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LIFE IS LIKE A RESERVOIR INTO WHICH A SCIENTIST WHO IS COMPLETELY DEVOTED TO HIS WORK PLUNGES

The article is dedicated to the memory of N. I. Zagubizhenko, Candidate of Biological Sciences, a talented scientist-hydrobiologist, a true friend, a teacher, a wonderful person

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Abstract. The article is devoted to the description of the pages of the life and scientific activity of the outstanding Ukrainian scientist N. I. Zagubizhenko, who made a great contribution to the formation of the theoretical base on the enrichment of natural and artificial water bodies with fodder resources in the conditions of the Steppe zone of Ukraine. Being a student of the doctor of biological sciences, professor P. O. Zhuravel [1,2], who believed that the enrichment of the benthic fauna of the Steppe zone of Ukraine can be carried out by introducing animal organisms that are absent in these reservoirs, which are characterized by wide plasticity and high vitality [9,12,15], Nadezhda Ivanovna Zagubizhenko was engaged in the study of the reconstruction of the benthic fauna of the reservoirs of southeastern Ukraine. In connection with the instability of the fodder base of water bodies in the Steppe zone of Ukraine, the question of the introduction of representatives of the estuarine fauna, their habituation and inclusion in the food rations of a number of commercial fish was and remains relevant in the current period of time. According to the nature of nutrition, most acclimatizers are biofilters [9], for which there is a sufficient amount of food in the form of detritus, the remains of higher aquatic vegetation, in most reservoirs of the Steppe zone of Ukraine. The conduct and substantiation of these research works were of a positive nature and have a significant contribution to the scientific base, theory, and practice of enriching water bodies with fodder resources and preserving the environment. The quality of water at all times has been and is one of the main indicators of the standard of living, therefore, all developed societies make every effort to provide the population and economy with a sufficient amount of water of a quality that is adequate to the requirements of the consumer. Most of the water comes from natural sources – rivers, lakes, reservoirs, the water quality of which must not only be assessed, but also predicted. Two main components are responsible for the quality of water in nature – the catchment basin and the ecological system of the water body [6, p. 36]. Each of them is located in certain conditions of geography and climate, characteristic of the region under study, in our research – the Steppe zone of Ukraine.

Key words: water bioresources, fodder base, reservoirs, acclimatization, biofilters, hydroecology, hydrobiology

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ЖИТТЯ ЯК ВОДОЙМА, В ЯКУ МОЖЕ ПОРИНУТИ СПРАВЖНІЙ ВЧЕНИЙ, ПОВНІСТЮ ВІДДАНИЙ СВОЇЙ СПРАВІ

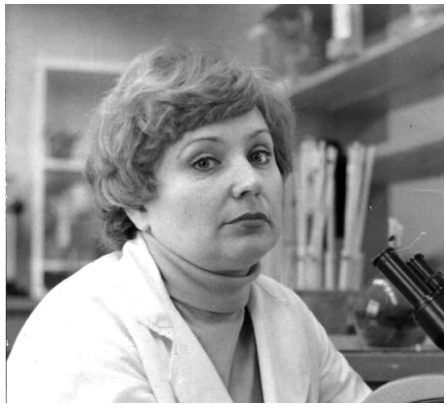
Стаття присвячена пам'яті Н. І. Загубіженко, кандидату біологічних наук, талановитій вченій-гідробіологу, справжньому другу, вчителю, прекрасній людині.

Анотація. Присвячено опису сторінок життя та наукової діяльності видатної української вченої Н. І. Загубіженко, яка зробила великий внесок у формування теоретичної бази зі збагачення природних та штучних водойм кормовими ресурсами в умовах Степової зони України. Учениця доктора біологічних наук, професора П. О. Журавля [1; 2], який вважав, що збагачення донної фауни Степової зони України можна проводити шляхом вселення відсутніх у цих водоймах тваринних організмів, які характеризуються широкою пластич-

ністю й високою життєстійкістю [9;12;15], Надія Іванівна займалася вивченням питань реконструкції донної фауни водойм південного сходу України. У зв'язку з нестійкістю кормової бази водойм Степової зони України питання вселення представників лиманної фауни, їх приживання та входження в харчові раціони ряду промислових риб було та залишається актуальним і нині. За характером живлення більшість акліматизантів є біофільтраторами [9], для яких в більшості водойм Степової зони України достатньо їжі у вигляді детриту, залишків вищої водної рослинності. Проведення та обґрунтування цих науково-дослідних робіт мали позитивний характер та є вагомим внеском для наукової бази, теорії і практики збагачення водойм кормовими ресурсами та збереження навколишнього середовища.

