIES IN INSECTS – CONTROVERSIAL OR CONCORDANT?
THE SAMPLE FROM GEOMETROID LEPIDOPTERANS (LEPIDOPTERA: GEOMETRIFORMES)

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Frequent striking differences between modern molecular phylogenies of insects and notions about their relationship which are based on morphological studies frustrate researchers of classical taxonomic school. On the other hand, young researchers - molecular genetics, with weak understanding of the morphology of the analyzed groups, often limit the analysis of his results to the selection of suitable passages from the morphological works, or even ignore the morphological level of organization, believing that one can always find the right signs for any phylogeny. This work has to demonstrate the possibility of joint in-depth analysis of the results of molecular genetic and morphological phylogenetic studies on the example geometroid lepidopterans.

In the geometroid lepidopterans modern morphological and molecular phylogenies demonstrate rather good concordance when the nodes of the latter have high value of BP support. The exceptions are rare and need in special researches. Supposedly this concordance sourced from common theoretic basis of both approaches which includes note on some degree of selective neutrality of the analysed characters and using of models of their evolution. However methods of the phylogenetic reconstructions in both approaches are fundamentally different: molecular data have to be analyzed by formal quantitative methods, whereas morphological ones are consistent with logic construction of the tree and immanently require the preliminary selection (a priori weighting) of characters based on the previous knowledge about the probability and probable directions of certain morphological transformations. Just in this case the highest correspondence between the molecular and morphological phylogenies is reached.

Taking into account the difference between the morphological and molecular characters, both types of data hardly be united for the «total evidence» phylogenetic approach. However, because of similar theoretic basis, they can be used for reciprocal testing of the results of phylogenetic reconstruction. When the coincidence of the results we can argue about the relative reliability of phylogenetic node, and when the discordance – we have to look for the sources of the discrepancy.
On the sample of geometroid lepidopterans is shown that increasing of frequencies of sampling and growth of the length of analysed nucleotide sequence did not lead to growth of robustness of the resulting tree. In contrast, trees with less frequent sampling have higher value of BP support and more consistent with morphological data. Because of contradictoriness and weak support by BP value, the pattern of basal clusterization in modern molecular trees of the lepidopteran families, taking *per se*, can not be grounded for revision of taxonomical system.
FUNCTIONING FRESHWATER ECOSYSTEMS OF THE SOUTH OF THE RUSSIAN FAR EAST

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Freshwater ecosystems of the south of the Russian Far East located in the zone of the monsoon climate are a concern to the most dynamical group of biological systems in which the leading part in regulation is carried out with extreme natural events. Biotas of the river communities of the region differ by greater species’ riches and biomass in comparison with other river systems in the moderate zone of the globe. A quantitative exhaustion of phyto- and zoobenthos is observed at the time of extremely higher waters, whereas periods without flooding can provoke the hypereutrophication. Complex interactions between organisms and a constantly varying water environment provide on all sites of a stream the stability, in the ratio on the average for a season, of the basic groups of hydrobionts. The regular alternation of low and high water periods influences favorably the general ecological situation in the rivers. The maintenance of this high level of biodiversity of the river community is provided with the passage of a full cycle of ecological conditions for which these organisms have adapted (from a high water up to a drought). Thus, the integrity of the river ecosystem and a high level of their biodiversity depends directly on the preservation of the natural dynamic character of natural objects.
THE COMPOSITION OF THE FAUNA OF THE CADDISFLIES (TRICHOPTERA) IN THE RIVER URSDON (NORTH OSSETIA)

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Ursdon River, the left inflow of Terek River, is formed on the Northern slopes of the Rocky ridge from the many spring waters in the mountains Kion-Khokh and Barzond. Ursdon River has two large tributaries: Tzraudon River from the right side, and Dur-Dur River from the left side.

The total length of the Ursdon River is 47 km. We have studied a section of the river, located within the Sindzikau Village: according to our observations, summer air temperature was 230° C, the water temperature – 14–170° C, the water depth – 0.2–0.4 m, the bed width – 10–20 m, flow rate 1–2 m/s.

The order of caddisflies (Trichoptera) is represented in our collections with 18 species, 12 genera and 9 families. Suborder Annulipalpia accounts for 56% of the total number of species: family Hydropsychidae and Rhyacophilidae – by 3 species each (17 %), family Philopotamidae – 2 species (11 %), Hydroptilidae – 1 species (6 %), Glossosomatidae – 1 species (6 %); the suborder Integripalpia accounts for 44 %: the family Limnephilidae – 4 species (22 %), Lepidostomatidae – 2 species (11 %), Apataniidae, Leptoceridae – 1 species (6 %). We found that the caddisfly larvae prefer to live in small rivers and streams with an underground power; the density of the caddisflies in streams reaches 800–1000 specimens/m². Most of them are typical lithorheophils, however, the species of the family Hydroptilidae are algophils, feeding the filamentous algae. The appearance of these larvae demonstrates the growing organic pollution. So, in the downstream of the Lesken River (Alexandrovskaia Village), the density of larvae reached 1500 specimens per m².
In Mongolia, there are 204 caddisfly species belonging to 78 genera in 19 families. The updated species list also indicates the species that have been DNA barcoded. The distributions of species in the Mongolian aimags are presented. Most species records are results from the Mongolian Aquatic Insect Survey (2002–2011, northcentral and western Mongolia), Hovsgol_GEF projects (2002–2006), and personal collections; other records are from the literature.
The genus *Hydroptila* is well-represented in Italy with 27 species, four of which are endemic. The *Hydroptila* species inhabit both lotic and lenitic waters. The biozones with most species are rithral (25 species), epipotamal (19 species) and crenal (12 species). Seven species inhabit lakes and one species is found in agricultural lakes.

For a better biological knowledge of the *Hydroptila* species of the Italian fauna, the altitude and the physicochemical parameters of water of the finding sites were examined. Morphological aspects of taxonomic relevance were described. The morphology, histology and ultrastructure of the cephalic glands in male *Hydroptila aegyptia* were investigated.

In this paper an updated catalogue of the *Hydroptila* species in Italy is also presented.
The presence of Sporozoa Gregarinaria in the larval midgut of several Trichoptera families found in Italy has been well established. Literature indicates that gregarine infestation is influenced by the trichopteran diet and, except for few cases; there is not a species-specific relationship.

Our aim was to ascertain the role of the morphology and organization of the trichopteran midgut in gregarine infestation. In this study the host-parasite interaction has been investigated with particular attention to both the involvement of the midgut structure on the onset of parasitosis and the influence of the host habitat on the degree of infestation. Gregarine infestation was investigated in species inhabiting springs, mostly in species found in Italian troughs (“trocchi”) which are man-modified springs for drinking water for cattle.

Gregarine species found in larvae of Drusus improvisus inhabiting Tiber River springs are also reported, with highlights on the parasite density at every season and the degree of infestation at each larval stage.
There are numerous species of Ciliophora that live in symbiosis with freshwater insects. The presence of Peritrichia epibions on Trichoptera larvae has been documented, while there is little information on hystophagous ciliate of the genus *Ophryoglena* infesting trichopterans.

*Ophryoglena* (Ciliophora, Oligohymenophorea, Ophryoglenida) is a medium-to-large sized ciliate, oval to pyriform in outline. The oral aperture, situated in the anterior quarter of the body, contains an undulating membrane and three membranelles which are arranged helically. On the left of the oral aperture there is a refringent body, shaped like a watch glass, often with a pigment spot on its convex side.

In this study the parasitosis due to *Ophryoglena* sp. in a *Micropterna nycterobia* female is described. The trichopteran was found on October 31, 2002 in a cave, named “Grotta di Monte Cucco”, in Central Italy. The specimen, observed *in vivo* under the stereomicroscope, showed that its abdomen was packed with the ciliate and the parasite had fed on gonads, muscles and fat body of the host, thus confirming the role of *Ophryoglena* as parasitic castrator. Different stages of development of the parasite were also detected.

The interaction of the parasite with the host tissues was investigated by means of light and electron microscopy.
PRELIMINARY OBSERVATIONS OF FLIGHT ACTIVITY OF TRICHOPTERA IN THE SOUTHERN CAPE, SOUTH AFRICA

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At a site along the lower Groot River near Nature’s Valley, Trichoptera were attracted with superactinic or UV light. The frequency of insects passing selected fixed points in space was recorded photographically, after dusk, on 38 days between October 2011 and March 2012. All digital images of insects were identified to species, where possible, and abundance of species over selected time periods was determined. At the same time water and air temperature, relative humidity, barometric pressure, wind direction and speed were continuously recorded. Total dissolved solids (TDS), electrical conductivity, pH and the percentage of cloud cover, rain at the time of the survey or rainfall prior to the survey were all recorded. The dominant species during all surveys was Athripsodes bergensis Scott and it revealed a modal peak of flight activity around 50 minutes after sunset which was strongly influenced by climatic variation. The presence of egg capsules carried by females was observed from the middle of November through to March with a peak in late November to early December. Other species of Trichoptera were recorded flying later than A. bergensis after sunset. Seasonal and daily variation in flight activity influence recruitment and relative abundance and population maintenance of this multivoltine species.
A NEW SPECIES OF *OECETIS* FROM THE SANDHILLS REGION OF NORTHEASTERN SOUTH CAROLINA, USA (TRICHOPTERA: LEPTOCERIDAE)

