



FINAL REPORT – CONTRACT NO. 11751/ 10.04.2013

Study regarding the threats on wetland habitats from the Danube cross border zone in the Djerdap National Park and the Iron Gates Natural Park areas, within the project “Integrated management of the biological and landscape diversity for sustainable regional development and ecological connectivity in the Carpathians”

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INTRODUCTION

The project "BIOREGIO Carpathians – Integrated management of the biological and landscape diversity for sustainable regional development and ecological connectivity in the Carpathians" it's mainly financed by European funds through Transnational Cooperation Programme South East Europe.

The project aims the integrated management system improvement of natural resources and protected areas in a wide transnational context, resulting in increasing the attractiveness of the region. This project promotes the harmonization of managerial measures applied on natural resources and protected areas, including Natura 2000 sites in the Carpathian area in accordance with the existing regulations and based on cooperation established within the Carpathian Convention but also of other networks and transnational initiatives.

The target group is extremely wide: politicians, administrative institutions, protected area managers, tourism offices, farmers, landowners, policy makers in various sectorial policies (agriculture, tourism, etc.)

The project aims to strengthen the conservation, restoration and sustainable exploitation of biological and landscape diversity through efficient management harmonization of common natural heritage, habitats and species, and common preservation and promotion of the natural values of the Carpathians in a transnational framework.

To improve management plans and harmonization, the project aims to provide common standards and encouraging and supporting transnational cooperation agreements.

Supporting sustainable regional development, the project promotes the economic value of high biodiversity areas, including sustainable tourism and other forms of externality. Raising awareness of the importance of an integrated management of natural values Carpathian region. Promoting information on NATURA 2000 network of protected areas, establish a geo-referenced database and designing a Red List Species and Habitats in the Carpathians.

The target groups of this study are on the one hand the 2 administrations of the protected areas, the study resulted will be used by them in the future to establish the management measures, as well as for the discussions with local communities. The study, will also be considered the basis for the designation of a trans boundary Ramsar site.

The specific purpose of the report

The final report on the implementation of the project - *Study regarding the threats on wetland habitats from the Danube cross border zone in the Djerdap National Park and the Iron Gates Natural Park areas* CPV code 79311200-9 - seeks to achieve all 4 activities for the period April- October 2013.

The activity in this period involves the covering of the following activities:

Activity 1. Identification of the information specific to the general description of the study area

Activity 2. The habitats identification from the investigated wetlands

Activity 3. Inventory of the investigated wetlands threats

Activity 4. Conservation measures for preventing and reducing the negative impact

ACTIVITIES

ACTIVITY 1. IDENTIFICATION OF THE INFORMATION SPECIFIC TO THE GENERAL DESCRIPTION OF THE STUDY AREA

CHAPTER 1. GENERAL DESCRIPTION OF THE STUDY AREA

1.1 DJERDAP NATIONAL PARK

a. Legislative elements for setting up and administration

The Djerdap National Park was established in 1974 to protect and improve the unique natural and cultural values of the area.

The Djerdap National Park was set up as a public enterprise in 1989 to manage the protected area, with its headquarters in Donji Milanovac. The cooperation of the Djerdap National Park extends far beyond the borders of Serbia, however, as the park is part of the family of Europarc Federation of European national parks.

The area of nature conservation is normatively regulated by the Law on Nature Conservation and other legal acts and bylaws which directly or indirectly relate to nature and natural resources. Besides law enforcements and international conventions, also very important, for the normative regulation of this area, are books of rules, regulations, commands, and decisions on natural resources conservation, etc.

Currently the harmonization of legislation from the area of environment protection and nature with the legislation of European Union is desirable. The Law on Nature Conservation, published in the Official Gazette of the Republic of Serbia no. 39/2009 and 88/2010 regulates the protection and conservation of nature, biological, geological and landscape diversity as part of the environment.

Relevant Laws and Sub-laws for nature conservation in Djerdap National Park:

- Law on Nature Conservation (“Official Gazette RS” no. 36/2009 and 88/2010);
- Law on Environment Protection (“Official Gazette RS” no. 135/2004 and 36/2009);
- Law on Fund for Environment Protection (“Official Gazette RS” no. 72/2009);
- Regulation on Determination of the List of Projects which demand impacts estimation and List of those which can demand estimation of impacts on the environment, (“Official Gazette RS” no. 114/2008 from 16.12.2008.);
- Law on Waste Management (“Official Gazette RS” no. 36/2009 and 88/2010);
- Law on Waters (“Official Gazette RS” no. 30/2010 from 7.5.2010);
- Law on Forests (“Official Gazette RS” no. 30/2010 from 7.10.2010.);
- Law on Agricultural Land (“Official Gazette RS” no. 62/2006 and 41/2009);
- Law on Agriculture and Rural Development (“Official Gazette RS” no. 41/2009 2.6.2009);
- Law on Spatial Plan of Republic of Serbia from 2010 to 2020 (“Official Gazette RS” no. 88/2010 from 23.11.2010);
- Law on Planning and Constructing (“Official Gazette RS” no. 72/2009 and 81/2009);
- Law on State Survey, Cadastre and Registering Property Rights (“Official Gazette RS” no. 83/92, 12/96, 15/96 and 25/2002);
- Law on Tourism (“Official Gazette RS” no. 36/2009 and 88/2010);
- Law on Culture (“Official Gazette RS” no. 72/2009);
- Law on Energetic (“Official Gazette RS” no. 84/04);
- Law on Mining (“Official Gazette RS” no. 44/95, 34/2006 and 104/2009);
- Law on Game and Hunting (“Official Gazette RS” no. 18/2010 from 26.3.2010);
- Law on Animal Welfare (“Official Gazette RS” no.41/2009 from 2.6.2009);
- Order of prohibition against collecting special protected flora and fauna species in 2010 (“Official Gazette RS” no. 17/2010 from 23.3.2010); Regulation on the implementation of control use and trade of wild fauna and flora ("Official Gazette RS", nr 31/05, 45/05, 22/07, 38/08, 9/10.);

