

ЗЕМЛЕУСТРОЙСТВО, КАДАСТР И МОНИТОРИНГ ЗЕМЕЛЬ/LAND MANAGEMENT, CADASTRE AND LAND MONITORING

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GEOGRAPHICAL STUDY OF THE CONDITION AND USE OF LANDS BY CIVIL REAL ESTATE OBJECTS IN FEDERAL PROTECTED AREAS

Research article

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Abstract

This article examines the condition and use of lands occupied by civil real estate objects within federally protected natural areas of Russia. The study aims to identify spatial-legal discrepancies, evaluate the ecological consequences of human activity, and assess the effectiveness of land legislation. A mixed-methods framework was applied, combining legal and cadastral analysis with GIS-based spatial modeling, remote sensing data, and field surveys. Information from the National Spatial Data System (NSPD) and the Federal State Information System for Territorial Planning (FGIS TP) provided the empirical foundation.

The results reveal substantial discrepancies between cadastral records, settlement boundaries, and protected area zoning, which create legal uncertainties and intensify ecological risks, including habitat fragmentation, biodiversity loss, and soil degradation. Case studies of national parks demonstrate that poorly coordinated planning documents and outdated spatial data complicate property rights, increase administrative barriers, and undermine conservation objectives.

The article emphasizes the necessity of integrating ecological criteria into land-use planning, updating cadastral information using modern GIS technologies, and harmonizing legislation. Practical recommendations are proposed to optimize land management, balance socio-economic development with environmental protection, and ensure the long-term sustainability of specially protected natural territories in Russia.

Keywords: specially protected natural territories, land management, cadastre, civil real estate, GIS, spatial analysis, environmental risk, land legislation, sustainable development.

ГЕОГРАФИЧЕСКОЕ ИССЛЕДОВАНИЕ СОСТОЯНИЯ И ИСПОЛЬЗОВАНИЯ ЗЕМЕЛЬ ОБЪЕКТАМИ ГРАЖДАНСКОЙ НЕДВИЖИМОСТИ НА ФЕДЕРАЛЬНЫХ ОХРАНЯЕМЫХ ТЕРРИТОРИЯХ

Научная статья

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Аннотация

В статье исследуется состояние и использование земель, занятых объектами гражданской недвижимости, на особо охраняемых природных территориях (ООПТ) федерального значения России. Цель работы — выявление пространственно-правовых диссонансов, оценка экологических последствий антропогенной деятельности и эффективности земельного законодательства. Применена комплексная методология, включающая правовой и кадастровый анализ, ГИС-моделирование, анализ данных дистанционного зондирования Земли (ДЗЗ) и полевые исследования. Эмпирическую основу составили данные Национальной системы пространственных данных (НСПД) и Федеральной государственной информационной системы территориального планирования (ФГИС ТП).

Результаты выявили существенные расхождения между кадастровыми записями, границами населённых пунктов и функциональным зонированием ООПТ, что порождает правовую неопределённость и усиливает экологические риски (фрагментация местообитаний, потеря биоразнообразия, деградация почв). На примере национальных парков «Плещеево озеро» и «Самарская Лука» показано, что несогласованность планировочной документации и устаревшие пространственные данные усложняют оформление прав, увеличивают административные барьеры и снижают эффективность охраны.

Подчёркивается необходимость интеграции экологических критериев в планирование землепользования, оперативного обновления кадастровой информации с использованием современных ГИС-технологий и гармонизации законодательства. Предложены практические рекомендации по оптимизации землеустройства, обеспечивающие баланс между социально-экономическим развитием и сохранением природных комплексов ООПТ.

Ключевые слова: особо охраняемые природные территории, землеустройство, кадастр, гражданская недвижимость, ГИС, пространственный анализ, экологический риск, земельное законодательство, устойчивое развитие.

Introduction

The relevance of the study is determined by the increasing anthropogenic pressure on federally protected natural areas (PAs) in the context of civil real estate development. Legal conflicts arising from discrepancies between cadastral data, settlement boundaries, and PA zoning create risks for both the ecological sustainability of these territories and the rights of individuals and legal entities [1]. Settlements located within PAs are in a zone of special legal and environmental conflict. The specific regime of national parks and nature reserves only exacerbates geographical, environmental, and economic problems [2].

According to Clause 1, Article 3.1 of Federal Law No. 33-FZ dated March 14, 1995 "On Specially Protected Natural Territories" (hereinafter — Federal Law No. 33-FZ), land plots within settlement boundaries can remain with rightsholders when these territories are included in national parks, provided their use complies with the established protection regime. However, as practice shows, the procedure for coordinating types of activities, especially in settlements with unestablished boundaries, becomes economically and administratively burdensome.

This article, based on a comprehensive analysis of legislative acts, territorial planning documents, and geospatial data, identifies key problems affecting the geographical and environmental aspects of activities within PAs [3], [4]. The aim of the work is to identify spatial-legal dissonances in the use of PA lands for civil development and to develop recommendations for their minimization based on the integration of GIS technologies, environmental monitoring, and legal analysis.

Research methods and principles

The object of the study is specially protected natural territories of federal significance — national parks within whose boundaries settlements with active residential development are located.

The subject of the study is the spatial-legal relations arising from the use of land plots for civil real estate objects under a special protection regime.

The research is based on a comprehensive methodology integrating legal analysis, geoinformation modeling, and environmental assessment. The work was carried out according to the following algorithm:

1. Legal and Regulatory Analysis: Systematization of federal and regional legislation (Federal Law No. 33-FZ, the Land Code of the Russian Federation, the Urban Planning Code of the Russian Federation, Federal Law No. 505-FZ), subordinate acts (including Orders of the Ministry of Natural Resources of Russia), and local regulatory documents governing land use within PAs.

2. Collection and Validation of Geospatial Data: Formation of the initial data array from public sources: the National Spatial Data System (NSPD, 2024) [33] and the Federal State Information System for Territorial Planning (FGIS TP) [30]. To verify cadastral maps and settlement boundaries, up-to-date Sentinel-2 satellite imagery and archival materials were used. The accuracy of spatial data referencing was controlled at a level not lower than 5 meters.

