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GENETIC RESOURCES AS AN OBJECT OF INTERNATIONAL LAW

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The article examines whether the legal regime of genetic resources is outlined in the context of applicable rules relating to biological diversity. The purpose of the research is to confute the prospects for the formation of a universal legal regime for genetic resources, in the context of the draft UN Agreement on the Conservation and Sustainable Use of Marine Biological Diversity in Areas beyond National Jurisdiction, and the possibilities of using regional mechanisms in this domain.

The methodology of the research includes the formal legal, comparative, historical, systemic and structural methods. The authors analyze and examine applicable international legal sources, including the 1992 Convention on Biological Diversity and its 2010 Nagoya Protocol. On the basis of the systemic and structural method the authors carry out the analysis of the sources of international law related to the conservation and sustainable use of genetic and other biological resources.

The main results. The international community's interest in genetic resources results from the growing need to take more informed environmental decisions. The relevant universal legal basis, created by the 1992 Convention on Biological Diversity, does not provide answers to some important questions, including the detailed legal definition of the term "genetic resources", though the relevant definition contained in the 1992 Convention remains the only one that has been accepted by a large number of states. It is possible that states will be able to develop a more concrete legal rules relating to the genetic resources in the course of negotiating the UN Agreement on the Conservation and Sustainable Use of Marine Biological Diversity in Areas beyond National Jurisdiction. However, the development of such a universal international treaty might require a lot of effort in order to reconcile the divergent interests of states.

Conclusions. Based on the analysis of applicable international law, the authors assert that the generally outlined legal basis for conservation of biodiversity, laid down by the 1992 Convention, demands further detailing in the modern context. The UN process on the conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction is likely to take considerable efforts of participating actors before the appropriate legal mechanisms are agreed upon. So regional legal regimes might be an appropriate way to ensure the efficient management of genetic resources taking into account peculiarities of each individual region.

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1. Introduction

Sustainable use of natural resources [1], which is provided for in international legal documents [2, p.6-28], comes down to the "intelligent management of nature", to decisions based on the best scientific data, and in the "long term" [3, p.9]. On such basis, the environmental policy of the State implies the involvement of the best available mechanisms for managing natural resources and their efficient use (in the food, commercial and medical spheres). This leads, in particular, to the question of clarifying the legal regime of genetic resources. In the legal teachings, the preservation of "genetic diversity" is considered necessary, because, for example, back in 1990, the bark of the Pacific Yew tree was used to treat cancer, while many useful chemical products, products of the pharmaceutical industry, etc. are produced from "materials of living and non-living nature" industry" [4, p.814]. Genetic resources are also used to reduce the effects of marine pollution through bioremediation; to ensure food security [5;6]. Moreover, a draft universal international treaty is currently being elaborated in order to develop the provisions of the 1982 UN Convention on the Law of the Sea (hereinafter referred to as the 1982 Convention) that relate to the conservation of biological diversity in areas beyond national jurisdiction. As proposed, the new treaty will regulate access to genetic resources in these areas, and the biomaterial contained in them is regarded as of increasing value to humanity, in the context of the current technological and information revolution. Taking into account the above, this article analyzes the international legal norms on genetic resources. The objectives of the study include definition of the concept of "genetic resources" in international law; analysis of existing documents on the topic and available scientific and legal assessments. The relevance of such study is also evidenced by different positions of States identified during the development of the draft agreement on the conservation of marine biodiversity mentioned above.

2. Genetic resources as a concept of natural sciences and international law

All living organisms (animals, plants, microorganisms) are carriers of genetic material valuable to humanity. Such resources can be obtained from wild, domesticated or cultivated species, both in natural habitats (*in situ*) and in conditions specially created by man, for example, in botanical gardens, gene banks, seed banks and collections of cultures of microorganisms (*ex situ*)[1]. The issue of defining the concept of "genetic resources" (as well as the concepts of "genetic code", "DNA") has already been resolved within the natural sciences. And discussions about the status of genetic resources led to the development of the first treaty definitions of this concept. States, assuming the rights and obligations under an international law, are interested in having a common understanding of its terms. Moreover, the definitions of the term in law and in the natural sciences may not coincide [7, p.14]; for example, in international law, the qualification of the continental shelf differs from its designation in geology [8, p.128].

