

Alla Potapova, Taras Pohrebskyi, Gennadii Golub,
Sofia Maksymiuk

Lesya Ukrainka Volyn National University, The Department of Economic and Social Geography, Potapova str. 9,
43021 Lutsk, Ukraine; email: potapova.alla@vnu.edu.ua; pogrebskyi.taras@vnu.edu.ua;
golub.gennadiy@vnu.edu.ua; maksimiuk.2501@gmail.com

The development of anthropogenic landscape science in Ukraine

Potapowa A., Pogribskij T., Gołub G., Maksimiuk S. **Rozwój krajobrazoznawstwa antropogenicznego na Ukrainie**. Omówiono istotę pojęcia „krajobrazoznawstwo antropogeniczne”. Scharakteryzowano przesłanki rozwoju krajobrazoznawstwa antropogenicznego na Ukrainie. Prześladowano udział rodzimych i zagranicznych badaczy w zdefiniowaniu tego pojęcia. Uogólniono podejścia naukowe i podstawy naukowo-metodyczne badań krajobrazów antropogenicznych.

Потапова А., Погребский Т., Голуб Г., Максимюк С. **Развитие антропогенного ландшафтоведения в Украине**. Раскрыта сущность понятия „антропогенное ландшафтоведение”. Охарактеризованы предпосылки развития антропогенного ландшафтоведения в Украине. Исследован вклад отечественных и зарубежных ученых в определение этого понятия. Обобщены научные подходы и научно-методические основы изучения антропогенных ландшафтов.

Потапова А., Погребський Т., Голуб Г., Максимюк С. **Розвиток антропогенного ландшафтознавства в Україні**. Розкрито сутність поняття „антропогенне ландшафтознавство». Охарактеризовано передумови розвитку антропогенного ландшафтознавства в Україні. Досліджено внесок вітчизняних і зарубіжних учених щодо визначення цього поняття. Узагальнено наукові підходи та науково-методичні основи вивчення антропогенних ландшафтів.

Key words: landscapes, anthropogenic landscape science, landscape complexes, anthropogenic geography, geoglobalism

Słowa kluczowe: krajobrazy, krajobrazoznawstwo antropogeniczne, kompleksy krajobrazowe, geografia antropogeniczna, geoglobalizm

Ключевые слова: ландшафты, антропогенное ландшафтоведение, ландшафтные комплексы, антропогенная география, геоглобалистика

Ключові слова: ландшафти, антропогенне ландшафтознавство, ландшафтні комплекси, антропогенна географія, геоглобалистика

Abstract

The essence of the concept of "anthropogenic landscape science" is revealed. The prerequisites for the development of anthropogenic landscape science in Ukraine are characterized. The

contribution of domestic and foreign scientists to the definition of this concept was researched. Scientific approaches and scientific-methodological bases of the study of anthropogenic landscapes are summarized.

Formulation of the problem

Anthropogenic landscape science studies landscape complexes changed by human. The influence of economic activity of people on natural complexes is extremely large, which is a consequence of their radical change.

Anthropogenic geography is a young science, the origin of which dates back to the period from the 9th–10th century to the first half of the 19th century, and the establishment of scientific foundations in the 60–70s of the 20th century. At the current stage, further development of the science, the theoretical part, is taking place, various controversial issues and approaches to the definition of the term "anthropogenic landscape science" are being considered.

Analysis of scientific research on this problem

The end of the 19th century was marked in geography not only by the birth of complex sciences such as physical geography, but also by the official recognition of the role and importance of man, the results of his economic activity in the development of nature. A more detailed analysis of materials from the history of the development of anthropogenic geography makes it possible to assert that this science was started even in the times of Kyivan Rus.

17th–early 19th centuries were interesting in the development of anthropogenic geography. At this time, not only the facts of human influence on the nature of Ukraine are ascertained, but also noted attempts to actively change individual components of nature – soils, surface waters and vegetation with the aim of their rational use. Practical achievements of Ukrainian farmers and foresters, in particular V. Lomykivskiy, V. Skarzhynskiy, A. de Carriere, M. Sredinskyi were taken into account in research, theoretical generalizations and practical recommendations.

The formation of anthropocentric views of geographers of the second half of the 19th and early 20th centuries was influenced by the book by D. Marsh "Man and Nature, or the Influence of Man on the Change in Physical and Geographical Conditions." In Ukraine, with publications close to anthropogenic geography at the beginning of the 20th century sparked S. Rudnytskyi, P. Tutkovskiy, P. Chubynskiy, and I. Pachoskiy.

The biogeographic direction of anthropogenic geography is represented by the works of I. Pachoskiy, E. Lavrenko, and P. Pogrebnyak.

V. Bondarchuk for the first time described anthropogenic industrial forms of relief, made an attempt to classify them, and showed the influence on the activation of geomorphological processes in industrially developed areas.

In the field of anthropogenic geomorphology, the researches of Y. Kravchuk, I. Kovalchuk, E. Palienka, M. Borshchevskii, Y. Shvidky are known.