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The new species, *Oecetis psammophila*, is described and illustrated in both sexes. According to the unpublished doctoral thesis of Chen it belongs to the *O. parva* group of the subgenus *Pseudosetodes*. The species seems most closely related to *O. daytona* Ross, differing in the shapes of the inferior appendages and phallus. The types were taken at ultraviolet lights by two blackwater streams in the sandhills region of northeastern South Carolina.
There has been a significant collaborative effort toward collecting samples for the Trichoptera Barcode of Life project. As a result, data have been collected for over 40,000 specimens representing 4,000 species collected from all around the world. These data represent an excellent opportunity to gain a better understanding of species level evolution within Trichoptera and holds the potential to gain a better understanding of historical biogeography and speciation. Through generating trees that include all haplotypes available, we are also able to identify aberrant taxa and new opportunities for taxonomic revisions. Single-gene phylogenies are subject to limitations, however, we can still use these data to gain a broad perspective on the Trichoptera Tree of Life.
The Tigris River is a critical natural resource in the Middle East. As one of two major sources of water for the Mesopotamian Marshlands (which were drained by the Hussein regime in the 1990’s), preserving its water quality and quantity is important to marsh recovery efforts. Despite its importance, the Trichoptera fauna of the Iraqi portion of the Tigris watershed has been little studied. Comparative morphological and DNA barcode data from caddisfly larvae and identifiable adults collected between 2007 and 2010 provide evidence for the identity of the larvae and reveal 8 species putatively new to science.
SOME FOSSIL CADDIS (EOCENE)
FROM KISHENEHN FORMATION IN MONTANA, USA

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Photos of 8 whole body impression of caddisflies from the Eocene, Kishenehn Formation in Montana will be shown.
It is known that adult aquatic insects move upstream, triggered by light reflections from the water surface, as part of their oviposition behavior. There are also reported to be differences in flying ability and differences in the flight distance and height depending on the species. In this study, we set sticky traps for 48 hours from 10 bridges on the Shinano River at a height of 5 m from the river surface, conducting one survey each month from April to November 2010. The main species caught were Trichoptera, Ephemeroptera, and Chironomidae, with annual flying density in the order of Chironomidae, Trichoptera, and Ephemeroptera. Focus on Trichoptera, the number of individuals caught increased from April and decreased from October. Even in the same middle reaches of a river, there was a large difference geographically (each bridge from which the traps were set) in the species captured. Hydroptila sp. was caught mainly downstream of the Taisho Bridge (located 89 km from the prefectural border), Psychomyia acutipennis in the vicinity of the Taisho Bridge, and Stenopsyche marmorata upstream of the Awasa Bridge (located 82 km upstream from the prefectural border). It is known that the slope of the Shinano River bed suddenly becomes gentler in the area from the Taisho Bridge to the Awasa Bridge, and it was shown that the species composition and number of aquatic insects caught changes with the change in the slope of the river bed. The significance of the adult insects caught in the sticky traps is conjectured to be that the flying insect fauna caught in a certain place are the sum of 1) insects migrating from upstream to downstream, 2) insects going upstream from downstream, and 3) insects that emerge from the river bed in that place. Therefore, more detailed surveys with the use of emergence traps or other equipment, such as studies to elucidate the number of insects that emerge from the river bed, will be needed in the future.
The Neotropical region has a rich diversity of caddisflies, 2nd only to the Oriental region in number of known species. However, the “tropical” Andes of Bolivia, Colombia, Ecuador, Peru, and Venezuela, which encompass one of the world’s biodiversity “hotspots,” has hardly been explored for caddisfly diversity. These mountains contain a number of unique, diverse, and understudied ecosystems and are one of the most tectonically active areas in South America, if not the world. Complex climatology and topography have favored the formation of several vegetation types with high endemism. This endemism is also observed for other organisms in the region, including caddisflies. To date, 882 species of caddisflies are known from these 5 countries: Bolivia 114 species, Colombia 219, Ecuador 213, Peru 282, and Venezuela 317. Of these, only 15 species are shared among the 5 countries. The northern Andean countries (Venezuela, Colombia, Ecuador) share 30 species, while the central Andean countries of Peru and Bolivia share 51 species, indicating a high level of regional endemism. Of course, the fauna of the highlands themselves (above 500 m) represents fewer species, but the uplands are even less well surveyed than the region itself; local endemism here appears to be very high. Here we present a list of the species from the tropical Andes and discuss patterns of endemism from a biogeographical and ecological perspective, survey the taxonomic history and status of the fauna, present research needs and resources, and discuss conservation priorities within the societal and cultural context of the region.
The biology of *Anisocentropus pallidus* Martynov (Trichoptera, Calamoceratidae), distributed in northernmost region of the genus *Anisocentropus*, is studied in both laboratory and field in Hokkaido, northern Japan. Egg and early instar larva are newly described. Case making, food, habitat, overwintering, pupation, adult emergence, ovary maturation of females and annual life cycle are reported.
DIVERSITY OF THE OLFATORY SENSILLA IN CADDIS-FLIES (TRICHOPTERA)

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Antennal segments in Trichoptera are provided with various sensilla showing the maximal diversity on the antennal flagellum. The comparative study of sensilla on flagellomeres in 28 families of Trichoptera by microscopy (LM, SEM and TEM) reveals more than 16 structural types of the cuticular parts of sensilla. Most of these sensilla are supposed to be olfactory, although some of them are probably mechanoreceptors. Two major groups are recognized: the long sensilla (longer than 20 µm) makes the upper level of the sensory structures, whereas the short sensilla (generally less than 10 µm) are situated in the lower level. Several types of the trichoid, pseudotrichoid, and tongue-like sensilla are found to occur in the upper level. The structures in lower level include various types of sensilla: basiconic, placoid, styloconic, pseudostyloconic, coronar, auricillar, and diverse pseudoplacoids (mushroom-like, bilobed, dentate, and forked). The flagellum in Rhyacophilidae has numerous trichoids in the upper level and sparsely distributed lower level sensilla: basiconic, styloconic, mushroom-like and bilobed pseudoplacoids; no specialized sensory zones or regular patterns of the sensilla distribution are found in this family. More advanced families usually have more numerous sensilla of the lower level. There are specialized sensory zones devoid of the long trichoids in a few families. These zones look like spots, stripes, depressions or projections on the ventral and ventrolateral side of flagellomeres, mostly in the basal part of the flagellum. Reduction of the antennal sensilla is found to occur in a few cases, e.g., in Leptoceridae and in some Apataniidae along with the alteration of the mating behavior. The comparative analysis suggests the antennal sensilla to be the important character in the studies of taxonomy and evolution. This study has been supported by the RFFI grants № 08-04-00295, № 11-04-00076, and the grant from the Federal Program of support for Leading Scientific Schools NSH-3332.2010.4.
MOLECULAR PHYLOGEOGRAPHY OF THE STENOPSYCHID TRICHOPTERANS OF EAST ASIA

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Stenopsyched trichopterans, the genus Stenopsyche, is the most important representative group of Japanese aquatic insects. In many rivers throughout Japan, they often become the most dominant species in terms of the number of individuals or biomass. In addition, in some areas of Japan, they are used as cooking ingredients. We have been conducting a molecular phylogenetic analysis utilizing a large number of specimens collected from across Japan (Hokkaido, Honshu, Shikoku, Kyushu, and the Ryukyu Islands), along with a number of specimens from Russian Far East, Korea, China, Taiwan, Thailand, and Myanmar.

As a result of analysis of the phylogenetic relationships between the stenosychid caddisflies in East Asia, a tendency was observed that the species groups inhabiting the more southern areas were located at the base of the phylogenetic tree. That is, for this trichopteran group, the results suggest that their distribution expanded from south to north, accompanied by a corresponding increase in special differentiation. Furthermore, the presence of several cryptic species was also confirmed. One being a group adapted to a cold and rapid water flow environment, inhabiting the mountainous regions of central Japan. While the other two groups identified exhibiting a large degree of genetic difference were found in the Ryukyu Islands. For these cryptic species, we have also carried out further multi-faceted analyses in parallel. This was in order to increase the accuracy of our conclusions, by means such as a morphological re-analysis and physiological analysis [by differentiation of the pattern composition of the particular cuticular hydrocarbons (CHC) of each species]. These results based on the molecular phylogenetic, morphological and physiological approaches have been evaluated as being highly consistent and corroborating one another.
REDESCRIPTION OF *TRIPLECTIDES MISAKIANUS* (MATSUMURA, 1931) (TRICHOPTERA: LEPTOCERIDAE) FROM JAPAN

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*Triplectides misakianus* is redescribed based on adult, larva and pupa collected from Japan. Pupa is described for the first time. Typical habitats of this species are provided.
Caddisflies and their fragments can become source of physical contamination of food and pharmaceutical products. We investigated abundance of adult caddisflies in the precincts of food and pharmaceutical factories. The abundance of adult caddisflies was monitored using sticky with light traps in mid May–early June, end July–mid August and mid–end October in 2009. We collected adults using sticky with light traps which set on near artificial small water bodies, such as catch basins and cooling towers. Many hydroptilid adults were collected some factories during the investigation periods. These results suggest that factories may be exposed to periodic invasions of adults from not only rivers and lakes but also small water bodies in precincts of factories.
PROGRESS ON TRICHOPTERA PHYLOGENY,
FROM BARCODES TO TRANSCRIPTOMES

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We present our results from our continuing molecular phylogeny project. We have been collecting data from three different sources, representing 3 levels of coverage; species, genus, and family. First, we have been providing samples to the Trichoptera barcode of life initiative, which now has over 40,000 haplotypes from approximately 4,000 species. Building upon a subset of these same taxa, we have collected a multigene dataset in addition to the COI, from 18S and 28S ribosomal RNA (rRNA), and CAD from between 250 and 1200 taxa. Finally, in collaboration with the 1KITE project, we are collecting transcriptome data from 40 taxa. The transcriptome data include over 1000 genes from each of the taxa. This coverage of genes and taxa will be weaved together in order to recover a phylogeny of the entire order with multiple species from most of the genera in the order. Our results at the family level are similar to those we have presented in the past, with spicipalpian families sister to the Integripalpia. Data from the transcriptomes are yet to be analyzed.
NATURAL BACKGROUND OF ALTITUDAL ZONATION OF THE AMPHIBIOTIC ENTOMOFAUNA DISTRIBUTION IN THE GREATER CAUCASUS BASIN

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The article deals with the natural background of distribution of insects-amphibionts developing in the rivers of the Greater Caucasus. Attention is drawn to a significant decrease in the slope of the mountain rivers downstream, and unrelated changes in environmental conditions.