- Law on protection and sustainable use of the fish fund (“Official Gazette RS” no. 36/2009);
- Decision on fishing areas determination (“Official Gazette RS” no. 115/2007 and 49/2010);
- Law on National Parks (“Official Gazette RS” no. 39/93 and 44/93);
- Regulation on ratification of the International Convention for Herbs Conservation (“Official Gazette SFRY- International Treaties” no. 7/55);
- Law on Ratification of the International Convention for birds protection (“Official Gazette SFRY”, no. 6/73);
- Regulation on ratification of the Wetlands Convention, which are of the international importance, especially as the wetlands birds habitats (“Official Gazette SFRY- International Treaties” no. 9/77);
- Convention on cooperation for protection and sustainable use of the River Danube (“Official Gazette SMN- International Treaties” no. 4/2003);
- Law on Ratification of the Convention on the Conservation of European wild flora and fauna and natural habitats (“Official Gazette RS- International Treaties” no. 102/2007);
- Law on Ratification of the Convention on Biological Diversity (“Official Gazette RS- International Treaties” no. 11/2001);
- Law on Ratification of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (“Official Gazette SRY- International Treaties” no. 11/01);
- Law on Ratification of the Convention on the Protection of World Cultural and Natural Heritage (“Official Gazette of SFRY- International treaties” no. 8/74);

b. Elements regarding the geographical location, access routes

The National Park Djerdap is situated in the south-east of Europe, in the north-east of the Republic of Serbia, along the international border with Romania. The total surface of the National Park is 63.608 ha, and the protective area surrounding the Park has a surface of 93.968 ha.

The Park stretches along the right bank of Danube, for about 100 km, from Golubac to Karatas near Kladovo, covering a narrow strip of forested hills, which is about 2-8 km wide, in altitude range from 50 to 800 meters.

The main natural phenomenon of the area is the grand Djerdap Gorge of the river Danube, the longest and the biggest penetrating gorge in Europe. Djerdap Gorge consists of four smaller gorges and three valleys, alternately turn in length of almost 100 km.

c. General climate elements

Djerdap National Park falls in the continental temperate climate with Mediterranean significant influences.

In the north-east, the climate is continental with cold winters and hot summers, humid throughout the summer and well distributed rainfall.

The areas with altitudes between 300 and 500 m have the average annual temperature of about 10⁰ C, and over 1000 m altitude around 6⁰ C.

The annual average precipitation amount increases with altitude. Areas with altitude of 1000 m has an average of 700-1000 mm of rain.

Air circulation area is largely caused by orography. During the warmer period of the year the winds of the north and west prevail. During the coldest the winds of east and southeast dominate.

d. Natural heritage elements (biodiversity, landscape)

With regard to biodiversity, the territory of the NP is situated on the border of two different floristic regions: the middle-European region of temperate forests and the Ponto-south Siberian or steppe-forests floristic region. The park is one of the largest and most northerly European refuge for flora and vegetation of the Arctic-Tertiary period, with more than 50 different types of forest and bush formations, out of which 35 are relict. More than 900 species and subspecies of vascular plants inhabit the territory of the NP, however a detailed database on the total number of species has not been completed yet.

Due to the great length and depth, various forms of relief and sheltered habitats with specific microclimates, Djerdap Gorge is one of the most important refuges of the ancient flora and fauna of Europe.

Specific climate, characteristic soil, complex relief, proximity of the river Danube and variety of historical factors have facilitated preservation of one of the wealthiest and most complex relict vegetation in the south-east of Europe. The flora of the Djerdap area is exceptionally rich both from the point of view of taxonomy and ecology. There are more than

1100 plant species in Djerdap area, and especially significant among these are Tertiary relict species - ancient species which have survived since the glacial period.

Some relict species: Holly (*Ilex aquifolium* L.), Southern Nettle Tree (*Celtis australis* L.), Lilac (*Syringa vulgaris* L.), Pancic Maple (*Acer intermedium*), Turkish Hazel (*Corylus colurna* L.), Walnut (*Juglans regia* L.), Bagnut (*Staphylea pinnata* L.), Mezereon (*Daphne laureola* L.), Knee - Holly (*Ruscus hypoglossum* L.), Yew (*Taxus baccata*) etc.

Djerdap Gorge and other refugees of the Balkan Peninsula provide habitat for associations of ancient relict species and expansive postglacial genera, such as: Maple - Trees (*Acer*), Ash - Trees (*Fraxinus*), Elm - Trees (*Ulmus*), Oaks (*Quercus*), Hornbeams (*Carpinus*), Hawthorns (*Crataegus*), Lime - Trees (*Tilia*).

About fifty forest and herbaceous associations have been found in the area of Djerdap - 35 of these are characterized as relict. Exceptionally valuable for science and education are numerous relict forest associations, especially the endemic forest associations of Djerdap of polydominant type, such as: *Querco-colurnetum mixtum*, *Fago-colurnetum mixtum*, *Celto-Juglandetum*, *Syringo-colurnetum mixtum* etc.

One of the many relict species in Djerdap is Turkish hazel (*Corylus colurna*), which is sporadically found in Europe, in gorges and canyons in the central parts of the Balkan Peninsula, while in Djerdap it forms dense and old stands mixed with other relict species. Persian walnut (*Juglans regia*), another relict and autochthonous species, is widespread in the Danube's riparian area, to 600 meters above sea level. Apart from beech (*Fagus moesiaca*), which is quite rampant in Djerdap and forms mixed communities with other deciduous and often relict species, other common species include oriental beech (*Fagus orientalis*), European bladdernut (*Staphylea pinnata*), Pančić's field maple (*Acer intermedium*), lilac (*Syringa vulgaris*) and European nettle tree (*Celtis australis*). As for relict examples of dendriforms in the woods surrounding the Iron Gates, there are evergreens and brushes, such as holly (*Ilex aquifolium*), spurge laurel (*Daphne laureola*), butcher's broom (*Ruscus hypoglossum*) and common yew (*Taxus baccata*).

From the point of view of biogeography and especially ecology, dendroflora of Djerdap is regarded as the most important part of its vascular flora, however, the trees and bushes are but a small portion of vegetation in this area. Numerous herbaceous plants found in the forests, on meadows, rocky terrain and rocks, are another botanical story. However, the most interesting part are the endemic plant species, because of their specific ecology and limited distribution.