3. GIS Analysis and Cartographic Modeling: Spatial analysis was performed in the ArcGIS Pro 3.1 and QGIS 3.28 software packages using overlay, buffering, and spatial statistics tools. A proprietary geoinformation database was created, including the spatial distribution of land plots, PA boundaries and their functional zones, settlement boundaries, as well as data on land use types and environmental restrictions. AutoCAD 2024 software was used to detail territorial planning schemes.

4. Comparative Case Study: For an in-depth analysis, three settlements were selected, representatively reflecting the spectrum of identified problems: the village of Kriushkino (lack of established boundaries), the village of Solomidino (presence of established boundaries), and the village of Brusyany (the problem of "cluster" zoning). The selection criteria were: location in different national parks, different legal status of boundaries, and the presence of conflict situations documented in the public domain.

5. Environmental Assessment: Based on remote sensing data and literature sources, a qualitative assessment of potential environmental consequences of development was conducted: habitat fragmentation, changes in hydrological regime, recreational digression. The assessment methodology included expert analysis and mapping of ecological risk zones.

As part of the study, a geographical database was created designed to analyze the spatial distribution of civilian real estate and to study the mutual influence of anthropogenic activity and specially protected natural areas within the boundaries of national parks. Based on the results of the work, problematic aspects of this interaction were identified, focused on three key elements: "population — protected areas — legislation". The analysis of existing relationships has been carried out, and recommendations have been developed to optimize the living conditions of people in the territories of national parks and adjacent protected areas [4], [5], [7], [23].

Main results

1. Legal Collisions and Administrative Barriers in Construction Approval. The analysis showed that the key factor determining the legal regime of land plot use is the presence of officially established settlement boundaries in the Unified State Register of Real Estate (USRE).

In accordance with Clause 4, Article 15 of Federal Law No. 33-FZ, a resident of a settlement whose boundaries are not established is obliged to coordinate with the Ministry of Natural Resources of Russia measures for the construction of a residential building. The procedure requires providing an extensive package of documents, including materials of the Environmental Impact Assessment (EIA), which entails significant time and financial costs [10].

Example 1: The village of Kriushkino (Pleshcheyevo Lake National Park). The settlement boundaries are absent from the USRE (Fig. 1). The provisions of Article 3.1 of Federal Law No. 33-FZ do not apply to residents, creating a legal vacuum: they are forced to either wait for the establishment of boundaries or undergo a complex coordination procedure with the Ministry of Natural Resources of Russia. This is economically impractical for individual developers [33].

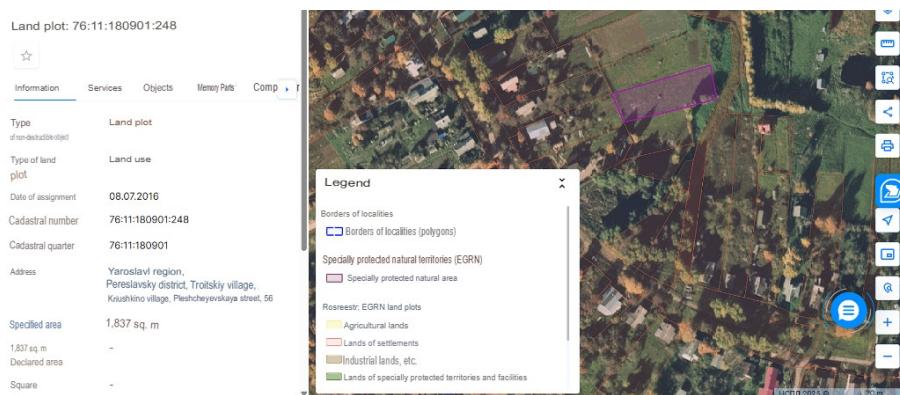


Figure 1 - Land plot diagram 76:11:180901:248, which requires approval of the type of work, map scale 1:2000
 DOI: <https://doi.org/10.60797/IRJ.2026.164.79.1>

Note: source [33]

Example 2: The village of Solomidino (Pleshcheyevo Lake National Park). The settlement boundaries are entered in the USRE (No. 76:11-4.303). By virtue of Article 3.1 of Federal Law No. 33-FZ, the developer is exempt from the obligation to coordinate with the Ministry of Natural Resources of Russia for the construction of an individual residential building within the boundaries of this settlement (Fig. 2).

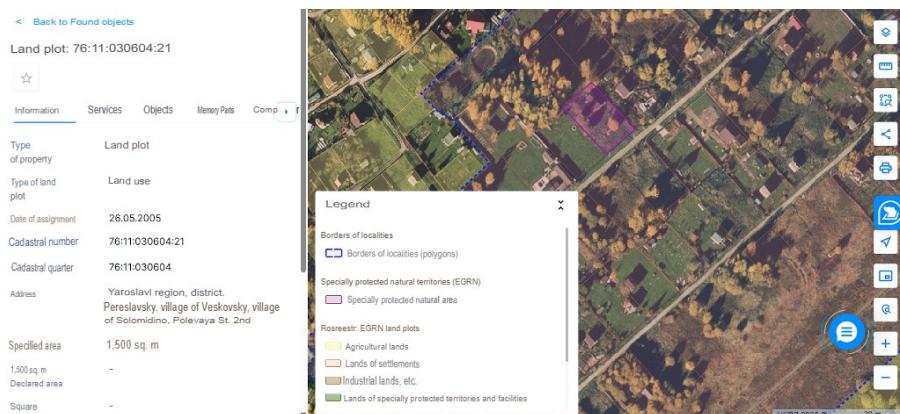


Figure 2 - Land plot diagram 76:11:030604:21, obtained from a geoinformation portal that does not require approval of the type of activity map scale 1:2000
 DOI: <https://doi.org/10.60797/IRJ.2026.164.79.2>

Note: source [33]

Thus, there is an inequality of legal conditions for residents of two neighboring villages, which contradicts the principles of legal certainty and social justice.