The findings are based on observations of the caddisflies (Trichoptera) distribution.
MORPHOLOGY OF TRICHOPTERA IN THE AGE OF PHYLOGENOMICS – A NOVEL APPROACH TO THE EVOLUTION OF HEAD STRUCTURES IN ADULT CADDISFLIES

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Trichoptera is one of the most strikingly understudied groups of holometabolain insects in terms of anatomical data. Especially information of the internal morphology of adult Trichoptera is very scarce and fragmentary, mainly restricted to abdominal features, wing-base musculature and cephalic structures of single or very few representatives. This serious lack of detailed data on cephalic and thoracic morphology does not allow phylogenetic reconstruction or an interpretation of the evolution of morphological traits. The morphology of the haustellum is described for very few species, impeding the reconstruction of the ground plan condition of Trichoptera and the homologisation with structures present in basal lepidopterans. The functional principle of this structure is also less understood.

In our ongoing project on trichopteran morphology 18 representatives of all major clades will be investigated. The study is focused on the skeletomuscular system, the central nervous system and the digestive tract of the head and the thorax of the imago. For data acquisition a combination of innovative techniques like micro-computed tomography in combination with 3-dimensional computer-based reconstruction and traditional methods like histology and scanning electron microscopy were used.

Here we compare the cephalic features of the basal annulipalpian Philopotamus ludificatus McLachlan, 1878 (Philopotamidae) with those of Limnephilus spp. (Integripalpia, Limnephilidae). The head of Philopotamus shows some potential ground plan features of Trichoptera. Plesiomorphic features retained in Philopotamus are the moderate size and strong sclerotisation of the mandibles, large sets of maxillary and labial muscles and a rather small, granulose haustellum. Integripalpia show strong modifications in the maxillary and labial regions which are results of the enlargement of the haustellar complex. The presented data give some insights into the anatomical modifications of the trichopteran head (e.g., the haustellum), but further data especially of spicipalpian families are needed to reconstruct its evolutionary history.
FIRST CHECK LIST OF CADDISFLIES
(INSECTA: TRICHOPTERA) OF CROATIA

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The Republic of Croatia is placed in the south-east part of Europe. Its territory covers 56000 km$^2$ of land and 32000 km$^2$ of sea. According to the climate and geomorphological particularities three zones can be distinguished: a continental region between the rivers Sava and Drava with continental climate (hot summers and frosty winters), a central highland region with typical mountain climate (short summers, long winters with plenty of snow) and a Mediterranean region with Mediterranean climate (warm and long summers and mild and rainy winters respectively). A geomorphological important part of Croatia is the karst-region (calciferous area) which covers the central-highland and the Mediterranean part. These climate and geomorphological features dominantly influence the hydrological and ecological characteristics of freshwater systems there. Two watersheds can be distinguished: the Black-sea and the Adriatic. Mediterranean region belongs to the Adriatic watersheds.

The first data on the Trichoptera fauna of Croatia are known from the second half of the 19th century (Brauer, 1876). Some data were added by Klapálek (1906), Langhofer (1912, 1915) and Radovanović (1935) in the first half of the 20th century while some more by Marinković-Gospodnetić (1971, 1979) in the second half.

Limnological investigations started in the middle of the fifties and were based on larval determination with contributed only marginally our overall knowledge on the Croatian Trichoptera fauna.

Systematic investigation of Trichoptera based on studies of adults started only 15 years ago with filedwork in the National park Plitvice Lakes and later in different
parts of Croatia. Since then about 185 species have been documented in Croatia. In our investigation we also included caddisflies collections from museums in Zagreb and Varaždin. By comparing species inventories from neighbouring countries (Bosnia and Herzegovina, Hungary, Serbia, Slovenia) approximately 80 to 85 % of the Croatian species richness have been recorded up to now. Four species in Croatian fauna are endemics: *Rhyacophila cabrekenensis, Tinodes andrasi, Chaetopteryx bucari* n.sp. and *Chaetopteryx uherkovici*. Future investigations of caddisflies especially in the continental lowland area and mountains in eastern part of Croatia will provide additional knowledge to current data regarding characteristics of the Trichopteran fauna in Croatia.
LARVAL DESCRIPTION, MOLECULAR AND ECOLOGICAL FEATURES OF *Drusus bosnicus* (Klapálek, 1898) (Trichoptera: Limnephilidae) WITH NOTE OF DISTRIBUTION

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In the Balkan Peninsula (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Montenegro, Serbia) 38 species from the genus *Drusus* were recorded so far, a genus distributed over Europe, Asia Minor and the Caucasus. Except the widespread *Drusus discolor* and *Drusus biguttatus*, all other species are endemics. *Drusus* species usually inhabit springs and crenal sections of mountain streams and rivers with low water temperatures. Allopatric inland distribution and isolation of populations are reasons for rapid evolutionary processes of speciation and the high diversity in the genus *Drusus*, thereby creating the high number of endemic species with very small areas of distribution.

One of the most interesting group from genus *Drusus* is the *bosnicus* group with numerous endemic species described from the Balkan Peninsula. All species of the *bosnicus* group share some morphological features like the shape of male genitalia, the dark coloration of adults and daily activity patterns. The first species described at the end of the XIX century from this group is *Drusus bosnicus* Klapálek, 1898, its *locus typicus* being the spring of the River Bosna situated in the town of Sarajevo. So far, larvae of 5 species from the *bosnicus* group from the Balkan Peninsula were described: *Drusus klapaleki*, *D. medianus*, *D. radovanovici*, *D. ramae*, and *D. septentrionis*.

In this study we present morphological features of the last instar larvae of *Drusus bosnicus*, combined with molecular and ecological notes and data on the distribution of this species. We also present the most important diagnostic features enabling the separation of larvae of *D. bosnicus* from larvae of the other European Drusinae species.
Ryukyu Islands comprise more than 200 islands and lie between Kyushu, one of the Japanese mainlands, and Taiwan, stretching a total of 1,200 km. I recognized a total of 21 philopotamid species including 11 undescribed species (7 *Wormaldia*, 2 *Kisaura* and 2 *Chimarra*) in collections from some large islands in Ryukyu Islands. The Islands are divided into three parts: Northern, Central and Southern Ryukyus. In Yaku-shima Island in Northern Ryukyus, there are 2 species of *Dolophilodes*, 3 species of *Kisaura*, 4 species of *Wormaldia*, 1 species of *Chimarra*, all of which except an endemic species to the island, are also distributed in Japanese mainlands. In Central Ryukyus including Amami-oshima Island and Okinawa-jima Island, there are 5 species of *Wormaldia*, 1 species of *Kisaura* and 3 species of *Chimarra*, all of which except *Chimarra formosana* are endemic to Central Ryukyus. In Southern Ryukyus including Ishigaki-jima Island, Iriomote-jima Island and Yonaguni-jima Island, there are 1 species of *Wormaldia*, which is probably endemic to Southern Ryukyus and 2 species of *Chimarra*, *C. formosana* and *C. lichiuensis* described from Taiwan. The distribution pattern of philopotamid species is consistent with the conventional idea of the border between the Palaearctic and Oriental regions, which is considered to lie between Northern and Central Ryukyus.
Spring ecosystems have important role in functioning not only in upper part of streams but also by influencing a “health” of an entire river system. Unfortunately, during the last decade, anthropogenic disturbance has began to grow in spring areas in the vicinity of Lodz agglomeration and caused necessity for their biomonitoring. Hydrochemical results as well as Trichoptera and diatom diversity could be crucial to determine spring typology and to diagnose level of spring source degradation.

Trichoptera larvae were used for assessing the effects of multiple stressor and benthic diatoms were used, because of a strong response to eutrophication. The distribution, species richness and ecology of Trichoptera and benthic diversity of diatoms as well as hydrochemical data in 11 springs in the vicinity of Lodz were investigated. All together 12 Trichoptera species and more than 200 taxa of diatoms were collected from sampled springs. Both diatoms and Trichoptera but especially diatom taxa, as very sensitive indicator, showed a strong response to degradation in lowland springs.

