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THE 24TH POLISH MALACOLOGICAL SEMINAR

SEMINAR REPORT

Our 24th Seminar (Not long before the 25th Seminar now!) took place on April 2nd–4th 2008 in Gdynia – the first time we had our Seminar in a big city, but the hotel and at the same time the conference venue was less than 100 metres from the sea. The organisers were The Department of Marine Geology, State Geological Institute and The Association of Polish Malacologists. The actual people who did the work were: our colleague from the Department of Marine Geology JARMILA KRZYMIŃSKA and her co-workers: MARTA NEUMANN, DOROTA KAULBRASZ and DOROTA KOSZTA MAROŃ. Good girls! The problem is that everybody likes coming to the Seminars but only very few like to organise them. Great thanks!

The city of Gdynia is situated on the Baltic Coast and, though technically easy to get to by train, bus, car or whatever, it is rather far from some malacologically populated places, like Cracow, Wrocław or Katowice. Accordingly, some participants grumbled (they always do). We all stayed in a place called The Seaman's Home which also had a conference room. Its staff seemed not to be used to feeding people outside the season as a result of which we were given pork chops three times over but at least they were good pork chops. Keeping all the people in one hotel has become a tradition now, and I'll never stop praising the arrangement. It favours informal discussions, various forms of socialising, organising late night micro-workshops like the one we had – in the hotel lobby – on the polymorphism in *Cepaea*. The proximity of the sea could not be resisted. Though the weather was not exactly beautiful all the time, and the Baltic has little to offer by way of molluscs, some people skipped some lectures and went for walks instead. Some terrestrial snails could be found in the suburban forests – a few populations of *Cepaea nemoralis* were scored for colour morphs. Another temptation was the fact that Gdynia is very close to Gdańsk – a very old and beautiful city which, on this particular occasion, also caused some escapes from the sessions. The Seminar excursion went to the Marine Aquarium and to the research ship "Baltica" and even the most foresworn terrestrial malacologists did not blame the Organisers for not offering them a terrestrial trip.

The official opening of the seminar (speeches and so on) was brief – 30 minutes only (which was good) – followed by the first session. In all there were five ses-

Fig. 1. One of the Seminar posters. Photo B. M. POKRYSZKO

Fig. 2. Participants of the 24th Seminar during the Seminar Dinner. Photo B. M. POKRYSZKO

sions of lectures plus one poster session. The programme contained 33 oral presentations, and most or even all participants were there. Like during many of the previous seminars most absentees were our wicked neighbours from across one border or another; they always submit their abstracts and then… nothing happens. Their abstracts were in the abstract book (the total number of abstracts in it was 65) and are included here. The programme did not contain a list of posters, but there were quite many. Like last year, during the poster session each poster owner had to stand in front of their poster and explain to the audience what the poster was about (last year I thought it was because the chairman of the session doubted the quality of our graphics, now I know it was to prevent the poster authors from going to Gdańsk or for a walk). The number of participants and the number of presentations were widely disparate for the usual reasons: more than one author per presentation, more than one presentation per author, people without any presentations, presentations (included in the programme) without any people to them. Because of the usual business of coming later and/or leaving earlier and/or skipping some sessions the participants were very difficult to count. In all, there were about sixty people present, including one guest from the United Kingdom. Like during the previous Seminars, young people were many: master's or doctoral students, nice and bright kids who obviously still do not realise that malacology is not exactly a very profitable trade. On the other hand, some of the young people had in the meantime got their Ph. Ds. and even jobs which makes one a bit more optimistic.

Like during the last two seminars, to have a picture of the variety of presented topics, I have attempted as-

Fig. 3. President of The Association of Polish Malacologists (left) and the Main Organiser of the Seminar (right). Photo B. M. POKRYSZKO

signing papers to disciplines and compared the result with the last two seminars. Some presentations were difficult to assign to a discipline (some have been assigned to more than one in the Table), and I had to apply more than one division into categories.

No.	Discipline	Number of papers/posters		
		2006	2007	2008
1	Ecology	9	20	25
2	Life histories	9	7	7
3	Conservation	7	2	4
4	Fossil molluscs	5	6	4
5	Applied malacology	4	2	5
6	Parasitology	3	3	6
7	Faunistics	2	2	4
8	Methodology	2	3	
9	Physiology	2	1	
10	Structure (histology, cytology, shell)	2	0	
11	Variation	0	2	3
12	Systematics	2	2	4
13	Molecular genetics	1	3	1
14	Collections			3
15	Others (general, behaviour, archaeology)	2	3	3

The only really significant trend is the increasing number of ecological papers and posters. Some such presentations were about alien species in our fauna (a very fashionable topic), and most conservation papers were a result of the 2007 inventory of Annex II species of the EU Habitat Directive. Most of the parasitological presentations in the Table never actually became presentations, as they were never presented (authors: our wicked neighbours who send in their abstracts and then fail to materialise). The division in the table disregards whether the main character in the story was a snail or a bivalve or where it lived (land or water). The snail:bivalve ratio among the presentations was 1.54:1 (compared to 1.67:1 in 2007 and 2.38:1 in 2006), and the land:water ratio was 0.91:1 (0.54:1 in 2007 and 1.13:1 in 2006). No multivariate analysis is required to see that the snail:bivalve ratio keeps changing in favour of bivalves (is it easier to get a grant for bivalve research?). For a time the interest in aquatic malacology appeared to display an increase tendency but now the land:water ratio has grown again. These two seemingly opposing trends (increase in bivalves and decrease in things aquatic) do not mean that I can not count or that some bivalves have become terrestrial – I have checked and everything fits.

There was one official social event: the banquet on the third day. The banquet was very good – when looking back at all the foods and drinks we have consumed during the long history of the Seminars I have an impression that there is some kind of banqueting contest going on, and all our Organisers are very ambitious. Unofficial social events were many.

There next Seminar will be organised by the Poznań malacologists who volunteered and did not have to be persuaded.

Our Abstract Book was in Polish, with a piece of the Baltic and a *Cardium* shell on the cover. Brief abstracts in English are presented below; in most cases translated surreptitiously behind the authors' back, by Yours Truly.