Ключові слова: водні біоресурси, кормова база, водосховища, акліматизація, біофільтратори, гідроекологія, гідробіологія.

Introduction. The study of the reproduction of fish and non-fish resources of water bodies in all their diversity and interrelation is one of the most important subjects addressing the productivity of water bodies. Since this subject is aimed at solving the issues of expanding the reproduction of aquatic organisms, the study of physiological and biochemical processes that determine one or another quality of organisms and the rate of their reproduction is of particular importance.



Historiography. Dnipropetrovsk Hydrobiological School of Technogenically Transformed Freshwater Ecosystems is a research team that has been studying the hydroecosystems of freshwater reservoirs (reservoirs, cooling reservoirs for energy facilities, canals, rivers, lakes, etc.) for more than 90 years. The origin of the Dnipropetrovsk hydroecological school was due to the need to study the consequences of the construction of the hydroelectric dams on the Dnepr River. The impact of the construction of the hydroelectric dams on natural aquatic ecosystems served as the basis for the emergence of a team of Dnipropetrovsk hydrobiologists.

Purpose of the article. Summary of the scientific activity of the famous hydrobiologist, candidate of biological sciences, N. I. Zagubizhenko and the importance of research as a model and scientific basis for young scientists, as well as invaluable recommendations for the conservation of aquatic bioresources in the Steppe zone of Ukraine.

Focus of research. In general, Zagubizhenko's attention is focused on one of the most urgent problems of hydrobiology – the problem of clean water suitable for water supply. The solution of this problem is necessary, first of all, to provide the population with drinking water. Without clean water, the normal development and habitation of fish and other hydrobionts in water bodies is unthinkable [7, p. 17–19].

The issue of rational use of various water bodies is of great importance for the national economy, in particular for drinking and domestic water supply, fisheries, irrigation and watering of dry agricultural lands, as sources of electricity, and transport routes. It is no secret that in industrial areas reservoirs are used as receivers for industrial and domestic wastewater.

The primary task facing hydrobiology and ichthyology has been and remains the elucidation of the patterns that determine the process of reproduction and loss of living organisms, food relations between them, the study of the processes of transformation, utilization and destruction of food resources in water bodies [8, 105–107].

In the complex of ichthyological, hydrobiological, hydrochemical, and parasitological studies carried out by the Research Institute of Hydrobiology of the Dnipropetrovsk State University, much attention was paid to the study of the benthic fauna of water bodies of fish farms in the Dnipropetrovsk region [1; 2]. Materials on the benthic fauna of many water bodies, seasonal and annual dynamics of zoobenthos, annual production and food value of some invertebrates before N. I. Zagubizhenko were practically absent.

N. I. Zagubizhenko. We met with Nadezhda Ivanovna back in 1987, when I was a student of the Faculty of Biology. She is an accomplished and reputable hydrobiologist, hydroecologist, super-expert and analyst in the field of studying benthic fauna. My emotions and impressions from the first meeting were amazing and non-standard. Nadezhda Ivanovna was a representative of science at its best and, at the same time, a very beautiful woman.

Early ideas about women of the scientific world were destroyed and erased, because in my eyes a new standard of a modern scientist was built, deserving to be on the covers of popular, scientific and glossy magazines – stately and slender with a beautiful, invariably classic Sesson hairstyle, framing her face with graceful and bright features, eyes sparkling with kindness and a soft smile. Nadezhda had an amazing sense of humor, smoothing out sharp corners, saving, repainting life in brighter colors. This wonderful person, an extremely kind and talented woman, was open to all kinds of help and support. Here is a role model, I thought then, and perhaps it was Nadezhda Ivanovna and our friendship with her that served as my decision to devote myself to science.

Life offered and threw up various situations, both in the scientific world and of a personal nature. Nadezhda Ivanovna was always there, protective and supportive, gave practical and competent advice, directed in the right direction, took care of and cared for. I remember, I respect, I love.