H. Denysyk draws attention to certain aspects of the development of anthropogenic landscape science: territorial, qualitative and temporal.

V. Petlin notes that the term anthropogenic landscape is interpreted as a natural territorial complex, the properties of which are determined by human activity. The change of any properties of natural complexes by man, according to the given definition, immediately transfers them to the rank of anthropogenic.

Scientific foundations of landscape ecology, geoecology, geochemistry and geophysics of landscapes, geosystem monitoring, applied physical geography, urban geography, anthropogenic landscape science, developed in the works of M. Grodzinsky, O. Topchiev, A. Melnyk, G. Miller, V. Hutsuliak, L. Malysheva, P. Shishchenko is the theoretical basis for the study of anthropogenic transformation of geosystems.

The purpose of this article is to investigate the formation of a modern network of scientific

centers of development of anthropogenic landscape science in Ukraine.

Research methodology

During the research, the works of H. Denysyk, M. Grodzinsky and V. Petlin were used. Systemic, landscape, ecological, landscape-ecological approaches, as well as the principle of optimizing the natural environment, were used to study anthropogenic impacts on landscapes.

Results of the research

Anthropogenic landscape studies as an independent direction began to develop in Ukraine only in the early 70s of the XX century.

M. Grodzinsky directed his scientific interests to the field of landscape ecology. Scientists wrote the first university textbook on the discipline, developed a number of theoretical propositions and concepts of landscape ecology, which gained wide recognition. The scientist substantiated the concept of the multiplicity of forms of landscape sustainability and the system of indicators for its quantitative assessment. On the basis of this concept, the mechanisms of ensuring and breaking the stability of geosystems, landscape territorial structures of various types, and landscape boundaries and ecotones are clarified. He developed a method of landscape-ecological forecasting based on Markov matrices, methods for determining permissible norms of anthropogenic loads on landscapes and ecosystems, criteria and methods for determining the degree of criticality of landscapes, assessing the probability and losses from environmental risks.

In recent years, M. Grodzinsky scientific developments are related to the problems of sustainable development and landscape diversity, where a system of ecological and regional indicators of sustainable development for countries with a transitional state of economy is substantiated (*Географічний факультет*, 2008).

The Department of Physical Geography and Geoecology of Taras Shevchenko National

University of Kyiv is the leading scientific institution in Ukraine for the problems of landscape ecology and geoecology. The most important scientific results were obtained in solving such problems as assessing the resistance of landscapes to anthropogenic loads, forecasting changes in landscapes, and determining the norms of permissible anthropogenic loads on landscapes.

Historical and landscape studies are based on the thesis that the current geoecological situation in the region is formed through the centuries-old process of ethnogenesis, technogenesis, sociogenesis and landscapegenesis. The developed system of methods of historical and landscape analysis of the region allows not only to restore the landscapes of the historical past, but also the territorial features of nature use for different time slices, to find out the causes and consequences of landscape and ecological crises and other changes in landscape and economic systems. Basically, these studies are conducted in the Middle Dnipro region.

Research on sustainable development is focused on resolved issues of zoning of the territory of Ukraine, development of a system of ecological and regional indicators of sustainable development, definition of landscape-ecological norms of anthropogenic impacts on ecosystems, formation of appropriate human behavior in the landscape and attitudes towards it. The obtained theoretical and methodological results were used in the project on the development of a strategy for the supportive development of the Dnipro basin.

The anthropocentric direction of N. Mykhaylenko consists in the development of scientific principles and methods of experimental research of the impact of landscape factors on human health and well-being, both for natural landscapes and anthropogenically modified ones. Research is conducted in regions with contrasting landscape conditions (the Ukrainian Carpathians) and in landscapes with a stressful regime for human life (the largest cities of Ukraine).

P. Tyshchenko was involved in the development of the principles of landscape analysis in regional planning, the theory of modern landscape genesis.

O. Dmytruk developed the problems of urban nature use, urban landscapes and regional urban landscape structures of Ukraine.

V. Khilchevsky is engaged in the study of changes in the chemical composition of river waters of the Upper Dnipro basin under the influence of anthropogenic factors.

V. Osadchij is a specialist in the study of conditions and processes of surface water quality formation. Under his scientific leadership, a number of national and international projects were carried out, devoted to the assessment of the influence of natural and man-made factors on the formation of the chemical composition and quality of surface waters, ecological monitoring of natural environments in the region where the Zaporizhia NPP is located.

Original studies of the radiation landscapes of the Chernobyl NPP zone are conducted at the Institute of Geography of the National Academy of Sciences of Ukraine.

The formation and development of anthropogenic landscape science is closely related to the formation and development of the Lviv School of Landscape Science, which was founded by Professor K. Gerenchuk. The main achievements of the Lviv School of Landscape Scientists during this period were the development of the theory and methodology of field large- and medium-scale landscape studies, the study of the structure and dynamics of the landscapes of the Western region of Ukraine.