Endemic Balkan species can also be found in Djerdap, including: *Erysimum commatum* (endemic variant of cress), *Hieracium marmoreum* (endemic variant of hawkweed), coronation gold yarrow (*Achillea clypeolata*), *Dianthus petraeus* (endemic variant of carnation), yellow campion (*Silene flavescens*), Pančić's field maple (*Acer hyrcanum intermedium*), *Alyssum petraeum*, *Coronilla elegans*, *Sesleria rigida*, *Cerastium banaticum* (endemic variant of chickweed), *Satureja kitaibelii* (endemic variant of savory), *Centaurea atropurpurea* (endemic variant of cornflower), *Parietaria serbica* and *Jurinea subhastata*. A typical endemorelict, is an endemic species of lilac which forms famous Adamović's shrubs, named after this renowned botanist and recognized throughout the world.

A distinct characteristic of Djerdap vegetation are successive belts of various forest types on a relatively small stretch of land. There is a pronounced difference between forest vegetation on silicate formations in the gorges and forest vegetation on lime formations in gorges and canyons.

From a scientific standpoint, the most noteworthy communities of relict and mixed character in the gorge are as follows:

Forests of beech, Turkish hazel, walnut and other species;

Forests of oak, ash, Turkish hazel, lilac and other species;

Forests of lilac, Turkish hazel and other species;

Forests of European nettle tree, walnut and other species with lilac;

Forests of maple, lime and other species with walnut;

Forests of beech with walnut and other species;

Forests of oak and oriental hornbeam, with lilac and other species.

Regarding the crevice vegetation it is worth mentioning *Erysimum commatum* (variant of cress), *Alyssum petraeum*, bellflower (*Campanula crassipes*) and bushy and semi-bushy formations such as yew (*Taxus baccata*).

Because of the climate, Djerdap NP and its surroundings have small enclaves of sub Mediterranean and Mediterranean plants such as: field maple, oriental hornbeam, smoke tree, European nettle tree, rusty back and others. European nettle tree (*Celtis australis*), a typical Mediterranean species, is also a classic relict dendriform and the Djerdap Gorge is its northernmost point of distribution in the Balkans.

With the construction of the reservoir, a species called Balkan crocus (*Crocus banaticus*) became extinct in this area, because it grew on wet meadows around Tekija, wherefore it is believed that the population of this plant has been submerged. Another herbaceous plant of similar fate was Boiler tulip, also known as Hungarian tulip (*Tulipa*

hungarica Borbas), a strict endemic plant of the Djerdap Gorge, which has been granted rare taxon status in Romania. The tulip has not been found in the canyons of Mali and Veliki Kazan, although it was believed that it could thrive there, because it was located on the Romanian side of the gorge. The most likely cause of the disappearance of Boiler tulip on the Serbian bank is the flooding of its natural habitat due to the construction of the accumulation lake. This is further backed by the data gathered by Zahariadi (1966), according to which this plant grew on steep cliffs on the Romanian side at the altitude of no more than 80 m. Therefore, the largest portion of its habitat in Mali Kazan and on the Romanian side was submerged. The remaining population in Romania was scarce (2002) when this plant was placed under a strict protection regime. The last count conducted on the Serbian side (2010) affirmed that there are over 6,000 specimens of Boiler tulip on Romanian lime terraces in Kazan.

The abundance of animals in the National Park is largely due to the well-preserved habitats providing good conditions for the survival of such a large number of animal species. The following habitats are of particular importance in Djerdap National Park: water, namely the Danube and its tributaries; preserved forest habitats, most notably extensive forest complexes which are a precondition for the diversity of animals living in them; meadows; gorges and canyons.

The diversity of habitats and plant communities has affected the fauna, which also is rich in relict species.

The fauna of this area is also rich and various. So far 170 bird species have been noted, (*Phalacrocorax*, *Fulica atra*, *Egretta garzetta*, *Ardea cinerea*, *Charadriidae*, *Anas platyrhynchos*, *Accipitriformes*, *Falconiformes*, *Aythya*, *Mergus albellus*, etc.) but it is thought that at least 200 bird species visit this area throughout the year. Numerous species of mammals are also present, including: the wildcat (*Felis silvestris*), bear (*Ursus arctos*), wolf (*Canis lupus*), jackal (*Canis aureus*), chamois (*Rupicapra rupicapra*), deer (*Cervus elaphus*), otter (*Lutra lutra*) and others. A great number of species of insects, amphibians and reptiles (*Emys orbicularis*, *Sauria*, *Testudo hermanni*) also inhabit the territory of Djerdap NP. Before the construction of the Djerdap dam, the fish population was composed of species common to the Danube River, as well as semi-migratory species such as eel and other migrant species (sturgeons, stellate sturgeon), etc.

Djerdap National Park is rich in speleological elements, primarily caves, where you can find dozens of species of bats, including: greater horseshoe bat (*Rhinolophus ferrumequinum*), lesser horseshoe bat (*Rhinolophus hipposideros*), Mediterranean horseshoe bat (*Rhinolophus*

euryale), greater mouse-eared bat (*Myotis myotis*), lesser mouse-eared bat (*Myotis blythii*), common bent-wing bat (*Miniopterus schreibersii*) and other species.

As far as the animal kingdom is concerned, the richest fauna is that of birds, numbering close to 200 species. Due to the diversity of bird fauna and the presence of rare, endangered bird species, the area of Djerdap National Park has been declared an Important Bird Area (IBA) under the name Djerdap.

Among the most important bird species are the following ones: pygmy cormorant (*Phalacrocorax pygmaeus*), lesser spotted eagle (*Aquila pomarina*), booted eagle (*Aquila pennata*, formerly *Hieraeetus pennatus*), white-tailed eagle (*Haliaeetus albicilla*), golden eagle (*Aquila chrysaetos*), peregrine falcon (*Falco peregrinus*), corncrake (*Crex crex*), black stork (*Ciconia nigra*), Eurasian eagle-owl (*Bubo bubo*), Ural owl (*Strix uralensis*), European scops owl (*Otus scops*), Alpine swift (*Apus Melba*) and red-rumped swallow (*Hirundo daurica*).

Reptiles and amphibians species include the following important species: Hermann's tortoise (*Testudo hermanni*), European pond turtle (*Emys orbicularis*), green lizard (*Lacerta viridis*), sand lizard (*Lacerta agilis*), horned or long-nosed viper (*Vipera ammodytes*), Aesculapian snake (*Zamenis Longissimus*), grass snake (*Natrix Natrix*), fire salamander (*Salamandra salamandra*), edible frog or common water frog (*Pelophylax kl esculentus*), agile frog (*Rana dalmatina*), European tree frog (*Hyla arborea*) and others.