Given that municipal administrations bear the financial responsibility for demarcating settlement boundaries for cadastral registration, two key issues require attention: the socioeconomic status of residents within national parks, and the establishment of a streamlined approval process for siting capital construction projects on land plots designated for such use. This study proposes a framework to regulate family residence in these areas. Furthermore, leveraging modern technologies like GIS and remote sensing in document preparation is expected to significantly accelerate the processing of land rights documentation for the studied plots [11].

2. Problems of Territorial Planning and Zoning. Systemic shortcomings in territorial planning documents and PA zoning have been identified:

Cluster Zoning and Violation of Settlement Compactness. Using the example of the village of Brusyany (Samarskaya Luka National Park), it was revealed that the inclusion of the remote farmstead "Brusyany" into the settlement boundaries led to the formation of a non-compact, cluster structure (Fig. 3, 4, 5). This contradicts the formal definition of a "settlement" according to Order of the Ministry of Economic Development of Russia No. 71 (2021) [12], [13], [14]. Moreover, the Master Plan and Land Use and Development Rules (LUDR) were approved without substantive consideration by the Ministry of Natural Resources of Russia, using the "silent approval" mechanism, which calls into question their compliance with the environmental protection regime.

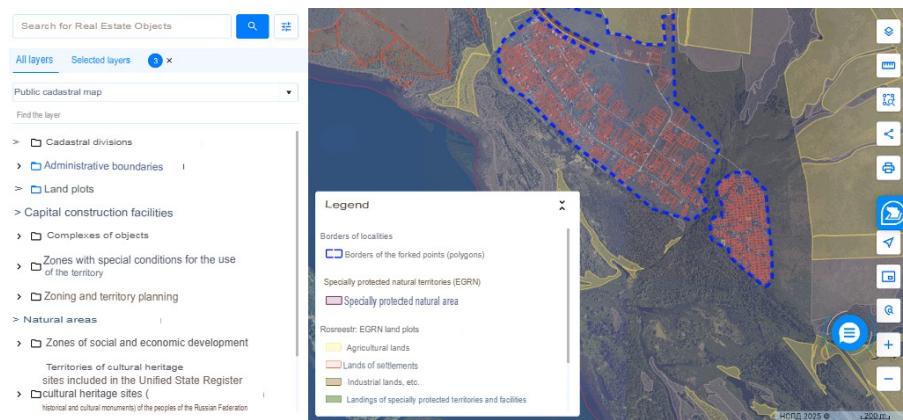


Figure 3 - The village of Brusyany and the farm "Brusyany" on the portal of the NSPD, map scale 1:20000
 DOI: <https://doi.org/10.60797/IRJ.2026.164.79.3>

Note: source [33]

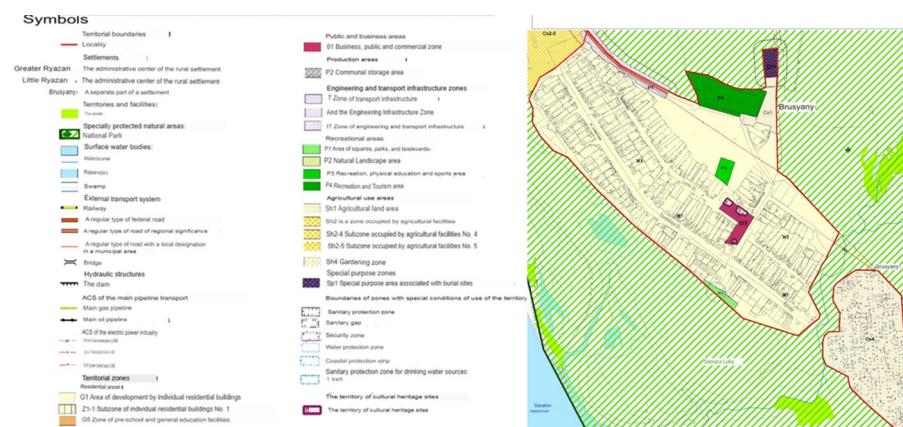


Figure 4 - The map of the urban zoning of the village of Brusyany is presented within the framework of the current rules of land use and development, map scale 1:5000
 DOI: <https://doi.org/10.60797/IRJ.2026.164.79.4>

Note: source [30]

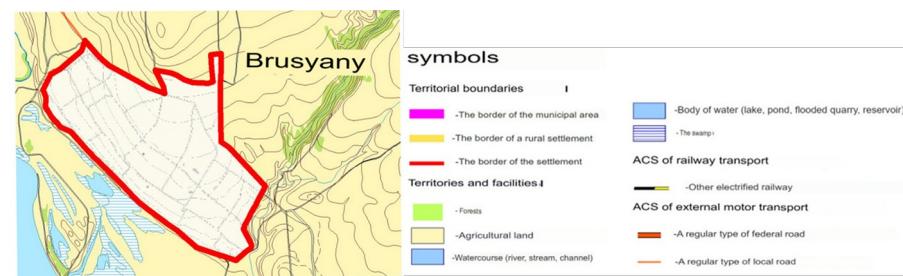


Figure 5 - A fragment of the map showing the boundaries of the settlements included in the rural settlement of Bolshaya Ryazan in the Stavropol region of the Samara region is taken from the Master Plan, map scale 1:25000

DOI: <https://doi.org/10.60797/IRJ.2026.164.79.5>

Note: source [33]

Poor Quality of Cartographic Materials. Functional zoning schemes published in appendices to PA Regulations (e.g., for Pleshcheyevo Lake National Park, Fig. 6) often have low readability and accuracy [16]. This leads to errors in determining the zonal affiliation of land plots during land management work.

