

Additional information

General ecological features:

There are 4 typical biotopes of lowland woods.

1. **Fluvial forest** - that is main native biotope, formed by poplar associations. *Populus alba* forms six of them. *Populus alba* and *P. nigra* dominate in native stands with an admixture of *Quercus robur*, *Salix alba*, *Fraxinus excelsior* and *Ulmus laevis*. The ratio of main species that form woodland varies strongly. Tree stands completely lacking *P. alba* and with single *Salix* sp., or including only *P. alba* and *F. excelsior* have been recorded. Dominant association is *Populetum (alba) rubosum (caesii)*.
2. **Riparian willow formations** (incl. swamp forest) – young poor biotopes. Forests of *S. alba*, mainly *Salicetum (alba) rubosum*, and *S. undulatum* or *S. (alba) undulatum*, include often shrubby *S. triandra* and *S. purpurea*.
3. **Alluvial ash-dominated forest**. Dominant association is *Fraxinetum (excelsior)-P. (alba) ulmosum*.
4. **Artificial mono-dominant plantings** of *P. alba*, *F. excelsior*, *Q. robur*

Upland forests are represented mainly by artificial plantings or degraded tree-stands, many of them have abnormal reproduction, but valuable parcels of pubescent oak (*Quercus pubescens*) communities with seed offspring take place too. As remainders of silvo-steppe they contains beautiful glades of steppe grass associations with the most rare in Moldova plants. However special forest management is necessary to conserve these valuable habitats of Mediterranean type because natural succession series cannot be stable on too limited area. Upland forest makes 5 biotope types.

1. **Semiarid (*Quercus pubescens*) oak curtain forest** – main native forest-glade biotope, which generates high floral and faunal diversity, 4 associations: *Quercetum (pubescentis) cornosocotinosum*, *Quercetum (pubescentis) stepposum*, *Quercetum (pubescentis) herbosum*.
2. **Semi-arid oak stands (*Quercus robur*)**, incl. with special southern eco-type of the English Oak.
3. **Natural and artificial tree-shrubby thickets** (oaks, ash and locust-tree with numerous *Cornus mas*, *Cotinus coggygria*, *Prunus spinosa*, *Crataegus monogyna*, *Viburnum lantana*) **on steep slopes** – important habitat of birds and snakes.
4. **Compound forest plantings** (*Quercus robur*, *Fraxinus excelsior*, *Carpinus betulus*, *Ulmus*, *Tilia argentea*, *Robinia pseudacacia*, *Armeniaca vulgaris*, *Cerasus avium*) – biotopes attractable for hoofed and carnivorous mammals.
5. **Robinian (locust-tree) plantings of anti-erosion and production purpose** – biodiversity scanty habitats.

Native meadows and steppes are deleted in the country excluding small remainders; nevertheless 60 grassy formations including primary ones, were revealed the last time in the site. There is some considerable potential for meadows restoration on remote arable plots of the valley where active ground cultivation became unprofitable when free market fuel prices were introduced, or because of hydro-edaphic conditions. Vast marshes did not conserved here after anthropogeneous landscape transformation. All stated below grassland biotopes require rehabilitation in the most degree.

1. **Dry native grasslands (steppe)** are the most rare and valuable sites considering herbs and anthophilous insects. They include subtropical grasslands, meadow steppe and true steppe. Different variants of *Festuceto – Stipetum* and *Stipeto – Festucetum* prevail by number of associations, but various *Festuceto – Stipetum* with *Stipa tirsia*, *S. pulcherrima*, *S. capillata*, *S. lessingiana*, *S. ucrainica* clearly dominate in habitats.
2. **Weeded dry grasslands and pastures**(usually *Festuceto-Bothriochloetum* and *Bothriochloetum*) are the most spread upland open semi-natural sites.
3. **Tall-herbaceous lowland meadows** are mainly renewing habitats on abandoned lands (*communities with Elytrigia repens*, *Phalaroides arundinaceus*, *Poa pratensis*, *Agrostis gigantea*, *Phleum pratense*, *Alopecurus pratensis*, *Bromopsis inermis*).