As for insects, the most extensively researched flora is that of butterflies. Over 100 butterfly species have been recorded, which is one of the reasons why Djerdap was declared a Prime Butterfly Area (PBA).

From Golubac to Kladovo, the Danube flows through the most beautiful gorge in Europe – Djerdap, also known as the Iron Gates because of its cultural and historical importance. This section of the river is the most intriguing and attractive in the geological, morphological and spatial sense. Djerdap's morphological features indicate that the gorge was created by the river successively gnawing away at the cliffs of the Carpathian Mountains, leaving behind steep and occasionally vertical cliff face towering above the river up to 800 meters in height.

The Djerdap area is characterized by an immense diversity of geological forms, that is, by its lithological composition, age and configuration. There are sedimentary rocks, granitic intrusions and metamorphic rocks, formed from the Paleozoic to the present day. In the broader area of the Djerdap Gorge, which belongs to the Carpathian-Balkan arc, tectonic movements were so forceful that they affected today's structural profile, which is characterized by numerous longitudinal tectonic zones.

In a geomorphologic sense, different relief profiles can be distinguished on the territory of the National Park, visible in present processes and forms, the dominant ones being fluvial, denudation and karst.

Djerdap comprises four gorges: Golubac Gorge, Gospodjin Vir with the canyon of the Boljetina River – geologically the most fascinating part of the National Park – Kazan and the Sip Gorge. Among geomorphologic forms, a special place belongs to the area of Veliki Štrbac, and the gorges of Mali and Veliki Kazan – the ‘Gate of Europe’ – where the Danube is the narrowest (140 m) and the deepest (90 m).

From a geomorphologic point of view, Djerdap today implies: the largest, deepest and prettiest gorge in Europe, separating the Banat Mountains from the mountain ranges in eastern Serbia and linking the Pannonia and the Wallachian-Pontian Basins. Donji Milanovac valley divides the gorges into Smaller and Larger Djerdap.

e. Cultural heritage monuments and local ethnographic elements

Djerdap National Park presents a unique blend of Serbia’s natural and cultural heritage, because the specific natural features of this area yielded extremely valuable cultural heritage. The Danube’s riparian area in the Djerdap Gorge was inhabited as far back as the Neolithic Age and uncovered archeological treasures – from the monumental Neolithic culture of Lepenski Vir, through ancient and medieval monuments, to the modern age – affirm that it was continuously inhabited.

- Emperor Trajan’s tablet (Tabula Traiana) is part of an assemblage of Roman monuments on the Roman Road through Djerdap, raised to commemorate the completion of works on two huge construction projects in the gorge, namely a road through Djerdap and a Roman canal near the present day Djerdap 1 hydroelectric power plant. Tabletă dreptunghiulară este sculptată în stâncă, cu o inscripție gravată în latină dedicată împăratului roman Traian.
- Lepenski Vir is one of the most important archeological sites in Serbia is located on a terrace by the Danube, in the Djerdap Gorge. The discoveries from 7000-6000 years BC changed the global notion of the beginnings of civilization, which also it’s the oldest known European human settlement;
- Diana, one of the largest and best preserved castra (forts) on the Danube, it was built of ashlar, most likely between 100 and 101 AD, during the reign of Emperor Trajan.

- The Golubac Fort lies on the Danube's right bank, at the very entrance to the Iron Gates. The year of its construction has not been ascertained, but the first written record of the town dates back to 1335.
- Monastery Gospodjin Vir;

f. Elements regarding the land ownership and especially of those from wetland areas

Following the visit to the Serbian side were identified the lands in the wetland areas of Djerdap National Park and determined the management area and ownership. At the city hall of Kladovo we were provided the following information: Kosova wetland is state owned and private and Kasajna wetland is state property. At the city hall from Golubac and Kladovo we were informed that more accurate data can be provided only after some official letters were submitted by Djerdap PN administration.

After meeting with the Director PN Djerdap, we were informed that all other wetlands are owned by the park. The expert team was accompanied by a Serbian translator for a better communication.

Tabel 1 Elements on land ownership

Wetland designation	Administrative area	Ownership
Kosovica	Kladovo	State and private (6 plots)
Kasajna	Kladovo	State
Mali Kivilovski Potoc	PN Djerdap	Park administration
Porecki	PN Djerdap	Park administration
Zlatica	PN Djerdap	Park administration
Brnjicka1, 2	PN Djerdap	Park administration
Golubac1, 2	PN Djerdap	Park administration

Tabel 2 Categories of property

Name	ATU	Category of property Code	Category of property	Area (ha)
Golubac	Golubac	DAT	Private domain of administrative units	1.46
Golubac 2	Golubac	DAT	Private domain of administrative units	0.68

Brnjicka 2	Golubac	DAT	Private domain of administrative units	7.32
Brnjicka	Golubac	DAT	Private domain of administrative units	3.81
Zlatica	Majdanpek	DAT	Private domain of administrative units	2.32
Porecki	Majdanpek	DAT	Private domain of administrative units	166.81
Mali Kovilovski Potok	Kladovo	DAT	Private domain of administrative units	2.57
Kasajna	Kladovo	DAT	Private domain of administrative units	1.17
Kosovica	Kladovo	DAT	Private domain of administrative units	14.91
Kosovica	Kladovo	PF	Private property of individuals	7.45

