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Legal Protection of Ichthyofauna in Natura 2000 Sites in Poland: A Case Study of an Ecological Disaster in the Oder River

Elżbieta Zębek
PhD habil., Professor, Department of Economic Law and Commercial Law, The Faculty of Law and Administration, University of Warmia and Mazury in Olsztyn; correspondence address: ul. Dybowskiego 13, 10-725 Olsztyn, Poland; e-mail: elzbieta.zebek@uwm.edu.pl
https://orcid.org/0000-0002-8637-8391

Agnieszka Napiórkowska-Krzebietke
PhD habil., Professor, National Research Institute, The Stanisław Sakowicz Inland Fisheries Institute in Olsztyn; correspondence address: ul. Oczapowskiego 10, 10-719 Olsztyn, Poland; e-mail: a.napiorkowska-krzebietke@infish.com.pl
https://orcid.org/0000-0001-8361-0290

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Abstract: In EU legislation, the protection of ichthyofauna as an element of diversity takes place in the Habitats Directive 92/43/EEC. The purpose of the article is to present the legal status and legal instruments for the protection of ichthyofauna in Natura 2000 sites in the EU and Poland. The considerations were undertaken in the context of the ecological disaster in the Oder River. Analyzing the legal status of ichthyofauna protection, strengths and weaknesses were identified. The former include the establishment of a network of Natura 2000 sites, categories of priority species, strict, active and *in situ* species protection, prohibitions on fishing, trade and habitat destruction, and a program for the restoration and protection of fish stocks. However, a problematic issue has been the lack of procedures for dealing with threats to ichthyofauna, as exemplified by the ecological disaster in the Oder River. Although a law has been passed to revitalize the Oder River, it focuses on investments to regulate the riverbed and not on restoring the state of ichthyofauna and natural habitats.

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1. Introduction

The subject of the analysis is the legal protection of ichthyofauna. This concept has not been defined in legal terms, and in the literature it means the totality of fish species occurring at a given geological time in a specific body of water.[1] It should be noted that ichthyofauna is, on the one hand, an important element of biodiversity in aquatic ecosystems, and, on the other hand, a good indicator of water quality. The distribution of fish in Poland is determined by historical, anthropogenic and habitat factors. The species composition of the ichthyofauna is quite homogeneous, there are no endemic species, while foreign (invasive) species are increasing.[2] Fish communities are subject to a wide range of anthropogenic pressures that can alter their structure. This is especially true of flowing water ecosystems through pollution, regulation, and baffling, resulting in the phenomenon of the disappearance of fish species with specific high environmental requirements and a drastic reduction in their populations. Many fish populations are on the brink of ecological disaster.[3] A significant threat to ichthyofauna is climate change, especially extreme weather events (floods and droughts) and rising river water temperatures. The negative consequences of these environmental changes include changes or shifts in the life cycles of fish, impacts on the food base, increased mortality and disappearance of native, vulnerable species, and the expansion of invasive species. Another threat to river ichthyofauna is anthropopressure, manifested by the regulation of the river bed, technical developments and the close location of industrial plants, discharging sewage, that is, treating the river as a receiver of pollution. The diversity of nature conservation forms and varying degrees of land development mean that rivers are exposed to varying degrees of anthropogenic factors.

1 *Dictionary of the Polish Language*, s.v. "Ichthyofauna," accessed October 17, 2024, https://sjp.pwn.pl/slowniki/ichtiofauna.

2 See: Joanna Grabowska, Jan Kotusz, and Andrzej Witkowski, "Alien Invasive Fish Species in Polish Waters: An Overview," *Folia Zoologica* 59, no. 1 (2010): 73–85, https://doi.org/10.25225/fozo.v59.i1.a1.2010; Dagmara Błońska, "The Origin of Poland's Freshwater Ichthyofauna," *Kosmos. Problemy Nauk Biologicznych* 61, no. 2 (2012): 261.

3 Paweł Buras et al., "The Fish of the Nida River System – Present State, Threats and Possibility of Protection," *Roczniki Naukowe PZW* 14 (2001): 213–33; Wiesław Wiśniewolski, "Możliwości przeciwdziałania skutkom przegradzania rzek i odtwarzania szlaków migracji ryb [Factors Favorable and Harmful to the Development and Maintenance of Fish Populations in Flowing Waters]," *Supplementa ad Acta Hydrobiologica* 3 (2002): 45–6.

Often, river damming and the creation of large reservoirs have a number of environmental consequences for the river basin and, alongside water pollution and poaching, are the main factors affecting ichthyofauna.[4] The development of the riverbed and the regulation of its banks cause the loss of valuable natural habitats of species and also negatively affects ichthyofauna, which is manifested by the disappearance of the most valuable, rheophilic and migratory species in favor of less valuable species, the so-called ubiquitous, i.e., with low environmental requirements. Similarly, changes in ichthyofauna are caused by discharges of chemical pollutants into river waters. These impacts on fish can be both direct (e.g., increased morbidity and mortality) and indirect, by affecting the entire trophic system, including the fish food base and habitat quality (e.g., spawning substrate vegetation, sediment formation, etc.).[5] An example of a large-scale negative phenomenon created in the river ecosystem due to climate effects and increased industrial wastewater inflows is the ecological disaster in the Oder River, which occurred in July, August and September 2022. This event can certainly be classified as an environmental disaster, as the result was and is permanent, that is, naturally irreversible damage or destruction of a large area of the aquatic environment and adjacent ecosystems, negatively affecting, directly or indirectly, the health and lives of people.[6] This event has resulted in irreversible changes to the ichthyofauna on a very large scale, which requires remedial action.[7]

The above-mentioned threats to ichthyofauna raise the profile of the need for legal protection of these aquatic communities. In EU legislation, the protection of ichthyofauna as an element of diversity takes place in Council Directive 92/43/EEC of May 21, 1992, on the conservation of

4 Aneta Bylak and Krzysztof Kukuła, "Ichtiofauna Bieszczadzkiego Parku Narodowego: skład gatunkowy, struktura i zagrożenia," *Roczniki Naukowe Polskiego Związku Wędkarskiego* 28 (2015): 27–42, https://doi.org/10.12823/sapaa.0860-648X.15002.

5 Grzegorz Radtke, "Współczesne zagrożenia dla ichtiofauny dolnej Wisły," *Dzikie Życie* 239, no. 5 (2015), accessed October 17, 2024, http://dzikiezycie.pl/archiwum/2014/maj-2014/wspolczesne-zagrozenia-dla-ichtiofauny-dolnej-wisly.

6 *Encyklopedia PWN*, s.v. "Katastrofa ekologiczna," accessed October 17, 2024, https://encyklopedia.pwn.pl/haslo/katastrofa-ekologiczna;3921133.html.