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ABSTRACTS OF THE 24TH POLISH MALACOLOGICAL SEMINAR, GDYNIA 2008

THE EFFECT OF SELECTED HABITAT FACTORS ON THE SHELL LENGTH OF *UNIO CRASSUS* PHILIPSSON, 1788 IN THE DRAWA AND ZBRZYCA RIVERS (POMERANIAN LAKELAND)

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The material (738 individuals of *Unio crassus*) originated from 46 localities in the rivers Drawa and Zbrzyca. In the section of the Drawa below lakes Lubie and Adamowo the bivalves were larger (mean length 47.38±8.7 mm) than those from the river section above the lakes (mean 40.0±6.6 mm), probably due to their diet enriched with lake seston. In the Zbrzyca River U. *crassus* was limited to a 7 km section in the middle course of the river; the size varied betwee the sites, from 43.4±5.8 mm in Miłachowice to 48.35±7.6 mm in Kaszuba and Rolnik.

MOLLUSCS OF THE BARLINEK-GORZÓW LANDSCAPE PARK

LUCJAN AGAPOW, IZABELA KRZYŻANOWSKA

Państwowa Wyższa Szkoła Zawodowa w Gorzowie Wielkopolskim

The Barlinek-Gorzów Landscape Park, established in 1991, is 20,285.54 hectares in area and the surrounding buffer zone is 22,272.85 hectares; its numerous lakes (55) connected by several streams occupy 1,020.34 hectares. Sampling in 2003–2007 revealed 46 species of gastropods (20 of them aquatic) and 18 species of bivalves.

NEW LOCALITIES OF THE VERTIGINIDAE IN THE ŚWIĘTOKRZYSKI AND MAZOVIAN REGIONS

JADWIGA ANNA BARGA-WIĘCŁAWSKA

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Studies of 2007 conducted within the Natura 2000 inventory in the Świętokrzyski region and the southern part of the Mazovian region revealed five new localities of *Vertigo geyeri* Lindholm, 1925 in the western part of the Świętokrzyskie Mts, six new localities of *V. genesii* (Gredler, 1856): five in the Świętokrzyskie Mts and one in southern Mazovia, four localities of *V. angustior* Jeffreys, 1830: two in the Świętokrzyskie Mts and two in southern Mazovia, and six localities of *V. moulinsiana* (Dupuy, 1849): four in the Świętokrzyskie Mts and two in southern Mazovia. Some of the localities are within nature reserves, some are in unprotected areas.

SNAILS OF POST-METALLURGY ENVIRONMENTS OF THE ŚWIĘTOKRZYSKI REGION

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The oldest mining and metallurgy region in Poland, using traditional technologies, is situated in the Świętokrzyskie Mts; the first metal mills were built in the Middle Ages. The aim of the study was to ascertain the composition and structure of gastropod communities in post-metallurgic environments. Thirty five gastropod species were recorded in 30 sites; the most common and abundant were: *Cochlicopa lubrica, Vitrina pellucida, Pupilla muscorum, Trichia hispida, Bradybaena fruticum, Discus rotundatus, Cepaea vindobonensis* and *Laciniaria plicata*. Rare species found in the sites were *Helicigona lapicida* and *Helix lutescens*.

VALUABLE MALACOLOGICAL COLLECTIONS AT THE FACULTY OF BIOLOGY, ADAM MICKIEWICZ UNIVERSITY IN POZNAŃ

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The newly formed unit at the Faculty of Biology, UAM, called the Natural History Collection, is to maintain and make available the existing collections and create new ones. The most important is J. Urbański's clausiliid collection with several hundred specimens from the area of the pre-war Poland and from the Balkan Peninsula. The collection of over 30,000 shells of *Helix pomatia* collected within more than 40 years from the whole of Poland is also valuable. The collection of bivalves and gastropods from Wielkopolska includes a few dozen thousands specimens, representing 71 terrestrial and 43 aquatic gastropod species and 18 bivalve species.

ECOLOGICAL ASPECTS OF THE UKRAINIAN VALVATID FAUNA

ALLA BOGACHOVA

Ivan Franko Zhytomyr State University

Twenty five valvatid species have been recorded from the Ukrainian territory. They represent the subfamilies Borystheniinae with the genus *Borysthenia* (4 species) and Valvatinae with the genera *Valvata* (7 species) and *Cincinna* (14 species). Stenoecious borysthenines are mainly fluviatile species found in the littoral of big rivers. Many species of *Cincinna* live in oxbows and small lakes (e.g. *C. piscinalis, C. falsifluviatilis, C. obtusa, C. dilatata, C. antiqua, C. skorikovi, C. chersonica*); *C. pulchella* and *C. macrostoma* inhabit small temporary ponds. Pure lakes harbour *V. pusilla, V. andreana, V. geyeri, C. dilatata, C. skorikovi, C. discors, C. piscinalis, C. klinensis*, as well as euryoecious *C. lilljeborgi, C. ambigua, C. antiqua, C. chersonica* and *C. depressa. V. spirorbis, V. planorbulina* and *V. cristata* are typical of well-vegetated river shores and small reservoirs. Euryoecious species constitute 76% of the Ukrainian valvatid fauna.

SHELL MORPHOMETRICS OF PREHISTORIC AND RECENT *UNIO TUMIDUS*

ZDZISŁAW BOGUCKI, MICHAŁ RADOMSKI, MAŁGORZATA OŻGO

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Biometrical analysis incuded 172 shells of *Unio tumidus* from a prehistoric settlement (4000–3000 BP) on Ptasia Wyspa on Lake Salęt Mały (Mrągowo region) located among fields, and 68 shells collected in 2007 in the littoral of that lake. Length, width, mass of the left valve, thickness and height/length ratio were analysed. The prehistoric shells were statistically significantly longer, higher and heavier, and also much thicker. The recent shells were less elongated. The biometrical differences must have appeared within the last 100 or 200 years, with intensification of agriculture.