4. **Lowland pastures** are covered first of all by combinations of four edipicators: *Lolium perenne*, *Poa pratensis*, *Agrostis stolonifera* and the most spread *Elytrigia repens*.
5. **Wet meadows and fens** are conserved in Talmaza Wetland and as not great plots of riverside protective band. Main associations are *Alopecureta aequalisi*, *Cariceta acutiformisi*, *Eleocharieta palustrisi*.
6. **Reedbeds** (*Phragmiteta australisi*, *Typheta angustifoliae*, *Scirpeta tabernaemontanii*, etc.) occupied natively relatively small ratio in the area, they are spread in limited degree now, but acquire space along drainage channels.

Agricultural arable lands include mainly fields of annual crops and orchards both on upland and lowland, and also vineyards.

Wetland and upland natural habitats together with agricultural lands create integrity for main part of bird species. Besides water-birds, species composition is similar. In all high number and diversity is characteristic due to excessive longevity of forest edges. In the upland Copanca forest tract population density varies 4-5 times in different places and reach 572/km, but species density 42/km. Population density reaches 484/km and species 24/km in the Turkish Garden forest wetland reserve, but 146/km and species 34/km in the Talmaza Wetland. There is colony of 5 water-birds (*Ardea cinerea*, *Egretta garzetta*, *Nycticorax nycticorax*, *Phalacrocorax carbo*, *Phalacrocorax pygmaeus*) in the last locality. The most noticeable nesting water-birds are herons (*Ardeola ralloides*, *Egretta garzetta*, *E.alba*, etc.) and storks (*Ciconia ciconia*), some birds of prey (*Milvus migrans*, *Buteo buteo*, *Falco tinnunculus*, *F. subbuteo*, etc.). It is one of the few places in Moldova where large aggregations of moulting waterfowl (2,000-3,000 specimens) are recorded, as well as *Plegadis falcinellus* foraging flocks of 200-300 birds. *Phasianus colchicus* is numerous in particular in uplands. Among migrants in the Lower Dniester area water-birds and birds of prey are offered expressly rich. The most numerous are ducks (*Anas platyrhynchos*, *A.querquedula*, *Aythya ferina*) and some other (*Hirundo rustica*, *Riparia riparia*, *Sturnus vulgaris*, *Emberiza schoeniclus*). Not numerous but enough diverse plovers, snipes and sandpipers, more often *Tringa nebularia*, *Tringa totanus*, *Gallinago gallinago*, *Vanellus vanellus*. Geese (*Anser erythropus*, *A. albifrons*, etc.) fly en route.

Terrace slopes are habitats of sufficient populations of *Coronella austriaca*, *Elaphe longissima*, and single viable in Moldova population of *E. quatuorlineata*. Wetland habitats support numerous populations of *Natrix tessellata*, *N. natrix*, *Hyla arborea*, sufficient populations of *Pelobates fuscus* and *Emys orbicularis*.

The usual animals in all parts of the site are *Lepus europaeus*, *Vulpes vulpes*, *Talpa europaeus* *Martes foina*, *Putorius putorius*, *Meles meles* (badger is especially numerous in Talmaza Wetland). *Capreolus capreolus* is quite numerous among hoofed, *Sus scrofa* is usual but not numerous and occurs more often in wetlands. The site supports one of two viable in the country populations of *Cervus elaphus*. Bats are very abundant in wetlands, the most numerous species is *Pipistrellus pygmaeus*, then *Myotis dasycneme*, and also *Myotis daubentonii* and *Nyctalus noctula*.