7 See: Elżbieta Zębek and Agnieszka Napiórkowska-Krzebietke, "Działania prawne i naprawcze wobec szkód w środowisku wodnym. Studium przypadku katastrofy ekologicznej na rzece Odrze," *Zeszyty Prawnicze Biura Analiz Sejmowych Kancelarii Sejmu* 79, no. 3 (2023): 48–72, https://doi.org/10.31268/ZPBAS.2023.52.

natural habitats and wild fauna and flora (Habitats Directive).[8] The basic prerequisite for the establishment of this legislation was the deteriorating condition of natural habitats and the increase in the number of wild species, including fish, which are seriously endangered. Therefore, it is necessary to take measures to protect them at the EU level. Due to threats to certain types of natural habitats and certain species, it is therefore necessary to introduce measures aimed at their protection and to declare them a priority. In order to restore or preserve natural habitats, Article 3 of the Directive indicates the need to designate special areas of conservation to create a coherent European ecological network, Natura 2000 sites. In this regard, Member States have been obliged to establish such areas in proportion to the occurrence of such types of natural habitats and species habitats on its territory, and, if necessary, to take measures to improve the ecological coherence of Natura 2000 by preserving and, where appropriate, developing landscape features of great importance for wildlife.

In Polish law, the protection of ichthyofauna as an element of biodiversity of aquatic ecosystems and an indicator of water quality has been comprehensively regulated in such legal acts as the Law of April 16, 2004 on Nature Protection (NCA),[9] the Law of April 18, 1985 on Inland Fisheries (IFA), [10] the Law of July 20, 2017 – Water Law (WL)[11] and implementing acts, as well as in the Act of July 13, 2023 on Revitalization of the Oder River.[12] The purpose of the article is to present the legal status and legal instruments for the protection of ichthyofauna, especially in Natura 2000 sites in the EU and Poland. The present considerations were undertaken in the context of the ecological catastrophe in the Oder River, during which there were massive die-offs of fish species under legal protection at the EU and national levels, including in Natura 2000 sites. The article uses a legal-dogmatic method based on the analysis of EU and national legal regulations for the legal protection of ichthyofauna and the literature on the subject.

8 Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L206, 22 July 1992), 7–50 (Habitats Directive).

9 Consolidated text: Journal of Law 2024, item 1478.

10 Consolidated text: Journal of Law of 2022, item 883.

11 Consolidated text: Journal of Law of 2024, items 1087, 1089, 1473.

12 Journal of Law of 2023, item 1963.

2. Legal Protection of Ichthyofauna as an Element of Biodiversity

Protection of ichthyofauna consists primarily of multidirectional measures aimed at preserving and restoring, at an appropriate level, the natural population size of individual fish species and enabling their rational use. Such protection consists of legal actions, leading to the protection of species in the area of their occurrence through, e.g., prohibitions on the trapping, keeping and preparation of fish and the destruction of their habitat. Local protection of fish populations is also distinguished, which serves to preserve the genetic distinctiveness of individual fish populations. Moreover, economic protection represents measures to protect usable fish from overharvesting and to counteract the effects of adverse environmental transformations. Such measures include the introduction of conservation sizes and periods, catch limits, protection of spawning and wintering sites, denaturalization and making rivers passable for fish migration, and protection of populations of endangered and economically valuable species.[13]

Fish as an element of the environment and biodiversity are subject to legal protection at both EU and national levels. The most relevant act of EU law in this regard is the Habitats Directive. This directive aims to contribute to ensuring biodiversity through the protection of natural habitats and wild fauna and flora, including ichthyofauna. Measures taken in accordance with this Directive are aimed at preserving or restoring, at a favorable conservation status, natural habitats and species of wild fauna and flora of Community interest. Actions under this Directive take into account economic, social and cultural needs and regional and local characteristics (Article 2). Measures pursuant to this Directive take into account economic, social and cultural requirements and regional and local characteristics (Article 2). In order to strengthen species protection, two categories of protected species were specified, i.e., species of community interest and priority species. The first category includes the following species: (a) endangered – with the exception of those species whose natural range in the territory is negligible and which are not endangered or vulnerable in the Western Palearctic region; (b) vulnerable – species that are thought to be likely to move into the endangered category in the near future if the factors causing the threat

[13] *Encyklopedia PWN*, s.v. "Ochrona ryb," accessed October 17, 2024, https://encyklopedia.pwn.pl/haslo/ochrona-ryb;3949676.html.

continue to affect them; (c) rare – species with small populations that are currently neither endangered nor vulnerable, but are subject to risk of endangerment; and (d) endemic – requiring special attention due to the special nature of their habitat and/or the potential impact of their exploitation on that habitat and/or the potential impact of their exploitation on their conservation status.[14] These species are listed in Annex II and/or Annex IV or V of the directive. Meanwhile, priority species means species for the conservation of which the Community has special responsibility because of the size of their natural range within the territory. Species are listed in Annex II of the directive and marked with an asterisk. Annex II lists plant and animal species of Community interest, the protection of which requires the designation of special areas of conservation.[15] Among them are the following freshwater fish species: steelhead (*Hucho hucho*), marbled trout (*Salmo marmoratus*), noble salmon (*Salmo salar*), as well as white bleak, barbel, whitetail gudgeon, European roseate, great goat, common goat, sculpin, golden goat, striped carp, barbel, and within this the mud minnow has been included as a priority species. In turn, Annex IV indicates plant and animal species of Community interest that require strict protection, i.e., the western sturgeon (*Acipenser sturio*) and the mud minnow (*Phoxinus percnurus*). Meanwhile, Appendix V identifies animal and plant species of Community Interest, the harvesting from the wild and exploitation of which may be subject to management actions, i.e., river lamprey (*Lampetra fluviatilis*), grayling (*Thymallus thymallus*), steelhead, common asp (*Aspius aspius*), and whitetail (*Rutilus friesii meidingeri*).

Species protection is implemented by taking measures to establish a system of strict protection for animal species listed in Annex IV (a), including fish, in their natural range. These measures include the following prohibitions: (a) any form of intentional capture or killing of specimens of these wild species; (b) intentional disturbance of these species, particularly

[14] See: Paweł Pawlaczyk and Andrzej Jermaczek, *Natura 2000 – narzędzie ochrony przyrody. Planowanie ochrony obszarów Natura 2000* (Warsaw: WWF Polska, 2004), 28–30; Grażyna Łaska, "'Natura 2000' Ecological Network in the Aspect of Sustainable Development," *Ecological Questions* 15 (2011): 9–21; Wiesław Pływaczewski, Elżbieta Zębek, and Joanna Narodowska, *Odpowiedzialność za środowisko z perspektywy prawa, kryminologii i nauk przyrodniczych* (Warsaw: Difin, 2020), 29–31.