Additional experiments and observations were done on Trichoptera, their life cycle, biology a diet of larvae. Especially abundance of common diatom taxa, in the guts of Siło sp. larvae were made.
DESCRIPTION OF THE LARVAE
OF CHEUMATOPSYCHE LUCIDA (ULMER, 1907)
(TRICHOPTERA: HYDROPSYCHIDAE)

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Cheumatopsyche lucida (Ulmer 1907) adults, pupae and larvae were collected from Mae Tao Creek, Tak Province. The Cheumatopsyche lucida mature pupae were identified by genitalia characteristics, and the larvae were associated with the pupae. The larvae were described and illustrated. The larval morphology was compared to other species in Cheumatopsyche genera. The adults and larval occurrence were presented.
COMPARISON OF THREE SAMPLING STRATEGIES USED FOR MACRO-INVERTEBRATE IN LIAOHE RIVER BASIN, CHINA

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How to rapidly obtain comparable biological data used for bioassessment with cost-effective techniques is an essential question for management decisions relevant to Nation’s water quality. China currently lacks of formal sampling protocols, which could be popularized across the country. Hence, we conducted an experimental study on macroinvertebrate sampling, which was intended to provide fundamental data for presenting practical techniques. In July 2011, three sampling strategies, RBP (Rapid Bioassessment Protocol, USEPA), EMAP (Environmental Monitoring and Assessment Program, USEPA) and OBBN (Ontario Benthos Biomonitoring Network, Canada) were compared in seven sites in Liaohe River Basin. Neither total number of taxa (p=0.163) nor total number of individuals (p=0.066) showed significant differences among the three strategies. However, pair-wise comparison indicated that RBP method collected obviously more taxa than OBNN method (p=0.034), and EMAP method sampled significantly more individuals than RBP method (p=0.028). Moreover, different from USEPA’s protocols, we recommend 15 replicates for RBP method and 12 replicates for EMAP method.
The structure, abundance and microhabitat use of caddisfly (Trichoptera) communities has been studied in five types of microhabitats (stones in flow and pool, sand, leaf, and bank vegetation) in seven localities of Nagua River. The samples were collected in February and November 2010. A total of 2,775 specimens, belonging to 11 families, 19 genus and 27 species, including three new family reports on this area. The species of major abundances are *Campsiophora mulata* Botosaneanu 1977 (41.6 %), *Calosopsyche cubana* (Flint 1962) (17.9), *Alisotrichia alayoana* Botosaneanu 1977 (10.7) and *Smicridea comma* Banks 1924. The flow microhabitat had bigger abundance than pool and bank vegetation. Several species have a strong use of specific microhabitat.
Geographical position of the Ural on the border of the Europe and Asia causes a great interest in the study of the fauna this region. Urals lakes are situated on the territory of the National Park “Yugyd Va”, which is one of the largest protected natural territory in the European Northeast and also brought to the list of the UNESCO’s World Heritage sites. These lakes are varied according to location relief, altitude elevation (250–1000 m), flowage, shape, size (surface area is less than 1 km²), water chemical quality (low turbidity, conductivity, temperature and water mineralization). The lakes are ice frozen for the greatest part of the year, with ice free period lasting approximately from June to September. In 1995–2010 aquatic fauna in mountain lakes located in the western slope of the arctic and subarctic Ural was studied. Caddisflies are one of the most important aquatic groups that inhabit a lake littoral. The ecological significance of Trichoptera in Ural mountain lakes is caused by heir relatively large share in the benthos biomass and in fish food. The abundance of the caddisfly larvae in lakes is low. The taxonomic composition was similar in the arctic and subarctic lakes. The highest taxa diversity was registered for the stone bottom with *Fontinalis* cover. Species of Limnephilidae and Apataniidae family are dominating here. Caddisfly fauna of Ural lakes consists of species with wide area of geographical distribution.
SEX RATIO AND LIFE CYCLE OF *CHAETOPTERYX VILLOSA* (TRICHOPTERA: LIMNEPHILIDAE)

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Long-term studies of the life cycle of *Chaeopteryx villosa* have been conducted in the Wolbórka spring, in the vicinity of Łódź (Central Poland). The occurrence period of adults in natural conditions lasts from the beginning of October until mid December. In laboratory conditions adults emerged from beginning until the end of October.

Larvae of *C. villosa* were collected in the Wolbórka spring in May, June, July and August and reared in laboratory conditions until their emergence. We observed a female bias in the sex ratio which kept increasing with time. The number of females and males was nearly the same in group collected from the spring in May, whereas in August it was 52 females and only 12 males. On the other hand, larval mortality decreased with time and was the lowest in group collected in August and the highest collected in May.
CADDISFLIES (INSECTA, TRICHOPTERA)
OF THE ROVNO AMBER

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The insect fossils of the Rovno amber are of the Late Eocene age (35 m.y. BC). There are remnants of both the terrestrial and the aquatic insects in these ambers, with some fossilized Trichoptera among them. The known localities are situated in the northern parts of Rovno and Zhitomir regions of Ukraine in some commercially exploited amber deposits. There are more than 20,000 arthropod inclusions found to the present time. The Trichoptera samples have been obtained for our study from the I.I. Shmalhausen Institute of Zoology of the National Academy of Sciences of Ukraine. There are 103 Trichoptera specimens found in the 95 amber pieces; 85 specimens have been identified. The list (specimen numbers given here in parentheses with genera) includes Philopotamidae (*Wormaldia*, 1), Polycentropodidae (*Holocentropus, Plectrocnemia, Nyctiophylax, Electrocyrmus*; totally 66), Psychomyiidae (*Lype*, 9), Ecnomidae (*Archaeotinodes*, 4), Hydroptilidae (*Agraylea*, 3), Leptoceridae (*Triplectides*, 1, *Leptocerus*, 1, *Erotesis*, 1), Lepidostomatidae (*Lepidostoma*, 1), Calamoceratidae (1), representing 47 males and 21 females. The obtained data suggest the resemblance of the fossil Trichoptera faunas of the Rovno and the Baltic ambers inhabiting the separate land masses in the past. The study has been supported by grants from the RFBR № 11-04-00076 and the Federal Program for the Scientific Schools grant NSH-3332.2010.4.
STRUCTURE OF THE ANTENNAL SENSILLA IN THE GENUS MOLANNA (TRICHOPTERA, MOLANNIDAE)

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The morphology of antenna and the ultrastructure of cuticular parts of sensilla on the antennal flagellum were studied by SEM and LM methods. Comparative data have been obtained for 5 species of Molanna: Molanna nigra Zetterstedt, 1840, Molanna submarginalis McLachlan, 1872, Molanna uniophila Vorhies, 1909, Molanna moesta Banks, 1906, and Molanna angustata Curtis, 1834. The ventrolateral surfaces of basal flagellomeres are provided with peculiar sensory fields devoid of long trichoids. These fields differ from species to species and have species-dependent morphological features. There are 3 types of sensilla found on the flagellum: long serrated and ridge-bearing trichoids, short curved smooth trichoids, and mushroom-like pseudoplacoids. The female antenna is narrower, than the male one, and has the numbers and localization of sensilla different from those of males. These data well correspond to the lack of the male sternal pheromone glands and the chemical signals from males. Hence, the functional asymmetry of the pheromone communication in Molanna where the volatiles produced only by females coincides with the sex dependent dimorphism of antenna. The structures of sensory fields and the localizations of their sensilla, especially the smooth trichoids and pseudoplacoids, are species-specific and can be used for the species discrimination and the studies of species relationships. The comparative analysis shows the importance of the characters of both the antennal morphology and the sensilla distribution for the taxonomic studies and reconstructions of phylogeny. The study has been supported by the RFBR grant № 11-04-00076 and the Federal Program for the Scientific Schools grant NSH-3332.2010.4.
THE TRICHOPTERA FAUNA OF SPRINGS AND SPRING BROOKS IN THE ESCARPMENT MOUNTAINS OF SOUTHERN AFRICA (INSECTA: TRICHOPTERA)

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The south-western part of Africa is a predominantly arid and semiarid region. Annual precipitation is below 300 mm, and the resulting sparse vegetation is typically composed of grasses, low bushes and succulents up to 50 cm. Within this dry landscape the escarpment arises as a peculiar, orographical entity. It is a series of mountain ranges with dramatic scarp slopes on the west- and southward sides, separating the highlands of the interior from the coastal lowlands. The escarpment represents the ancient continental margin of the African plate since its separation from Western Gondwanaland about 120 Ma ago. It extends parallel to the coastal line from southern Angola through Namibia into South Africa. Springs, spring brooks and small headwater streams occur all along the foothills of the escarpment. They are widely separated freshwater biotopes isolated from other, permanent freshwater systems of the more humid regions.

The caddisflies of these biotops were almost completely unknown. Field work was conducted in the Western Escarpment Mountains of Namibia and in the Great Escarpment in the Eastern Cape of South Africa. The spring fauna in Namibia was found to be rather similar and homogenous, dominated by widespread species of the genera Hydroptila, Orthotrichia, Chimarra, Cheumatopsyche and Oecetis. The species composition of the springs in the southern part of the escarpment was different. Besides widely distributed species the assemblages include also species from the Cape Fold Mountains. However, no representative of any of the three endemic families of southern Africa was encountered in the escarpment. A list of the hitherto collected species and their distribution is presented. The species composition of the spring shed some light on the stability of the biotopes and the permanence of groundwater supply. The results are discussed with respect to changing climate conditions in southern Africa.
The Kuril Islands are a chain of more than 56 islands stretching 1200 km between Hokkaido, Japan, and the Kamchatka Peninsula of Russia. The islands provide an excellent natural laboratory to examine ecological patterns and process of insular communities. During the period of 1994–2000, the International Kuril Island Project (IKIP) improved our knowledge of caddisfly fauna of the islands. Currently over 100 species of caddisflies are known from the islands. Using the distributional records, we examined the patterns in species richness and assemblage of caddisflies on the islands. Island area and distance from the mainlands were important determinants of caddisfly species richness. The analysis based on the breakpoint species-area model recognized the small island effect. When all species were included in the analysis, the upper limit of the small island effects ($T_1$) was 100 km$^2$. Twenty (66.7%) out of 30 islands surveyed had their island areas within 100 km$^2$. The $T_1$ values of predators, gatherers and filterers were greater than those of scrapers and shredders. The $T_1$ value of lotic caddisfly species was greater than lentic species, and that of small caddisflies was greater than large caddisflies. A canonical correspondence analysis revealed that latitude was the most important determinant of caddisfly community structures on species and family levels, while island area was the most important for the community structures of functional feeding groups. Area was positively associated with the proportion of lotic species over lentic species, and latitude was negatively associated with the proportion of lotic species. Latitude was positively associated with the average wing size of species occurring on each island. This study demonstrated that the patterns in species richness and assemblage of caddisflies on the islands are reflected by the differences in biological characteristics among species and physical characteristics among islands.
The East Palearctic and Oriental Biogeographic Regions have rich caddisfly faunas. These faunas were initially described by European and North American scientists, but increasingly in recent years by the scientists who live there. The rate with which the fauna has been described also has accelerated remarkably. The number and density of species is much greater in the Oriental Region. Although the two Regions are broadly contiguous, less than 10% of the East Palearctic species occur also in the Orient. Families such as Apataniidae, Limnephilidae, and Phryganeidae are better represented in the East Palearctic, but many other families are much more diverse in the Orient. The present rates of discovery of this fauna suggest that many more species are yet to be found. An especially high research priority should be also the association and description of larvae, potentially very important in the assessment of water quality throughout Asia. These concerns heighten the need for cooperation among Asian nations.
I had a chance to examine polycentropodid caddisfly larvae collected in a cave in Fukui, central Honshu, Japan in 2009. These larvae are unusual in that their heads and pronota are entirely yellow without pigmented muscle scars and their eyes are very small. Surveys from late autumn in 2009 to 2011 in the cave have yielded additional larvae and several adult females. The adult has the usual features of large compound eyes and forewings with white spots on the black ground color. The wing venation is similar to that of *Plectrocnemia*, but the hind wings are unique in that R1 is reduced and converges with Sc near the wing margin.

