

**Project Title: Baseline Inventory of Priority Wetlands in the Moldovan Part of the Danube River Basin which should be a part of the DRB Management Plan towards Integrated Management of Water Resources in Line with EU WFD**

**ABSTRACT TO THE FINAL REPORT**

There were identified *two wetlands areas complying with criteria for inclusion in the Danube River basin management plan with total surface of 24,888 ha*. These are *Lower Prut Lake Ramsar site (19,152 ha)* encompassing the strict reserve Beleu lake (1,755 ha) and strict reserve *Lord's Forest (5,736 ha)*. The area of proper *wetlands* in these sites where measures towards improvements of their conditions within active floodplain can be taken are *6,944 ha* and *4, 830 ha*, respectively.

*Wetlands* that initially had to be reported to the *Danube River basin management plan* were wetlands with area of 500 ha and more or of basin-wide significance disconnected from the rivers by dykes/dams, i.e. wetlands which were the matters of *interrupted lateral connectivity of the river systems due to morphological alterations*. While evaluating conditions of Moldovan wetlands bordering the Prut River which fall under dimension and significance criteria *there was identified another alteration crucially affecting wetlands' conditions*, in addition to morphological alteration of the river system. *This is a hydrological alteration of the river resulting from a big dam constructed on the Prut for water flow regulation* to prevent catastrophic floods. *This alteration generated conditions in wetlands situated downstream similar to those in laterally disconnected wetlands*. These wetlands suffer from *disturbed natural hydrological regime* because of flood deficit and disturbed regime of groundwater what *severely affects water-dependant habitats and water-dependant species*.

The Moldovan wetlands Beleu lake located in the Lower Prut Lakes Ramsar site and Lord's Forest, both situated downstream Costesti-Stinca dam, had to be reported for the Danube River basin management plan only as protection areas as they are not wetlands disconnected from the Prut River in a classic sense by dams/dikes but rather "improperly connected". However, following to in-depth analysis of wetlands' conditions and pressures to them, *these and other similar wetlands should they are found in the Danube River basin was decided to report to the Danube River basin management plan as wetlands where measures towards improvements of their conditions within active floodplain can be taken*. Such measures can include habitat restoration (increase groundwater level and flood dynamics), dyke removal and relocation applicable for disconnected wetlands; other measures can include change of dam operation to ensure appropriate ecological releases from the water reservoir, etc. Finally, *for the Danube River basin management plan will be reported disconnected wetlands* (and former floodplains) which i) comply with dimension and significance criteria for inclusion, ii) with potential for reconnection to the main river *or* iii) *where improvements can be made within active floodplain, identified by countries (see Annex 1. Letter of Appreciation from ICPDR)*.

*Protection areas* that had to be reported to the *Danube River basin management plan* were those related to Habitats and Birds Directives and other nature protection areas for water-dependent species and water-related habitats (WFD, Art. 5), represented as areas, which correspond to dimension criterion for inclusion (500 ha and more). Following to in-depth analysis of protection areas and their link to wetlands there was made a decision along with relevance of above protection areas to Natura 2000 sites, *to report also their relevance to Ramsar Sites and wetlands/ floodplains (see Annex 1. Letter of Appreciation from ICPDR)*. In Moldova such protection areas are the same as wetlands to be reported to the Danube River basin management plan; these are the Lower Prut Lakes Ramsar site which, as a whole area, was included in the list of protection areas established by the Law on the Fund of Natural Areas Protected by State (as of 1998 with amendment as of 2007 regarding designation of the Ramsar sites as protection areas) and Lord's Forest. Lower Prut Lakes site Ramsar site also encompasses strict reserve "Lower Prut"; Lord's Forest is a strict reserve, and they both apply to IUCN category Ia. *The overlap of Moldovan Protection Areas with Wetlands to be reported to the Danube River basin management plan is 100% vs. minimum required overlap of 30%*.

*To enhance internationally and nationally protection regime of the Lord's Forest ("Padurea Domneasca") and to enlarge the protection area to be a subject of the Danube River basin*

**management plan**, in the framework of current project there was evaluated the Lord's Forest potential for its designation as a new (forth) Ramsar site in Moldova. The results of expert judgment, field survey, study of available scientific data and other relevant sources, as well as outcomes of consultation meetings with main stakeholders (Ministry of Ecology and Natural Resources, strict reserve's directorate, scientific institutions of the Academy of Sciences, etc.) have shown that Lord's Forest features fall under Ramsar criteria 1,2,3,4 & 5, and as a new development of the project, in March 2008, **there was compiled Information Sheet on Ramsar wetland Lord's Forest** accompanied by GIS file providing geo-referenced site boundary vectors and attribute tables, and by electronic map; these documents were officially submitted to the Ministry of Ecology and Natural Resources of Moldova for further official procedures for designation of a new Ramsar site.