Functional zoning map of the territory of the
Pleshcheyevo Lake National Park



Figure 6 - Functional zoning map of the territory of the Pleshcheyevo Lake National Park
DOI: <https://doi.org/10.60797/IRJ.2026.164.79.6>

Note: source [32]

Such a scheme is published in the appendix to the Regulations on the FSB Consultant Plus. The lack of legibility of cartographic materials in the official source of legal information leads to delays and errors in determining the functional zoning during land management and construction work [16].

Internal Contradictions in Regulatory Documents. The Regulations for the "Losiny Ostrov" National Park contain a norm on a 150-meter permanent prohibited zone (clause 37), absent in similar documents for other parks. At the same time, the text of the Regulations uses the term "national nature park," not provided for by Federal Law No. 33-FZ [18], [19]. This creates grounds for arbitrary interpretation of norms and corruption risks (Fig. 7).

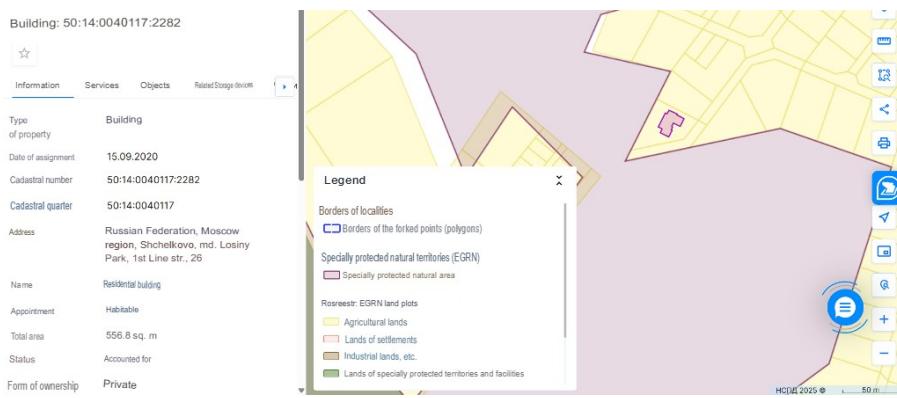


Figure 7 - An example of one of the residential buildings registered in the cadastral register in a 150-meter building-free zone, map scale 1:5000

DOI: <https://doi.org/10.60797/IRJ.2026.164.79.7>

Note: source [33]

3. Environmental Assessment of the Consequences of Unregulated Development. Spatial analysis allowed identifying potential and actual environmental risks associated with the identified legal and planning dissonances.

Habitat Fragmentation and Biodiversity Loss. Development near PA boundaries and within them (as in the case of the Brusyany cluster) disrupts the integrity of the ecological framework, creating barriers to animal migration and plant dispersal. Plots approved for development often border buffer zones and wetlands.

Impact on Water Resources. Construction in catchment areas (e.g., near Lake Pleshcheyevo) can lead to changes in surface runoff, increased load on water bodies with biogenic elements and pollutants, threatening vulnerable aquatic ecosystems.

Recreational Digression and Soil Degradation. Spontaneous development of individual residential buildings without considering the recreational capacity of territories leads to trampling, soil compaction, and damage to vegetation cover in forest or meadow areas adjacent to houses.

These risks are exacerbated by outdated cadastral maps that do not reflect the actual boundaries of vulnerable ecosystems, allowing economic activity in areas requiring special protection.

Discussion

A substantial body of both Russian and international literature offers diverse methodologies for assessing the information. The results of the study are consistent with the conclusions of Russian and international works highlighting land management problems within PAs [20], [25]. However, this work offers a comprehensive interdisciplinary perspective, linking legal gaps, cadastral errors, and environmental consequences into a single cause-and-effect chain.

The key conclusion is that the current regulatory system is reactive rather than preventive. Legal uncertainty and administrative barriers do not so much prevent negative impact as create conditions for "quiet" illegal or semi-legal development, the environmental damage from which manifests later.

International experience (e.g., managing national parks in the USA and Canada) shows the effectiveness of:

- 1) strict zoning with clear, georeferenced boundaries;
- 2) mandatory strategic environmental assessment (SEA) for all territorial development plans;
- 3) the use of public interactive GIS portals to ensure data transparency and public engagement [8], [28].

The proposed solution is a transition to "smart" PA land management based on a digital twin of the territory. Such a twin should integrate up-to-date cadastral data, legitimate boundaries and zones, environmental indicators (biodiversity indices, soil condition), and legal norms. This will allow for automated checking of document consistency and modeling the environmental consequences of planned decisions.

International and domestic practice offers many examples of creating databases that allow you to quickly update information and use it to solve emerging problems [22].

As an example, the geographic information system "State Natural Biosphere Central Forest Reserve" [23], [24], [26], a review and analysis of the data laid the foundation for further improvement of the database related to specially protected natural areas [25], [27].

Conclusion

The study has revealed systemic shortcomings in regulating land and property relations in the economic zones of national parks, manifesting at three levels:

1. Legal: Inequality of conditions for residents depending on the formal status of settlement boundaries; internal contradictions in subordinate acts; the use of the "silent approval" mechanism, which negates environmental expertise.
2. Information and Technological: Outdated, inaccurate, and poorly readable cartographic materials; lack of integration between cadastral, planning, and environmental data in state information systems.
3. Environmental: Ignoring environmental criteria at the planning stage of development, leading to landscape fragmentation, biodiversity loss, and degradation of natural complexes.

Based on the conducted analysis, the following recommendations are formulated:

1. For Legislative and Executive Authorities:

- Establish a transitional period and a simplified procedure for establishing boundaries of historically formed settlements within PAs to eliminate the legal vacuum.
- Eliminate the practice of "silent approval" for territorial planning documents within PAs. Introduce mandatory, substantive environmental expertise.
- Standardize requirements for cartographic appendices to PA regulatory documents, establishing mandatory standards for accuracy and readability.