A TALE OF TWO CITIES: VARIATION IN *CEPAEA* POPULATIONS IN SHEFFIELD AND WROCŁAW

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Shell polymorphism in *Cepaea nemoralis* has been studied in many places but rarely in urban environments. We have made samples across Sheffield and Wrocław and found no evidence of variation with habitat. Though the two cities are similar in size and range of habitats available, the Sheffield populations show a far greater variation in every genetic locus examined. Morph frequencies in the Wrocław populations are similar to those in the open, rural areas; the Sheffield populations resemble those in places with the "area effect". The differences relate to the different histories of the two cities: *Cepaea* populations have been in Wrocław for longer, they are larger and more continuous. Most populations in Sheffield have arrived within the last 20 or fewer years.

RECORDING *CEPAEA* SNAILS AND OTHERS IN SHEFFIELD

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Over the last 25 years, due to reduction in heavy industry and better pollution control, northern industrial cities in England, including Sheffield, have been subject to massive increases in their snail populations. The poster displays the results of sampling the larger helicids, including *Cepaea nemoralis* and *C. hortensis*. Some parts of the city, though apparently suitable, still lack *Cepaea*. The pattern of genetic variation suggests accidental transport of *Cepaea* by people. *Helix aspersa* and *Hygromia cinctella* have undoubtedly benefited from the much milder winters of the last 20 years.

LATE GLACIAL AND HOLOCENE SUBFOSSIL MOLLUSCS IN THE DEPOSIS OF THE REGA RIVER VALLEY

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Our preliminary studies included lithological and malacofaunistic analysis in four sites (depth 7–13 m). The profiles provided 1,333 shells representing species of three types of habitats: freshwater (88.37%), brackish (1.35%) and marine (10.28%). The most abundant were *Bithynia tentaculata, Valvata pulchella* and *Cardium glaucum*. Lithological studies combined with malacological analysis allowed to distinguish sedimentation environments during the late glacial and Holocene: in the bottom part silty, algal and detritus gyttjas with freshwater fauna of *Bithynia tentaculata, Valvata cristata, Lymnaea* sp., *Pisidium* sp. type, in the mid part brackish-marine deposits – gyttja intercalated with sand with *Cardium glaucum*. The top part in-

cluded gyttja of a high organic content, with freshwater species (*B. tentaculata, Valvata pulchella*).

CHANGES IN THE OCCURRENCE OF *PLANORBIS PLANORBIS* (LINNAUS, 1758) IN 1977–2007 IN ANTHROPOGENIC RESERVOIRS OF UPPER SILESIA

ANNA CIEPLOK

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In 1977–2007 the abundance of *Planorbis planorbis* decreased in some anthropogenic reservoirs of Upper Silesia. No significant effect of selected physico-chemical parameters and changes in the structure of aquatic habitats was found. Appearance of *Potamopyrgus antipodarum* seems to have a significant influence on the native fauna; the observed decrease in abunance of *P. planorbis* may be related to this phenomenon. In many of the studied water bodies the decrease in abundance of *P. planorbis* was accompanied by an increase in that of *Radix balthica*.

MALACOFAUNAL COMPONENT IN THE BENTHOS OF THE MID AND LOWER DRAWA RIVER AND ITS TRIBUTARIES

ROBERT CZERNIAWSKI, JÓZEF DOMAGAŁA, MAŁGORZATA PILECKA-RAPACZ

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The lower and mid sections of the Drawa River provide an ecological corridor between the Drawski Landscape Park and the Drawieński National Park. In our studies we paid special attention to the components of malacofauna which were especially sensitive to changes in aquatic environment. Samples were taken in 2007 from 19 sites. Three bivalve families (Unionidae, Sphaeriidae, Dreissenidae) and seven gastropod families (Lymnaeidae, Planorbidae, Neritidae, Viviparіae, Valvatidae, Bithyniidae, Ancylidae) were recorded.

FURTHER STUDIES ON THE DETERRENT EFFECT OF PLANT DERIVATIVES ON *DEROCERAS LAEVE*

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Katedra Metod Ochrony Roślin, Akademia Rolnicza A. Cieszkowskiego

In hothouse conditions the pest slug *Deroceras laeve* can mature in one month and then reproduce. Molluscicides are not always effective and thus new control means are sought. Infusions, decoctions and extracts from eight plant species were tested in the laboratory for their deterrent effect.

NEW LOCALITIES OF *VERTIGO ANGUSTIOR* JEFFREYS, 1830 IN MAŁOPOLSKA

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Vertigo angustior is among species protected in all countries of the European Union. Earlier data on its distribution in Poland are incomplete and insufficient to plan a protection strategy. Samples were taken in 2007 in potential habitats in Małopolska. *V. angustior* was found in ten localities: six in the Beskid Niski, three in the Beskid Sądecki and one in the Vistula River valley. In the mountains the habitats were eutrophic montane fens of small area. The habitat in the Vistula valley was a sedge bed.

ECHINOSTOMATID TREMATODES OF FRESHWATER SNAILS AS BIOINDICATORS OF WATER QUALITY

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The aim of the studies was to assess the applicability of freshwater snail trematodes as indicators of the condition of the environment. Samples were taken from three water bodies near Kiev. The most common and abundant snail was *Viviparus viviparus*. Echinostomatids use snails as the first and second intermediate hosts. The prevalence of infection with the trematodes was higher in undisturbed habitats (30–57%) than in anthropognic habitats (5–10%). It indicates that the trematodes may be used as inicators of water quality.

ADAPTIVE SIGNIFICANCE OF LIFE STRATEGIES OF FRESH-WATER PROSOBRANCHS – VIVIPARIDAE

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Iteroparous, dimorphic, ovoviviparous viviparids are a good model in the studies of life strategies of freshwater gastropods. Observations on a population of *Viviparus viviparus* of more than ten years made it possible to assess spatial and temporal changes in its fecundity. An attempt was made at ascertaining if ovoviviparity could affect the populations of *V. viviparus*.