In an authoritative English legal dictionary, the terms "Genetic fingerprinting" /"DNA identification"/ are defined as follows: "an analysis of deoxyribonucleic acid (DNA), as a result of which the chemical structure of a person's genetic information is determined"; a method of "determining destructive patterns in genetic material to determine the source of a biological sample, such as tissue, blood or hair" [9, p.480]. The concept of "genetic resources" in the 1992 Convention on Biological Diversity (hereinafter referred to as the 1992 Convention) is linked to the concept of "biological diversity"; the latter includes the triad "diversity within species, between species and of ecosystems"[2]; genetic resources belong to one of the groups of living organisms that the 1992 Convention aims to conserve. The interpretation of this convention implies that in the named triad it is

[1]Convention on Biological Diversity: ABS. Introduction to access and benefit-sharing, 2011. URL: https://www.cbd.int/abs/infokit/revised/web/all-files-en.pdf (date of access: 19.08.2021).

[2]Convention on Biological Diversity, 1992. URL: https://www.cbd.int/doc/legal/cbd-en.pdf (date of access: 18.10.2022).

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the diversity within species that implies, first of all, diversity at the genetic level [10, p.12]. The 1992 Convention also contains a definition of such resources: "Genetic resources" means genetic material of actual or potential value (Article 2). And the 1992 Convention also defines genetic material as "any material of plant, animal, microbial or other origin containing functional units of heredity". The International Treaty on Plant Genetic Resources for Food and Agriculture of 2001 (hereinafter referred to as the 2001 Treaty) contains a similar definition: "Plant genetic resources for food and agriculture means any genetic material of plant origin of actual or potential value for food and agriculture"[3]; the term "genetic material" means "any material of plant origin, including reproductive and vegetative propagating material, containing functional units of heredity". According to the 2001 Treaty, its objectives are: "the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising out of their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security" (Article 1).

The international legal content of the concept of "genetic resources" might be clarified during the development of the draft of the above-mentioned international agreement on conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction. During the Conference on Marine Biodiversity of Areas Beyond National Jurisdiction it was noted that a generally acceptable definition of marine genetic resources should include four characteristics: 1) animal, plant, microbial or other origin from the oceans and seas; 2) the presence of functional units of heredity; 3) the presence of actual or potential value; 4) being in areas beyond the limits of national jurisdiction[4]. Some definitions are proposed in the draft treaty: 1) "marine genetic resources" means any genetic material of marine plant, animal, microbial or other origin containing functional units of heredity and noncoding regions of nucleic acids, with actual or potential value of their genetic and biochemical properties, including genetic information[5]; 2) "marine genetic resources" means any material of marine plant, animal, microbial or other origin containing functional units of heredity of actual or potential value.

According to the definitions of the term "genetic material" in the 1992 Convention and in the 2001 Treaty, the "functional units of heredity" represent its key element. The restrictive interpretation of this term leads to the fact that the scope of the concept of "genetic resources" is limited only to genes, while in practice its application is much wider[6]. Thus, in the Nagoya Protocol of 2010, in this context, the concept of "derivatives" is used – "a naturally occurring biochemical compound resulting from the genetic expression or metabolism of biological or genetic resources, even if it does not contain functional units of heredity"[7]. The term "derivatives" is associated with the concept of "biotechnology" provided for by the 1992 Convention, and the latter is further included in the concept of "utilization of genetic resources" by the Nagoya Protocol: "utilization of genetic resources" means "to conduct research and development on the genetic and/or

[3]International Treaty on Plant Genetic Resources for Food and Agriculture, 2001. URL: https://www.fao.org/3/i0510e/i0510e.pdf (date of access: 21.09.2022).