2. For PA Management Bodies and Municipalities:

- Develop and implement geodata standards for integrating information from the USRE, NSPD, FGIS TP, and environmental monitoring materials.
- Create public GIS portals for each PA, displaying boundaries, zones, plots, legal regimes, and environmental restrictions online.
- Introduce the practice of strategic environmental assessment (SEA) when making any changes to master plans and LUDR of settlements within PAs.

3. For the Scientific and Professional Community:

- Develop a methodology for quantitative assessment of environmental risks of development within PAs, including calculation of fragmentation and recreational load indicators.
- Actively participate in creating "digital twins" of PAs as a tool for modeling development scenarios and making scientifically based management decisions.

Prospects for further research are seen in testing the proposed "smart management" model on the example of specific national parks, as well as in a comparative analysis of the effectiveness of various legal models for regulating land use in Russian and international PAs.

Конфликт интересов

Не указан.

Рецензия

Все статьи проходят рецензирование. Но рецензент или автор статьи предпочли не публиковать рецензию к этой статье в открытом доступе. Рецензия может быть предоставлена компетентным органам по запросу.

Conflict of Interest

None declared.

Review

All articles are peer-reviewed. But the reviewer or the author of the article chose not to publish a review of this article in the public domain. The review can be provided to the competent authorities upon request.

Список литературы / References

1. Андриянова Ю.М. Оценка рекреационного использования особо охраняемых природных территорий Татищевского района Саратовской области / Ю.М. Андриянова, И.В. Сергеева, Ю.М. Мохонько [и др.] // Вестник Российской университета дружбы народов. Серия: Экология и безопасность жизнедеятельности. — 2019. — Т. 27. — №2. — С. 117–127. — DOI: 10.22363/2313-2310-2019-27-2-117-127.
2. Атаев З.В. Особо охраняемые природные территории: статус, проблемы и перспективы развития : монография / З.В. Атаев. — Новосибирск : Сибирская академическая книга, 2017. — EDN YPFUOB.
3. Баранова О.Ю. Особо охраняемые природные территории в условиях градостроительства: охранные и буферные зоны / О.Ю. Баранова // Академический вестник УралНИИпроект РААСН. — 2021. — №1. — С. 10–15. — DOI: 10.25628/UNIIP.2021.48.1.00
4. Богдан Е.А. Оценка состояния особо охраняемых природных территорий некоторых северных и центральных районов Республики Башкортостан / Е.А. Богдан, А.Ф. Нигматуллин, Л.Н. Белан и др. // Вестник Академии наук Республики Башкортостан. — 2023. — №4. — С. 27–39. — DOI: 10.24412/1728-5283_2022_4_27_38
5. Бердинских С.В. Защита прокурором в судебном порядке публичных интересов в сфере использования и охраны особо охраняемых природных территорий как комплексное направление прокурорской деятельности / С.В. Бердинских // Вестник Костромского государственного университета. — 2021. — №4. — С. 192–197. — DOI: 10.34216/1998-0817-2021-27-4-192-197
6. Dillon B.G. Expand or better manage protected areas: A framework for minimizing extinction risk when threats are concentrated near edges / B.G. Dillon, H.P. Possingham, M.H. Holden // Biological Conservation. — 2025. — Vol. 311. — DOI: 10.1016/j.biocon.2025.111469
7. Джунусова Н.Д. История формирования и развития системы особо охраняемых природных территорий в Астраханской области / Н.Д. Джунусова // Вестник Астраханского государственного технического университета. — 2022. — № 2 (74). — С. 72–78. — DOI: 10.24143/1812-9498-2022-2-72-78
8. Cerini F. Are we zoning out? Biases in the assessment of protected area zoning and a blueprint for a way forward / F. Cerini, G. Chiatante, A. Chicchio [et al.] // One Earth. — 2025. — 8(2). — P. 197–212. — DOI: 10.1016/j.oneear.2025.101377.
9. Ghasemi M. Ecosystem services modelling to analyse the isolation of protected areas from a social-ecological perspective / M. Ghasemi, A. González-García, S. Serrao-Neumann // Journal of Environmental Management. — 2025. — 386. — DOI: 10.1016/j.jenvman.2025.125459.
10. Иванов А.И. Развитие системы особо охраняемых природных территорий Пензенской области / А.И. Иванов, Л.А. Новикова, В.М. Васюков и др. // Известия высших учебных заведений. Поволжский регион. Естественные науки. — 2023. — 2. — С. 39–55. — DOI: 10.21685/2307-9150-2023-2-3