SLUG BODY MASS AS A PARAMETER FOR ASSESSMENT OF THE QUANTITY OF CONSUMED FOOD

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Laboratory experiments on the pest slug *Deroceras reticulatum* were aimed at ascertaining if the body mass could be used to estimate the damage caused by the slugs. Individuals of *D. reticulatum* starved for 24 hr were placed at 20°C, 15°C and 0°C and weighed dry and after 7 seconds immersion in distilled water. Then they were placed in containers with 2 cm diameter circle of cabbage leaf. All measurements were repeated after 4 hrs. The body mass of fed and starved slugs did not differ significantly, the mass increment did not differ significantly either. The body mass cannot be used as an indicator of the harmful effect of the slugs.

DIVERSITY OF AQUATIC MALACOFAUNA OF THE FLOODPLAIN OF THE LOWER BUG RIVER

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Species richness, diversity and structure of malacocoenoses were analysed on an over 100 km section of the Bug River valley. 121 water bodies were sampled in 2005–2007. Thirty seven gastropod species and 18 bivalve species were recorded. The number of species per site ranged from 1 to 27 (considering molluscs found as shells only, it was 1–31). Forty two permanent water bodies held most molluscs recorded from the area (51 species). Often drying (59) and temporary (20) water bodies harboured 37 and 35 species, respectively. The Shannon-Weaver index ranged from 0 to 3.88, being the highest in permanent water bodies. The abundance was high in temporary water bodies; the three categories of water bodies differed in the dominance structure of their malacocoenoses.

LABORATORY STUDIES ON THE CIRCADIAN ACTIVITY OF *ARION LUSITANICUS* MABILLE USING IMAGE RECORDER

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Arion lusitanicus is an invasive species in Poland; its expansion in the country started in the 1990s. It is a serious garden pest. Behaviour of the slug was registered in a climatic chamber with image recorder and infrared cameras. The observations lasted 72 hrs at two temperatures: 10 and 16°C. The slugs were more active during the night; they spent most of the time in shelter and the shortest time- feeding. Their activity was lower at 10 compared to 16°C.

TERRESTRIAL GASTROPODS FROM HOTHOUSES OF THE CRACOW BOTANIC GARDEN

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In 2006–2008 hothouses 'Victoria' and 'Holenderka' in the Botanic Graden in Cracow were repeatedly searched for gastropods. In 'Victoria', which also holds a pond, *Vallonia costata, V. pulchella, Oxychilus draparnaudi, Lymnaea* cf. *peregra, Melanoides tuberculata, Physa acuta* and *Helisoma duryi* were found. 'Holenderka', where mainly orchids are kept, harboured *Cochlicopa lubica, Arion lusitanicus, O. draparnaudi, Hawaiia minuscula, Zonitoides arboreus* and *Helix pomatia.*

THE EFFECT OF TREMATODE INVASION ON TH GLUCOSE CONTENT IN MOLLUSCS

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Ivan Franko Zhytomyr State University

Glucose content was analysed in the haemolymph of *Lymnaea stagnalis, Planorbarius corneus, P. purpura, Viviparus viviparus* and in various organs of *Unio tumidus, U. conus* and *U. rostratus*, parasite-free and infected with trematodes. In all trematode-infected species the glucose level increased about two times.

SHELLS OF *DREISSENA POLYMORPHA* AS PREFERRED SUBSTRATUM FOR THE PONTO-CASPIAN AMPHIPOD *DIKEROGAMMARUS HAEMOBAPHES*

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Ponto-Caspian amphipods have been observed to expand in Europe recently; in newly invaded areas

they encounter *Dreissena polymorpha*. The bivalve modifies its environment, hence it is likely to affect invasive organisms. In laboratory the amphipod was found to prefer substrata with living bivalves to stones and uninhabited plates. Its preferences were affected by the properties of the substratum (painted versus clean shells) and the surface and its shape (shells versus stones). Though the field results are less conclusive, it is likely that the zebra mussel facilitates expansion and survival of *D. haemobaphes*.

ONE OR TWO SPECIES? UNEXPLAINED PROBLEMS OF BIVALVE INVASION

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Two pairs of species of the genera *Dreissena* and *Corbicula* are examples of invasion of closely related species, originating from the same area and having similar ecological requirements. The Ponto-Caspian *Dreissena polymorpha* started its north-western expansion about 200 years ago; *D. bugensis* began its invasion in the middle of the 20th c. The two species were found in American Great Lakes, in 1986 and 1989, respectively. Genetic analysis suggests that they reached the lakes directly from their original distribution areas. The case of *Corbicula fluminea*, already recorded from America, and *C. fluminalis*, not yet recorded there, may be similar though the taxonomic status of the two species remains uncertain.

SHELL CHEMICAL COMPOSITION IN ADULT AND JUVENILE *CEPAEA VINDOBONENSIS* (FÉRUSSAC, 1821)

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The material was collected in 2007 in the Kazimierz Landscape park. Measurements were taken with Roentgen micronalyser. Apart from elements – components of calcium carbonate, small quantities of aluminium, silicon, phosphorus, iron, chlorine, sulphur and potassium were detected. Their presence may result from the composition of bedrock or from shell corrosion during the snail's lifetime.

NATURAL ENEMIES OF SLUGS

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Several slug species are agricultural pests in Poland. The paper aims at summarising the knowledge of their natural enemies. Almost any taxon includes some natural enemies of slugs: bacteria (*Escherichia, Bacillus, Borrelia*), fungi (*Verticillum, Microsporidium*), protozoans, trematodes, tapeworms and nematodes. Insects (dipterans, bugs and beetles) include the most numerous slug enemies; also predatory snails (*Gonaxis, Euglandina, Edentulina, Testacella, Oxychilus*) can control their populations. Among vertebrates, gastropod predators include birds, reptiles and mammals. Can any of them be used to control pest slugs?

PRELIMINARY RESULTS OF MALACOFAUNISTIC STUDIES ON INTERGLACIAL DEPOSITS IN THE REGION OF KĘTRZYN

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Two of the three profiles near Kętrzyn that contained interglacial biogenic deposits were used for malacofaunistic studies. In Marszewo W of Kętrzyn the deposit was silty-sandy, the fauna was terrestrial with hygrophile components (e.g. *Vertigo antivertigo, Succinea oblonga, Valonia pulchella*); the age is the Eem interglacial. In Sławkowo S of the town the sily sandy deposit was underlain with silts and clay and contained only freshwater fauna (*Lithoglyphus jahni, Valvata cristata, V. naticina, Theodoxus fluviatilis, Pisidium casertanum*); sedimentation took place in a shallow water body in a cool climate.