**There was made an inventory of all inland and main (designated as IBA's ) human-made wetlands situated in the Moldovan part of the Danube River basin, as well as a survey of some other human-made wetlands representing big water reservoirs with projected volume about 1 mln. m<sup>3</sup>.**

Wetlands inventory represents the first in Moldova attempt to describe the most completely and comprehensively wetlands supporting waterbirds in conformity with the list of essential core data (area, location, map, geomorphic setting, general description of soil, water regime, biodiversity status, mainly, avifauna), recommended additional information (climate, land use - local and in the catchment, land tenure, administration, conservation and management status of the wetland, as well as pressures, impact, threats to the wetland). Besides, supplemented information has been gathered and evaluated against International Commission's for the Protection of the Danube River (ICPDR's) requirements for data collection for the development of the Danube River Basin District Management Plan as follows: type of connectivity interruption, where appropriate; measure type to restore lateral connectivity, if applicable, reasons for measure, where appropriate, and additionally, other relevant measures to be taken to improve wetland conditions.

**Selection criteria for baseline inventory of inland and human made wetlands** situated in the Moldovan part of the Danube river basin was expert judgment of wetland's capacity to support **birds diversity** (including rare species) **and abundance**; there were also considered such factors as **wetland use** by waterbirds (as breeding, feeding/ stopover/ visiting areas, etc.); availability and conditions of water-dependant **habitats** (biotopic structure of wetland, size, etc.) and **location** (e.g. on migration flyways, remoteness from localities, etc.).

Expert judgment on wetlands' status to support waterbirds based upon above criteria that was made during ground survey and on-site research, as well as followed desk studies were used to identify wetlands that along with internationally important wetlands (in more details, respectively) are to be subjects of sub-basin national and sub-unit local river basin management plans to be developed further in the frame of relevant local, national, bi-lateral activities.

In present evaluation all protection areas that might have a relevance to water-dependent species and water-related habitats were considered as subjects of the national river basin management plan. However, by time, the inventory of above protection areas towards identification proper wetlands within their bounds and in-depth evaluation of their conditions to support waterfowl has to be made for their further consideration, if appropriate, as subjects of the local river basin management plans.

Inland wetlands having a high status for supporting of waterbirds were considered as subjects of the national river basin management plan due to relatively small number and surface area of remained natural wetlands both in the Moldovan part of the Danube River basin and in the country, in whole, and therefore they require developing of special action plans and undertaking of special measures towards their protection and conservation. Furthermore, in present evaluation all inland wetlands were considered as subjects of river basin management plans (of different levels) because adequate quality bird habitat is not always a consideration in open-space acquisition. In general, for resident species large contiguous tracts of wetlands are better than fragments or small parcels but for migratory birds even small parcels of wetlands situated in key migration corridors can be extremely important during passage.

The total *area of wetlands to be a subject of the national and local river basin management plans is 20,061 ha*. These are all inland wetlands found in the Prut River basin with area of 11,722.7 ha, human-made wetlands designated as Important Bird Areas situated in the Prut River basin with area of 7,137 ha and human-made wetlands designated as Important Bird Areas situated in the Ialpuș River basin with area of 1,171 ha.

Out of **13** identified *inland and human-made wetlands* to be included in the *national river basin management plans with total surface of 17,969.5 ha*, **10** are *inland wetlands* with area of **11,092.5 ha** (Lord's Forest, Beleu and Manta lakes situated in the Lower Prut Lakes site, Caracusenii Vechi lake, Zberoaia-lunca, Bujor lake, Lebada Alba, Antonesti plawni, Paicu lake and Cahul lake), and **3** are *human-made wetlands* with area of **6,877 ha** (Costesti-Stinca water reservoir, Taraclia, Congaz) to be developed further on international (for shared wetlands) and/ or national levels.