Fish *Alosa kessleri pontica*, *Silurus glanis*, *Rutilus rutilus heckeli*, *Leuciscus cephalus*, *Pelecus cultratus*, *Aspius aspius*, *Chondrostoma nasus*, *Cyprinus carpio*, *Abramis sapa*, *A. brama*, *A. bjoerkna*, *Stizostedion lucioperca*, *Carassius auratus gibelio*, are the most common species in the Dniester mainstream; the last four species, but mainly *Carassius auratus gibelio*, dominate in oxbows, canals and lakes together with *R.rutilus rutilus*, *Perca fluviatilis* and *Alburnus alburnus*.

Physical features of the catchment area:

Catchment (local) area is about 29,000 ha and situated within the site that is its specific feature. Therefore geological characteristics are mainly the same as in the point 14. Slopes vary mainly from 4 to 12 degrees; slopes of the recent sliding genesis are wavy in profile, surface is complicated by hollows, ravines and landslides; aged slopes are prominent in profile. There are three general kinds of

the land use: forestry, arable agriculture including vineyards and orchards, and grazing. Main soil types in catchment area: chernozems leached, meadow, carbonate.

Downstream (catchment) area is about 443 km².

Hydrological values:

Hydrological mean of main water bodies is very different. Dniester River creates a hydro-system background for wide territory, determines ground water level in all valleys (not only relatively the 1st ground water layer) and in the same time accumulates general basin and local discharges. It acts here as self-purification buffer between last industrial area (Bender-Tiraspol city complex) and estuary, receives underground waters from rural settlements without collecting systems and untreated sewage from some local enterprises.

Valley is completely dammed, chemical agricultural impact in strong diminished last decade, however soil erosion contributes to eutrophication through wind and partly water drift, especially in breaks of protective forest band, together with illegal pasturing on riversides.

Old River Bed acts as head of water relatively underground flows on terrace slopes; it is very silted, lost connection with the mainstream owing to anti-flood damming, lowland agricultural development and lack of adequate decisions. Strong danger of bogging up arises for this water body, which is supported mainly by rainfall, surface run-off, springs in the bed, and rarely by flooding from mainstream.

Channels created by anti-flood dam construction interconnect many little pools and swamps, but the big channel aside Talmazza Wetland provides consumption of Adana Lake by the Dniester waters. Dam construction prevents flood flushing of soils and salinization takes place in the lowest parts of plain at the expense of ground water bearing salts from sea deposits; drainage canal systems decrease this process lowering ground waters, but cannot stop on the background of arable land use.

Physical features of the site:

Geology and geomorphology. The north of the site was formed during the Sarmatian stage of Neogenic deposits, represented by limestones, clays and sands; the south is from the Pontic stage of Neogenic deposits, with a predominance of clays and sands. The surface geology is predominantly Quaternary. Mineral origins are near Slobozia village on the depths 30-50 m. The river channel is varying from almost closed meanders to a few sinusoid fragments. The right banks are steep, 1-3 m high. Width of floodplain alternates from 9 km to some decades of meters. The upper floodplain terraces are sometimes precipice and crossed by ravines, but mainly moderate steep with fragments of landslips.

Dominated soils are: in lowlands - meadow, meadow saline, and silty-marshy (fluvial) soils, meadow chernozem; in uplands: chernozems leached, meadow, carbonate and carbonate saline. Carbonate meadow chernozem, meadow and silty-marshy soils are found in the Resource Reserve situated in Talmazza Wetland.

Hydrology. Depending on the character of the recharge flood, the low-water period is unclear most years in the main stream - Dniester. There are three types of years: with dominant spring floods and sparse floods later; with an absence of spring floods and prevalence of summer floods; with a constant flood of equal height during spring, summer and autumn. The maximum spring water level in an average low flow period is 4.5-5.8 m, the water rising 0.4-6.2 m/24 hours. Normally 3-5 floods occur each summer and autumn, (sometimes as many as 12-15), with an average length of 10-15 and maximum of 55 days. However, the number of floods decreases to 1-2 in dry years. These features together with relief of lowlands determine regime in other water bodies mainly through ground

waters. The pattern of water discharge in the Dniester depends on the management of the Novodnestrovsk Reservoir in Ukraine.