NEW LOCALITIES OF *VERTIGO ANGUSTIOR* (JEFFREYS, 1830) AND *V. MOULINSIANA* (DUPUY, 1849) IN NW. POLAND

ZOFIA KSIĄŻKIEWICZ

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Habitats examined in 2007 within the inventory of Natura 2000 were calcareous fens near rivers and lakes. The inventory revealed 49 localities of *Vertigo angustior* and 16 of *V. moulinsiana*; numerous localities were located in the Lubuskie voivodeship. *V. angustior* seems to be associated with humid but not flooded habitats with *Carex acutiformis* and *C. paniculata*. *V.*

moulinsiana prefers permanently flooded areas with *Phagmites* and *Typha*, as well as the above sedges.

CHANGES IN UNIONID DISTRIBUTION IN LAKE MIKOŁAJSKIE IN 1953–2007

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Unionids recorded in 1972 from Lake Mikołajskie were *Unio tumidus, U. pictorum, Anodonta cygnea, A. anatina* and *Pseudanodonta complanata*. In 1987 *A. cygnea* and *P. complanata* disappeared; the remaining unionids were still present albeit their proportion underwent considerable changes (initially *A. anatina* dominated, in 2007 *U. tumidus* was dominant). The vertical range of unionids was the widest (to the depth of c. 5 m) in the first and the last period of studies; in the 1980s and 1990s it was very limited. The mean density, initially low, increased in consecutive years to ca. 20/m^2 in 2007. In all the study period the maximum size and age of the unionids decreased. The results indicate a clear negative effect of environment conditions on the unionid populations at the end of the 20th c. The results from recent years, combined with data on decreasing trophy of the lake, suggest a possibility of reconstruction of the species richness.

SELECTED CHEMICAL AND TECHNOLOGICAL PARAMETERS OF MEAT OF *HELIX ASPERSA, H. POMATIA* AND *ACHATINA FULICA* IN VARIOUS FARMING CONDITIONS

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Head, foot and mantle collar of farmed *Helix aspersa, H. pomatia* and *Achatina fulica*, fed in the same way (snail food mix), but kept with various plants and on substrata with different calcium content were examined for total protein, collagen, meat crispness, hardness and elasticity. The differences were species- and age-associated.

GLOCHIDIA OF *SINANODONTA WOODIANA* (LEA, 834)

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Anodonta woodiana appeared in Poland in the late 1980s, probably introduced from Hungary with fish stocking material. It invaded heated waters and then waters of natural thermal regime. Its presence there depends on the presence of glochidia. Adults were collected in July 2005 in a discharge canal of the Dolna Odra Power Station. Larvae were isolated from brooding sacs and examined in light microscope. Measurements were taken and the shape and sculpture of the external surface were analysed.

THE EFFECT OF MAGNETIC FIELD ON *HELIX ASPERSA MAXIMA* AND *H. ASPERSA ASPERSA*

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The snails were tested in direct and alternating magnetic field for survival rate during hibernation, reproduction intensity, survival rate and growth rate in the sixth week of life and at the last stage of sexual maturity. The survival rate in both varieties of *H. aspersa* was the highest in the control group, followed by the experimental groups of alternating and then direct magnetic field. Magnetic field aplied to hibernating snails affected their future reproduction: it had a negative effect on the number of eggs but in some cases a positive effect on the hatching rate.

GROWTH RATE OF *CHILOSTOMA FAUSTINUM* IN NATURAL CONDITIONS

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The growth rate of *Chilostoma faustinum* was studied in 2005–2007 in the Romincka Forest (NE. Poland), using marking-release-recapture and back readings method. The mean growth rate was 0.21 whorl/month and 1.33 mm/month and did not vary between months. Snails of the youngest age classes showed greater whorl increment and smaller width increment whereas older age classes showed the opposite tendency. The snails reached maturity in their second year of life at the earliest.

PHYLOGEOGRAPHY OF TWO FRESHWATER PULMONATES FROM UKRAINE

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Ukrainian populations of *Planorbarius corneus* (Linnaeus, 1758) and *Lymnaea stagnalis* (Linnaeus, 1758) were studied with respect to polymorphic loci. The results show that both are superspecies with at least two allospecies each, with a hybrid zone in the mid Dnieper River. Alleles specific for the eastern populations penetrate westwards, while introgression from the west does not exceed the hybdrid zone. The eastern and western forms of each species differ in their external appearance.

DISTRIBUTION OF *CEPAEA VINDOBONENSIS* (FÉRUSSAC, 1821) ON ALLUVIAL DEPOSITS OF POLAND

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Distibution of *Cepaea vindobonensis* on alluvial deposits of Polish rivers is insular. Localities were found along rivers which are parts of the Vistula and Odra catchment areas. The species occurred most often on south-, south-west or west-facing alluvia. Its ocurrence along the river is associated with transport of individuals and depends on biogeohemical conditions. Anthropogenic factor may also be important.

RIVERS OF THE BALTIC BASIN AND THE DISTRIBUTION OF *CEPAEA VINDOBONENSIS* (FÉRUSSAC, 1821)

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Most rivers of the Baltic Basin are parts of the Vistula and Odra catchment areas. Some rivers form they own small river systems. *Cepaea vindobonesis* is absent from the rivers of the Eastern and Western Pomerania and of the Mazurian Lakeland since they do not cross carbonate deposits which are present at natural localities of the species (Lublin, Cracow––Częstochowa, Kielce-Sandomierz and Silesian Uplands). The occurrence of *C. vindobonesis* north of the above-mentioned regions, along the Odra and Vistula rivers, may be termed "apparent distribution" because of the temporary character of the localities.