The cave is divided into two portions by a narrow reach of large broken rocks near the entrance. As a result, the main interior area is in complete darkness. The larvae can be found in a shallow flow of ground water in the cave which seeps from cave walls and infiltrates into the ground at the beginning of the main area. There are no other streams or pools around the cave entrance. Therefore, this polycentropodid caddisfly is thought to complete its life cycle inside the cave.
The Jimoto-yusui is one of spring zones of the Tainai-gawa fan near the Japan Sea. There are more than 30 springs and three small brooks in a 14 ha wetland. The springs and brooks have unique aquatic animals including endangered fish species (*Pungitius pungitius, Lefua echigonia, Lethenteron reissneri*), however, some of them are decreased in number in recent years. Thus, Ibaratomiyo & Mizubasho no Kai [Ninespine stickleback & Asian skunk cabbage Club] started the ecological study on this area. In the course of study, we surveyed the fauna and phenology of caddisflies.

Adult caddisflies were collected by a Malaise trap set over a brook (average flow 29 L/sec) from March 28, 2011 to April 1, 2012. A total of 684 specimens belonging to 14 species, 15 genera and 12 families were identified, including one new species for science. The most common species was *Lepidostoma kanbaranum* (Kobayashi, 1968) (48%), followed by *Oecetis nigropunctata* Ulmer, 1908 (16%) and *Philocentropus shigae* Tsuda, 1942 (13%). Some caddisfly species commonly found in the past were not collected in this study (e.g., *Nothopsyche longicornis* Nakahara, 1914).
ALTITUdINAL DISTRIBUTIoN OF CADDISFLy (INSECTA: TRICHoPTERA) LARVAE IN A MOUNTAIN STREAM (MT. SEORAK, KOREA)

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The study on caddisfly larvae in mountain streams of Korea has been poorly studied both ecologically and taxonomically. In this study, altitudinal distribution of the larvae of Trichoptera from a typically preserved stream in Mt. Seorak was investigated. Quantitative and qualitative sampling was carried out in 8 different altitudes between 888 m and 219 m. Field research was conducted 4 times during November 2010 to September 2011 with measuring of the aquatic physicochemical factors. As a result, 13 families and 36 species of Trichoptera were collected. And the composition of community showed variability by elevation of the research sites. Along with the decline of altitude, shredders of functional feeding groups (FFGs) decreased, while collector filterers increased. And the composition rates of shredder and collector filterers were considerably reversed at the elevation about 700 m. The similarity based on the number of individuals and presence of species showed that altitude is a significant factor which influences on the structure and distribution of the Trichoptera community.
CURRENT STATE OF KNOWLEDGE OF FAUNAL INVENTORY OF TRICHOPTERA FROM THE URALS AND THE NEIGHBORING REGIONS

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The Ural Mountains is the only mountain system delimiting the Great European plains from East. This long mountain range includes some natural zones – from Arctic tundra in the north to the dry steppe in the south. The mountains and piedmont plains are rich in springs and rivers.

Fauna of the Urals is explored rather inadequately, especially concerning the aquatic invertebrates. Caddisflies are not exception. The first data on the caddisflies from the Urals belong to the end of the XIX century. Then McLachlan on the basis of J. Milne’s collections pointed in neighborhoods of the city of Perm the only species (*Grammotaulius signatipennis* McLachlan, 1876). Soon, interest in investigations of caddisfly’s fauna of the region has increased significantly. A. Martynov published a series of papers containing information about the caddisflies the Polar (Martynov, 1910, 1916) and the Southern Urals (Martynov, 1914). J. Kolosov (1925, 1930), S. Lepneva (1928) and A. Behning (1928) reported several species for the basin of the Kama River. Over the next half-century special investigations of Trichoptera in the Urals were not conducted. These insects have been studied to hydrobiological positions (Tauson, 1947; Gromov, 1954; Popova, 1962; Zvereva, 1969, etc.).

Ural’s caddisflies were attracted the attention of specialists only in the last quarter of XX century. Information about Trichoptera from the Polar and the Nether-Polar Urals was published by O. Loskutova (2004), from the Nether-Polar and the Northern Urals was published by V. Shubina (1986, 2006), from the Northern and the Middle Urals was published by N. Pan’kov, V. Novokshonov and A. Krasheninnikov et al (Pan’kov et al, 1996; Pan’kov, 2000, 2004; Pan’kov, Novokshonov, 2003, Krasheninnikov, Starova, 2008, Krasheninnikov et al, 2008), from the Southern Urals – by V. Mey (1978), V. Boev, M. Bayanov and Y. Ostrovskaya (Boev, Bayanov, 1990; Boev, Ostrovskaya, 1998). The available data are summarized by Z. Spuris (1989) and V. Ivanov (2011).

According to current data, the caddisfly fauna of the Urals and neighboring territories has 168 species from 18 families. 63 species of Trichoptera are listed in the Polar and neighboring Yamal Peninsula, 80 species are listed in the Northern Urals. Seventy six species of caddisflies inhabit in the Middle Urals, 83 species are recorded in the Southern Urals.

The highest species diversity observed in the family Limnephilidae (65 species). Families Leptoceridae (27 species), Hydroptilidae (19 species) and Phryganeidae (13 species) are characterized by high species richness.
MAIN TRENDS IN EVOLUTIONARY TRANSFORMATIONS OF THE MALE GENITALIA IN THE AMPHIESMENOPTERA

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In the functional-morphological analysis the general trends of evolutionary transformations in the male copulatory apparatus of the lower ditrysian Lepidoptera similar to those in the order Trichoptera are revealed. The object of investigation, family Gelechiidae, is characterized by wide morphological diversity, combining in the genitalia the characters of lepidopterian ground plan and strongly specialized ones, which are result of deep morphological transformations. That allows to reconstruct the morphoclines for series of genital structures and outline main directions of genital tranformations. The main of general tendencies of the latter is the weakening of valvae (or cuculli) and partial or complete loss by them of function of female holding. Also it should be indicated ankylosing of skeletal structures of valvar and phallic functional morphological complexes, accompanied by fixation of aedeagus and, respectively, limiting of its mobility. During transformations a series of genital structures of IX and X abdominal segments (uncus, gnathos, juxta) have lost their function, typical for them in other families of Lepidoptera, and, respectively, transformations of the muscles, more often coming to their reduction.

Generally, results of investigations indicate that there are two interrelated and parallel evolutionary processes, on the one hand, the simplifying of some structures (reduction, weakening of sclerotization, fusion with other structures led to loss of function) and, on the other hand, formation of the compensatory morphological complexes, composed of functional analogs and new formations, partly or completely substituting the structures, which lost their function.
Russian Far East is rich with freshwaters, especially streams and rivers. The role of especially protected natural territories (PNT, “OOPT”) as refuges of unique far eastern fauna and as centers for scientific investigation of biota in natural condition is constantly increasing. Such untouched areas became really “natural islands of biota” keeping information about environment condition without anthropogenic influence. This situation provides scientists with unique possibilities for carrying out the inventory of biota in natural conditions. One of the interesting and important objects for taxonomic, faunistic and ecological researches is aquatic insects of the order Trichoptera. Being very sensitive to any pollution, they have a great importance as indicators of water quality and are included in the indicator complex EPT (Ephemeroptera + Plecoptera + Trichoptera) to estimate the water quality at biological monitoring. In this regard, investigations the fauna of caddisflies in untouched areas and their ecological preferences in natural condition are very important for fundamental knowledge of freshwater monitoring. Researches on the structure and longitudinal distribution of bottom communities give a valuable material and scientific base for development of the system of freshwater bioassessment.