Water quality. The waters of the Lower Dniester are attributed to hydrocarbonate class II with mineralisation 395-638 mg/l and dissolved oxygen content of not less than 88.4%. Average content of suspended substances was 180-420 mg/l in the past but is now about 29.5 mg/l. Contamination by organic and other nitrogen-containing substances, phenols, oil products and metals takes place, especially below the town of Bender. The destruction of organic substances slows between Bender and main river fragment included in the site.

Hydrological background. The Lower Dniester River bed has a width of 100-200 m; depths in shoals of 1.6-2.5 m, in reaches 4.0-8.0 to 16 m. Its arm Turunciuk has width 30 m, row depths up to 6 m, in deeps up to 9 m. The Talmazza Wetland contains the V-shaped Lake Adana, 2.4 km in length and 100 m in width, and the loop-like oxbow a length of 2.5 km, width up to 40 m and depth up to 4 m; it is partly connected to the main stream. The Old River Bed meanders to 32 km in the widest part of valley between Copanca and Talmazza villages; this riverbed has width up to 40 m and depth up to 4-12 m, during drought it decreases to 1 m in some places last years. Diverse pools, channels, bogs and shallows are mainly intermittent besides big channel along state anti-flood dam aside Talmazza Wetland; it has length about 5 km, depth 1-4 m and general width up to 40 m with protuberance about 100 m. Drainage system in the valley between Olanesti and Crocmaz villages contains channel about 3.5 km length, 40 m width and up to 4 m depth, it is non-intermittent being below average level of the Dniester River to -1.5m by surface.

Ecosystem services:

Social and cultural values:

The site contains important agricultural arable areas (main crops are corn, sunflowers, wheat, vineyard, plums, tomatoes, etc.), and some locations are connected with wine production of international known trademark; stock-rising (cattle, sheep) became extensive, based on grazing, over-pasturing is characteristic for destined lands. There is tinned food factory for vegetables processing. Intensive forestry is developed using mainly plantations, especially of introduced species *Robinia pseudacacia* in uplands. The site includes the important remaining spawning places. Pisciculture is in crisis; fishing is the traditional trade, but lost economical value due to become scarce fish resources; recreational fishing is very traditional. The site contains known locations of paleontologic fossils. There are 40 recognised and mainly identified archeological places as tumuli, Cimmerian, Ghetic, Sarmatic, Slavic memorials, etc. Villages were mainly established in XV-XVI centuries.

Tourist business is undeveloped; however there is traditional place of boating tourist yearly festival. The site's natural cultural value is well recognized by the local population within the context of conservation.

Current scientific research and facilities:

There are no permanent research facilities. Earlier relevant institutes of the Academy Sciences of Moldova, Fishery Research Station, specialists of the State University of Moldova did some fragmentary studies. The most recent study (1998-1990) was conducted by the BIOTICA Ecological Society, funded by a grant from the John & Catherine MacArthur Foundation, and then in 2001 at the expense of Ramsar Small Grant programme.

Current recreation and tourism:

There is no organized recreation/tourism, besides annual festivals of boating tourists and excursions held by Alvona Private Tourist Company about Palanca Village near Ukraine border.

Current land use within the site:

Lands of private property are arable as well as main part of the left bank, first of all “Turunciuc Island”; sometimes that is abandoned areas in bogging up part of valley. State lands of the right bank are mainly under State Forest Service. Lands under local authorities includes first of all pastures and settlements, but a part is afforested or apportioned for anti-erosion planting and for creation of corridors to interconnect isolated woodlands. Illegal pasturing takes place on lowland grassy and partly-wooded areas; such usage predominates in riverside protective band out of compact forests. Fishponds, arable fields and orchards occupy smaller areas. Illegal arable cultivation has been noted. Fishery and agriculture are no longer intensive. Legal and semi-legal fishing and hunting occur. Many drained arable lands border the strong protected riverside band along the flood-prevention dam. At present, recreational use is limited mostly to the local population.