SCIENTIFIC VALUE OF MALACOLOGICAL COLLECTIONS OF THE MUSEUM AND INSTITUTE OF ZOOLOGY, POLISH ACADEMY OF SCIENCES, WARSAW

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The malacological collection of the Museum and Institute of Zoology is among the largest in Poland; the estimated number of specimens is 800,000, with types of c. 1,000 species and subspecies. The main parts are collections of W. E. Lubomiski, O. Retowski, A. J. Wagner, W. Poliński, S. Feliksiak and A. Riedel. At present the collection is being computerised and data made available on-line.

GASTROPODS OF FOREST HABITATS OF THE PŁONINA RIVER VALLEY

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Akademia Rolnicza w Poznaniu

In the Barlinek-Gorzów Landscape Park (24,000 km^2) forests occupy c. 81% of the area. Gastropods were sampled at 48 sites; the source area of the Płonia River proved especially interesting. *Cochlodina laminata, Clausilia bidentata, Laciniaria plicata, Nesovitrea petronella, Vitrina pellucida, Carychium minimum, Columella edentula, Punctum pygmaeum, Ena obscura, Arion subfuscus* and *Helix pomatia* were found to occur there.

WHY STUDY TREMATODE INFECTIONS IN SNAILS?

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Trematode larvae affect snail ecology and biology, e.g. abundance and distribution; they play a role of a regulatory factor eliminating weaker individuals, cause changes in morphology, as well as behavioural and physiological changes. Monitoring of trematode infections in snails is of importance for epidemiology and planning control measures e.g. against fasciolosis or the so called swimmers itch.

POLYMORPHIC SHELL VARIATION IN *CEPAEA VINDOBONENSIS* AND ITS RELATION TO HABITAT

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Material of 1,062 shells of *Cepaea vindobonensis* from 16 localities near Hrubieszów and Sandomierz was examined for shell polymorphism. Frequency of shells with light bands was considerably higher in open habitats. In open sites snails with reduced number of bands and low degree of covering with bands dominated. Frequency of shells with fused bands and high band covering was the highest in shaded habitats. The results indicate that climatic selection associated with local habitat conditions determines the morph frequency.

A NEGATIVE EFFECT OF *DREISSENA POLYMORPHA* ON *UNIO TUMIDUS* IN A FLUVIATILE ENVIRONMENT

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The mid section of the Brda Great Canal in Bory Tucholskie is surrounded by the forest, in the place of occurrence of *Unio tumidus* it is 20–30 m wide, 0.5–1.5 m deep, with moderate current and sandy-gravelly bottom. All shells of *U. tumidus* were covered with *Dreissena polymorpha* (2–44 individuals per shell); in most cases the combined weight of the mussels exceeded that of the *Unio*. The "attacked" *Unio* reached a smaller size, had thinner shells and showed a higher mortality.

THE POPULATION OF *GYRAULUS ACRONICUS* (FERUSSAC, 1807) IN LAKE OSTROWITE IN THE BORY TUCHOLSKIE NATIONAL PARK

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A population of the rare and little known *Gyraulus acronicus* was discovered in Lake Ostrowite – a post-glacial lake with pure water of neutral pH and a high Ca and Mg content. The snail occurred mainly in the shallow littoral (0.1–0.5 m) at a density of 60–500 indiv./m^2. The snail fauna of the littoral included 23 species, *G. acronicus* being dominant. *G. acronicus*, widely distributed in the Pleistocene, is probably a post-glacial relict in the lake.

PRELIMINARY RESULTS OF LYMNAEID IDENTIFICATION WITH DNA BARCODING

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The aim of the study was to read the DNA barcoding sequences for selected species of Polish lymnaeids (*Lymnaea stagnalis, Stagnicola corvus, S. occulta, S. palustris, S. turricula*) and use the sequences to verify their taxonomic status.

NEW DATA ON THE DISTRIBUTION OF TERRESTRIAL GASTROPODS OF POLAND AND THE NECESSITY TO UPDATE THE CHECKLIST

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Much new, published and unpublished data on the distribution of terrestrial gastropods in Poland have accumulated during the last ten years. Examples are *Chilostoma faustinum* in the Romincka Forest, *Cepaea vindobonensis* in the Pieniny, *Vertigo moulinsiana* and *V. ronnebyensis* in NW. Poland, confirmation of the occurrence of *V. genesii* and *Cochlodina costata*, or unpublished information on *Macrogastra badia* in the Sudetes, *Discus perspectivus* in Roztocze and *Helicigona lapicida* in NE. Poland; much new information accumulated as a result of the 2007 inventory within Natura 2000. The last catalogue published in 1988 includes information up to 1984, the most recent identification key was published in 2000. There is a need to publish an updated checklist.

TERRESTRIAL GASTROPODS OF THE MONASTERY PARK IN HENRYKÓW (SW. POLAND)

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The terrestrial malacofauna of the monastery park in Henryków was compared with the malacofauna of the nearby nature reserve Muszkowicki Las Bukowy, and with gastropod communities of other parks in Poland. Overall similarity between Henryków and the nature reserve was 0.75. The species composition,

dominance and frequency structure differed between the two malacocoenoses. Comparison of the Henryków malacocoenosis with the communities of other parks in Poland, despite their generally low similarity (0.55–0.67), made it possible to distinguish a community of typically park species which are present in all the studied parks. Finding in Henryków such rare species as *Discus perspectivus, Aegopinella epipedostoma, Ruthenica filograna* and *Deroceras praecox* suggests that the park is an important refugium for malacofauna.

MALACOFAUNA OF UPPER LITTORAL OF THE LIMNIC PART OF THE WŁOCŁAWEK RESERVOIR

MAŁGORZATA POZNAŃSKA, JAROSŁAW KOBAK

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Three types of habitat were studied (2002–2004) in the eutrophic, flow Włocławek Reservoir located on the lower Vistula River: sandy habitat in the flood zone, sandy habitat near the current, and organic-rich bottom. Twenty one mollusc taxa were recorded (sphaeriids identified to the genus only): 16 on the detritus bottom, 13 in the flood zone, 4 in the near-current zone. The density on the organic bottom was 600–1,500 indiv./m^2 and no taxon dominated. On the sandy bottom the diversity and richness increased with depth (the highest in the phytolittoral site, 8,300/m^2 where *Potamopyrgus antipodarum* dominated). The near-current zone harboured single individuals.