11. Ivleva M.I. Ecological Aspect of the Analysis of a Project for Economic Development of the Kurshskaya Kosa (Curonian Spit) National Park as a Specially Protected Natural Territory / M.I. Ivleva, I.V. Yablochkina, T.E. Zulfugarzade [et al.] // Review of European Studies. — 2014. — 4. — P. 110–121. — DOI: 10.5539/res.v6n4p110.
12. Ишамятов И.Х. Комплексное (кластерное) зонирование городов Пензенской области на основе эколого-экономических показателей территории / И.Х. Ишамятов, Д.В. Антропов // Креативная экономика. — 2023. — 11. — С. 4263–4290. — DOI: 10.18334/ce.17.11.119528
13. Kalikhman T.P. The tendencies in the development of the system of specially protected natural territories of Siberia / T.P. Kalikhman // Geography and Natural Resources. — 2017. — 38. — P. 122–130. — DOI: 10.1134/S1875372817020020
14. Khamzina Sh.Sh. The importance of environmental audit of specially protected natural territories of the Republic of Kazakhstan / Sh.Sh. Khamzina, Z.K. Altaibayeva, V.P. Shelomentseva // ECONOMIC Series of the Bulletin of the L.N. Gumilyov ENU. — 2022. — 1. — DOI: 10.32523/2789-4320-2022-1-195-202
15. Galli M. Paraffin waxes in the North-Western Mediterranean Sea: A comprehensive assessment in the Pelagos Sanctuary, a Specially Protected Area of Mediterranean Importance / M. Galli, M. Baini, C. Panti et al. // Journal of Hazardous Materials. — 2024. — 467. — DOI: 10.1016/j.jhazmat.2024.133677
16. Масляев В.Н. Кадастровый учет земель особо охраняемых природных территорий регионального значения: состояние и перспективы / В.Н. Масляев, С.А. Тесленок, С.А. Орлова и др. // Московский экономический журнал. — 2024. — 4. — С. 169–186. — DOI: 10.55186/2413046X_2024_9_4_197
17. Mairomi H.W. Mapping actors' interests and protected area management outcomes in the Campo Ma'an landscape of Cameroon / H.W. Mairomi, J.N. Kimengsi // Forest Policy and Economics. — 2025. — 174. — DOI: 10.1016/j.forpol.2025.103493
18. Minchenko V. The tourism development in specially protected natural territories of Krasnodar Krai / V. Minchenko, E. Zadneprovskaya // Service & tourism: current challenges. — 2017. — 4. — P. 68–77. — DOI: 10.22412/1995-0411-2017-11-4-68-77
19. Мурашева А.А. Информационно-моделирующая система для решения региональных экологических проблем / А.А. Мурашева, П.П. Лепехин // Науки о земле. — 2015. — 1. — С. 26–36.
20. Novikov A. Evolution of the system of protected natural territories in Belarus: from Communism to authoritarianism / A. Novikov // Global Ecology and Conservation. — 2021. — 26. — DOI: 10.1016/j.gecco.2021.e01486
21. Rasmussen M.B. Pushing the limits to participation in Argentina's protected areas / M.B. Rasmussen, M. Pouliot // Environmental Science & Policy. — 2025. — 168. — DOI: 10.1016/j.envsci.2025.104059
22. Рыбалова М.М. Организация проектно-исследовательской деятельности обучающихся на примере изучения региональных особо охраняемых природных территорий Воронежской области / М.М. Рыбалова, Н.В. Проскурина // Вестник ВГУ, Серия: География. Геоэкология. — 2023. — 1. — С. 135–140. — DOI: 10.17308/geo/1609-0683/2023/1/135-140
23. Salikhov T.K. The study of the features of the relief and geology of the ecosystem of the Chingirlau district of the West Kazakhstan region / T.K. Salikhov, A.A. Murasheva, G.O. Abisheva et al. // NEWS of the National Academy of Sciences of the Republic of Kazakhstan, Series of Geology and Technical Sciences. — 2023. — 6. — P. 187–197. — DOI: 10.32014/2023.2518-170X.357
24. Shirokov K. Features of the Legal Regime of the Land Plots within the Boundaries of Protected Areas of Specially Protected Natural Territories / K. Shirokov // Pravosudie / Justice. — 2020. — 2. — P. 195–213. — DOI: 10.37399/issn2686-9241.2020.2.195-213
25. Starokozheva G.I. The regional determinants of developing the net of specially protected natural areas / G.I. Starokozheva, I.V. Mitrofanova, M.A. Yuliya // Conference: International Scientific Conference "Competitive, Sustainable and Secure Development of the Regional Economy: Response to Global Challenges". — 2018. — 39. — P. 423–428. — DOI: 10.2991/cssdre-18.2018.87
26. Терехова М.В. Природные и антропогенные воздействия, негативно влияющие на экологическое состояние почвы. Наука и инновации: исследования и достижения : сборник статей / М.В. Терехова // Международная научно-практическая конференция. — Пенза: Издательство Пензенского государственного университета, 2024. — С. 130–133.
27. Yakovleva I.A. Current issues in development of protected areas / I.A. Yakovleva // Fundamental research. — 2015. — 12(2). — P. 438–443.
28. Wan L. Evaluating the socioeconomic and psychological implications of human-wildlife conflict within protected areas in China / L. Wan, G. Liu, X. Su // Ecological Frontiers. — 2025. — 45(3). — P. 693–700. — DOI: 10.1016/j.ecofro.2024.12.012
29. Zhang Y. Social impacts from tourism development in protected areas: Comparing communities in different conservation zones of Wulingyuan World Heritage Site / Y. Zhang, H. Philippe, F. Vanclay // Land Use Policy. — 2025. — 158. — DOI: 10.1016/j.landusepol.2025.107753
30. Федеральная государственная информационная система территориального планирования // Портал ФГИС ТП. — URL: <https://fgistp.economy.gov.ru/> (дата обращения: 15.09.2025)
31. Генеральный план сельского поселения Большая Рязань Ставропольского муниципального района Самарской области // Генеральный план. Федеральная государственная информационная система территориального планирования. — 2013. — URL: <https://fgistp.economy.gov.ru/> (дата обращения: 15.09.2025)
32. Приказ Минприроды России от 15.03.2012 N 60 "Об утверждении Положения о национальном парке "Плещеево озеро" // КонсультантПлюс. — URL: https://www.consultant.ru/document/cons_doc_LAW_128364/ (дата обращения: 15.09.2025)

33. Национальная система пространственных данных [НСПД] // Национальный портал пространственных данных. Федеральная служба государственной регистрации, кадастра и картографии Российской Федерации. — 2024. — URL: <https://nsdp.gov.ru/> (дата обращения: 15.09.2025)