[4]Chair's streamlined non-paper on elements of a draft text of an international legally-binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, 2017. URL: http://www.un.org/depts/los/biodiversity/prepcom_files/Chairs_streamlined_non-paper_to_delegations.pdf (date of access: 16.08.2021).

[5]The Revised draft text of an agreement under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. URL: https://documents-dds-ny.un.org/doc/UNDOC/GEN/N22/368/56/PDF/N2236856.pdf?OpenElement (date of access: 21.12.2022).

[6]Chair's streamlined non-paper…(note 4).

[7]Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity, 2010. URL: https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf (date of access: 16.10.2022).

biochemical composition of genetic resources, including through the application of biotechnology". Such legal formulations, as noted, make it possible to define broadly the regime of genetic resources, including both genes and "derivatives" in this concept [11].

Another question related to the definition of "genetic resources" is the following: what does the contractual expression "of actual or potential value" mean? For example, the 1992 Convention recognizes "the intrinsic value of biological diversity and of the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic value of biological diversity and its components". Genetic resources are recognized as valuable from various points of view [12, p.105], it is proposed to understand the value as social, cultural, economic, etc. [13]. At the same time, the indication of both "actual" and "potential" value is considered as a reference to the "technological state of the art"; "actual value" refers to the value of the genetic material associated with the use of methods known and already developed at the time of development of such resources; and "potential value" refers to the use of currently unknown methods, as a result of which the still unknown value of the functional units of heredity can be realized [13]. Without objecting to the admissibility of such interpretation, we note that the potential value of genetic resources is not limited only by the use of new methods for their development and future scientific discoveries. It may be related to other factors, including geopolitical ones, as a result of which the scale of values itself may differ from the current one.

3. Summary of legal documents on genetic resources

The laws of ancient China; the laws of Assyria [14, p.70]; conventions regulating fisheries [15]; the treaties of Russian princes of the XIV-XVI centuries [16, p.137-138,143]; the resolutions of the UN General Assembly [17, p.122]; the 1972 Declaration on the Human Environment, etc. contain regulations on the conservation of wildlife components. But it is the 1992 Convention on Biodiversity that has crowned the "dome" of the legal regime of such conservation [17, p.122; 18, p.34], denoting not only the consequences of the unregulated development of biotechnologies [19, p.1], but also of the "most massive in history" extinction of species [20]. The interpretation of the 1992 Convention is also significant for identifying the emerging legal regime of genetic resources[8]. In developing the Convention, studies of such resources carried out in some States were taken into account. For example, the first field research of genetically engineered bacteria were conducted as early as the 1980s, and successful field trials of genetically engineered cotton were completed in the 1990s. The results of these studies, in turn, contributed to the development of legal ideas about genetic resources as object of international law [13]. Let us emphasize that the principle of "sovereign rights of a State over its own resources" outlined in the 1992 Convention is also applicable to genetic resources (within the jurisdiction of the respective State). According to the 1992 Convention, "States have the sovereign right to exploit their own resources" and hold "the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States". The words "within the jurisdiction" mean areas under *the sovereignty* of the State (within State borders), as well as the exclusive economic zone and the continental shelf of the coastal State (in respect of which it exercises *sovereign rights and jurisdiction*). According to article 15 of the 1992 Convention, the State determines access to genetic resources within the scope of its national jurisdiction. It means, within the interpretation of this Convention, that genetic resources are not burdened with additional requirements for their use, such as, for example, marine living resources, according to Article 62 of the 1982 Convention.

The 1992 Convention is also applicable to genetic resources (as a type of biological resources) located in areas beyond national jurisdiction. The Convention applies "in relation to each Contracting Party: (a) in the case of components of biological diversity, in areas within the limits of its national jurisdiction; and (b) in the case of processes and

[8]United Nations Decade on Biodiversity. Convention on Biological diversity. URL: https://www.cbd.int/undb/media/factsheets/undb-factsheets-en-web.pdf (date of access: 17.08.2021).