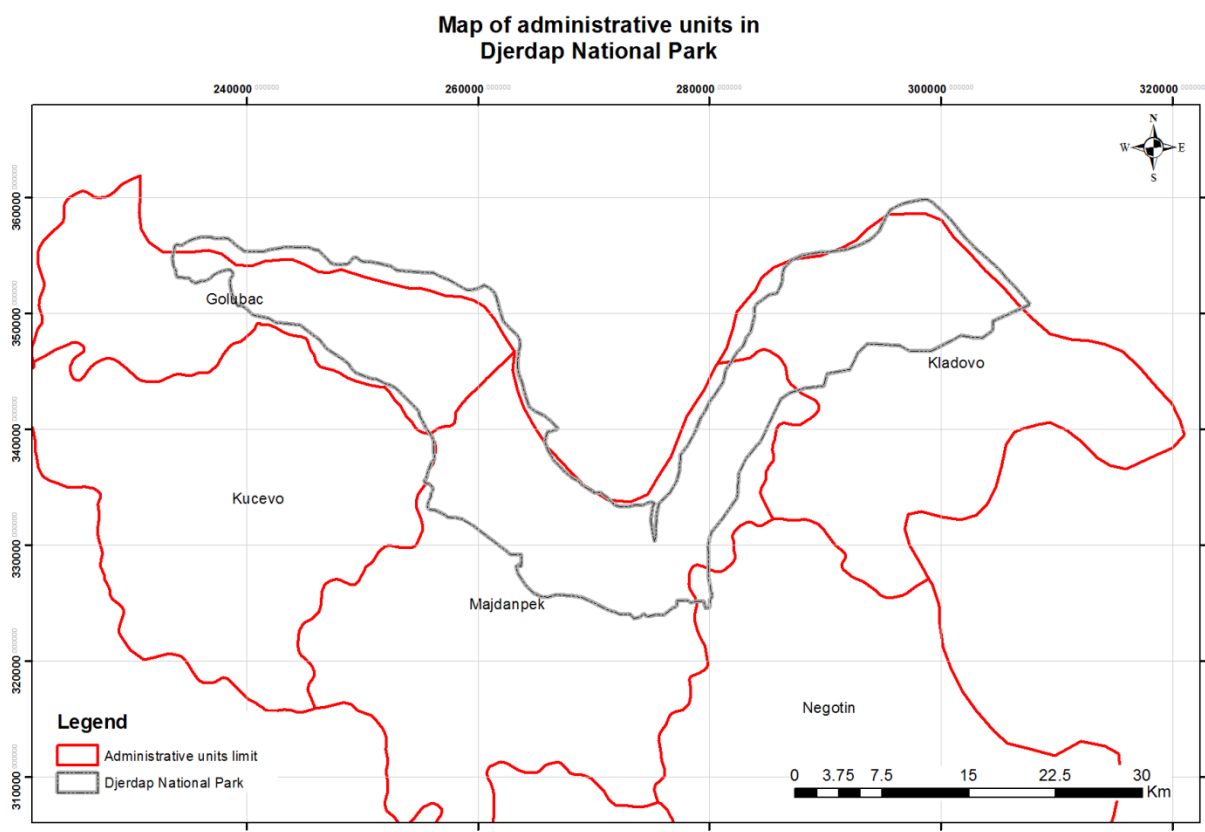


Figure 1 Map of administrative units in Djerdap National Park

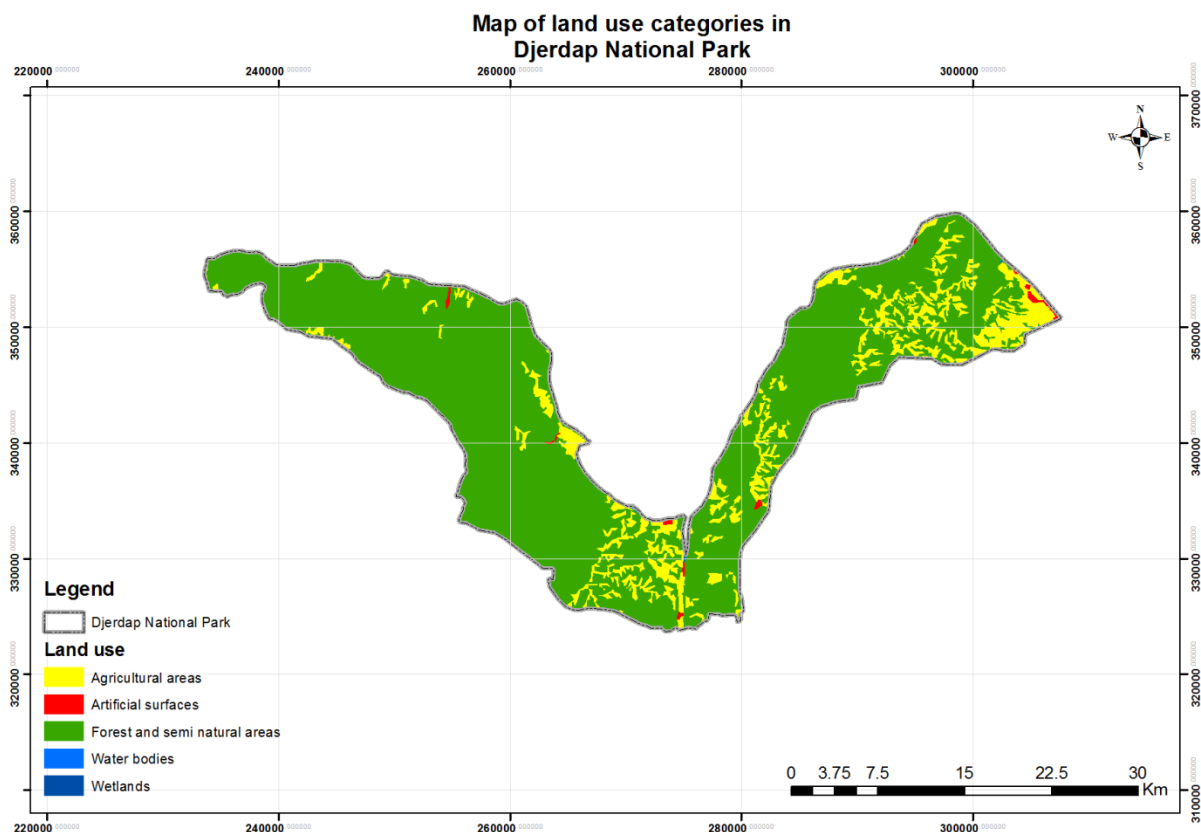


Figure 2 Map of land use categories in Djerdap National Park

1.2. IRON GATES NATURAL PARK

a. Legislative elements for setting up and administration

The Iron Gates Natural Park is a protected area established by law nr.5/2000 regarding the approving of the National Spatial Plan - Section III - Protected Areas. The Iron Gates Natural Park corresponds to the IUCN Category V "Protected landscape: protected area managed mainly for landscape conservation and recreation."

According to the O.U.G. No. 57/2007 on protected natural areas, natural habitats, flora and fauna, approved with amendments and completions by Law nr.49/2011 "natural parks are those protected areas whose goals are the protection and preservation of landscape piles where the interaction of human activities with nature over time has created a distinct area with significant landscape value and / or culture, often with high biological diversity."