Among inland wetlands to be subjects of the national river basin management plans 5 wetlands are protection areas (Lord's Forest, Beleu lake, Zberoaia-lunca, Lebada Alba and Antonesti plawni) out of which Lord's Forest and Beleu lake were designated also as IBA's), Cahul lake (also designated as IBA), as well as newly identified as wetlands of national importance - Caracusenii Vechi lake (40 ha), Bujor lake (246 ha) and Paicu lake (40 ha) and Manta plawni which in the frame of current project were proposed to be designated as new wetland protection areas.

Among protection areas Lower Prut Lakes Ramsar Site and Lord's Forest have a great status to support waterbirds; among other protection areas only Zberoaia-lunca has a high status, Antonesti plawni has a middle status while Lebada Alba in its present conditions does not have any status to support waterbirds. However, as a protection area having a relevance to water-related habitats and water-dependant species, presently, Lebada Alba is to be a subject of the national river basin management plan.

Among wetlands without protection status, Caracusenii Vechi lake, Costesti-Varatic bay, Bujor lake, Paicu lake and Cahul lake have a high status to support water birds; Nicolaevca wetland have a middle status while Macaresti and Toceni wetlands – low status.

According to identified selection criteria, among *wetlands to be subjects of local river basin management plans*, there were identified **6 inland wetlands with total area of 629,2 ha**; these are Costesti-Varatic bay with area of 281,2 ha (high status to support waterbirds; this wetland also can be considered in the National Prut River basin management plan for the Costesti-Stinca water reservoir), Macaresti - 90 ha (low status), Nicolaevca - 67 ha (middle status), Toceni – 7 ha, Colibas lake - 150 ha (middle status) and Brinza lake - 34 ha (middle status) and **3 human-made wetlands with total area of 1,461 ha**; these are Cahul fish ponds with area of 1,237 ha (high status), Comrat water reservoir - 126 ha (middle status) and Tomai water reservoir - 98 ha (low status) all designated as objects of the National Ecological Network, while Cahul fish ponds has also a Ramsar status. In spite of Cahul fish ponds high status to support waterbirds it is a subject of the local river basin management plan since it is a future private industrial enterprise which will be managed in conformity with a local business development plan.

Altogether, in the Moldovan part of the Danube River basin there were identified **16 inland wetlands with total area of 11,723 ha** (Lower Prut Lakes with total area of 6,944 ha occupied by wetlands as a site embracing two largest in Moldova natural lakes, two smaller natural lakes and big fish pond was conventionally considered as separate wetlands to accurately estimate areas of inland and human-made wetlands, as well as total area of important inland wetlands, while the Lord's with total wetland area of 4,830 ha mostly embracing floodplain woodland was considered as a single inland wetland with area of 4,665 ha at cost of deducted 165 ha occupied by water reservoirs which were considered separately as a "big water reservoirs"). All inland wetlands except the Cahul lake are situated in the Prut River basin.

**Out of inland wetlands, 9 sites** (Lord's Forest, Beleu and Manta lakes, Caracusenii Vechi lake, Costesti-Varatic bay, Zberoaia-lunca, Bujor lake, Paicu lake and Cahul lake ) **with total area of 11,235.6 ha** were evaluated as of **high priority** for supporting of waterbirds; **4 sites** (Antonesti plawni, Nicolaevca, as well as Colibas and Brinza lakes situated in the Lower Prut Lakes Ramsar site) **with total area of 360 ha** were

considered as of *middle priority* for supporting of waterbirds and *3 sites, with total area of 127 ha* were evaluated as of *low* (Macaresti, Tocieni) *and no* (Lebada Alba) *priority*.

The *total area of 6 main human-made wetlands having a high status to support waterbirds is 8,308 ha* including Cahul fish pond situated in the Lower Prut Lakes Ramsar site. Out of them, 2 human-made wetlands are situated in the Prut River basin (Costesti-Stinca (5,900 ha) and Cahul fish pond (1,237 ha), and 4 - in the Ialpuj river basin: Taraclia (700 ha), Congaz (277 ha), Comrat (126 ha) and Tomai (98 ha). It should be emphasized that none of human-made wetlands is properly artificial ones. One of them – Cahul fish ponds were constructed on the basis of natural lakes previously belonging to the Manta lake complex; they are connected to the Prut River through the channel and to a great extent, are fed also by underground waters. Other water reservoirs are river impoundments and therefore to some extent, depend on water level in rivers where they are situated, i.e. have some natural features.