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activities, regardless of where their effects occur, carried out under its jurisdiction or control, within the area of its national jurisdiction or beyond the limits of national jurisdiction" (Art. 4).

In order to implement the objectives of the 1992 Convention, the two protocols were adopted to it – in 2000 and in 2010. The objective of the 2000 Cartagena Protocol on Biosafety is to "contribute to ensuring an adequate level of protection in the field of the safe transfer, handling and use of living modified organisms resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity", taking also into account "risks to human health", and "specifically focusing on transboundary movements"[9]. The 2010 Nagoya Protocol, mentioned above, is an agreement between States on the sharing of benefits arising from use of genetic resources and from conservation and sustainable use of biodiversity. This protocol, relying on the provisions on genetic resources of the 1992 Convention, provides for a more specific and transparent legal framework for both providers and consumers of these resources[10], including framework for access to them and the "transfer of relevant technologies", by "appropriate funding". The fact that genetic resources are the core object of the Nagoya Protocol is emphasized in its Art. 3: "This Protocol shall apply to genetic resources within the scope of Article 15 of the Convention and to the benefits arising from the utilization of such resources. This Protocol shall also apply to traditional knowledge associated with genetic resources".

Conservation of "genetic diversity" as one of the obligations of the States Parties is stipulated in the ASEAN Agreement on the Conservation of Nature and Natural Resources of 1985. This agreement provides for the obligation to "maintain genetic diversity" through the adoption of measures aimed at ensuring the conservation of "species of animals and plants whether terrestrial, marine and freshwater", as well as their habitats (Art. 3)[11].

Taking into account the international legal acts described above, the priority attention of States is currently focused on clarifying the legal regime of conservation and sustainable use of biodiversity in areas beyond national jurisdiction.

4. Draft text of a universal agreement on conservation of biodiversity of areas beyond national jurisdiction

Among measures for the improvement of management of marine living resources[12], an international dialogue initiated by the UN in 2004 aims to clarify the legal regime of biodiversity in areas beyond national jurisdiction. Assessments of the state of marine biodiversity are compared and alternative legal mechanisms for universal cooperation of States in this area are proposed within the framework of this process [21, p.5]. It was proposed to reach an agreement on the following issues: on the regime of marine genetic resources; on applicable zonal management mechanisms; on adaptation of environmental impact assessments; on technology capacity building and its transfer[13]. By now, no consensus has been reached on whether the key concept of "marine genetic resources" should cover the "derivatives" mentioned above[14]. There is also no common position among the States Parties as to whether the concept of "marine genetic resources" includes the "information and data" related to them; whether the latter should be part of the subject matter of the legal regime of marine genetic resources; whether the previously agreed treaty regime of natural resources applies to

[9]Cartagena Protocol on Biosafety to the Convention on Biological Diversity, 2000. URL: https://bch.cbd.int/protocol/text/ (date of access: 17.10.2022).

[10]United Nations Decade on Biodiversity…

[11]ASEAN Agreement on the Conservation of Nature and Natural Resources, 1985. URL: https://agreement.asean.org/media/download/20161129035620.pdf (date of access: 18.10.2021).

[12]Marine biological diversity of areas beyond national jurisdiction. Legal and policy framework. URL: https://www.un.org/Depts/los/biodiversityworkinggroup/webpage_legal_and_policy.pdf (date of access: 13.10.2021).

[13]International legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction: Resolution 72/249 adopted by the General Assembly, 24.12.2017. URL: https://digitallibrary.un.org/record/1468985? (date of access: 15.09.2022).

[14]Chair's streamlined non-paper….

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genetic resources. For example, the regime established in the 1992 Convention on Biological Diversity cannot, as argued, applies directly to the seabed outside of national jurisdiction (the "Area"), as there is allegedly no State jurisdiction over marine genetic resources in the Area, with taking into account the powers here of the International Seabed Authority (hereinafter referred to as the Authority) [22]. Objecting to the author, let us remark that the Authority has powers (under the 1982 Convention) only over the mineral resources of the Area; but not over living natural resources, which include genetic resources.