In accordance with Law no. 5/2000, Order no. 552/2003 of M.A.P.A.M., H.G. No. 2151/2004 and OUG 57/2007, the Iron Gates Natural Park includes 18 protected areas (reserves).

Under H.G. 1284/2007, were declared two Special Protection Areas in the Iron Gates Natural Park, as part of the ecological European network in Romania NATURA 2000, respectively:

-**ROSPA0026 course Baziaş-Danube-Iron Gates**, covering 10,124.4 ha;

-**ROSPA0080 Almaj-Locvei** the area of 118,141.6 ha.

Also, according to the Order of the Minister of Environment and Sustainable Development 1964/2007 was declared as a site of Community Importance ROSCI0206 Iron Gate, part of the European ecological network Natura 2000 in area of 124,293.0 ha.

The presence of these Natura 2000 sites require that the application of the provisions in force concerning the procedure for achieving environmental assessment for plans and programs, and setting procedure of environmental impact assessment for all plans / programs and projects to be held in sites of Community importance.

Conservation and management actions of the Iron Gates Natural Park are done in accordance with the law, namely:

- Law. 5/2000 on the approval of the National Spatial Plan, Section III protected areas;
- Law. 190/2009 approving Government Emergency Ordinance no. 142/2008 approving the National Spatial Plan - Section VIII - a - Tourist Areas
- Law. 575/2001 approving the National Spatial Plan - Section - Natural risk areas
- Law. 363/2006 approving the National Spatial Plan - Section I - Transport Networks
- Law. 171/1997 approving the National Spatial Plan - Section II of Water, as amended;
- Law. 351/2001 approving the National Spatial Plan - Section IV - a localities network, as amended and supplemented;
- Government Decision no. 230/2003 concerning the delimitation of biosphere reserves, national parks and natural parks and setting their administrations, as amended;
- Minister of Agriculture, Forest and Environment no. 552/2003 regarding the approval of the internal zoning of national parks and nature parks in terms of need for conservation of biological diversity;
- Government Decision no. 2151/2004 on the establishment of the regime for protected natural area for new zones;
- Government Emergency Ordinance no. 195/2005 – regarding Environmental Protection, approved with amendments and completions by Law no. 265/2006;
- Decree no. 187/1990 for ratifying the Convention on the Protection of the World Cultural and Natural, adopted by the General Conference of United Nations Educational, Scientific and Cultural Organization on 16 November 1972;

- Law. 50/1991 regarding some measures construction authorization for building houses, republished, with subsequent modifications and completions;
- Law. 13/1993 for Romania's accession to the Convention on the conservation of wildlife and natural habitats in Europe, Berne on 19 September 1979;
- Law. 79/1993 for the ratification of the Convention on Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property, adopted by the General Conference of United Nations Educational, Scientific and Cultural Organization in Paris on 14 November 1970;
- Law. 69/1994 for Romania's accession to the Convention on International Trade of Endangered Species of Wild Fauna and Flora extinct, done at Washington on March 3, 1973;
- Law. 58/1994 for the ratification of the Convention on Biological Diversity, signed in Rio de Janeiro on 5 June 1992;
- Law. 46/2008 - Forest Code, as amended and supplemented;
- Law. 7/1996 - Law on cadaster and real estate publicity republished, with subsequent modifications and completions;
- Law. 247/2005 - regarding the reform of property and justice, as well as some of Europe's architectural accompanying measures, adopted in Granada on 3 October 1985.
- Law. 315/2004 on regional development in Romania, as amended and supplemented;
- Government Emergency Ordinance no. 43/1997 on the legal status of roads, republished, with subsequent modifications and completions;
- Government Emergency Ordinance no. 34/2006 on the regime of concessions;
- Law. 13/1998 for Romania's accession to the Convention on Migratory Species of Wild Animals, done at Bonn on 23 June 1979;
- Government Ordinance no. 68/1994 on the protection of national cultural heritage, with subsequent modifications and completions;
- Law. 14/1999 for the ratification of the Convention between the Government of Romania and the Government of the Federal Republic of Yugoslavia on the operation and maintenance of hydropower and navigation Iron Gates I and II, signed in Drobeta Turnu Severin on 16 May 1998;
- Law. 182/2000 on the protection of movable cultural heritage, republished, with subsequent modifications and completions;
- Law. 171/2010 on the establishment of forest offenses and punishment;
- Law. 1/2000 to reconstitute the ownership of agricultural land and forest land required according to Law no. 18/1991 and Law no. 169/1997, with subsequent amendments;

- Law. 215/2001 on local public administration, republished, with subsequent modifications and completions;
- Law. 422/2001 on the protection of historical monuments, republished, with subsequent modifications and completions;
- Government Emergency Ordinance no. 78/2000 on waste regime, approved with amendments and completions by Law no. 426/2001, with subsequent amendments;
- Order of the Minister of Environment and Water Management no. 604/2005 for the approval of the Classification of caves and cave sectors - protected areas;
- Order of the Minister of Environment and Forests no. 19/2010 approving the Methodological Guide for proper assessment of the potential effects of plans or projects on protected natural areas of interest.
- Law. 350/2001 on spatial planning and urbanism, with subsequent modifications and completions;
- Government Emergency Ordinance no. 105/2001 on the state border of Romania, approved with amendments by Law no. 243/2002, with subsequent amendments;
- Law. 72/2002 - Livestock Law, as amended and supplemented;
- Law. 85/2003 - Mining Law, as amended and supplemented;
- Government Emergency Ordinance no. 139/2005 on the management of forests in Romania, approved with amendments and completions by Law no. 38/2006, with subsequent amendments;
- Government Emergency Ordinance no. 57/2007 on protected natural areas, conservation of natural habitats, flora and fauna, approved with amendments and completions by Law no. 49/2011;
- Law. 107/1996 - Water Act, as amended and supplemented.
- Government Decision no. 918/2010 on the reorganization and functioning of the National Agency for Environmental Protection and public institutions subordinated to it.
- Order of the Minister of Environment and Sustainable Development no. 1964/2007 declaring sites of Community importance as part of the European ecological network Natura 2000 in Romania, as amended;
- Government Decision no. 1284/2007 regarding the declaration of Special Protection Areas as part of the European ecological network Natura 2000 in Romania, with subsequent modifications and completions;
- Government Decision no. 229/2007 on the reorganization of RNP-Romsilva and approving the organization and operation.