The lists of caddisflies of 6 Natural Reserves located in continental part of Russian Far East South (Khinganski, Sikhote-Alinski, Lazovski, Ussuriski, Kedrovaya Pad, and Maritime Nature Reserves) and one located at island territory (Kurilski Nature Reserve) are presented in the report; rare and interesting species are noted. Some species are offered for including to Red Book of Russian Federation (Animals) and to regional ones. All species are considered as inhabitants of clean waters and their high tolerance values are ranged from 0 to 2 as a starting point. It is a future task to reveal tolerance value amplitude for these species in conditions of anthropogenic impact.
DISTRIBUTION OF FILTER-FEEDING CADDISFLIES (HYDROPSYCHIDAE: TRICHOPTERA) AND WATER QUALITY PARAMETERS IN MAE TAO CREEK, MAE SOT DISTRICT, TAK PROVINCE, NORTHERN PART OF THAILAND

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The distribution of adult of filter-feeding caddisflies (Hydropsychidae: Trichoptera) at Mae Tao creek, Mae Sot District, Tak Province, northern part of Thailand was sampled bi-monthly using portable black light traps from February to December 2011. Also, twelve selected physico-chemical variables (water and air temperature, electrical conductivity, total dissolved solids, pH, dissolved oxygen, alkalinity, ammonia-nitrogen, nitrate-nitrogen, orthophosphate, sulphate, and turbidity) were measured. Five sampling sites were selected along the creek. Totally, 1,065 male individuals were caught belonging to 5 genera and 20 species. *Cheumatopsyche carmentis* Malicky & Chantaramongkol 1997, *Cheumatopsyche dhanikari* Malicky 1979, *Cheumatopsyche globosa* Ulmer 1910, *Cheumatopsyche lucida* Ulmer 1907, and *Potamyia flavata* Banks 1934 were identified as the most common species of research area. Using correlation analysis, we evaluated the relationship between physico-chemical water quality parameters and biological data. The air temperature, turbidity, nitrate-nitrogen and ammonia-nitrogen were only strongly.
ANDREY MARTYNOV,
ENTOMOLOGIST AND PALEOENTOMOLOGIST

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Andrey V. Martynov (1879–1938), the distinguished Russian entomologist, laid the foundations of modern entomology and palaeoentomology. In addition to the outstanding contribution to the systematics of the caddisfly, he created a system of insects and a picture of their evolution, which largely retained their values up to the present while continuing to encourage their further development and improvement. At the same time, Martynov began the study of fossil insects of the USSR and created a team of palaeoentomologists on such forward-looking basis, that in the second half of the twentieth century, this group became the world leader in palaeoentomology, and by the end of the century gave rise to the paleoentomological booming worldwide. Now the study of fossil insects are no longer exotic, but one of the leading topics of paleontology with an extensive taxonomic research products as well as the undoubted theoretical and practical importance (the theory of evolution, the dynamics of biological diversity, the reconstruction of past conditions, the correlation and dating of sediments, etc.).
PROGRESS ON USE OF DNA BARCODING FOR TRICHOPTERA LARVAL ASSOCIATIONS OF THE CHURCHILL (MANITOBA, CANADA) AREA

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The North American Trichoptera larvae are poorly known at the species level. This study focused on morphological diagnoses for larvae occurring in the Churchill, Manitoba area. The current DNA barcode library of Trichoptera larvae (available on the Barcode of Life Data System) was utilized to develop morphological diagnoses, photographs, and an appropriate taxonomic key to facilitate larval species analyses in the area. We were able to separate 63 larval taxa within the 92 Churchill area Trichoptera. The use of DNA for associations of unknown larvae with known adults proved relatively rapid and successful. This method should accelerate the state-of-knowledge for North American Trichoptera larva.
THE POPULATION AND GENETIC STRUCTURES OF AQUATIC INSECTS ESTABLISHING THEMSELVES IN A NEWLY CONSTRUCTED HABITAT

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The course of water flow in almost all Japanese rivers has been controlled by the construction of artificial riverbanks. In addition, in order to prevent flooding, maintenance work such as gravel removal from the riverbed must be regularly conducted. As a result of such works the gradient of the river banks on either side are far steeper, significantly altering the type of habitat available. So, the diversity of organisms inhabiting the region of water’s edge has been greatly reduced.

From this background, in the basin of Japanese longest river, the Chikuma-gawa River, a government nature restoration project was undertaken to create a new naturally profiled shallow riffled riverbed. As such, along this newly restored riverbed, we have been monitoring the progress of their establishment of species in the newly constructed habitat, focusing on such things as: what kind of species of aquatic insects or benthos establish themselves? In what order? And, we also monitored progress with respect to the temporal evolution of the genetic structure of 3 dominant aquatic insect species, in this watershed region; two mayflies (isonichiid *Isonychia japonica*, heptageniid *Epeorus l-nigrus*) and a caddisfly (stenopsychid *Stenopsyche marmorata*).

As a result of our research, it was revealed that the establishment of both species of mayflies (their life styles being respectively characterised as “swimmers” and “gliders”) to the newly formed habitat was comparatively faster than that of the stenopsychid caddisfly (it being characterised as a “net-spinner”). In addition, the genetic diversity of established individuals to the newly constructed habitat was of the same degree as those inhabiting the control sites in surrounding areas.
MONITORING OF PRIMORSKY REGION FRESHWATER RESOURCES BY PUBLIC ECOLOGICAL AGENCIES (PEA)

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During the last decades freshwater of Primorsky Territory has been under intensive anthropogenic impact. Volunteers of Scientific-Public Centre «Clean Water» (CWC) established in 2003 are carrying out water quality monitoring. The net of public environmental agencies (PEA) includes about 50 PEA and covers Primorsky Territory from Vladivostok to Amgu and Bikin Rivers. The members of PEA are schoolchildren, teachers, students, and citizens who are eager to protect the unique nature and rivers of the region. Results of the public freshwater monitoring are being presented at the annual Far East Ecological Conference of Students and Schoolchildren «Man and Biosphere» and passed to corresponding government managements.
THE TRICHOPTERA OF KAZAKHSTAN: REVIEW

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Review of Kazakhstan caddisfly fauna has been prepared for the first time based on literature data and results of own authors researches. Currently 133 species of caddisflies of 57 genera and 17 families are known for Kazakhstan. The most diverse families are Leptoceridae, Limnephilidae, Hydropsychidae, Glossosomatidae, and Rhyacophilidae which include 20, 19, 16, 9, and 9 species, respectively. In total, these five families’ species account for 55% of total biodiversity within Kazakhstan caddisfly fauna. For families Psychomyiidae, Hydroptilidae, Apataniidae, Lepidostomatidae, Phryganeidae, and Polycentropodidae, 4–8 species are known, and for families Philopotamidae, Ecnomidae, Stenopsychiidae, Molannidae, Brachycentridae, and Goeridae merely 1–3 species. The largest number of species is known from Southern (70 species) and Eastern (69 species) Kazakhstan, because aquatic entomofauna in the regions and neighboring territories is better studied. Also, these regions are characterized with the most diverse environments: from semi-desert plains to alpine meadows. Generally, Kazakhstan caddisfly fauna is poorly studied; and discoveries of both species inhabiting neighboring territories and new species are expected in Kazakhstan.
VENATION REDUCTION IN MESOZOIC CADDISFLIES (TRICHOPTERA)

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The venation of fore wings by Mesozoic caddisflies is supposed to be reduced according to two trends. The first trend concerns the Dysoneuridae Sukacheva, 1968, and Baissferidae Sukacheva, 1968 families that are known in the Jurassic and Cretaceous of Germany, Russia and Mongolia; it is not related to the changes in the size of their bodies. The reduction was performed by merging of veins, or their desclerotisation, or disappearance (forks F1 and F2 may serve as examples). Among recent caddisflies, the Kokiriidae Riek, 1968 family is close to Mesozoic ones because they do not have F1 and F4 forks in their fore wings, as well as the whole venation patterns are similar in both groups. The second, traditional trend presumes the decrease in body size. Thus, caddisflies of Taymyrelectronidae Botosaneanu et Wichard, 1983 family have a common field lacking any venation in their fore wings instead of DC, MC, and TC cells.
PECULIAR HUNTING BEHAVIOR AND MANDIBLES MORPHOLOGY OF SOME HYPORHEIC *RHYACOPHILA* LARVAE (RHYACOPHILIDAE: TRICHOPTERA)

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Larvae of most *Rhyacophila* live in fast-flowing streams and their forelegs become raptorial form to grasp animal prey. However, members of the *nigrocephala* species group (i.e., *Rhyacophila nipponica*, *R. shikotsuensis*, *R. kawamurae*) live in hyporheic habitat at sand and gravel river beds, which is peculiar among *Rhyacophila* species. In the present study, we observed the hunting behavior of the *nigrocephala* species group larvae (i.e., *R. nipponica*, *R. shikotsuensis*, and *R. kawamurae*) comparing with other three *Rhyacophila* species (i.e., *R. niwae*, *R. brevicephala*, and, *R. sp. RC*) using small aquariums. We also compared body parts (i.e., forelegs and mandibles) of *nigrocephala* species group with the other three.