[15] The symbol "*" indicates a priority species.

during the breeding, rearing, winter sleep and migration periods; (c) intentional destruction or egg-picking; and (d) deterioration or destruction of breeding or resting areas. For these species, prohibitions have been imposed on keeping, transporting, selling or exchanging, and offering for sale or exchange, specimens taken from the wild, except for those legally taken before the implementation of this directive. These prohibitions provided for apply to all life stages of these animals, including fish. In addition, Member States have been obliged to establish a monitoring system for the incidental capture or killing of animal species listed in Annex IV (a). In the context of the information collected, Member States shall undertake any further research or conservation measures required to ensure that the incidental capture and killing does not have a significant negative impact on these species (Article 12). Based on an assessment of the status of habitat types and species covered by the Habitats Directive, it was shown that the overall status of species and habitats in the EU did not change between 2007 and 2012 and even some protected species and habitats showed signs of recovery. However, the European Commission stressed the significant role of the Natura 2000 sites in stabilizing habitats and species with an inadequate conservation status, especially if the necessary conservation measures were implemented on an appropriate scale. Nevertheless, the conservation status of numerous habitats and species is inadequate, and the condition of a significant portion of them is deteriorating to an even greater extent, which includes some freshwater fish species.[16] It is therefore necessary to make much greater conservation efforts to reverse the unfavorable aforementioned trends, significant pressures and threats from, e.g., changes in agricultural practices and constant changes in hydrological conditions, as well as from overexploitation and pollution of the water environment must be reduced.[17] The impact of climate change and growing anthropogenic pressure must also be taken into account in the appropriate management and

[16] European Commission, Report from the Commission to the Council and the European Parliament, The State of Nature in the European Union. Report on the status and trends of habitat types and species covered by the Birds and Habitats Directives 2007–2012 required under Article 17 of the Habitats Directive and Article 12 of the Birds Directive, Brussels, May 20, 2015, COM(2015) 219 final.

[17] European Commission, Financing Natura 2000. Investing in Natura 2000. Delivering benefits for nature and people, Brussels, December 12, 2011, SEC(2011) 1573 final.

conservation of fish stocks to ensure the preservation of biodiversity and ecological balance.[18] These measures will significantly contribute to improving the status of species and natural habitats protected within Natura 2000 sites, by significantly reducing anthropopressure, as well as funding such projects.[19]

2.1. Legal Management and Protection of Ichthyofauna under the Inland Fisheries Act

The IFA is responsible for regulating issues related to the protection, breeding, cultivation and fishing of fish in inland surface waters. It also specifies which administrative bodies are obliged to take actions that influence the fisheries economy.[20] K. Gruszecki distinguishes three basic forms of ichthyofauna (fish stock) protection, i.e., conservative, utilitarian, and humanitarian-veterinary. The primary purpose of the first form is to protect certain elements or values of the environment from degradation for ecological reasons, while the purpose of the second form is to carry out rational fisheries management, and the third form is to preserve the fish stock in good health and reduce unnecessary suffering in the breeding process.[21] For the present article, the analysis will be limited primarily to conservation of ichthyofauna. The subject of the IFA regulation is the rules and conditions for the protection, rearing, breeding and catching of fish in inland surface waters, in aquatic facilities and in objects intended for the rearing or breeding of fish. Thus, the spatial scope of the cited law primarily covers inland surface waters, in aquatic facilities (fish ponds being aquatic facilities) and facilities intended for raising or breeding fish.[22]

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18 Alina-Adriana Tudor, "Observations on the Ichthyofauna of 'Balta Mică a Brăilei' Nature Park," 11th edition International Scientific-Practical Conference "Training by research for a prosperous society," January 2024, https://doi.org/10.46727/c.v1.16-17-05-2024.p304-309.

19 Pływaczewski, Zębek, and Narodowska, "Odpowiedzialność za środowisko z perspektywy prawa, kryminologii i nauk przyrodniczych," 35–6.

20 Krzysztof Gruszecki, "Rybactwo śródlądowe. Komentarz," accessed November 15, 2024, https://sip.lex.pl/komentarze-i-publikacje/komentarze/rybactwo-srodladowe-komentarz-587822379.

21 Krzysztof Gruszecki, "Ochrona prawna rybostanu w Polsce," *Zeszyty Naukowe Wyższej Szkoły Pedagogicznej w Bydgoszczy. Administracja Publiczna* 11, no. 1 (1997): 74.

22 Wojciech Radecki, *Kompendium prawa rybackiego* (Poznań: Polskie Towarzystwo Rybackie, 2011), 57.

Fish farming is considered to be activities aimed at maintaining and increasing the production of fish, and breeding is considered to be breeding combined with selection and farming, with the aim of preserving and improving the utility value of fish. Thus, fish and other aquatic organisms living in water constitute its benefits (Article 1). Fish farming means activities aimed at maintaining and increasing fish production. A type of fish farming is fish breeding, which is the rearing of fish combined with selection and preservation, with the aim of keeping and improving the functional value of the fish.[23] For the protection of fish stocks, these resources must be managed in a rational way, as is the case with Article 2a of the IFA. Thus, the protection and recovery of fish stocks in waters, with the exception of fish species protected under the provisions of the NCA, is ensured through the rational management of resources. This involves taking measures to maintain, restore or reestablish the proper state of these resources and the natural relationships between their various components, in accordance with the principles of sustainable development (Article 2a of the IFA). An important legal instrument is a program for the protection and recovery of stocks of certain fish species. Such a program is developed by the minister in charge of fisheries (Article 2b of the IFA). The purpose of this program is to create the conditions necessary for the protection and restoration of fish stocks of certain species, in particular to restore fish feeding or spawning grounds, as well as to maintain or restore in selected river basins the possibility of fish spawning and migration. First of all, the conservation and restoration program shall define the general objective and specific objectives for the conservation and restoration of stocks of specific fish species, taking into account short-term and long-term priorities. Then indicate the type, scope and timing of primary and supporting activities. The former include recommended legal, economic, control and monitoring measures, while the latter include research and development, promotion, education and training activities to ensure proper implementation of the basic activities. The program also identifies the entities authorized or obligated to undertake basic measures and supporting measures, including public

[23] *Encyklopedia PWN*, s.v. "Chów i hodowla ryb," https://encyklopedia.pwn.pl/szukaj/ch%C3%B3w%20ryb.html; Janusz Guziur et al., *Poradnik hodowcy ryb* (Olsztyn: PWRIL, 2016), 124–6.