In the Prut River basin there were *identified 5 sites with wetland restoration potential* with total *area of 2,552 ha*. Out of them, 2 sites with area of 2,232 ha are situated in the Lower Prut Lakes site (one with area of 1,980 ha - northward Cahul fish ponds and another site with area of 252 ha - northward Beleu lake), and 3 sites with total area of 319,6 ha bordering to the Prut River - Sarata-Rezesi (160 ha), Sirma (112 ha) and Leova (46,7 ha). Main constrains in regard to wetlands restoration are linked with lack of appropriate technical solution due to absence of common understanding on further use of restored wetlands; lack of funds to implement structural wetland restoration projects; low awareness of local people about wetland values and relatively low priority of environmental concerns as compared to economic and social ones.

Along with official proposal on designation of the Lord's Forest wetland as a new Ramsar site, *4 sites* to be designated as *new wetland protection areas were also officially proposed to the Ministry of Ecology and Natural Resources of Moldova*. These are: i) karstic lake Caracusenii Vechi situated south-eastward village of the same name, Birceni district; area of the lake is 40 ha, its coordinates are 48°15'20" N & 27°05'09" E; ii) floodplain lake Paicu bordering the Prut River vis-à-vis Paicu village, Cahul district; area of the lake is 27,5 ha, area of the lake with associated plawni is 36,5 ha, coordinates of the site are 46°02'05" N & 28°05'42" E; iii) floodplain lake Bujor situated 1,8 km north-westward town Leova, district Leova; area of the lake is 67,2 ha, area of the lake with associated plawni is 245 ha, coordinates of the site are 46°30'19" N & 28°13'04" E, and iv) Manta plawni situated between Manta and Colibas villages, district Cahul; area of the lake is 1,880 ha, area of the lake with associated plawni is 3,239 ha, coordinates are 45°47'56" N & 28°09'11" E. These wetlands contain well-developed and stable habitats for waterbirds and support high level of birds' diversity especially during passage; their ecosystems are stable and show a predictable development, and avifauna inhabited in the sites is harmoniously developed.

There was defined more precisely the *surface of Important Bird Areas designated in the Moldovan part of the Danube River basin* as compared to those indicated in the *Directory of the Azov-Black Sea Coastal Wetlands (18,947 ha vs. 25,700 ha)* published in 2003 by Wetlands International (edition by G. Marushevsky).

For all *inland wetlands there was identified priority functioning* which is *biodiversity and habitat conservation*; other not so significant functioning are *flood protection and nutrients removal* due to their relatively small dimensions (except Lord's Forest and Lower Prut Lakes wetlands) and relatively small number insufficient to properly remove nutrients washed out with surface runoff from adjacent huge agricultural areas. Inland wetlands *are mostly used for agricultural purposes* (grazing, mowing); other uses are *fishing and recreation*. *Priority use of important human-made wetlands is flood protection*, other uses - fishing and irrigation. *The priority functioning is a biodiversity conservation* because over years in these wetlands were naturally created conditions supporting bird habitats and providing conditions for their nesting, breeding, resting, etc.

While evaluating the *pressures* on the river systems in the Moldovan part of the Danube River basin which may have relevance to wetlands there was identified the *main pressure - hydrological-morphological* the most *severely affecting water-dependant habitats and water-dependant species* in downstream wetlands. This pressure was generated by *both hydrological alteration of the river linked with operation of the Costesti-Stinca dam* on the Prut River what *resulted* not only in interruption of

longitudinal river and habitat continuity but also *in disturbance of lateral connectivity of the river system* through crucial flood deficit and change of groundwater regime in downstream riverine wetlands, *and morphological alteration of the river system linked with construction of dykes along the Prut River* resulted in even more flood deficit in riverine wetlands. Other pressures are *diffuse nutrients pollution, soil erosion and water abstraction*.

*Main common* identified *impacts on wetlands* are drainage of the Prut River floodplain, decrease of fish number in waterbodies due to illegal fishing, water and soil pollution due to agricultural activities, e.g. grazing, hay harvest, land cultivation, waste disposals, septic tanks, sedimentation of water bodies, etc. There were also identified *specific impacts* typical for certain wetlands, e.g. swamping of Lebada Alba wetland resulted from ceasing of site's feeding by groundwater; partial destruction of Manta plawni during railway construction, additional water pollution, associated noise impact, etc.