How much Nadezhda Ivanovna managed to give to the scientific world. The conclusions of this legendary scientist, made as a result of a comprehensive study of the benthic fauna, helped to identify and clarify the relationship of benthos with other structural elements of water bodies. Without knowledge of the natural food supply of fish, it is impossible to establish and maintain a rational fish economy, environmental protection [5, p. 94–100].

These considerations served as a stimulus for the formulation of research work on the study of the benthic fauna of reservoirs of fish farms, small reservoirs and ponds of the Steppe zone of Ukraine.

The following paragraphs describe some of the important work performed by N. I. Zagubizhenko:

The reservoirs located in the Dnipropetrovsk region, the Steppe zone of Ukraine, and the zone of the central steppe located in the Black Sea depression, were investigated. The Black Sea depression is formed by Tertiary limestones covered with loess. Chernozems of varying thickness and fertility lie on the loess.

The southern reservoir is part of the Dnieper canal, where the banks are low, and collective farm arable lands and pastures reach the water's edge. There are insignificant areas of tree plantations on the right bank. In summer, as a result of the drawdown of the water level, the shallow water zone noticeably dries up (Photo 2).

Photo 2. Drainage of the shallow zone of the South Reservoir as a result of a drop in the water level in the spring (1969)

Work to improve the fish productivity of water bodies should be based on knowledge of their fauna, flora, biological, ecological, physiological and production properties of invertebrates and their requirements for environmental conditions. A long-term assessment of the expediency of introducing food objects into water bodies is impossible without knowledge of the biology and ecology of the introduced organisms [3, 4].

For many years of scientific activity, Nadezhda conducted experiments, described and systematized the results of observations in such areas as: qualitative and quantitative assessment of the bottom fauna of various reservoirs of fish farms (ponds and small reservoirs) of the Steppe zone of Ukraine; changes in the abundance and biomass of zoobenthos by seasons and years were clarified; some of the most important aspects of the biology of mass species of higher crustaceans have been studied; the feeding value of mass species of benthic fauna – mollusks and higher crustaceans in the reservoirs of the Steppe zone of Ukraine was characterized; the ways of reconstruction of the bottom fauna of reservoirs of fish farms are outlined, in connection with economic and environmental problems.

The fish productivity of reservoirs depends on the supply of fish with food, especially bottom organisms, since most of the fish in ponds and reservoirs of fish farms are benthivorous (Photo 3).

Photo 3. Traces on the bottom of ponds after eating benthic organisms by hybrids of carp with Amur carp at a double stocking density.

To control the fish productivity of water bodies, the study of the nutritional value of benthic organisms is of great importance. The study of the food base of fish is carried out mainly by determining the biomass of plankton and benthos [10–12]. In addition, one of the essential tasks of understanding the food base of fish is the study of the qualitative and biochemical composition of its components, since the objective indicators of the nutritional value of aquatic organisms are the amount of fat, dry matter, protein, calorie content and the degree of their assimilation by fish. The rationale for the acclimatization of estuary fauna in reservoirs was the positive results of acclimatization activities in the reservoirs of the Steppe

zone of Ukraine. All Liman-Caspian invertebrates, as representatives of the epifauna, live on the ground surface and in this respect have an advantage over the infauna, burrowing deep into the silt with oligochaetes and chironomid larvae [13–15]. When choosing acclimatization objects, the following requirements must be observed: the introduced organisms must produce a large number, their life cycle must proceed in the reservoir itself, the acclimatizers must have a high food value, and the increase in their biomass.

The study of the dynamics of the biochemical parameters of food organisms makes it possible to give a more correct objective description of the food base for fish. And only with a combination of biological data on the quality and quantity of aquatic organisms, and with knowledge of their nutritional value, the degree of their digestibility by fish, can one truly scientifically approach the issues of fauna reconstruction and the preservation of ecological balance. As a result of multifaceted and fruitful research activities, Nadezhda Ivanovna Zagubizhenko made certain generalizations and conclusions [9, pp. 49–50].