administrations and water users, as well as possible sources and methods of financing these measures.[24] The detailed conditions and procedure for providing financial support are set forth in the Regulation of the Minister of Agriculture and Rural Development of September 5, 2022, on the detailed purpose, conditions and procedure for providing support for the processing or marketing of agricultural, food, fishery or aquaculture products under the National Plan for Reconstruction and Increasing Resilience.[25]

2.2. Legal Protection of Ichthyofauna under the Nature Conservation Act

The protection of species of ichthyofauna is regulated by the 2004 NCA, which defines the goals, principles and forms of protection of living and inanimate nature and landscape (Article 1). Thus, nature protection consists in the preservation, sustainable use and restoration of resources, creations and components of nature, i.e., (a) wildly occurring plants, animals, and fungi, including those under species protection; (b) animals with a migratory lifestyle; (c) natural habitats, and (d) habitats of endangered, rare and protected species of plants, animals and fungi. This protection is carried out under the forms of nature protection specified in Article 6(1) and (2) of the NCA, i.e., national parks, nature reserves, landscape parks, protected landscape areas, Natura 2000 sites, nature monuments, documentary sites, ecological land uses, natural and landscape complexes, and species protection of plants, animals and fungi. In addition, border areas of natural value may be established in agreement with neighboring countries for their joint protection. For the purposes of this article, Natura 2000 areas are discussed in more detail. Pursuant to Article 25 of the NCA, the Natura 2000 network of areas includes: (1) special bird protection areas; (2) special habitat protection areas; (3) areas of Community importance. Natura 2000 sites are often seen as a combination of site and species protection, protecting both sites of particular importance to the EU and protected species, in particular wild birds, but also mammals, reptiles, and amphibians, as well as natural

[24] See more: Elżbieta Zębek and Agnieszka Napiórkowska-Krzebietke, "Nielegalny połów ryb w aspekcie karnoprawnym i środowiskowym," *Studia Prawnoustrojowe*, no. 29 (2015): 247–60.

[25] Journal of Law of 2022, item 1898, as amended.

habitats.[26] Due to the high value of these areas of EU importance, Article 36 of the NCA provides for certain restrictions on activities in Natura 2000 sites. These relate to the maintenance of equipment and installations for flood protection and economic, agricultural, forestry, hunting and fishing activities, including recreational fishing, if they have a significant negative impact on the protection objectives of the site. The provisions of Article 34 of the NCA (based on Article 6(4) of the Habitats Directive) require compensation to be carried out if it is found that the project carried out will have a significant negative impact on the Natura 2000 site.[27] This applies where there are compelling reasons of overriding public interest, including social and economic reasons, and where there are no alternative solutions. If significant adverse impacts affect priority habitats and species, a permit may only be granted for the following purposes: (a) protecting human health and life; (b) ensuring public safety; (c) achieving beneficial consequences of primary importance for the natural environment; or (d) compelling reasons of overriding public interest, provided the European Commission has been consulted. It is worth adding that the concept of imperative requirements of overriding public interest is rather an exemption from the rigors of protection, rather than the establishment of protection.[28] An important legal instrument for species protection are conservation plans preceded by plans of conservation tasks. An essential element of these plans is the establishment of protective measures for maintaining or restoring the proper state of conservation of the objects of protection of the Natura 2000 site. The scope of such measures should include (a) active protection or restoration of natural habitats or habitats of plant and animal species; (b) water relations, including water management; and (c) agricultural, forestry and fishery management,

[26] See also: Elżbieta Zębek and Magdalena Szramka, "Ochrona ptaków i siedlisk przyrodniczych a realizacja przedsięwzięć na obszarach Natura 2000," *Journal of Modern Science* 18, no. 3 (2013): 323–36.

[27] Adam Habuda, "Ochrona przyrody a działalność gospodarcza na obszarach Natura 2000," in *Gospodarcze prawo środowiska*, eds. Janina Ciechanowicz-McLean and Tomasz Bojar-Fijałkowski (Gdańsk: Wydawnictwo UG, 2009), 177–8; Magdalena Szramka and Elżbieta Zębek, "Ograniczenia realizacji przedsięwzięć na obszarach Natura 2000," *Studia Prawnoustrojowe* 22 (2013): 195–206.

[28] Piotr Ćwiek, "Kompensacja przyrodnicza," accessed October 10, 2024, https://sip.lex.pl/komentarze-i-publikacje/komentarze-praktyczne/kompensacja-przyrodnicza-469906279; Gruszecki, "Rybactwo śródlądowe. Komentarz."

including directions for shaping the production space, as well as the indication of areas that should be afforested and areas excluded from afforestation, and inland flowing surface waters, in which the possibility of migration of fish and other aquatic organisms should be preserved or restored.[29]

Within the framework of species protection, the NCA provides for its various forms, i.e., active protection, which is the application, where necessary, of conservation measures to restore the natural state of ecosystems and components of nature or to preserve natural habitats and the habitats of plants, animals or fungi (Article 5(5)), and *in situ* protection, which consists in protecting species of plants, animals, and fungi, as well as elements of an inanimate nature, in places of their natural occurrence (Article 5(7)). The list of species protected within Natura 2000 sites is set out in the Regulation of the Minister of the Environment of April 13, 2010, on natural habitats and species of Community interest, as well as the criteria for selecting areas eligible for recognition or designation as Natura 2000 sites.[30] According to §3, the subject of the regulation is animal species of Community interest, with an indication of those that require protection in the form of designation of Natura 2000 sites, and animal species of priority importance. These species are indicated in Appendix 2, which lists more than 75 species, including 8 priority species (e.g., western sturgeon, sharp-tailed whitefish).

3. Importance of Ichthyofauna as an Indicator of Water Quality in EU and National Law

Fish communities are a valuable component of the environment also because of their usefulness in assessing water quality. Ichthyofauna are used for this purpose because of the following characteristics: (a) a wide distribution range, covering a variety of aquatic ecosystems, (b) a well-studied life cycle, (c) relatively easy species identification, and (d) a long life span, enabling long-term assessment of environmental stress levels.[31] Thus, fish, on the one hand, are good indicators of water quality, but, on the other hand,

[29] Pływaczewski, Zębek, Narodowska, "Odpowiedzialność za środowisko z perspektywy prawa, kryminologii i nauk przyrodniczych," 45–52.

[30] Journal of Law of 2014, item 1713, as amended.

