

Habitat 1150 includes „shallow, coastal brackish water basins, of varying salinity, closed or partially separated from the sea” (Zalewska-Gałosz 2010, Interpretation manual... 2013). The criterion distinguishing them from the habitat 1160 (large shallow inlets and bays) is the amount of the river flow and the exchange of marine waters (op.cit.). Also difference between habitat 1150 and habitat 1130 (estuaries) is sometimes conventional. According to the Interpretation manual of European Union Habitats (2013), a reservoir can be categorized as a coastal lagoon unless, despite above-mentioned criteria, it is still in contact (at least temporarily) with sea waters or it has been separated from the sea “very recently”. In the light of these definitions, classifying basin as a habitat 1150, should not be based on the genetic criterion given in the manual „Poradnik ochrony siedlisk i gatunków” (Nagengast and Warzocha 2004) according to which habitat 1150 is “a coastal part of the sea (lagoon) which was formed as a result of isolation from the open sea waters by the spit”.

Reservoirs classified as habitat 1150 are characterized by relatively large freshwater inflow but insignificant seawater inflow and dominance of freshwater species. Salinity in coastal lagoons is unstable and temporarily within a range of brackish water salinity. Habitats are mainly large, shallow and polymictic with eutrophic waters characterized by low transparency and high oxygenation. Phytoplankton is dominated by freshwater species of chlorophyta, cyanobacteria and diatoms. Macrophytes are usually scarce and dominated by freshwater species typical of eutrophic waters (e.g. *Potamogeton* sp., *Myriophyllum spicatum*, *Ceratophyllum demersum*). More rare are Characeae and their communities, which are commonly named “charophyte meadows”. Reedbeds are well-developed and form vast and dense phytocoenosis. They are mostly dominated by *Phragmitetum australis* and *Scirpetum lacustris*, often by *Phragmition* and *Magnocaricion*. Nymphaeids are represented by *Nuphar lutea*, *Nymphaea alba* and *Limnanthemum nymphaeoides*, which form their own phytocoenosis, particularly in sheltered areas. They are also the element of reed communities. The most common in habitat 1150 are communities of halophytes like *Zannichellia palustris* ssp. *pedicellata* and *Scirpetum maritimi*.

The species composition of zoobenthos depends on substrate type. Zoobenthos is dominated by Oligochaeta, Chironomidae and Bivalvia. Freshwater fish species (mainly Cyprinidae) are permanent inhabitants of lagoons while the diadromous and marine species are present in lower numbers (Nagengast and Warzocha 2004).

Habitat 1150 can be divided into two groups:

1150-1 Lagoons

1150-2 Coastal lakes

The specification of each group was described by Nagengast and Warzocha (2004). The first group (1150-1) includes: the Vistula Lagoon and the Szczecin Lagoon (with Kamieński Lagoon) whereas the second group (1150-2) includes coastal lakes:

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Bukowo Lake, Dołgie Małe Lake, Dołgie Wielkie Lake, Gardno Lake, Jamno Lake, Kopań Lake, Koprowo Lake, Liwia Łuża Lake, Łebsko Lake, Resko Lake, Sarbsko Lake, Wicko Lake (Zalewska-Gałosz 2010).

In the light of the definition of coastal lagoons presented above and the diversity of Polish coastal lakes in terms of their connection with seawater (por. Cieśliński 2011), it is recommended to verify the representativeness of these lakes as a part of the habitat 1150. Undoubtedly, fully representative are Resko Przymorskie Lake, Bukowo Lake and Łebsko Lake with higher salinity and significant connection to the sea. They are considered by Cieśliński (op.cit.) as lagoons. Also Jamno and Gardno Lakes, which are temporarily saline, should be classified as coastal lakes. In contrast Wicko Lake, Kopań Lake and Sarbskie Lake, classified by Cieśliński (2011) as coastal lakes with freshwater, are poorly representative.

Dołgie Małe Lake and Dołgie Wielkie Lake, that are isolated from the sea and have hydrochemical and biocenotic characteristics of freshwater ecosystems, should be excluded from the list of habitats 1150. Similarly, the old bay of Gardno Lake (so-called North Bay, Smółdzińskie Lake) doesn't have features of habitat 1150. It is a separated reservoir having only periodic connection with the Gardno Lake (Cieśliński 2011). It rather shows characteristics of habitat 3150 (oxbow lakes and natural eutrophic water bodies, Bociąg et al. 2014).