Summarizing the positions of States outlined in the framework of the UN discussion, let us point out two pivotal ones. Proponents of *the first position* are of the opinion that the principle of freedom of the high seas should be extended to marine genetic resources and their "derivatives" in areas beyond national jurisdiction. But some questions still arise within this approach. Should a new international agreement limit existing rights of the high seas by establishing exceptions to freedoms of the high seas, in the context of the 1982 Convention? After all, paragraph 2 of Art. 87 of that Convention provides: "These freedoms shall be exercised by all States with due regard for the interests of other States in their exercise of the freedom of the high seas, and also with due regard for the rights under this Convention with respect to activities in the Area"[15]. Or should it be clearly stated in the future agreement that the regime of the Area established by the 1982 Convention and the powers of the Authority are limited only to the exploitation of the mineral resources of the Area, while its living resources, including genetic ones, are subject to the regime of the high seas? It is proposed, for example, to fix in the draft of the future agreement additional obligations related to "bioprospecting" in areas beyond the limits of national jurisdiction [23, p.8].

Proponents of *the second position* are in favor of extending the provisions of the 1982 Convention on the "common heritage of mankind" to all natural resources in areas beyond national jurisdiction, including marine genetic resources. According to such approach, natural resource activities in these areas are to be carried out "for the benefit of mankind as a whole", according to the same bureaucratic model that is reflected in the 1982 Convention. Article 9 of the draft agreement on conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction reflects precisely this approach. However, there exists a disagreement among proponents of this approach: some believe that the principle of the "common heritage of mankind" should only apply to marine genetic resources located in the depths of the seabed outside the continental shelf. And the principle of freedom of the high seas should regulate the use of genetic resources located in the water column of the high seas. However, most States argued that all marine genetic resources in areas beyond national jurisdiction should be subject to a single legal regime, whether such resources are located in the water column or on the seabed and subsoil. Proponents of this "integrated" approach refer to the fact that marine organisms living on the seabed are difficult to separate from marine organisms living in the water column located above the seabed [24].

There are also other options for clarifying the legal regime of marine genetic resources in the international law literature: 1) continue to develop their status based on the distinction between such a regime for the water column and for the seabed, but using the provisions on "sessile" species, the definition of which is fixed in the 1982 Convention 1982 [25, p.40; 26, p.626; 27, p.114]; 2) apply an approach based on the regulation of specific marine ecosystems [28, p.228; 29, p.149]; 3) create a sui generis regime applicable to all marine genetic resources in areas beyond national jurisdiction, thereby creating a "simpler and more rational" legal framework [30, p.190].

5. Conclusions

The outlined characteristics of the current international legal norms on genetic resources and of the existing approaches to the content of a future agreement on biodiversity of areas beyond national jurisdiction, as well as discussions within each such approach, confirm the complexity of issues related

[15]United Nations Convention on the Law on the Sea, 1982. URL: https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf (date of access: 25.11.2022).

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to clarifying the status of genetic resources. It can be predicted with caution that the development of this universal agreement will either drag on for years or lead to the adoption of a very vague text – a “compromise of compromises”. But the importance of biodiversity conservation is growing, and on such background the universal legal basis for such conservation, laid down by the 1992 Convention, is both in demand and insufficient. States are already adopting other international legal documents, including those related to the conservation of specific species or of specific habitat area of bioresources. At the same time, fundamental changes in modern economic activity on the planet due to technological progress, climate change and a number of socio-economic factors lead to the crystallization of updated international legal priorities, including clarification of the legal regime of genetic resources, before their large-scale use. All States are objectively interested in their effective exploitation, which entails potential benefits in various aspects of human life, which indicates the demand for international cooperation in this area. At the same time, genetic resources are also becoming a new object of interstate competition. In the above context, it seems that the optimal legal policy of States is seen with a greater emphasis on clarifying the legal status of genetic resources in a particular region, taking into account its features, factual and legal. In turn, pioneering mechanisms for the conservation and use of genetic resources as an object of a regional international treaty could contribute to the harmonization of the universal contours of the legal regime of such resources.