[31] Alan K. Whitfield, "Fishes and the Environmental Status of South African Estuaries," *Fisheries Management and Ecology* 3 (1996): 45–57, https://doi.org/10.1111/j.1365-2400.1996.tb00129.x.

they are subject to a wide range of anthropogenic pressures, i.e., pollution of waters with nutrients and harmful substances or impacts associated with fishing. The aforementioned factors contribute to changes in the functioning and structure of ichthyofauna communities, which can be monitored to obtain information on the state of the environment.[32]

The assessment of ichthyofaunal biodiversity is related to a systematic action for the sustainable preservation of all components of aquatic ecosystems, and, above all, to the validation of the current status of a given taxon in the place of its natural occurrence. Natural monitoring consists of observations and measurements of selected components of living nature on the basis of which certain conclusions are formulated about the phenomena taking place or the economic activities carried out, both in time and space.[33] The obligation to conduct such monitoring stems from national and international law. Within the framework of State environmental monitoring, natural monitoring of biological and landscape diversity is carried out in accordance with the provisions of Article 112 of the NCA in connection with the implementation of the provisions of the Habitats Directive, in particular those contained in Article 12. Such monitoring shall consist of the observation and assessment of the status and ongoing changes in the components of biological and landscape diversity, including natural habitat types and species of Community interest. It shall have a particular focus on natural habitat types and species of priority importance, as well as on the evaluation of the effectiveness of nature conservation practices. With regard to ichthyofauna, the obligation of monitoring is imposed in the IFA within the framework of the Fish Stock Protection and Restoration Program (Articles 2a–2d). In Slovakia, for instance, ichthyofauna monitoring

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32 Alberto Barausse et al., "Long-Term Changes in Community Composition and Life-History Traits in a Highly Exploited Basin (Northern Adriatic Sea): The Role of Environment and Anthropogenic Pressures," *Journal of Fish Biology* 79, no. 6 (2011): 1453–86, https://doi.org/10.1111/j.1095-8649.2011.03139.x; Sofia Henriques et al., "Response of Fish-Based Metrics to Anthropogenic Pressures in Temperate Rocky Reefs," *Ecological Indicators* 25 (2013): 65–76, https://doi.org/10.1016/j.ecolind.2012.09.003; Szymon Smoliński, "Wskaźniki ichtiofauny w ocenie stanu środowiska morskiego," in *95-lecie Morskiego Instytutu Rybackiego: aktualne tematy badań naukowych*, vol. 2, *Stan Środowiska Południowego Bałtyku*, ed. Iwona Psuty (Gdynia: Morski Instytut Rybacki 2016), 65–6.

33 Małgorzata Makomaska-Juchiewicz, ed., *Monitoring zwierząt. Przewodnik metodyczny*, part I (Warsaw: GIOŚ Biblioteka Monitoringu Środowiska, 2010), 16–8.

relies on traditional research methods such as electrophilization and netting. It also incorporates information about the study area, habitats and fishing activity. Sensitivity monitoring should consider pollution, the presence of non-native species (particularly invasive ones) and potential fishing interventions.[34] Meanwhile, in Romania, as part of the monitoring and protection of ichthyofauna in 2007, a project entitled "Scientific validity of a model law enforcement Nature 2000" took place, taking as a study case the animal species listed in the Habitats Directive.[35]

Water monitoring methods in Poland result from the regulations of the Water Framework Directive (WFD)[36] and the 2017 Water Law. Indeed, the environmental goals of the WFD prescribe the pursuit of enhanced protection and improvement of the aquatic environment, as well as the gradual reduction of emissions of hazardous priority substances.[37] The WFD also identifies a monitoring system for surface water status as one of the legal instruments for water protection in the EU. Member States are required to ensure that water status monitoring programs are established to provide a coherent and comprehensive overview of water status in each river basin district for surface waters, including volume and level or rate of flow as appropriate to ecological status, ecological potential and chemical status (Article 8). These programs are also established for the protected areas listed in Annex IV of the Directive. These include the abstraction of water for human consumption, the protection of aquatic species of economic importance, aquatic species used for recreational purposes, aquatic species sensitive to nutrients, and the protection of habitats or species for which the maintenance or improvement of water status is an important factor in their protection, including Natura 2000 sites designated under the Habitats and

34 Ján Koščo and Pavol Balázs, "Fishes Protected of Natura 2000 System in Slovakia," *Acta Agraria Debreceniensis*, no. 25 (2007): 9–12, https://doi.org/10.34101/actaagrar/25/3030.

35 Vasile Otel and Aurel Năstase. "Researches on Ichthyofauna in the Natura 2000 Sites from Banat (Romania)," *Scientific Annals of the Danube Delta Institute* 16 (2010): 33–8.

36 Directive 2000/60/EC of the European Parliament and of the Council of October 23, 2000, establishing a framework for Community action in the field of water policy (OJ L327, 22 December 2000), 1–73.

37 See: Janina Ciechanowicz-McLean, "Wpływ Ramowej Dyrektywy Wodnej na bezpieczeństwo ekologiczne Morza Bałtyckiego," *Gdańskie Studia Prawnicze* 32 (2014): 85–97; Janina Ciechanowicz-McLean, "Ramowa Dyrektywa Wodna a ochrona środowiska morskiego," *Prawo Morskie*, no. 29 (2013): 107–15.

Birds Directives. The directive establishes three types of monitoring: (a) diagnostic, (b) operational, and (c) for protected areas.[38] In the Polish legal system, the types of monitoring are defined in the Regulation of the Minister of Infrastructure of July 13, 2021, on the forms and manner of monitoring of surface water bodies and groundwater bodies.[39] According to §4 of the regulation, four types of monitoring have been defined for surface water bodies, i.e., diagnostic, operational, research, and protected areas. Diagnostic monitoring of surface water bodies is established to assess the status of these waters, including those occurring in protected areas, taking into account significant anthropogenic impacts and priority substances, and to assess the degree of eutrophication of surface waters. Operational monitoring of surface water bodies is established to assess the status of those waters deemed at risk of failing to meet the environmental objectives set for them, including those bodies occurring in protected areas. Research monitoring of surface water bodies is established in order to clarify the reasons for the failure to achieve the environmental objectives set for a given body of these surface waters. This type of monitoring is applicable if it is impossible to explain these causes on the basis of data and information, obtained as a result of measurements or studies conducted as part of diagnostic monitoring or operational monitoring. Meanwhile, the purpose of protected area monitoring is to assess the fulfillment of additional requirements established to meet environmental objectives for protected areas (§5), including protected species.

The WFD and WL define the ecological status (natural) or ecological potential (heavily modified) of surface waters, based on physical and chemical parameters and bioindicators, with fish being one of the key elements of this system. These indicators are defined in the Regulation of the Minister of Infrastructure of June 25, 2021, on the classification of ecological status, ecological potential and chemical status and the method of classifying the status of surface water bodies, as well as environmental quality standards for priority substances.[40] According to the regulation, the biological

[38] Elżbieta Zębek, "Legal Solutions of Lake Monitoring Systems in Poland in Compliance with the Water Framework Directive," *Review of European and Comparative Law* 48, no. 2 (2022): 173–201, https://doi.org/10.31743/recl.13419.