GIANT CEPHALOPODS, LEGEND AND REALITY

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Legends and myths of giant cephalopods are discussed and confronted with facts; actual candidates for legendary sea monsters are proposed.

POPULATION STRUCTURE OF *BITHYNIA TROSCHELI* IN THE LAKE CHANY BASIN (W. SIBERIA)

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Population structure (age and sex) of *Bithynia troscheli* (Paasch, 1842) was studied in 1995–2005 in the Kargat River (Lake Chany basin). The age was determined based on growth lines, sex – based on the genital system. The reproductive period lasted from 40 to 60 days, depending on the year, and started in the second decade of July; the embryonic development took 18–20 days. In all years juveniles formed the majority of the population; the sex ratio of snails aged 1 year was 9:10 (male:female), 2 years old – 7:10, 3 years old – 6:10; 4 years old – 3:10. The tendency resulted from the high mortality of males.

MONITORING OF *DREISSENA POLYMORPHA* (PALLAS, 1771) IN A HEATED ECOSYSTEM

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Eight sites in the heated Konin lakes were monitored in 1993–2007. The abundance and biomass of the mussels was significantly associated with the structural indices of the population and with the habitat conditions.

FRESHWATER BIVALVE FOSSILS FROM LATE TRIASSIC DEPOSITS IN LIPIE ŚLĄSKIE – PRELIMINARY RESULTS

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The fossil site in Lipie Śląskie is located ca. 2 km W of Lubliniec. The Triassic deposit is estimated as 210–205 mln years old. The bivalve material, in the form of several hundred specimens, is under study. The shells come from deposits of two lithological types. Sandstone specimens are preserved as interior casts. Specimens from clay shale deposits are interior and exterior casts, with many important structures preserved. The material includes three morphotypes which may represent different species.

BIVALVE MUSCULATURE MAPPED ON THE BIVALVE PHYLOGENETIC TREE

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Data on musculature from dissection of recent material, analysis of fossil specimens and literature were superimposed on the bivalve phylogenetic tree. Bivalve musculature is little diverse; four types of musculature could be distinguished based on the musculature of the umbonal region. Bivalves of the subclasses

Palaeotaxodonta and Cryptodonta preserved a probably plesiomorphic, complicated muscular system; the sedentary Pteriomorphia have a simplified musculature; the subclasses Palaeoheterodonta and Heterodonta show a similar musculature which is simpler than that of the Palaeotaxodonta.

QUALITATIVE AND QUANTITATIVE DIVERSITY OF MOLLUSCS OF INDUSTRIAL SPOIL-HEAP RESERVOIRS

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Many of Silesian anthropogenic reservoirs are a result of subsidence above deep coal mines. Malacofauna of 11 reservoirs located near industrial spoil-heaps was studied in 2005–2007. Ten snail species were recorded, from 6 to 10 per reservoir, and 5 to 9 per site. The fauna differed between the reservoirs and study periods. The mean mollusc density was 12–508/m^2, with *Potamopyrgus antipodarum* at 1–446/m^2 and *Physella acuta* at 2–29/m^2. The Simpson index of species diversity was 0.22–0.70, the Shannon-Wiener index – 0.78–2.20. The proportion of the two alien species ranged from 0 to 100%.

TRIPLOID KARYOTYPE OF *CORBICULA FLUMINALIS* (O. F. MÜLLER, 1774)

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Corbicula fluminalis was first recorded in Poland in 2004. Chromosomes were analysed in 20 specimens from W. Pomerania. *C. fluminalis* has 54 chromosomes, divided in 18 groups of 3 homologous chromosomes each: one group of metacentric, 5 of submetacentric and 12 of subtelo-acrocenric chromosomes.

ANODONTA WOODIANA OR *SINANODONTA WOODIANA* IN THE LIGHT OF GENETIC STUDIES

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The studies are aimed at ascertaining the level of genetic differences between *A. woodiana* and other members of *Anodonta*, in order to verify the generic status of *A. woodiana*. The DNA fragment concerned inludes the region 18S rRNA, ITS1, 5,8S, ITS2 and 28S rRNA as well as mitochondrial genes cox1 and 16S rRNA.

ENDANGERED FRESHWATER GASTROPODS AND BIVALVES IN UKRAINE

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The main threat factors to freshwater malacofauna of Ukraine are changes in chemical and physical characteristics of the habitats. The changes in the malacofauna in recent years are manifest as disappearance of some species (*Lymnaea doriana, L. clavata, Planorbarius banaticus, Bithynia leachi*), or species becoming increasingly rare, e.g. *Lymnaea glutinosa* or *Theodoxus fluviatilis*. Among unionids members of the subgenus *Batavusiana* (*Unio crassus*) as well as *Anodonta cygnea* and *Pseudanodonta complanata* are especially endangered.

OCCURRENCE OF SNAILS ON VARIOUS TYPES OF BOTTOM IN NEWLY FORMED SUBSIDENCE PONDS

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Eleven subsidence ponds formed in the 1960s and 1970s in Upper Silesia were sampled for molluscs; their bottom deposits were different and the area varied from 0.07 to 2.5 ha. Eleven snail species were recorded, two of them alien (*Potamopyrgus antipodarum, Physella acuta*). Periods of the greatest qualitative and quantitative diversity varied with the type of bottom deposits, for example ponds with carbon shale bottom showed the greatest diversity in October, those with muddy-detritus bottom – in December (quantitative) and August (qualitative). The studies provided data on autecology of the recorded species.

ALIEN TERRESTRIAL GASTROPODS IN THE MALACOFAUNA OF POLAND

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The list of terrestrial gastropods of Poland includes 177 species, 17 of them being alien; some of them can be regarded as invasive. Four species are limited to hothouses, further two are limited to buildings but can stay outside in the summer. Other alien species are mainly slugs, most of which are synanthropic, while others penetrate into seminatural

or natural habitats. Two slug species (*Deroceras panormitanum, D. turcicum*) have been found only recently. *Monacha cartusiana* is typically synanthropic and expanding rapidly. The native vs. alien status of *Helicodiscus singleyanus* is debatable. Most alien species come from S., SE. or SW. Europe, two from the Caucasus, two or three from N. America, one from Central America.