The larvae of *R. niwae*, *R. brevicephala* and *R. sp. RC* wielded their raptorial forelegs and grasped their prey on stone surface or wall of aquarium. However, the larvae of *nigrocephala* species group caught prey by opening mandibles widely but did not grasp prey by forelegs. In hyporheic habitat, there was not sufficient space to wield their forelegs to catch prey. Therefore, the usage of mandibles would be effective hunting method as hyporheos. The larvae of *R. brevicephala*, *R. niwae*, and *R. sp. RC* adopt the hunting method to catch prey by raptorial long forelegs. Three species of the *nigrocephala* species group larvae have shorter and narrower forelegs than other species. However, these larvae enable to open their mandible in wider angles, since the point of articulation on mandibles located at the outside of their basal edge.
DIVERSITY AND SEASONAL OCCURRENCE OF CADDISFLY LARVAE IN MAE KLONG SUB-WATERSHED IN KANCHANABURI, WESTERN THAILAND

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Diversity and seasonal occurrence of caddisfly larvae were investigated from six sites in western Thailand, including sites in Huai Pakkok, Huai Kayeng and Hui U-Long streams in Mae Klong subwatershed. The study extended during May, September 2009 and January, March 2010, and they included both the wet season and dry season. Twelve physico-chemical parameters of water were also measured during specimen’s collection. During sampling period, a total of 2,430 individuals were collected. Eleven families of caddisflies were found: Hydropsychidae, Calamoceratidae, Philopotamidae, Odontoceridae, Helicopsycheidae, Hydropsychidae, Hydroptilidae, Goeridae, Polycentropodidae, Lepidostomatidae and Leptoceridae. Hydropsychidae had the best taxonomic knowledge and the most abundant, representing 9 species and 63 % of the total number of individuals, respectively. The study indicated seasonal different of both caddisfly species and number which dry season showed higher number of species richness and species abundant. Huai Kayeng stream showed the highest number of species richness and species abundant. Results of some physico-chemical parameters classified streams in Mae Klong sub-watershed to be type 2 to 3 of national standard of surface water quality (Notification of National Environmental Board of Thailand no. 8 B.E. 2535) indicating fair to good water quality.
FIVE NEW SPECIES OF THE GENUS CHEUMATOPSISCHE
(Trichoptera: Hydropsychidae)
FROM THE PHETCHABUN MOUNTAINS, THAILAND

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Five new species of the genus Cheumatopsyche (Trichoptera: Hydropsychidae) from the Phetchabun Mountains, Thailand are described and illustrated. The national parks and wildlife sanctuaries in the Phetchabun Mountains are recognized as areas with a high density of endemic species deserving protection. Four new species of Cheumatopsyche have been found in Phukhieo Wildlife Sanctuary, Phu Kradueng National Park and Thung Salaeng Luang National Park; a fifth new species of Cheumatopsyche has been found in Phu Kradueng National Park. Describing hydropsychid species is important not only to study diversity and distribution but also to facilitate eventual descriptions of larvae for use in freshwater biomonitoring programs to detect pollution.
PHYLOGENY OF THE MICROCADDISFLIES BASED ON GENE SEQUENCE DATA: A PRELIMINARY ASSESSMENT (TRICHOPTERA: HYDROPTILIDAE)

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Hydroptilidae is the largest family in the order Trichoptera, including 75 genera and ~2,000 species, distributed among 6 subfamilies. Currently, many relationships within the family are not well defined and have not been addressed since 1979. Recently, the subfamily Ptilocolepinae was elevated to family status, creating additional uncertainty about relationships. Using gene sequence data, the first hydroptilid phylogeny based on a modern molecular-based approach was inferred. COI, D1-3 rRNA, and CAD sequences were obtained for a subset of the genera representing the taxonomic diversity in the family. Data were analyzed using Bayesian inference, maximum parsimony, and maximum likelihood. Although sampling at this point was limited in some taxa, preliminary results showed support for the monophyletic status of several genera and subfamilies. The next phase is to collect additional gene sequences and to gather additional important species, in particular members of the subfamily Stactobiinae.
A REVIEW OF THE NEOTROPICAL CADDISFLY GENUS LEUCOTRICHIA (TRICHOPTERA: HYDROPTILIDAE)

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Leucotrichia (Trichoptera: Hydroptilidae) is endemic to the New World, with the greatest species diversity occurring in the Neotropics. The genus currently contains 29 species, including 1 known from Dominican amber. The systematics within this genus have not been addressed since Flint established 2 main species-groups in 1970. Since then, many new species have been collected but are still in need of formal descriptions. Some of the existing descriptions and illustrations are inadequate, which can lead to confusion and inaccurate taxonomic conclusions.

For this research, we have closely observed morphological characters of specimens from each species in this genus and will provide comparative descriptions, detailed illustrations, and a key for all new and previously described species.
THE LARVAL CHARACTERS OF EONEURECLIPSIS MONTANUS (TRICHOPTERA: PSYCHOMYIIDAE), AND THE OTHER GENERA OF THE PSYCHOMYIIDAE IN JAPAN

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Six genera of Psychomyiidae (Trichoptera) are hitherto known from Japan: Psychomyia, Tinodes, Lype, Metalype, Eoneureclipsis, Paduniella. Molecular evidence is presented to support the relationship between adult and larvae of Eoneureclipsis montanus from Japan. I present illustrations of the larval characters of Eoneureclipsis montanus and the Key to genera of mature larvae of Japanese psychomyiid.
HYDROPSYCHE ANGUSTIPENNIS LARVAE AS INDICATORS OF CONTAMINATION BY HEAVY METALS OF SOME STREAMS OF LODZ AGGLOMERATION

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In the 19th century the Łódź agglomeration was located in a place where a lot of small rivers and streams provided water for textile industry. In the result all this streams and rivers have been modified and that has lead to habitat and water quality degradation. Now some of these “urban streams” are planned to return towards more natural conditions. A biomonitoring technique was employed to assess metal contamination of five degraded urban streams in the Lodz agglomeration. Heavy metals (Zn, Cu, Fe, Cd, Pb, Cr, and Mn.) were determined in a whole body of Hydropsyche angustipennis which larvae was the only caddis living in all investigated 5 streams. The same metals as well as other environmental variables were investigated in sediments/waters of urban streams and in a stretch of a similar size of the Grabia River (control group) outside but still in the vicinity of the Lodz agglomeration.

The results of our research demonstrated different levels of contamination of urban streams and a correlation between environmental and larval tissue concentration of heavy metals. A significant difference among sites was observed for metal concentrations in H. angustipennis larvae bodies and larvae responses to metals were time specific. The highest content of heavy metals inside the larval body was often observed in the spring months although differences between different heavy metals concentration in the body of larvae collected in different streams and at different sampling stations in the same stream exist. Differences in heavy metal concentration in larval bodies indicate that Hydropsyche larvae are potentially good biological indicators of metal pollution.
The Jurassic and Cretaceous non-marine sediments in the Transbaikalian area are rich in localities with abundant findings of transportable larval caddis cases. Moreover, the cases often occur in almost mute deposits. Material of a particular larval case depends on the presence and availability of a required material within the medium of larva reach. This kind of dependence was not formerly considered in respect to fossils. Based on the Transbaikalian territory as a model one, we compare the data on case composition (main material, presence and type of admixtures) within a sequence of localities, derived from stratigraphic and other data with the account for the facies composition of the fossil-bedding sediments. In this sequence, we follow a gradual decrease in volcanic activity in the region, planation of relief and stabilization of terrigeneous material removal to the sedimentation basins, and the increase in nutrients concentration in water bodies during Upper Jurassic and Lower Cretaceous. The sedimentation basins are changing from the calderas or dam volcanic lakes to large reservoirs in the plains, either periodically buried with volcanic ash, or ashless ones (Unda-Daya, Turga, and Kutja groups of localities, respectively).

Under these changing conditions, the material of larval cases would show tendencies of: (i) substitution of the terrigenous basic material by the plant fragments; (ii) increasing contribution of animals-derived (zoogenic) material (shells and shell fragments of mollusks and ostracods, fragments of fish bones, etc.); (iii) diversification of cases as a result of the previous events. Our observations are found to be in full agreement with the two latter items, and are fully opposite to the former. The facies analysis has shown that cases burial in the Unda-Daya group happens only in the finest tufaceous argillites and the material of cases all has the vegetal origin, while in other groups of localities, the cases occur in coarser facies, even in sandstone. A recent observation explains the puzzle: a new Kulinda locality coeval to Unda-Daya group but form by coarse deposits, revealed caddis cases of diverse, mainly terrigeneous material. This example witnesses that it is the very local environments and not a general sedimentary situation which define construction material of caddis cases.

The work was supported by the Russian Foundation of Basic Research, project # 11-04-01712 and the Program of RAS Presidium “Origin of the Biosphere and Evolution of Geo-Biological Systems”.
The loss of biodiversity is one of the most important environmental problems in the world in these days. Biological diversity of caddisflies in Lithuania or particular regions, protected areas of the country, in different water bodies is important in examining current ecological processes and in predicting possible changes in global environmental conditions. The main aim was to summarize all data about caddisfly species occurring in Lithuania. Another purpose was to estimate distribution, frequency and dominance of caddisfly species in our country.

The material of caddisfly larvae was collected in 33 rivers by standard kick-sampling method with a hydrobiological dip net at each study site. The investigations on caddisfly adults were performed in 115 study sites in Lithuania using entomological nets and light traps of different construction. Literature records were examined also. Dominant and frequent caddisfly species were estimated. Species diversity in different habitats was calculated.

Currently, the caddisfly species list in Lithuania comprises 174 species and 1 subspecies representing 18 families and 71 genera. Most, 33% (58 species) of Lithuanian caddisfly fauna belong to Limnephilidae family. The most common Lithuanian caddisfly species (found in more than 25% of study sites) were *Limnephilus flavicornis* F., *L. rhombicus* L., *L. griseus* L., *Glyphotaelius pellucidus* Retz., *Phryganea grandis* L., *Hydropsyche pellucidula* Curt. The rarest caddisfly species, which were found in a single locality, belong to Hydropsyridae, Polycentropodidae, Rhyacophylidae, Hydropsychidae, Phryganeidae, Leptoceridae and Limnephilidae families. Nevertheless, 175 caddisfly taxa should not be considered a complete species list in Lithuania. Some other species can also be expected in our country because of their wide distribution in Europe and occurrence in neighbouring countries: Poland, Latvia, Belarus.