REFERENCES

1. Mirovitskaya N., Ascher W. *Guide to Sustainable Development and Environmental Policy*. Durham, London, 2001. XXVII + 391 p.

2. Vylegzhanin A.N., Korzhenyak A.M. Sustainable Development Clauses in the International Law of the Sea. *Moskovskii zhurnal mezhdunarodnogo prava = Moscow Journal of International Law*, 2022, no. 4, pp. 6–33. DOI: 10.24833/0869-0049-2022-4-6-33. (In Russ.).

3. Aniansson B., Svedin U. *Towards an Ecologically Sustainable Economy.* Stockholm, Swedish Council for Planning and Coordination of Research Publ., 1990. 144 p.

4. Campbell-Mohn C., Breen B., Futrell W.J. *Environmental Law: From Resources to Recovery*. West Group Publ., 1993. 994 p.

5. Jaspars M., de Pascale D., Andersen J. H., Reyes F., Crawford A. D., Ianora A. The marine biodiscovery pipeline and ocean medicines of tomorrow. *Journal of the Marine Biological Association of the United Kingdom*, 2016, vol. 96, iss. 1, pp. 151–158. DOI: 10.1017/s0025315415002106.

6. Blasiak R., Wynberg R., Grorud-Colvert K., Thambisetty S., Bandarr N., Canário A.V.M., Silva J. da, Duarte C.M., Jaspars M., Rogers A.D., Sink K., Wabnitz C.C.C. *The Ocean Genome: Conservation and the Fair, Equitable and Sustainable Use of Marine Genetic Resources*, Blue Paper 4. Washington, DC, World Resources Institute Publ., 2020. 62 p. Available at: http://opus.sanbi.org/bitstream/20.500.12143/7038/1/Blasiak_etal_2020_Blue Paper_ The Ocean Genome.pdf.

7. Aricò S., Salpin C. *Bioprospecting of Genetic Resources in the Deep Seabed: Scientific, Legal and Policy Aspects*. Yokohama, United Nations University Publ., 2005. 76 p.

8. Gureev S.A. (ed.). *International Maritime Law*. Moscow, Yuridicheskaya literatura Publ., 2003. 448 p. (In Russ.).

9. *Black's Law Dictionary*, Sixth Edition. St. Paul, Minn., West Publishing CO, 1990. 1657 p.

10. De Lucia V. The Concept of Commons and Marine Genetic Resources in Areas beyond National Jurisdiction. *Marine Safety and Security Law Journal*, 2018–2019, iss. 5: Special Issue on Ocean Commons, available at: https://www.marsafelawjournal.org/wp-content/uploads/2018/11/MarSafeLawJournal_Issue5_DeLucia.pdf.

11. Harden-Davies H. *Marine genetic resources beyond national jurisdiction: an integrated approach to benefit-sharing, conservation and sustainable use*, Doctor of Philosophy thesis. Australian National Centre for Ocean Resources and Security, University of Wollongong Publ., 2018. xxi + 380 p.

12. Atkinson G., Bateman I., Mourato S. Valuing Ecosystem Services and Biodiversity, in: Helm D., Hepburn C. (eds.). *Nature in the Balance: The Economics of Biodiversity*, Oxford University Press, 2014, pp. 101–150.

13. Schei P.J., Tvedt M.W. *"Genetic Resources" in the CBD: The Wording, the Past, the Present and the Future*, FNI Report 4/2010. Fridtjof Nansen Institute Publ., 2010. 24 p.

14. Vylegzhanin A.N. Marine Biodiversity and International Law. *Gosudarstvo i pravo*, 2001, no. 3, pp. 69–81. (In Russ.).