The patterns of formation and quantitative development of the bottom fauna of ponds and small reservoirs of the Taromsky and Krivoy Rog fish farms of the Dnipropetrovsk region, water bodies of a new type formed in the zone of large reservoirs of the Dnieper cascade, in connection with hydrological and hydrochemical regimes, in complex interaction with biotic, seasonal and meteorological factors, were studied. The hydrochemical regime of reservoirs in the Steppe zone of Ukraine is not the same and is characterized by a number of features, such as: changes in the active reaction of water from neutral to alkaline, high oxidizability of feeding ponds – especially the Tarom fish farm, in terms of salt content, reservoirs are characterized by medium mineralization (Karachunovskoye, Makortovskoye) and high mineralization (Sholokhovskoye, Nikolaevskoe, Khristoforovskoe).

Macrozoobenthos of fish farm ponds is represented by 80 species and forms of animals belonging to 9 systematic groups. In small reservoirs of the Krivoy Rog fish farm, 70 species and forms of benthic invertebrates belonging to 12 systematic groups were found.

Despite some ecological differences in the reservoirs of fish farms, the main biocenotic complexes of their benthic fauna were pelophilic and phytophilic, consisting of widespread forms.

In the first years of filling the ponds of fish farms with water, a rather high quantitative development of chironomid larvae was observed.

The macrofauna of the higher aquatic vegetation in the ponds of the fish farms consisted of 74 species and forms of invertebrates. The main groupings of macrophytes were submerged vegetation (threads, pondweeds), semi-submerged vegetation (reed, cattail) and vegetation with floating leaves (amphibian buckwheat).

The bottom fauna of the reservoirs of the Krivoy Rog fish farm, despite some differences, also has many common features, especially in the composition of the fauna of pelophilic biocenoses, which is explained by the common conditions for the existence of pelophiles in these reservoirs.

Studies of the formation of benthic fauna as the main food supply for benthic fish have shown that the food fauna for them is subject to noticeable seasonal fluctuations. In the summer period, the period of intensive feeding of fish, the benthic fauna for them is noticeably reduced due to the emergence of adult insects, the natural death of invertebrates after reproduction.

Along with an increase in the number and biomass of food organisms, as a result of the acclimatization of animals of the liman-Caspian fauna and a number of other fish breeding activities, the fish productivity of reservoirs increased in the range of 1.5–2 times [9].

Conclusion. I would like to return to the title of this work – life at times is really similar to a reservoir in which harmony and idyll can be present with a competent and humane approach, supported by knowledge and experience. N. I. Zagubizhenko was a great scientist and mentor who made important contributions to the field of biology. She served as a beloved role model for many of her researchers and colleagues, including the author.

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ДО ПОЧАТКОВОЇ БІОГРАФІЇ М. ПОЗЕНА: АНАЛІЗ АРХІВНОЇ СПРАВИ «О ДВУХ РАЗНЫХ БРАТЬЯХ ПОЗЕН»

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Анотація. Метою статті є введення до наукового обігу та аналіз опису архівної справи щодо конвертації до християнства відомого діяча великих реформ середини XIX ст., автора одного з перших проєктів вирішення селянського питання, полтавського поміщика М. Позена та прослідкувати початковий етап його включення до управлінських і соціальних структур Наддніпрянської України та Російської імперії. **Методологія дослідження** представлена комплексом наукових підходів та методів. До роботи залучено поколіннєвий, підхід, логічний метод, за допомогою чого розкрито сутність та механізми соціальної адаптації вихрестів, методи аналізу та синтезу джерел; метод узагальнення для створення цілісного образу взаємовідносин вихрестів з імперськими елітами в добу модернізаційних змін, проблемно-хронологічний метод задля встановлення послідовності змін віросповідання в межах двох поколінь родини євреїв. **Наукова новизна** полягає у введення до наукового обігу низки джерел, які через війну стали недоступними для українських науковців. **Перспективи подальших студіювань** вітчизняними істориками «Дела о двух разных братьях Позен» полягають у залученні цієї справи до реконструкції початкової кар'єри М. Позена, вивчення історії трансформації ідентичностей, студій з юдаїки та інших галузей історичної науки. **Висновки.** Оприлюднені джерела дозволяють суттєво уточнити й розширити існуючі уявлення щодо біографії М. Позена та його родини, спростувати усталені в історіографії версії щодо його походження та початку кар'єри як імперського чиновника, окреслити особисті риси та коло знайомств, які дозволили йому увійти до місцевої та імперської еліти й зробити успішну кар'єру.

Ключові слова: історія України, історія євреїв в України, М. Позен, конвертовані євреї, імперська влада, архівна справа.