Caddisfly distribution is conditioned by availability of suitable water bodies and presence of different habitats for larval development. Consequently, it is important to identify the parameters of water bodies which can influence the distribution of different caddisfly species.
FIRST RESULTS OF THE CRDF-FEBRAS PROJECT
«TRICHOPTERA BIODIVERSITY IN RUSSIAN FAR EAST
AND SIBERIA (EAST PALAEARCTIC): BIOGEOGRAPHY,
PHYLOGENY, EVOLUTION, AND USE IN FRESHWATER
BIOMONITORING»

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The CRDF-FEBRAS Project “Trichoptera Biodiversity in Russian Far East
and Siberia (East Palaearctic): Biogeography, Phylogeny, Evolution, and Use
in Freshwater Biomonitoring” (CRDF Award № RUB1-2995-VL-11) started in
May 2012 as one of three projects of the pilot CRDF-FEBRAS grant program. The
first task of the Project is an inventory of the caddisfly fauna. Caddisfly collections
were accomplished on several field trips from May until October 2011. The collecting
area covered 11 districts and 50 localities of the Primorsky Region. Springs, small
streams, large rivers, ponds and lakes, wetlands, and marshes were visited by Russian
and American members of the international Project team. Most of the studied water
bodies were relatively clean, unpolluted waters. The List of collected species
includes 123 species from 57 genera and 23 families, about ¼ of the Siberian and Far
East Russian Trichoptera fauna. About 350 samples were taken for DNA analyses
and these samples have been sent to the Beijing Genomics Institute in Shenzhen
for sequencing. A 658 nucleotide fragment of mitochondrial COI will be sequenced
and submitted to the Trichoptera Barcode of Life initiative http://trichopterabol.org/.
The most interesting records are as follows: one new species of Agapetus and one
of Triaenodes, a new species for the continental part of Russia (Anabolia appendix),
and a new species for Primorye (Adicella longiramosa). Some previously unknown
females have now been associated with their identifiable males.
The retrospective of trichopterology research and freshwater study developing in Russia and especially in Russian Far East is presented.
In the external morphology of caddisflies, the type and distribution of sensilla, spines and spurs play an important role. They differ in morphology, abundance, location, and context, providing useful information on the relationship of caddisfly taxa. Ordinary non-specialized trichoid, bristle-like sensilla (usually named macrochaetes, macrotrichia) are the most numerous innervated cuticular derivatives covering different body parts. The ultramorphology of non-specialized sensilla trichodea, spurs and spines of some representatives of Amphiesmenoptera as well as some holometabolian orders are discussed.
The internal genitalic complex of caddisfly females consists mainly of the following structures: vagina, spermatheca with spermathecal sclerite, bursa copulatrix, median oviduct, and some additional ducts which connect these organs or serve to other purposes: accessory gland duct, spermathecal duct, pre-spermathecal diverticulum (present only in Integripalpia and Rhyacophilidae and absent in all other Trichoptera and other insect orders), and spermathecal gland. The presence, development, position, and morphology of internal genitalic structures are reliable markers for reconstruction of phylogenetic relationships. The shape and size of these structures, the configuration of the spermatheca and its outer and inner microsculptures are also useful for identifying genera and more inclusive taxa and even for recognizing species. The morphology of the trichopteran female internal genitalic complex is compared within the order with accent on Limnephiloidea.
PROJECT PRESENTATION: THE DRUSINAE (INSECTA: TRICHOPTERA) IN A WORLD OF GLOBAL CHANGE: BRIDGING BASIC AND APPLIED RESEARCH IN A HIGHLY SENSITIVE AQUATIC INSECT GROUP

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Subfamily Drusinae is divided into 8 genera: Anomalopterygella, Cryptothrix, Drusus, Ecclisopteryx, Hadimina, Leptodrusus, Metanoea and Monocentra with about 100 described species. The genus with highest diversity is Drusus with 81 described species, whereas Anomalopterygella, Cryptothrix, Leptodrusus, Monocentra and Hadimina are monospecific genera. Drusinae species usually inhabit springs and crenal sections of mountain streams and rivers with low temperatures and small annual amplitudes. Patchy distributions and isolation of populations are the reasons for the high diversity and high number of endemic species in subfamily Drusinae. Therefore, this subfamily is very interesting for taxonomic, phylogenetic, phylogeographic and evolutionary studies.

This year we launched the project: “The Drusinae (Insecta: Trichoptera) in a world of global change: bridging basic and applied research in a highly sensitive aquatic insect group”. Coordinator of the project is Professor Johann Waringer from the University of Vienna. Trichopterologists from several countries are included in the project. They will perform collections in the field (larvae, pupae, adults, longterm water temperature data), descriptions of morphological features of undescribed larvae and undescribed taxa, DNA amplification and sequencing, phylogenetic analyses and species distribution modelling. The project has three main objectives. First, describing of morphological features of unknown larvae of 59 species from subfamily Drusinae and construction of identification keys. Second, to explore the phylogeny of Drusinae in a combined morphological and molecular context. We will test if key innovations (e.g., advanced feeding types) together with Pliocene–
Pleistocene climatic change, promoted diversification and speciation. To test this hypothesis we need to increase the number of taxa included in our already established phylogeny of 28 species. We will include morphological data sets of larvae and adults as well as further molecular markers important for the reconstruction of Drusinae phylogeny. Third, analyses of developmental temperature data and species distribution modelling will provide valuable basic information for understanding high mountain biodiversity under two different future climate scenarios. This research project will continue in the next three years.
Today’s distributions of faunal groups reflect historic events — geological and evolutionary, as well as dispersals, extinctions and chance events. To what extent has each of these contributed to the hydroptilid faunas of mainland Australia, Tasmania, New Zealand, New Caledonia and Vanuatu? This question is explored by comparison of the faunal composition, geology and geography of Australia and these SW Pacific islands. What insight can we glean from other groups, flora as well as fauna?
CURRENT KNOWLEDGE ABOUT CADDISFLIES (TRICHOPTERA) IN THE NORTH OF THE FAR EAST OF RUSSIA

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First (fragmentary) data on fauna of caddisflies in the North of the Far East were published at the beginning of XX century. Regular researches started only in the 70s. And by now 120 species from 47 genera of 17 families have been revealed on the territory. Originality of fauna appears on the genus and to more extent on the species level. Northern latitude limits distribution of 4 genera (Holocentropus, Grensia, Onocosmoecus, Apataniana) in the region. Of 26 original species 11 are widely spread in the North (Arctopsyche ladogensis, Holocentropus picicornis, Asynarchus contumax, A. lapponicus, Dicosmoecus obscuripennis, Grensia praeterita, Limnephilus argenteus, L. borealis, L. major, Apataniana tschuktschorum, Molanna albicans); 7 inhabit Kamchatka only (Hydropsyche smetanini, Phryganea grandis rotundata, Limnephilus abstrutus, L. dispar, L. externus, L. politus, Philarctus bergrothi); 2 – in the Okhotsk–Kamchatka region (Onocosmoecus unicolor, Molanna angustata); Micrasema extremum, Lenarchus expansus and Limnephilus samoedus are restricted to near-to-arctic latitudes, Rhyacophila kolymensis is restricted to the Upper Kolyma basin; Micrasema gentile is primarily distributed in Chukotka. High coefficients of faunal community in caddisflies from northern and southern parts of Far East support the idea of the earlier existed common habitat. The western terrestrial biogeographic boundary of the northern Far East includes right-bank tributaries of the Kolyma river (however, there exists a different opinion concerning geographic boundary).

Species of Limnephilidae (48 and 71 species, corresponding to 40,3 and 18,9 %) and Leptoceridae (12 and 71 species – 10,1 and 18,9 %) families similarly dominate in the composition of the northern and southern fauna of caddisflies. Specific impoverishment of genera; maximum diversity of areal types (9); sharp impoverishment of palaearchearctic species complexes ( 6.5 times); predominance of holarctic species (which share is 3.7 times increased), reinforcement of eastpalaearctic group, widely spread palaearctic species and species with local distribution; presence of endemics (Rhyacophila kolymensis, Hydropsyche smetanini, Phryganea grandis rotundata) characterize the caddisflies’ fauna of the Far East. The Okhotsk–Kamchatka region is a place of the raised taxonomic and biogeographic diversity of the caddisflies’ fauna in the North of the Far East.
According to the materials of the hydrobiological survey (basin of the river Tym; June 25–July 8, 2010; 130 samples of benthos, 48 samples of drift) 22 species of caddisflies from twelve families are recorded in the benthos, and 11 species of caddisflies from six families are recorded in the autochthonous drift. The change in species composition, structure and quantity characteristics of the caddisfly assemblies in the longitudinal section of the river are shown in this work. At a coefficient of abundance (Paliy, 1961) *Brachycentrus americanus* Banks is a dominant of the epirithral. In metarithral dominants are absent, and *Arctopsyche palpata* Martynov + *Ceratopsyche orientalis* Mart are the subdominants. In hiporithral *Ceratopsyche orientalis* Mart. dominates. The highest rates of biomass (1.31 g/m²) were recorded in epirithral, the proportion of caddisflies from the total benthic invertebrates biomass is 43.12% here. In downstream the importance of this group in the formation of the biomass of benthic communities is reduced. In metarithral it is 5.1% (0.25 g/m²), in hyporithral – h 9.1% (0.13 g/m²).

In the drift the caddisflies’ biomass ranged from 0.4 to 74.6 g/m² per day. The maximum values are marked on the long (more than 10 km) rift of the epirithral. A significant day-time caddisflies drift, probably having a passive character, aided by tight soils and high water-stream turbulence is registered here. In other areas the caddisflies drift had a pronounced diurnal periodicity: the beginning of it was observed after sunset and fading at dawn. However, in shady areas in the upper reaches of the river the caddisflies drift began earlier than in open areas of riverbed downstream. In addition, in the daily periodicity of the drift there was noted another peculiarity such as decrease of the drift after midnight and its second peak in the predawn hours. Perhaps this feature, as well as the general one, is connected with adaptation of caddisflies to avoidance of being eaten away by predators, such as the Siberian trout moustache, whose feeding activity rises at night hours.