15. Birnie P.W., Boyle A.E. *Environmental Law and the Environment*. Oxford, 1992. XXVII + 563 p.

16. Bulgakov M.B., Jalbuganov A.A. Environmental Regulations: from "the Russkaya Pravda" to the era of Peter the Great. *Gosudarstvo i pravo*, 1996, no. 8, pp. 136–146. (In Russ.).

17. Kolbasov O.S. International Environmental Law on the Verge of the 21st Century, in: Kolodkin A.L. (ed.). *Pervaya Konferentsiya Vsemirnoi assotsiatsii mezhdunarodnogo prava v Rossii (1997)*, Novorossiysk, 1999, pp. 120–135. (In Russ.).

18. Bowman M., Redgwell C. (eds.). *International law and the conservation of biological diversity*. London, Boston, Kluwer Law International Publ., 1996. xiv + 334 p.

19. Young O.R. *Addressing the Grand Challenges of Planetary Governance*. Cambridge University Press, 2023. 58 p.

20. Klein C. New Leadership Needed: The Convention on Biological Diversity. *Emory International Law Review* 2019, vol. 31, iss. 1, pp. 135–165.

21. Broggiato A., Vanagt T., Lallier L.E., Jaspars M., Burton G., Muyldermans D. Mare Geneticum: Balancing Governance of Marine Genetic Resources in International Waters. *International Journal of Marine and Coastal Law*, 2018, vol. 33, no. 1, pp. 3–33. DOI: 10.1163/15718085-13310030.

22. Tvedt M.W. Marine Genetic Resources: a Practical Legal Approach to Stimulate Research, Conser-vation and Benefit Sharing, in: Banet C. (ed.). *The Law of the Seabed: Access, Uses, and Protection of Seabed Resources*,

Publications on Ocean Development; Vol. 90, Leiden, Boston, Brill Nijhoff Publ., 2020, pp. 238–254. DOI: 0.1163/9789004391567_013.

23. Correa C.M. *Access to and Benefit Sharing of Marine Genetic Resources Beyond National Jurisdiction. Developing a New Legally Binding Instrument*. Geneva, South Center Publ., 2017. 29 p.

24. Mossop J. Towards a Practical Approach to Regulating Marine Genetic Resources. *ESIL Reflections*, 2019, vol. 8, iss. 3, available at: https://esil-sedi.eu/esil-reflection-towards-a-practical-approach-to-regulating-marine-genetic-resources/.

25. Korn H., Friedrich S., Feit U. *Deep Sea Genetic Resources in the Context of the Convention on Biological Diversity and the United Nations Convention on the Law of the Sea*, BfN Skript 79. Federal Agency for Nature Conservation Publ., 2003. 83 p.

26. Allen C. Protecting the Oceanic Gardens of Eden: International Law Issues in Deep Sea Vent Resources Conservation and Management. *Georgetown International Environmental Law Review*, 2001, Vol. 13, pp. 563–660.

27. Mossop J. *The Continental Shelf Beyond 200 Nautical Miles: Rights and Responsibilities*. Oxford University Press, 2016. 310 p.

28. Leary D. *International Law and the Genetic Resources of the Deep Sea*. Martinus Nijhoff Publishers, 2007. Xvii + 301 p.

29. Oude Elferink A.G. The Regime of the Area: Delineating the Scope of Application of the Common Heritage Principle and the Freedom of the High Seas. *International Journal of Marine and Coastal Law*, 2007, vol. 22, iss. 7, pp. 143–176. DOI: 10.1163/157180807781475272.

30. Scovazzi T. The Negotiations for a Binding Instrument on the Conservation and Sustainable Use of Marine Biological Diversity Beyond National Jurisdiction. *Marine Policy,* 2016, no. 70, pp. 188–191. DOI: 10.1016/j.marpol.2016.04.007.

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BIBLIOGRAPHIC DESCRIPTION

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