If appears differences in the interpretation of environmental legislation, the Environmental law is a priority.

Iron Gates Natural Park is managed according to Government Emergency Ordinance 57/2007, amended and supplemented, based on Management Plan and Regulation Park, which is required to be complied with by the Administration and by individuals and legal persons from its territory.

Park management is provided by National Forest – Romsilva, under contract with the Ministry of Environment and Sustainable Development, nr.740/22.05.2004.

b. Elements regarding the geographical location, access routes

Iron Gates Natural Park is located in the south-west of Romania, at the border with Serbia, occupying an area of 115 655 ha, according to Law. 5/2000, partially occupying territories in the counties Caras-Severin and Mehedinti in the southern part of Locvei Mountains and Almajului and in south-west of and Mehedinti Plateau.

Iron Gates Natural Park extends between 21 ° 21 'and 22 ° 36' East longitude and latitude between 44 ° 51 'and 44 ° 28' 30" North latitude.

The main access points are in the vicinity of Drobeta Turnu Severin and Orsova from Mehedinti County and the towns Socol and Naidăș from Caras Severin County.

c. General climate elements

Iron Gates Natural Park falls in the continental temperate climate with Mediterranean significant influences.

Due to the influences of warm air circulation of the Mediterranean origin, the air temperature in the Iron Gates Natural Park records high values compared to other mountain units of the country.

Mean annual temperature gradually increased from V to E, 11.2 ° C recorded at Moldova Noua, 11.4 ° C at Berzasca, 11.5 ° C at Svinița, 11.6 ° C at Drobeta Turnu Severin.

Because the region is situated under the West and South West movement of air masses, are relatively high precipitation for an area up to 1200 m altitude in Romania. There is a vertical zoning imposed by the difference in level of more than 1000 m from the Danube Valley and Peak Svinecea Mare, annual average quantities ranging from 800-1000 mm.

The snow did not last very long, about 30-40 days / year, while the number of days with snow is less than 20 days / year. The average thickness of the snow reaches the highest value in February, may reach 20-35 cm.

Regarding the wind regime in the highlands prevail the south winds with a frequency of 19.7%, North with a frequency of 16.5% and north - west with a frequency of 16%, due to major relief units orientation and movement of air masses with average speeds between 4 and 7.6 m / s, while in the Danube Gorge winds are felt particularly from the west direction with a frequency of 23% and east with a frequency of 24.4% due to channeling air masses on this aisle with average speeds wind between 2.3 and 4.6 m /s.

d. Natural heritage elements (biodiversity, landscape)

Iron Gates Natural Park is known as an area with high biodiversity, in the scientific studies have been identified a variety of species of plants, animals and habitats, some of conservative interest. The special features of the landscape is the main determinant element of touristic interest.

Regarding the flora of the park, it is represented by all five phyla of the plant kingdom, as follows: Phycophyta, with 71 families, 171 genera and 549 species; Lychenophyta with 34 families, 67 genera and 375 species; Fungal, 48 families, 252 genera and 1077 species; Bryophyta, 31 families, 98 genera and 296 species; Cormophyta with 67 orders, 114 families, 540 genera, 1395 species, 272 subspecies and 5 varieties.

Number of endemic elements, although not very large, comes as a complement to the wide diversity of phytogeography elements.

Of the total of 1668 taxa inventoried in the Iron Gates Natural Park, a total of 242 taxa, relatively 14.5% of the total number of taxa in the park are inventoried in the Red List of Higher Plants in Romania, of which 200 are considered rare taxa, 5 taxa vulnerable: *Taxus baccata*, *Corylus colurna*, *Beta trigyna*, *Paeonia* and *Alyssum tortuosum* and 2 extinct taxa: *Geranium bohemicum* and *Alyssum Stribrny*.

Of Community importance are a number of four species listed in Annex no. I of the Bern Convention: *Salvinia natans* (L.) All., *Colchicum arenarium* Waldst. et Kit., *Typha shuttleworthii* et Sonder and *Eleocharis carniola* Koch.

In previous studies were identified and described 171 plant associations of cormophyte contained in 20 classes of vegetation, of which 26 are endemic, which proves once again the great floristic diversity of the area.

The vegetation in the Iron Gates Natural Park area consists of forests, thickets, meadows and ruderal groups, their distribution is subject to orogeny, pedology and climate substrate specificities.

In the nemoral storey area we talk about the beech forests sublevel spreading from 500 - 1000 m, is represented mainly by beech. These descends locally to an altitude of 200 m on shady slopes, or even up to 61-70 m in wooded pastures by replacing durmast. In the structure of beech forests-*Fagus sylvatica*, there are also: *Fagus taurica* and *Fagus moesica* and *Fagus orientalis*.

Between 500 and 650 m is conducted beech and durmast associations, where the species predominating are *Quercus petraea* - durmast, *Fagus Moesica* - Balkan beech and *Fagus orientalis* - oriental beech, Pontic relict.

The Durmast sublevel mixed with other deciduous species, forms the dominant plant formation in the area of the park and it is found at altitudes between 200-500 m.

The sublevel of mixed forest with thermophilic elements is located at altitudes with values below 300 m, the vegetation being most representative of the Iron Gates Natural Park, is composed mainly of associations where dominates thermophilic species such as sky - *Quercus cerris*, flasks - *Quercus frainetto*, downy oak - *Quercus pubescens* and hornbeam - *Carpinus orientalis*.

As an endemic element of this sublevel is currently the black pine of Banat - *Pinus nigra ssp.banatica* on rocky, with thin soil, the area emerged as the best is the one from Cioaca Borii.

The undergrowth layer is characterized by underbrush or blackberry - *Rubus caesius*.

In the floodplain areas appear swamps in which dominates the cane - *Phragmites communis*, reeds - *Scirpus sylvaticus*, rust - *Juncus inflexus*, *Galium palustre*, etc.