[39] Journal of Law of 2021, item 1576.

[40] Journal of Law of 2021, item 1475.

indicators determining the ecological potential of waters are phytoplankton, phytobenthos, macrophytes, benthic macroinvertebrates, and ichthyofauna (fish population). Similarly, in the case of ecological status, where the bioindicators of water quality are the Phytoplankton Index for Polish Lakes (PMPL), Multimetric Diatom Index (IOJ), Macrophytic Ecological Status Index (ESMI), Benthic Macroinvertebrates, and Lake Fish Index LFI+, LFI-EN. Thus, the Lake Fish Index includes two methods: (1) LFI+, based on the results of multi-year commercial ichthyofauna fishing harvests, and (2) LFI-EN, based on the results of a single fish catch with a Nordic wonton set conforming to EN 1475735. Both methods assume that changes in the state of the environment translate directly into the composition and structure of the ichthyofauna, and vice versa – the composition and structure of the ichthyofauna are direct indicators of the state of the environment. Thus, the variables are the weight shares (%) of species or functional groups of fish (LFI+) or the weight shares (%) of species in the total fish yield of the Nordic wonton set (LFI-EN). The variables characterizing the pressure on the lake environment are Secchi disk visibility, total phosphorus content, chlorophyll a content and, calculated from these values, the Trophic State Index (TSI) indicators.[41]

4. Case Study – Environmental Disaster in the Oder River

4.1. Legal Protection of the Oder River under International Agreements

The Oder River is legally protected through international agreements. Notably, the International Commission for the Protection of the Oder River against Pollution plays a key role in this area. This commission was established by the Ministers of Environmental Protection of the Republic of Poland, the Czech Republic, and the Federal Republic of Germany, as well as the European Community, with the aim of intensively working to improve the quality of the Oder River's water resources. The "Quick Action Programme for Protecting the Oder River from Pollution" is the first document to be developed jointly by the countries involved, and it defines

[41] Łucjan Chybowski et al., *Przewodnik metodyczny do monitoringu ichtiofauny w jeziorach* (Warsaw: Biblioteka Monitoringu Środowiska, 2016), 43; David Ritterbusch et al., *Water Framework Directive Intercalibration: Central-Baltic Lake Fish Fauna Ecological Assessment Methods. Part A: Descriptions of Fish-Based Lake Assessment Methods*, EUR 28022 EN 2017, Publications Office, 2017, https://data.europa.eu/doi/10.2791/084375.

the scope of investment activities for the years 1997–2002. The program is aimed at restoring the balance of the river ecosystem in the Oder basin. In accordance with the agreement between the countries and the EU, the following objectives were specified: (1) preventing and permanently reducing the pollution of the river and the Baltic Sea by harmful substances; (2) creating aquatic and coastal ecosystems that resemble natural ones, with their inherent species diversity; and (3) enabling the use of Oder waters for drinking water supply via shore intakes, as well as for irrigation, fish farming and tourism.[42] Therefore, the focus of this program was the improvement of the chemical status of the Odra River through the modernization of sewage treatment plants. An analysis of subsequent reports prepared by this committee shows that the next ones in 1999–2004 mainly concerned flood protection.[43] In 2010, the Commission published a brochure describing some of the most common fish species found in this river, such as vimba, barbel, pike, and burbot, but did not indicate any conservation measures.[44] The next report, from 2013, concerned the implementation of the water management plans that had been submitted to the European Commission in March 2010. These plans focused primarily on water and sewage management, as well as the installation of fish migration structures on the Czech side.[45] The 2019 report focused on protecting ichthyofauna, setting out specific goals to protect migratory species of particular importance to the Oder River system, such as sturgeon, eels, and salmon. Potential spawning areas for these species should be identified and their migration, which has been disrupted by river development, should be facilitated. Efforts should be made to maintain and restore stable population sizes and genetic diversity as indicators

42 *Program szybkiego działania dla ochrony rzeki Odry przed zanieczyszczeniem 1997–2002* (Wrocław: Międzynarodowa Komisja Ochrony Odry przed Zanieczyszczeniem, 1999).

43 For example: *Wspólna strategia i zasady działań przeciwpowodziowych w dorzeczu Odry* (Wrocław: Międzynarodowa Komisja Ochrony Odry przed Zanieczyszczeniem, 1999); *Program działań przeciwpowodziowych w dorzeczu Odry* (Wrocław: Międzynarodowa Komisja Ochrony Odry przed Zanieczyszczeniem, 2004).

44 *Ryby. Odra jakiej nie znacie* (Wrocław: Międzynarodowa Komisja Ochrony Odry przed Zanieczyszczeniem, 2010).

45 *Stan wdrażania programów działań na Międzynarodowym Obszarze Dorzecza Odry* (Wrocław: Międzynarodowa Komisja Ochrony Odry przed Zanieczyszczeniem, 2013).

of good ecological status through habitat restoration.[46] However, the 2024 report was related to the establishment of an emergency plan. The parties to the agreement agreed on preventive measures and measures to combat extraordinary water pollution. They will also develop a unified alarm and warning system which will be updated based on experience gained following the ecological disaster on the Odra River. This will be achieved using lists of point and area pollution sources, as well as action programs developed to prevent emergency water pollution, in accordance with the guidelines contained in Directives 2012/18/EU,[47] 2011/92/EU,[48] and 2010/75/EU (IED).[49] Such a plan should include the following: (a) a list of potential point sources of emergency pollution (i.e., plants with a high or increased risk of a major industrial accident); (b) line sources of potential emergency pollution; (c) transport sources involved in the transportation of hazardous substances; (d) alarm procedures and template forms for emergency water pollution; (e) procedures for conducting rescue operations in protected areas (e.g., Natura 2000).[50]

4.2. Environmental Disaster in the Oder River – Consequences and Recovery Program

The subject of this article's analysis is an ecological disaster that occurred in the summer of 2022 in the Oder River. A toxic bloom of the haptophyte algae known as golden algae (*Prymnesium parvum*) has been identified as a possible cause. The cumulation of a set of weather, hydrological and environmental factors, as well as those resulting from anthropogenic activities,

46 *Strategia wspólnego rozwiązywania istotnych problemów gospodarki wodnej na Międzynarodowym Obszarze Dorzecza Odry* (Wrocław: Międzynarodowa Komisja Ochrony Odry przed Zanieczyszczeniem, 2019).