Management authority:

Addresses of regional; and local authorities are: Moldova, the name of region, the name of village.

Stefan-Voda Region.

Stefan-Voda Region Authority – Region head Mr. Iurie Moiseev, tel. (+373 42) 22650.

Village Popeasca – mayor Mr. Cojocari Chiril (+373 42) 34-336, 34-338

Village Talmaza – mayor, Mr. Craciun Alexandru, tel. (+373 42) 41 236

Village Cioburciu – mayor Mr. Bitca Valerian, (+373 42) 35 236

Village Rascaeti – mayor Mr. Tihon Igor, (+373 42) 36 236

Village Purcari – mayor Mr. Nistor Anatolie, (+373 42) 30 236

Village Olanesti – mayor Mr. Feodosie Darii (+373 42) 52 236

Village Crocmaz – mayor Mr. Ion Bondar (+373 42) 46 236

Village Tudora – mayor Ms. Ghilan Tatiana (+373 42) 53 288

Village Palanca – mayor Mr. Ion Voloh (+373 42) 47 236

Causeni Region

Causeni Region Head – Mr. Mihai Iluh +373 43 23005

Village Copanca – mayor Mr. Sergei Muntean, (373 43) 50 2 34

Village Plop-Stiubei – mayor Ms. Ilishova Valentina

Village Gradenita (with village Leuntea) - Siianov Vladimir (373 43) 45 217

Slobozia Region

Slobozia Regional Authority – Deputy Head of State Administration Alexandru Muntean, tel. (+373 57) 2 52 14

Village Cremenciug – president of council

Village Crasnoe – president of Council Mr. Victor Tiuliubaev

Village Ciobruciu – Leonid Pyrjan (+373 57) 43236

Village Glinoe – president of Council Mr. Valerii Platonov, (+373 57) 37 364

Village Corotnoe – president of Council Mr. Trofim Iuras, (+373 57) 55 336

Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:*within the Ramsar site:*

Drainage systems lost integral management, canals are silting, and power dry-up job, as well as pumping refill of the Old River Bed became impossible due to market energy prices. That creates danger of oxbow degradation, spreading soil salinization on drained lands; whilst it promotes extension of wild areas, rehabilitation of bogs and meadows, stimulates transition to environment friendly crop rotation and grass farming.

Done privatization was not accompanied by appropriate land use planning to consider environment conditions and needs, or by cooperation of small private owners. That has deleted crop rotation system and relevant household links within local community. Many owners had received unusable or inarable land privacy that has created obstacles for re-planning in land use and transition to sustainable agriculture.

Further changes should be determined by the creation of strict protected zones, substitution of grazing by grass mowing, restoration of meadow spawning, development of tourism and local crafts, etc., as a consequence of the creation of the National Park.

The rehabilitation of natural ecosystems is expected to increase in some adjacent territories if the drainage system continues to decline. Amendments to the Law on Water-Protection Zones and Bands of Rivers and Water Bodies, which were adopted by the Parliament (2001) are currently in process, provide stricter and clearer restrictions on land use.

The significant part of the site (about 27,000 ha) is included to the State Silvo-Hunting Enterprise, founded by the Governmental Regulation in 2002. The staff and structure of this enterprise, subordinated to the State Chancelorate, are not still established, as well as internal regulations.

BIOTICA Ecological Society has developed (2001) a model management-plan to improve forestry and green band in the water protective riverside strip in order to advance biodiversity conservation. It has been developed management plans and technological recommendations for the most affected valley between Crocmaz and Olanesti villages; these are based on territorial zoning in agricultural area, apportion of the natural development territory, buffer zone for meadow restoration and arable area of environment sound crop rotation. The documents are adopted by local authorities and the Ministry of Ecology, Construction and Territorial Development.

in the surrounding area:

The surrounding zone is characterized by extensive land use for arable agriculture and pasturing. In transboundary Ukrainian County of Odessa the Lower Dniester National Park is establishing, where main human activity is fishing and also agriculture.

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