DIFFERENT FACES OF OVOVIVIPARITY – CLAUSILIIDS OF THE GENUS *VESTIA*

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Of the three modes of reproduction known among terrestrial pulmonates: oviparity, egg retention and ovoviviparity, the last mode is thought to be advantageous for snails living in extreme habitats or unpredictable climate. *Vestia elata, V. gulo* and *V. turgida* were used to check how the mode of reproduction affected fecundity. *V. gulo* which retains eggs for a short time showed the highest fecundity; the strategy may be advantageous in very damp habitats it occupies. Ovoviviparous *V. turgida* occupies habitats of varied humidity and reaches the highest altitudes in the mountains. *V. elata*, of intermediate strategy and the lowest fecundity, is a mesophile but with a small altitudinal range in the Carpathians.

OLIGOCENE MOLLUSCS OF W. POMERANIA IN THE COLLECTION OF SZCZECIN MUSEUMS

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The National Museum in Szczecin holds a German geological collection which is incomplete and not well labelled. Post-war students of Oligocene molluscs of the area deposited their specimens in other museums. The collection of the Geological Museum, Institute of Marine Sciences, started in 2001. Most specimens there are large sandstone lenses with layers of snail, bivalve and scaphopod shells. Spherical sandstone concretions of concentric structure usually contain bivalve shells.

CLAUSILIIDS OF WIELKOPOLSKA

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Twenty six clausiliids occur in Poland; 10 were recorded from 103 localities in Wielkopolska: *Clausilia bidentata* (Strom, 1765), *Cochlodina laminata* (Montagu, 1803), *Ruthenica filograna* (Rossmässler, 1836), *Laciniaria plicata* (Draparnaud, 1801), *Macrogastra plicatula* (Draparnaud, 1801), *Clausilia pumila* Pfeiffer, 1828, *Bulgarica cana* (Held, 1836), *Balea biplicata* (Montagu, 1803), *Macrogastra ventricosa* (Draparnaud, 1801), *Clausilia cruciata* Studer, 1820. *M. ventricosa* was previously known only as subfossil; *C. bidentata* was found in 82 and *C. laminata* in 40 localities. *M. ventricosa, C. cruciata, B. biplicata* and *B. cana* are rare.

SEASONAL VARIATION IN A POPULATION OF *LYMNAEA SARIDALENSIS* AND LARVAL TREMATODE INFECTION

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L. saridalensis was studied in Lake Fadikha (W Siberia) in 2003–2007: the density was estimated and the snails were examined for the presence of trematode cercariae. The population density was the highest in June. *L. saridalensis* was host to 11 trematode species of 6 families: Plagiorchiidae, Echinostomatidae, Diplostomatidae, Strigeidae, Notocotyliae and Schistosomatidae; the average prevalence varied between years (12.8–72.7%) and increased from May till August.

PRELIMINARY STUDIES ON THE OCCURRENCE OF AN ASIAN BIVALVE *CORBICULA FLUMINEA* (O. F. MÜLLER, 1774) IN THE ODRA RIVER IN POLAND

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The SE Asian *Corbicula fluminea* (O. F. Müll.) started its expansion in the 19th c. and is now known from many European rivers. In the Odra River (warm discharge canal of the Dolna Odra power plant) it was found in 2003. In 2005 no live specimens or shells were found in the Odra River outside the original site. In 2006 live specimens and shells were found in the

mid and upper sections of the river; the size structure indicated dominance of young and middle-aged specimens.

LOVE LIFE OF PULMONATE SLUGS

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Pulmonate slugs are hermaphrodites; sperm exchange is preceded by a complex courtship during which the partners track each other along the mucus trails, lick each other's mucus, and rub against each other assuming different postures. The mating dance varies between species; its purpose is species identification, assessment of the partner's condition and physiological state and mutual stimulation. Sperm transfer is brief; in spermatophore-producing species the spermatophore structure is one of factors preventing hybridization. Some slugs can reproduce uniparentally. All slugs are oviparous.

HELICELLA OBVIA (MENKE) FROM TUCHOLA

WŁODZIMIERZ WOJTAŚ

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Helicella obvia from three sites: Skworonno nr Pińczów (50°31'N, 20°32'E), and two on the edges of Tuchola (53°35'N, 17°52'E), all three being open, was studied biometrically. Site I was a xerothermic hill, site II a roadside ditch, site III a xerothermic meadow. Snails from site III were the largest with respect to their whorl increment and ultimate shell width.

CHANGES IN MALACOCOENOSES OF THE CENTRAL POLISSA REGION (UKRAINE) UNDER ANTHROPOPRESSURE

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Ivan Franko Zhytomyr State University

The comparison of the freshwater mollusc collections from the central Polissa region of 1995–96 and 2007 shows a decrease tendency in mollusc populations. The fauna includes 16 species of unionids. The mean density was 10–20 indiv./m^2 in 1995–96 and 1–6/m^2 in 2007. In the Teteriv River the number of species decreased from 8 to 5. In the Sluch River the number dropped from 12 to 7, in the Guiva River from 6 to 4.

EXPERIMENTAL INVASION OF DIGENETIC TREMATODES IN *POTAMOPYRGUS ANTIPODARUM* (GRAY, 1843)

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The introduced *Potamopyrgus antipodarum* (Gray) forms abundant populations in Poland, inhabits a wide range of habitats and is parthenogenic. Nevertheless sudden break-downs of its populatios are observed. The reason may be parasites. Only two reports pertain to trematode-infected *Potamopyrgus* in Europe. We checked survival rate of specimens experimentally infected with larvae of trematodes that are common in Poland. Out of six species, only *Echinostoma revolutum, Echinoparyphium aconiatum* and *Hypoderaeum conoideum* produced metacercariae in the snails. The results inicate that the parasites may conribute to the disappearance of some populations of *Potamopyrgus*.