47 Directive 2012/18/EU of the European Parliament and of the Council of July 4, 2012, on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC (OJ L197, 24 July 2012), 1–37.

48 Directive 2011/92/EU of the European Parliament and of the Council of December 13, 2011, on the assessment of the effects of certain public and private projects on the environment (codification) (OJ L26, 28 January 2012), 1–21.

49 Directive 2010/75/EU of the European Parliament and of the Council of November 24, 2010, on industrial emissions (integrated pollution prevention and control) (recast) (OJ L334, 17 December 2010), 17–119.

50 *Plan Awaryjny dla Odry* (Wrocław: Międzynarodowa Komisja Ochrony Odry przed Zanieczyszczeniem, 2024).

such as the availability of nutrients, high water temperature, slowed flow, a prolonged lack of precipitation resulting in low water levels and elevated conductivity, may have contributed to the initiation of the appearance of mass algal blooms, including in particular *Prymnesium parvum*.[51]

According to the Reports of the Oder River Situation Team,[52] the simultaneous occurrence of the above-mentioned factors contributed to optimal conditions for the mass development in the form of a water bloom of the golden alga (*Prymnesium parvum*) – a species characteristic of saline environments in the seas (such as the Norwegian Sea or the Baltic Sea) and industrial areas. This species has produced fish-killing toxins called prymnesin. Laboratory studies of the waters of the Oder River, the Gliwice Canal and reservoirs hydrologically related to the Oder River, carried out by the Stanislaw Sakowicz Institute of Inland Fisheries – National Research Institute (PIB), have shown high abundances of *Prymnesium parvum*, exceeding the level of 50-100 million cells/L, at which, according to the literature, die-offs of fish and other gilled organisms can already be recorded. In addition, simultaneous ichthyopathological studies confirmed that the histopathological picture of all examined animals from waters with a high abundance of *P. parvum* indicated acute damage to the organs with the strongest blood supply (gills, spleen, kidneys). Disruption of hematopoietic processes and damage to the gills are associated with the action of hemolytic toxins, which include prymnesin secreted by *Prymnesium parvum*, as indicated by necrotic lesions in the spleen, involving both the white and red pulp, and activation of the melanomacrophage centers of the spleen and

51 Elżbieta Zębek and Agnieszka Napiórkowska-Krzebietke, "Rozwój przepisów prawnych w zakresie bioindykacji środowiskowej a stan jakości wód jeziorowych," *Studia Prawnoustrojowe*, no. 43 (2019): 375–93, https://doi.org/10.31648/sp.4616; Agnieszka Napiórkowska-Krzebietke, "Ocena jakości/stanu/potencjału ekologicznego jednolitych części wód powierzchniowych – kryteria i unormowania prawne w Polsce," in *Odpowiedzialność za środowisko w ujęciu normatywnym*, eds. Elżbieta Zębek and Michał Hejbudzki (Olsztyn: UWM, 2017), 142–7.

52 Agnieszka Kolada, ed., "Wstępny raport zespołu ds. sytuacji na rzece Odrze," IOŚ-PIB, September 30, 2022, accessed October 15, 2024, https://ios.edu.pl/aktualnosci/wstepny-raport-zespolu-ds-sytuacji-na-rzece-odrze; see more: Zębek and Napiórkowska-Krzebietke, "Działania prawne i naprawcze wobec szkód w środowisku wodnym," 52–4; Agnieszka Kolada, ed., *Raport kończący prace zespołu ds. sytuacji w Odrze*, IOŚ-PIB, September 30, 2023, accessed October 15, 2024, https://ios.edu.pl/aktualnosci/raport-konczacy-prace-zespolu-ds-sytuacji-w-odrze/.

kidney interstitium. In order to reduce the negative impact of golden algae on ichthyofauna, a number of experiments were conducted. Among them, the most significant was the use of perhydrol as an effective agent for complete control of *Prymnesium parvum* blooms, which did not have a significantly negative impact on fish populations, inhabiting the Klodnica River.[53]

In view of the above, this was most likely the cause of the sudden and massive fish die-offs on a scale previously unrecorded in this river at 249 tons. The fish die-offs covered five provinces (Silesian, Opolean, Lower Silesian, Lubuskien, and West Pomeranian) and involved such species as bream, krib, roach, rudd, pikeperch, perch, catfish, barbel, chub, asp, pink, mumps. Among these fish species were protected species listed in Annex II (e.g., asp and roseate) and Annex V of the Habitats Directive, and in Polish legislation in the Regulation of the Minister of Environment of April 13, 2010, on natural habitats and species of Community interest, as well as the criteria for selecting areas eligible for recognition or designation as Natura 2000 sites.[54] It is worth mentioning that there are Natura 2000 sites along the Oder River, including Grądy Odrzańskie (site code PLB020002), Łęgi Odrzańskie (site code PLB020008), Dolina Środkowej Odry (site code PLB080004), and Dolina Dolnej Odry (site code PLB320003).[55]

As part of the remediation of the Oder River, recommendations were developed, including the establishment of a system of continuous measurement of water quality for selected parameters associated with blooms, as well as periodic monitoring of the algae *Prymnesium parvum* itself, and the fauna (including fish, mollusks) for environmental contamination (dioxins, heavy metals, pesticides, toxic compounds). In this regard, the Chief Inspectorate of Environmental Protection has developed an appropriate procedure for monitoring the occurrence of golden algae in the Oder River, which takes into account three degrees of threat (I–III) indicating, respectively, medium, high and very high risk of a bloom caused by the presence

53 Łukasz Weber et al., *Eksperymentalne zastosowanie nadtlenku wodoru do ograniczenia zakwitu Prymnesium parvum w rzece Kłodnicy latem 2024 r.* (Warsaw: Instytut Ochrony Środowiska-Państwowy Instytut Badawczy, 2024).