Список литературы на английском языке / References in English

1. Andriyanova Yu.M. Otsenka rekreatsionnogo ispolzovaniya osobo okhranyaemikh prirodnikh territorii Tatishchevskogo raiona Saratovskoi oblasti [Assessment of recreational use of specially protected natural territories of the Tatishchevsky district of the Saratov region] / Yu.M. Andriyanova, I.V. Sergeeva, Yu.M. Mokhonko [et al.] // Vestnik Rossiiskogo universiteta druzhbi narodov. Seriya: Ekologiya i bezopasnost zhiznedeyatelnosti [Bulletin of the Peoples' Friendship University of Russia. Series: Ecology and life safety]. — 2019. — Vol. 27. — №2. — P. 117–127. — DOI: 10.22363/2313-2310-2019-27-2-117-127 [in Russian]
2. Ataev Z.V. Osobo ohranyaemye prirodnye territorii: status, problemy i perspektivy razvitiya : monografiya [Specially protected natural territories: Status, problems and development prospects : monograph] / Z.V. Ataev. — Novosibirsk : Siberian Academic Book, 2017. — EDN YPFUOB. [in Russian]
3. Baranova O.Yu. Osobo ohranyaemye prirodnye territorii v usloviyakh gradostroitel'stva: ohranny'e i buferny'e zony' [Specially protected natural territories in urban development: protected and buffer zones] / O.Yu. Baranova // Academic Bulletin of UralNIIproekt RAASN. — 2021. — №1. — P. 10–15. — DOI: 10.25628/UNIIP.2021.48.1.00 [in Russian]
4. Bogdan E.A. Ocenka sostoyaniya osobo ohranyaemyx prirodnyx territorij nekotoryx severnyx i central'nyx rajonov Respubliki Bashkortostan [Assessment of the state of specially protected natural territories of some northern and central regions of the Republic of Bashkortostan] / E.A. Bogdan, A.F. Nigmatullin, L.N. Belan et al. // Bulletin of the Academy of Sciences of the Republic of Bashkortostan. — 2023. — №4. — P. 27–39. — DOI: 10.24412/1728-5283_2022_4_27_38 [in Russian]
5. Berdinskix S.V. Zashchita prokurorom v sudebnom poryadke publichnyx interesov v sfere ispol'zovaniya i ohrany' osobo ohranyaemyx prirodnyx territorij kak kompleksnoe napravlenie prokurorskoy deyatel'nosti [The prosecutor's judicial protection of public interests in the use and protection of specially protected natural territories as a complex area of prosecutorial activity] / S.V. Berdinskix // Bulletin of Kostroma State University. — 2021. — №4. — P. 192–197. — DOI: 10.34216/1998-0817-2021-27-4-192-197 [in Russian]
6. Dillon B.G. Expand or better manage protected areas: A framework for minimizing extinction risk when threats are concentrated near edges / B.G. Dillon, H.P. Possingham, M.H. Holden // Biological Conservation. — 2025. — Vol. 311. — DOI: 10.1016/j.biocon.2025.111469
7. Dzhunusova N.D. Iстория формирования и развития системы особы охраняемых природных территорий в Астраханской области [History of formation and development of system of specially protected natural territories in Astrakhan region] / N.D. Dzhunusova // Bulletin of the Astrakhan State Technical University. — 2022. — № 2 (74). — P. 72–78. — DOI: 10.24143/1812-9498-2022-2-72-78 [in Russian]
8. Cerini F. Are we zoning out? Biases in the assessment of protected area zoning and a blueprint for a way forward / F. Cerini, G. Chiatante, A. Chicchio [et al.] // One Earth. — 2025. — 8(2). — P. 197–212. — DOI: 10.1016/j.oneear.2025.101377.
9. Ghasemi M. Ecosystem services modelling to analyse the isolation of protected areas from a social-ecological perspective / M. Ghasemi, A. González-García, S. Serrao-Neumann // Journal of Environmental Management. — 2025. — 386. — DOI: 10.1016/j.jenvman.2025.125459.
10. Ivanov A.I. Razvitiye sistemy' osobo ohranyaemyx prirodnyx territorij Penzenskoj oblasti [Development of the system of specially protected natural territories of Penza region] / A.I. Ivanov, L.A. Novikova, V.M. Vasyukov et al. // University Proceedings. Volga Region. Natural Sciences. — 2023. — 2. — P. 39–55. — DOI: 10.21685/2307-9150-2023-2-3 [in Russian]
11. Ivleva M.I. Ecological Aspect of the Analysis of a Project for Economic Development of the Kurshskaya Kosa (Curonian Spit) National Park as a Specially Protected Natural Territory / M.I. Ivleva, I.V. Yablochkina, T.E. Zulfugarzade [et al.] // Review of European Studies. — 2014. — 4. — P. 110–121. — DOI: 10.5539/res.v6n4p110.
12. Ishamyatov I.X. Kompleksnoe (klasternoe) zonirovanie gorodov Penzenskoj oblasti na osnove e'kologo-e'konomicheskix pokazatelej territorii [Complex (cluster) zoning of cities of Penza region on the basis of ecological and economic indicators of the territory] / I.X. Ishamyatov, D.V. Antropov // Creative Economy. — 2023. — 11. — P. 4263–4290. — DOI: 10.18334/ce.17.11.119528 [in Russian]
13. Kalikhman T.P. The tendencies in the development of the system of specially protected natural territories of Siberia / T.P. Kalikhman // Geography and Natural Resources. — 2017. — 38. — P. 122–130. — DOI: 10.1134/S1875372817020020
14. Khamzina Sh.Sh. The importance of environmental audit of specially protected natural territories of the Republic of Kazakhstan / Sh.Sh. Khamzina, Z.K. Altaibayeva, V.P. Shelomentseva // ECONOMIC Series of the Bulletin of the L.N. Gumilyov ENU. — 2022. — 1. — DOI: 10.32523/2789-4320-2022-1-195-202
15. Galli M. Paraffin waxes in the North-Western Mediterranean Sea: A comprehensive assessment in the Pelagos Sanctuary, a Specially Protected Area of Mediterranean Importance / M. Galli, M. Baini, C. Panti et al. // Journal of Hazardous Materials. — 2024. — 467. — DOI: 10.1016/j.jhazmat.2024.133677
16. Maslyaev V.N. Kadastrov'yj uchet zemel' osobo ohranyaemyx prirodnyx territorij regional'nogo znacheniya: sostoyanie i perspektivy' [Cadastral registration of lands of specially protected natural territories of regional importance: state and prospects] / V.N. Maslyaev, S.A. Teslenok, S.A. Orlova et al. // Moscow Economic Journal. — 2024. — 4. — P. 169–186. — DOI: 10.55186/2413046X_2024_9_4_197 [in Russian]