*Main common* identified *threat to wetlands* is decrease of biodiversity mostly as the expense of decrease of birds number but not species composition. According to expert estimate, the main reason of that was massive illegal fishing followed by strong decrease of fish resources mostly due to commonly used until recent past electric rods for fish catch. Wetlands ground survey has shown that number of flying birds became more while number of migrating and nesting birds - less. There were also identified *specific threats* on certain wetlands, e.g. illegal use of natural resources and invasion of alien species in the Lower Prut Lakes and Lord's Forest, desiccation of forestland in the Lord's Forest, etc. (more detailed information on each concrete wetland is presented in the database).

The ground survey has shown that none of the inland wetlands, especially priority ones can be excluded from *wetland restoration works*, should they take place. *Main measures to restore inland wetlands* in the Prut River basin are those identified for disconnected wetlands (as they were shown in prepared by ICPDR GIS templates used for collection of data to be used for developing of the Danube River basin management plan and drafting of the Joint Programme of Measures): Habitat restoration ("increase groundwater level and flood dynamics"); "Reconnection of side-channels/oxbows"; "Dyke removal", and "Dyke relocation". *Other measures* to be undertaken to improve conditions of natural wetlands in the Prut River basin were outlined as follows: i) change of the Costesti-Stinca dam operation to ensure appropriate ecological releases providing sufficient seasonal flooding downstream within the whole year what surely will result in improvement of the wetlands conditions and water-dependant wildlife, as well as of the adjoining lands which currently in majority cases are used as low-quality pastures; ii) adherence of the national ecological legislation; iii) use of environmentally-friendly agricultural practices, e.g. grazing control, manure management, land cultivation, iii) appropriate waste management, iv) soil erosion control, etc; in human-made wetlands these are: maintenance of appropriate water level to support waterbirds, soil erosion control, etc.

There was created the first in Moldova *electronic Wetlands Database* based upon inventory findings and expert judgment. It was presented to the Ministry of Ecology and Natural Resources and is to be stored in the Environmental Informational Center for free access of public. The users of database are to be central and local public authorities, wetland managers, river basin management planners, scientists, national and international experts and consultants, teachers, students, etc.

The Wetlands Database and additionally, *Wetlands Fact-Sheets* were created for the wetlands supporting waterbirds which are situated in the Moldovan part of the Danube River basin as follows: inland wetlands, human-made wetlands designated as IBA's and permanent large river impoundments and off-channel water reservoirs which can represent certain interest for local avifauna and waterbirds on passage. The main reason for inclusion of latest in database was that for migratory birds even such type of wetlands situated in key migration corridors can be important during passage. At this stage, the evaluation of off-channel water reservoirs relevance to the river basin management plans was not a point. Later on, when RBMP's will be developing they will definitely include big water reservoirs and majority of them is expected to be a part of the local management plans.

The electronic Wetlands Database and Wetlands Fact sheets include such core and recommended for wetlands inventory data as area, location, map, geomorphic setting, general description of soil, water regime, biodiversity status, mainly, avifauna), climate, land use - local and in the catchment, land tenure,

administration, conservation and management status of the wetland. Besides, they include such supplementary information like pressures, impact, threats to the wetlands, type of connectivity interruption, where appropriate; measure type to restore lateral connectivity, if applicable, reasons for measure, where appropriate, other measures to be taken to improve wetland conditions, as well as data on wetlands priority functioning and use, current protection and management status, International Bird Area Code, if applicable, recommended priority level of the river basin management plan, depth of the waterbody, where appropriate; year of construction, projected volume and construction material (for human-made wetlands) and some others.

There were also designed first in Moldova GIS file and digital map of priority inland and main human-made wetlands situated in the Moldovan part of the Danube river basin. The prioritization of wetlands was evaluated on the basis of their status to support waterbirds (diversity of species, number, state and availability of habitats), protection status and respectively, expert judgment of their relevance to the Danube or national RBMP's

Obtained within the project implementation results will contribute to implementation the Ramsar Convention by initiation of comprehensive wetlands inventory in Moldova in line with the Ramsar Framework for Wetland Inventory and the Ramsar Convention guidance on integration of wetlands into river basin management, as well as implementation of the Danube, Biodiversity, Bonn and other relevant Conventions and international agreements ratified and signed by Moldova, as well as national strategic documents such as National Development Strategy (2008-2011) and others which presume gradual transpose of the European environmental legislation, particularly, Water Framework Directive (2000/60/EC) into domestic legislation.