54 Journal of Law of 2014, item 1713.

55 Regulation of the Minister of Environment of January 12, 2011, on special bird protection areas (SPAs) (Journal of Law of 201, No. 25, item 133), as amended by the Regulation of the Minister of Environment of June 22, 2017, amending the Regulation on special bird protection areas (Journal of Law of 2017, item 1416).

of *Prymnesium parvum*.[56] Other recommendations for remedial actions include (a) continuing inspections of entities discharging polluted water into the Oder River and its tributaries, (b) immediate removal of illegal sewage discharge outlets, (c) reviewing and verifying existing permits for the discharge of wastewater into waters in the Oder River basin, (d) improving the flow of information, (e) implementing an early warning and response system, and (f) improving procedures within emergency management. An important issue in the restoration of the river ecosystem is the inventory of post-disaster species, the analysis of the population structure, the creation of a gene bank and the restoration of the Oder River ecosystems in accordance with the assumptions of the recovery plan for the restoration of the Oder River ecosystems, which is currently being developed.[57] Currently, programs for the restoration of the Oder River's ecosystem and biodiversity are being implemented in 2022–2025, financed by the Provincial Fund for Environmental Protection and Water Management (WFOŚiGW). The purpose of these programs is to restore the Oder River ecosystem by restocking, including the acquisition of spawners as a genetic base for the production of stocking material; restoration of spawning grounds as natural sites for the restoration of the ecosystem of flora and fauna associated with the proliferation of fish and crustaceans, and monitoring of the Oder River ichthyofauna.[58] In 2023, the Law on Revitalization of the Oder River (LRO) was also enacted, the subject of which are detailed rules and conditions for the preparation of investments aimed at improving the environmental conditions of the Oder River in terms of the quantity and quality of water in the river, as well as the aquatic environment, and increasing the water retention capacity of the river's catchment area. Also included are measures to determine the extent of anthropogenic impact on the Oder River and rules for implementing measures to restore ichthyofauna in the river (Article 1).

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56 Główny Inspektorat Ochrony Środowiska, "Procedura monitorowania interwencyjnego Prymnesium parvum złotej algi," 3rd ed., November 7, 2023, accessed November 5, 2024, https://www.gov.pl/web/odra/opis-procedury.

57 Kolada, "Raport kończący prace zespołu ds. sytuacji w Odrze," 180–2.

58 Wojewódzki Fundusz Ochrony Środowiska i Gospodarki Wodnej, "Program 'Odbudowa ekosystemu i różnorodności biologicznej rzeki Odry,'" accessed October 28, 2024, https://www.wfosigw.opole.pl/oferta/program-odbudowa-ekosystemu-i-roznorodnosci-biologicznej-rzeki-odry/.

Article 2 indicates a catalog of 51 investments aimed mainly at regulating the riverbed, such as the construction of water stages, culverts, damming structures. However, in this catalog, with regard to the restoration of the Oder River, there are only a few activities aimed at actual improvement of the river ecosystem (revitalization as the title of the law indicates), i.e., those included in item 9 d–f consisting of (a) restoration of the Barłożna River and part of ditch A, leading to the connection of the Oder River with the old riverbed; (b) land reclamation and construction of an anti-filtration screen of the left-side flood control embankment; and (c) construction of migration corridors for animals with plantings of vegetation. There is no mention of any restocking aimed at restoring the biocenosis in the rest of the Act. With regard to ichthyofauna, the provisions contained in Article 7 of the LRO imposing an obligation on the State Water Company Wody Polskie to act within the scope of the Oder River Basin Management Plan adopted in 2022 apply. The catalog of these activities first includes: (1) analysis of the possibility of reconstruction of damming structures to ensure biological and morphological continuity and meet environmental objectives on rivers; (2) assessment of the impact of transverse structures on biological continuity and environmental objectives of surface water bodies. If negative impacts of these structures on biological continuity and environmental objectives are found, an analysis of the feasibility of implementing measures to ensure biological continuity should be carried out; (3) inspection of the operation of fish migration devices to determine their proper operation and allow for adequate fish migration; and (4) monitoring of the effectiveness of existing fish migration devices to verify the proper operation of these devices. If the negative impact of construction on biological continuity and environmental objectives is found – analysis of the possibility of implementing measures to ensure biological continuity and the meeting of environmental objectives must be carried out. Analyzing this catalog of measures, it should be considered reasonable to minimize the effects of construction on the Oder River and restore its continuity and natural course, allowing the migration of fish, which should be previously introduced into the environment through stocking.

5. Conclusions

Ichthyofauna is a very important element of biodiversity and an important indicator of water quality; however, due to anthropogenic activities, especially illegal activities, it is under threat and should, therefore, be subject to special legal protection. At the EU level, species protection is established mainly in the Habitats Directive, and in national legislation in the Law on Nature Protection, Inland Fisheries, Water Law and implementing acts. An analysis of the legal status of the protection of ichthyofauna in the EU and Poland will be the basis for the identification of strengths and weaknesses. Among the former are: (a) the establishment of a special form of nature protection, i.e., Natura 2000 sites aimed at strengthening species protection, including ichthyofauna; (b) the establishment of priority species categories, i.e., endangered, vulnerable, rare, and endemic; (c) the introduction of strict, active and *in situ* species protection, i.e., in places of their natural occurrence; (d) the introduction of bans on inappropriate fishing methods, trade, habitat destruction; (e) the establishment of a program for the restoration and protection of fish stocks aimed at maintaining, restoring their proper condition; and (g) a monitoring program in protected areas. These measures will significantly contribute to improving the status of species and natural habitats protected within Natura 2000 sites.

However, extraordinary threats to ichthyofauna are becoming a problematic issue, as exemplified by the ecological disaster in the Oder River. The late reaction of public administration bodies due to the lack of proper procedures in such situations may have contributed to such a wide-scale degradation of ichthyofauna. Admittedly, after the incident, the Oder River Revitalization Law was passed in 2023, theoretically aimed at improving environmental conditions in terms of water quantity and quality in the river. Unfortunately, the provisions in this law should be criticized. This is mainly due to the fact that the legislation focuses on investments aimed at regulating the river bed, such as the construction of water stages, culverts and dams for the generation of hydroelectric power, and largely ignores investments aimed at the actual restoration of the Oder. The stocking of the river to restore the biocenosis was only mentioned. Only attention was paid to the need to monitor the impact of these structures on biological continuity and fish migration.

In order to more fully protect ichthyofauna species, especially in cases of ecological disasters, all measures should be taken to limit the negative consequences in order to restore populations, especially of priority species. To this end, habitats should be restored first, taking into account the provisions for the protection of surface waters contained in the Water Law and under the rules of the Inland Fisheries Law. Only comprehensive protection and restoration of aquatic ecosystems will ensure the protection of fish species and the preservation of protected and priority species as the natural heritage of the EU.

It is important to take measures to carry out an inventory of ichthyofauna species and to monitor their status; to introduce systemic solutions to improve water quality in rivers, as well as appropriate measures to deal with water pollution threats. The scope should include, among other things: (1) improvement of conditions for protected areas, including, in particular, reduction of pollutant inflows and protection of habitats and ichthyofauna species, as well as measures aimed at revitalization and reduction of regulation of river channels; (2) improvement of hydromorphological conditions of rivers and streams, including, in particular, but not limited to, protection and restoration of natural processes and reduction of the negative impact of hydraulic engineering structures on fish migration and survival; (3) reduction of pollutant emissions, and (4) ensuring biological and morphological continuity of rivers and streams.

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