17. Mairomi H.W. Mapping actors' interests and protected area management outcomes in the Campo Ma'an landscape of Cameroon / H.W. Mairomi, J.N. Kimengsi // Forest Policy and Economics. — 2025. — 174. — DOI: 10.1016/j.forpol.2025.103493
18. Minchenko V. The tourism development in specially protected natural territories of Krasnodar Krai / V. Minchenko, E. Zadneprovskaya // Service & tourism: current challenges. — 2017. — 4. — P. 68–77. — DOI: 10.22412/1995-0411-2017-11-4-68-77
19. Murasheva A.A. Informacionno-modeliruyushhaya sistema dlya resheniya regional'nyx ekologicheskix problem [Information modeling system for solving regional environmental problems] / A.A. Murasheva, P.P. Lepexin // Earth Sciences. — 2015. — 1. — P. 26–36. [in Russian]
20. Novikov A. Evolution of the system of protected natural territories in Belarus: from Communism to authoritarianism / A. Novikov // Global Ecology and Conservation. — 2021. — 26. — DOI: 10.1016/j.gecco.2021.e01486
21. Rasmussen M.B. Pushing the limits to participation in Argentina's protected areas / M.B. Rasmussen, M. Pouliot // Environmental Science & Policy. — 2025. — 168. — DOI: 10.1016/j.envsci.2025.104059
22. Ry'balova M.M. Organizaciya proektno-issledovatel'skoj deyatel'nosti obuchayushhixya na primere izucheniya regional'nyx osobosti ohranyayemyx prirodnyx territorij Voronezhskoj oblasti [Organization of Design-Research Activities of Students by Studying Regional Specially Protected Natural Areas of the Voronezh Region] / M.M. Ry'balova, N.V. Proskurina // Proceedings of VSU, Series: Geography. Geoecology. — 2023. — 1. — P. 135–140. — DOI: 10.17308/geo/1609-0683/2023/1/135-140 [in Russian]
23. Salikhov T.K. The study of the features of the relief and geology of the ecosystem of the Chingirlau district of the West Kazakhstan region / T.K. Salikhov, A.A. Murasheva, G.O. Abisheva et al. // NEWS of the National Academy of Sciences of the Republic of Kazakhstan, Series of Geology and Technical Sciences. — 2023. — 6. — P. 187–197. — DOI: 10.32014/2023.2518-170X.357
24. Shirokov K. Features of the Legal Regime of the Land Plots within the Boundaries of Protected Areas of Specially Protected Natural Territories / K. Shirokov // Pravosudie / Justice. — 2020. — 2. — P. 195–213. — DOI: 10.37399/issn2686-9241.2020.2.195-213
25. Starokozheva G.I. The regional determinants of developing the net of specially protected natural areas / G.I. Starokozheva, I.V. Mitrofanova, M.A. Yuliya // Conference: International Scientific Conference "Competitive, Sustainable and Secure Development of the Regional Economy: Response to Global Challenges". — 2018. — 39. — P. 423–428. — DOI: 10.2991/cssdre-18.2018.87
26. Terekhova M.V. Prirodnye i antropogennye vozdejstviya, negativno vliyayushchie na ekologicheskoe sostoyanie pochvy. Nauka i innovacii: issledovaniya i dostizheniya : sbornik statej [Natural and anthropogenic impacts that have a negative impact on the ecological state of the soil. Science and Innovation: Research and Achievements : Collection of Articles] / M.V. Terekhova // Mezhdunarodnaya nauchno-prakticheskaya konferenciya [International Scientific and Practical Conference]. — Penza: Publishing House of Penza University, 2024. — P. 130–133. [in Russian]
27. Yakovleva I.A. Current issues in development of protected areas / I.A. Yakovleva // Fundamental research. — 2015. — 12(2). — P. 438–443.
28. Wan L. Evaluating the socioeconomic and psychological implications of human-wildlife conflict within protected areas in China / L. Wan, G. Liu, X. Su // Ecological Frontiers. — 2025. — 45(3). — P. 693–700. — DOI: 10.1016/j.ecofro.2024.12.012
29. Zhang Y. Social impacts from tourism development in protected areas: Comparing communities in different conservation zones of Wulingyuan World Heritage Site / Y. Zhang, H. Philippe, F. Vanclay // Land Use Policy. — 2025. — 158. — DOI: 10.1016/j.landusepol.2025.107753
30. Federal'naya gosudarstvennaya informacionnaya sistema territorial'nogo planirovaniya [Federal State Information System for Territorial Planning] // FGIS Territorial Planning Portal. — URL: <https://fgistp.economy.gov.ru/> (accessed: 15.09.2025) [in Russian]
31. General'nyj plan sel'skogo poseleniya Bol'shaya Ryazan' Stavropol'skogo municipal'nogo rajona Samarskoj oblasti [General Plan of the Rural Settlement of Bolshaya Ryazan, Stavropol Municipal District, Samara Region] // General'nyj plan. Federal'naya gosudarstvennaya informacionnaya sistema territorial'nogo planirovaniya [General Plan. Federal State Information System for Territorial Planning]. — 2013. — URL: <https://fgistp.economy.gov.ru/> (accessed: 15.09.2025) [in Russian]
32. Order No. 60 of the Ministry of Natural Resources of the Russian Federation. (2012, March 15). "Ob utverzhdenii Polozheniya o nacional'nom parke "Pleshcheyevo ozero" [Regulations on the Pleshcheyevo Lake National Park]. // ConsultantPlus. — URL: https://www.consultant.ru/document/cons_doc_LAW_128364/ (accessed: 15.09.2025) [in Russian]
33. Nacional'naya sistema prostranstvennyh dannyh [National Spatial Data System] [NSPD] // National Spatial Data Portal. Federal Service for State Registration, Cadastre and Cartography of the Russian Federation. — 2024. — URL: <https://nsdp.gov.ru/> (accessed: 15.09.2025) [in Russian]