Besides lakes described as habitats 1150 by Zalewska-Gałosz (2010), there are reservoirs that are influenced by seawater and could be considered as coastal lagoons. These are:

-Modła Lake; described by Cieśliński (2011) as a coastal, freshwater lake without identified inflow of seawater (Cieśliński et al. 2009), classified as habitat 3150 in conservation plan of Przymorskie Błota Natura 2000 area (Polish Journal of Laws, Western-Pomeranian Voivodeship 23.09.2014, pos. 3620).

- reservoirs nearby Vistula Śmiała and Vistula Przekop mouths (e.g. Ptasi Raj Lake, Karaś Lake, Mikoszewskie Lake); according to Cieśliński (2011) these are coastal lakes connected to seawater by groundwater flow, classified as habitat 1130 during preparation of conservation plan for Ujście Wisły Natura 2000 area (Michalek and Kruk-Dowgiało 2014).

In both cases, the diagnosis developed during preparation of conservation plans seems to be correct.

Generally, the habitat 1150 in Poland is well-studied. Hydrological and hydrochemical conditions of reservoirs are fully described, biocenotic structure is at least partially known. All sites identified as habitat 1150 are included in the State Environmental Monitoring Programme and their conservation status was assessed, mainly as unsatisfactory (overall assessment U1, Zalewska-Gałosz 2013). The main threats for the habitat are: eutrophication (natural), contamination of surface waters (limnic, land, sea and brackish waters), fishing and exploitation of resources.

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Among non-threatening activities are sport infrastructure, sports and recreation, piers and harbours (op. cit.).

Analysis of the habitat definition and hydrological, hydrochemical and biocenotic specification of reservoirs considered as habitat 1150, showed that coastal lagoons can be finally represented by the following lakes: Bukowo Lake, Gardno Lake, Jamno Lake, Kopań Lake, Koprowo Lake, Liwia Łuża Lake, Łebsko Lake, Resko Przymorskie Lake, Sarbsko Lake, Wicko Lake and lagoons: Kamieński Lagoon, Szczecin Lagoon and Vistula Lagoon. It is recommended to start monitoring studies in Kamieński Lagoon, Szczecin Lagoon, Vistula Lagoon and Bukowo Lake, Gardno Lake, Jamno Lake, Łebsko Lake and Resko Przymorski Lake.

In 2016, the Maritime Institute in Gdańsk conducted environmental studies allowing the assessment of status of habitat 1150. Studies were carried out within the framework of the project "Pilot monitoring studies of marine habitats and protected species in 2015-2018".

Literature

1. Bociąg K., Gos K. Lazarus M. Ćwiklińska P., Pełechata P, Chmara R. 2014. *Materiały do dokumentacji planu ochrony dla Słowińskiego Parku Narodowego. Gdańsk, Poznań. mscr.*
2. Cieśliński R. 2011. *Geograficzne uwarunkowania zmienności hydrochemicznej jezior wybrzeża południowego Bałtyku*, Wyd. UG, Gdańsk, 225 pp
3. Cieśliński R., Bogdanowicz R., Drwal J. 2009. *The impact of seawater intrusions on water quality in small coastal freshwater basins*, Technical Documents in Hydrology, No 84, International Hydrological Programme – VII, UNESCO, Paris: 69–74.
4. *Interpretation manual of European Union Habitats 2013. EUROPEAN COMMISSION DG ENVIRONMENT Nature ENV B.3, EUR 28, April 2013, 144 p.*
5. Michałek, M., Kruk-Dowgiałło, L. (eds) 2014. *Program zarządzania dla rejonu Ujście Wisły. Praca zbiorowa. Wykonano na zlecenie Urzędu Morskiego w Gdyni w ramach Zadania pn.: Opracowanie projektów planów ochrony obszarów Natura 2000 w rejonie Zatoki Gdańskiej i Zalewu Wiślanego. WW IM w Gdańsku Nr 6854, 224 p.*
6. Nagengast B., Warzocha J. 2004. *Zalewy i jeziora przymorskie (laguny)*. [in:] Herbich J. (ed.). *Siedliska morskie i przybrzeżne, nadmorskie i śródlądowe solniska i wydmy. Poradniki ochrony siedlisk i gatunków NATURA 2000 – podręcznik metodyczny. Ministerstwo Środowiska, Warszawa. Vol. 1, 37-53.*
7. Zalewska-Gałosz J. 2010. *Zalewy i jeziora przymorskie (laguny)* [in:] Mróz W.

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(ed.) Monitoring siedlisk przyrodniczych. Przewodnik metodyczny. Część I. GIOŚ, Warszawa, 32-58.