

History and Principles of the Malacology School Functioning

Malacology School headed by Agnesa Stadnychenko, Doctor of Sciences (Biology), Professor, has been functioning at Zhytomyr Ivan Franko State University for 35 consecutive years. It was founded as a students' scientific task group in 1976. The postgraduate training program in specialty 03.00.08 "zoology" was established at the Department of Zoology of Zhytomyr State University in 1992, and the doctorate training program in 2007. The scientific coordination Malacology Center has been functioning as a structural unit of the Zhytomyr State University since 2004. It was established on the basis of Scientific Malacology School. In 2008 a research laboratory 'Cytogenetics and Environmental Genetic Monitoring of the Environment' was established at the Department of Environment and Natural Resources of Zhytomyr State University in close cooperation with the Department of Evolutionary and Genetic Basis of Animal Taxonomy at Shmalgausen Institute of Zoology of the National Academy of Sciences of Ukraine.

Nowadays 2 Doctors of Sciences (Biology), 17 Candidates of Sciences (Biology), 3 Senior Lectures, 2 assistants, 6 post-graduate students, master's degree students, students and pupils of secondary schools who are members of the Minor Academy of Sciences of Ukraine exercise systematic research of freshwater and terrestrial mollusks of Ukraine within Malacology School and academic structural units of Zhytomyr State University.

The main principles of organizing students' and faculty's research within Malacology School are continuity, variability, systemic approach, consistency and coordination, combination of individual and group work in creative teams.

Major Research directions of the School, Scientific and Organizational Activity. Research of mollusks is carried out in various directions by the Malacology School members. The first one is *faunal direction*. Studying a certain group of mollusks, one focuses primarily on their taxonomy, morphological and anatomical characteristics, distribution, and ecology. In recent years faunal researches have been closely connected with the complex conchiological,

anatomical, karyological and genetic researches of mollusks, study of hybridizational processes and genetic structure of populations. As a result of the Ukrainian malacofauna research the funds of the Zoological Museum of Russian Academy of Sciences (St. Petersburg), the National Museum of Natural History at the National Academy of Sciences of Ukraine (Kyiv), the State Museum of Natural History (Lviv), the Zoological Museum of Ivan Franko National University of Lviv, the Museum of Natural History of Zhytomyr State University are enriched with samples gathered by our professors, post-graduates and students.

The second direction of Malacology School investigations is *parasitological*. Years of trematodes fauna research made it possible to reveal the range of intermediate hosts for 153 species of these parasites. Histological, physiological and histochemical research of trematodes effect on different mollusks' tissues and organs was conducted. Biochemical study of the internal environment equilibrium shifts took place as well. Beside trematodes Aspidogastrea (Plathelminthes, Aspidogastrea) and Hydrachnidiae of the family *Unionicola* (Acari, Hydracarina) are objects of parasitological research for Malacology School members.

The third direction of Malacology School activity is *ecological*. Ecological researches are based both on observations and results of laboratory experiments. They include researches on the impact of environmental factors on various mollusks. Such factors are high and low temperatures, alkalization and acidification of environment, drying-up, and pollution with ions of heavy metals, organic substances, etc. These researches are conducted in close cooperation with the Department of Ecotoxicology of the Institute of Hydrobiology of the National Academy of Sciences of Ukraine. Three state budget scientific researches commissioned by the Ministry of Education and Science, Youth and Sports of Ukraine have been carried out in this direction. They are "The impact of pollutants on behavioral characteristics, macrostructure and physiological biochemical indices of mollusks' tissues and organs", "Freshwater mollusks in the system of biological monitoring", "The role of hydrobiontes in formation of Zhytomyr Polissia water basins' quality".

During the period of Malacology School existence its members have participated in more than 150 conferences, seminars, meetings of various ranks both in Ukraine and abroad (in Russia, Lithuania, Belarus, Poland, Czech Republic, Romania, Slovakia, Bulgaria, the USA). Moreover, they initiated and co-organized international malacological conferences (in 2002, 2004, 2006, 2012) which traditionally took place at Zhytomyr State University via organizational support from the institutions of the National Academy of Sciences of Ukraine (Shmalgausen Institute of Zoology, Institute of Hydrobiology, Institute of Geological Sciences) and the State Board of Environment and Natural Resources in Zhytomyr Oblast.

Recognition, Awards and Honours of the School and its Scientists.

Zhytomyr Scientific Malacology School has reached significant results.

Nearly 1000 scientific papers, including 14 monographs have been published in leading domestic and foreign academic periodicals and partly deposited in the State Scientific and Technical Library of Ukraine.

The Malacology School members were among the scientists involved in three scientific researches commissioned by the Ministry of Education and Science, Youth and Sports of Ukraine.

One thesis for the degree of the Doctor of Sciences (Biology) and 18 theses for the degree of the Candidate of Sciences (Biology) in zoology (specialty 03.00.08), ecology (specialty 03.00.16), hydrobiology (specialty 03.00.17), helminthology (specialty 03.00.20), parasitology and helminthology (specialty 03.00.25) have been defended so far.

Associate Professors H. Kyrychuk, L. Yanovych, D. Vyskushenko, O. Uvaieva received Government Grants in different years.

Four scientists became laureates of the President's Award for Young Scientists in Science and Technology (Associate Professors H. Kyrychuk and L. Yanovych in 2003 for the scientific project "Toxicological pressure on freshwater malacocoenosis"; as well as Associate Professors O. Harbar and R. Melnychenko in 2005 for their project "The current state of the most common groups of

freshwater mollusks in the fauna of Ukraine: species, systematics, ecological features and preservation strategy”).

Four members of the Malacology School won grants of the International Renaissance Foundation supported by George Soros in different years (Professor A. Stadnychenko won it twice, post-graduate students H. Kyrychuk, L. Yanovych and V. Hradovskyi).

In 2007 Associate Professor O. Harbar and post-graduate student T. Chernyshova won grants of the State Fund for Fundamental Research with the paper “Geographical peculiarities of diploid and polyploid species of invertebrates”.

Associate Professors O. Pavliuchenko and O. Uvaieva became laureates of the National Academy of Sciences of Ukraine Award for Young Scientists in 2008 with the paper “Freshwater mollusks of Ukraine and their parasites: species, systematics, ecology and importance for agriculture”.

Associate professor O. Uvaieva received the Ukrainian Cabinet of Ministers Award for Youth Special Achievements in the Development of Ukraine (2008) and won the Youth Innovative Projects in Humanitarian, Natural and Technical Sciences Competition for States – Members of CIS (Commonwealth of Independent States) in Moscow (2010). She won the President’s Grant for Gifted Youth for the implementation of the project “The use of mollusks in sewage treatment” in 2011.

Five post-graduate students were awarded with the 1st and 2nd degree diplomas for the best reports both at international and national scientific conferences for young scientists and at the 5th Meeting of the Hydroecological Association of Ukraine.

Five students won the Students’ National Biology Academic Competition and seven students won the Students’ National Ecology Academic Competition. Seven students received diplomas at National Competitions of Students’ Scientific Projects.

Two pupils, members of the Minor Academy of Sciences of Ukraine, received international awards for the results of their individual researches of mollusks based on Malacology School theory. During 2008-2012 pupils won national competitions of the Minor Academy of Sciences of Ukraine and ecological projects competitions annually.