Under the leadership of Professor H. Miller, the development of new areas of landscape research began – the functioning, dynamics and interaction of facies (V. Petlin), landscape monitoring (A. Melnyk), mapping of landscapes of urbanized territories (I. Kruglov), anthropogenic influence on the natural geosystems of the Carpathians (V. Bilanyuk, V. Matviyev) (ПЕТЛИН, БІЛАНЮК, 2017)

Under the leadership of Professor A. Melnyk, the scientific foundations of ecological and landscape analysis of mining and industrial, recreational and residential areas, landscape and ecological information systems for sustainable development and assessment of natural resources and others were developed.

S. Kukurudza studied the assessment of the state of natural resources and the consequences of anthropogenic influence on landscape systems. This direction covers works devoted to theoretical, methodical and applied issues of natural and anthropogenic transformation of territorial landscape systems.

The leading areas of scientific research of the Lviv School are:

- anthropogenic transformation of landscapes (P. Shtoiko, L. Bilous);
- monitoring, metisization and ecological assessment of landscape systems (S. Kukurudza, F. Kiptach).

I. Kovalchuk – one of the founders of ecological landscape science in Ukraine studies the specifics, scales and consequences of human influence on the relief and other components of landscapes, as well as on the processes of relief formation. These problems belong to anthropogenic and engineering geomorphology. The scientist investigates them from historical-geomorphological and historical-geographical positions, based on the ideas of complex and systemic approaches. These studies covered the regions of operation of powerful mining and technical complexes (Lviv-Volyn coal, Yavoriv and Rozdilsky sulfur-bearing, Stebnytsky, Kalusky and Solotvyn saline basins and deposits and quarries, areas of manifestation of anthropogenic erosion and karst, etc.). The field of engineering geomorphology and constructive geography includes works dedicated to anti-erosion and water protection design, reconstruction of ponds and small rivers and optimization of their condition, reclamation of lands disturbed by mining and engineering activities (ПОТАРОВА et al., 2023).

At the Yuriy Fedkovych Chernivtsi National University issues of anthropogenic landscape science were dealt with by L. Voropai.

V. Hutsuliak first developed the method of integral assessment of the ecological situation of landscapes. His works are devoted to landscape science, landscape geochemistry and landscape ecology.

M. Dubchak also deals with these issues, for which he studied the natural-territorial complexes of the Dnister valley-river system within the boundaries of Middle Transnistria, their changes under the influence of the hydrotechnical system.

In Odesa I. I. Mechnikov National University the issues of anthropogenic landscape science were dealt with by prof. H. Shvebs, who developed the problems of regional nature management of the Black Sea region, geographical and engineering foundations of the contour soil protection organization of the territory, put forward the idea of ionization of natural and economic territorial systems.

T. Bezverhnyuk studied automated agro-landscape zoning.

In the Vinnytsia Mykhailo Kotsyubynskyi State Pedagogical University a lot of attention is paid to the study of anthropogenic landscapes of Podillia, the development of anthropogenic landscape studies. These questions are considered by H. Denysyk and his students. H. Denysyk (ДЕНИСИК, 2012) proposed the classification of anthropogenic landscapes.

In Lesya Ukrainka Volyn National University professor V. Petlin (ПЕТЛИН, 2018) deals with issues of landscape science, modeling and forecasting the state of the environment.

O. Mishchenko (МІЩЕНКО, 2018) touches on the study of sacred landscapes of the western region.

Conclusions

Anthropogenic landscape science – one of the sections of complex landscape geography is at the stage of formation, therefore the development of theoretical foundations is now of utmost importance, and in specific studies – the clarity of the author's positions on debatable issues.

References

- Географічний факультет у персоналіях / Олійник Я. Б., Бортник С. Ю., Гродзинський М. Д., Дмитрук О. Ю. та інші. Київ, 2008.
- Денисик Г. І., 2012: Антропогенне ландшафтознавство: навчальний посібник. ПП ТД „Едельвейс і К”, Вінниця: 306 с.
- Міщенко О. В., 2018: Сакральний ландшафт: зміст та функції. Вісник Київського національного університету імені Тараса Шевченка. Географія, Вип. 1, № 70. ВПЦ „Київський університет”, Київ: 83–88.
- Петлін В. М., 2018: Ієрархії природних територіальних систем. Монографія. ПрАТ „Волинська обласна друкарня”, Луцьк: 476 с.
- Петлін В. М., Біланюк В. І., 2017: Теоретичне обґрунтування виникнення катастрофічних явищ у геосистемах. Людина та довкілля. Проблеми неоекології, № 1–2 (27). Харківський національний університет імені В. Н. Каразіна, Харків: 9–16.
- Potapova A., Pohrebskyi T., Golub G., Golub S., 2023: The transformation of natural agricultural landscapes of the Volyn Region. Acta Geographica Silesiana, № 17/1 (49). INoZ UŚ, Sosnowiec: 25–30.

Received: 25 June, 2023

Wpłynął do redakcji: 25 czerwca 2023

Поступила в редакцію: 25 июня 2023