Grasslands are quite small in size, being interspersed between forests and agricultural land. Here are emerging xeromezofile associations (*Brachypodium pinnatum*, rye grass - *Lolium perenne* and especially with sadin - *Chrysopogon gryllus*) xerothermal (fescue - *Festuca valesiaca*, *Botriochloa ischaemum* and *Bromus tectorum*) and xerothermophilous with relict and endemic species (*Tulipa hungarica*, *Campanula crassipes*, *Silene armeria*, *Allysum murale*, *Stipa aristela*, *Cerastium Banaticum*) and mezohigrofile associations (smooth-stalked meadowgrass-*Poa pratensis* and fescue - *Festuca pratensis*).

Endemic species are also encountered in the Cazane area: *Tulipa hungarica*, *Cerastium Banaticum*, *Astragalus rochelianus*, *Campanula crassipes*.

Regarding the fauna of the park, from the research conducted so far suggests that it consists of 5205 taxa, including 4873 invertebrates and 332 vertebrates.

Of the over 5,000 invertebrate some benefit of protection, being priority species of community or national interest. Among the species of decapod, the *Austropotamobius torrentium* is a priority. There are four species of gastropods nationally protected: *Theodoxus traversalis*, *Anisus vorticulus*, *Herilla Dacian Helix pomatia*, the latter being included in Annex III of the Bern Convention. Among the species of community interest listed in Class Insecta are *Rosalia alpina Cerambyx cerdo*, *Lucanus cervus*, *Morinus funereus*, *Osmoderma eremita eremita*, *Pilemia tigrina*, *Oxythyrea cinctella*, *Eriogaster catax*, *Colias Myrmidon*, *Lcaena disappear Cordulelogaster heros*.

Vertebrates of all classes found in Romania are represented in the Iron Gates Natural Park. Were determined 34 species belonging to the class Mammalia, which inhabits diverse habitats in the park.

Microcheiroptera are represented by members of two families: Vespertilionidae - *Myotis Bechstein*, *Myotis capacinii*, *Vespertilio murinus* and Rhinolophidae – *Rhinolophus Eurialis*, *Rhinolophus ferrumequinum*, *Rhinolophus blasii*. All horseshoe bat species that inhabit caves in the park area have a strictly protected species status being included in Annex II of the Bern Convention on the conservation of European Wildlife and Natural Habitats in Europe in Annexes III and IV a of the Government Emergency Ordinance no. 57/2007, as amended and supplemented, also being included in the National Red List.

Carnivores are present both in large species such as bear - *Ursus arctos*, wolf - *Canis lupus*, fox - *Vulpes vulpes*, lynx - *Lynx lynx* and the smaller species, such as: ferret - *Putorius putorius*, badger - *Meles meles*, the marten - *Martes martes*. They inhabit mountainous wooded areas of the park.

Herbivores in the park are represented by *Cervus elaphus*, *Capreolus capreolus*- deer, *Sus scrofa* - wild boar.

Class Pisces is represented by 62 taxa, including: *Acipenser ruthenus* - starlet, species of increasingly rare and rarely reach adulthood, *Salmo gairdneri irideus* - rainbow trout.

Were reported 14 species of amphibians and 17 species of reptiles, among which *Pelobates syriacus* amphibian and reptiles *Testudo hermanni*, *Ablepharus kitaibelii*, *Lacerta praticola*, *L. muralis*, *L. Taurus*, *L. viridis*, *Coluber jugularis* and *Vipera ammodytes*, eastern Mediterranean and Mediterranean species with protection status.

Specific avifauna of the park consists of 205 bird species, of which 133 species have a strictly protected status in Annex. II of the Bern Convention on the Conservation of European

Wildlife and Natural Habitats in Europe, 37 protected species status in Annex. III of the Bern Convention, and 3 species - *Aythya nyroca*, *Aquila clanga* and *Falco naumanni* included in Annex. I of the Bonn Convention on the Conservation of Migratory Species of Wild Animals.

Present situation of wetlands and the component of avifauna of the park are due to the creation of the Iron Gates Dam I, which led to the emergence of new wetland habitats, representing habitats for waterfowl and waders birds.

Natura 2000 habitats found in the park are part of different categories:

a. Freshwater habitats:

- 3130 - Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *IsoetoNanojuncetea*
- 3140 - Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.
- 3150 - Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation

b. Grassland and scrub habitats:

- 6110 - Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*
- 6210 - Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*)

c. Rocky habitats and caves:

- 8120 - Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*)
- 8210 - Calcareous rocky slopes with chasmophytic vegetation
- 8230 - Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii*
- 8240 - Limestone pavements
- 8310- Caves not open to the public

d. Forest habitats:

- 9110 - *Luzulo-Fagetum* beech forests
- 9150 - Medio-European limestone beech forests of the *Cephalanthero-Fagion*
- 9160 - Sub-Atlantic and medio-European oak or oakhornbeam forests of the *Carpinion betuli*
- 91E0 - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)
- 91G0 - Pannonic woods with *Quercus petraea* and *Carpinus betulus*
- 91H0 - Pannonian woods with *Quercus pubescens*

- 92A0 - *Salix alba* and *Populus alba* galleries
- 9280 - *Quercus frainetto* woods

Iron Gates Natural Park enjoy the most spectacular European gorge, The Danube Gorge, characterized by an alternation of lowland basins and areas of narrowing, differentiated due to the extremely complex geological structures crossed by the river. It presents an alternation of steep rocky areas where human activity was virtually nil, with lowland areas in the settlements, cultivated fields, pastures, orchards indicates human activity evident, even this alternation gives this space a very special picturesque.

The Danube Gorges is the most spectacular part of the gorge, forming a well individualized geomorphological unit with two distinct portions:

- Cazanele Mari between Ciucarul Mare, whose steep walls bordering the left side of the Danube and Știrbățul Mare located on the right, in the Djerdap National Park;
- Cazanele Mici are located between Ciucaru Mic in Romania and Știrbățul Mic on the Serbian side.

On the southern slopes of Locvei Mountains, limestone creates a high steep slopes of 100 m, which takes place over a distance of a few kilometers downstream from Coronini. The area Sf. Elena village, Girnic and Padina Matei is a vast karst plateau - Cărbunari Plateau with numerous surface karst forms: sinkholes, ditches, wild and short keys in Cicalivăț, Livadica, Alibeg, and deep karst forms, such as the cave Gaura cu Musca and cave Gaura Chindiei. In the Svinița area, Jurassic and Cretaceous limestones have given rise to unique forms called talve, with corresponding Djerdap National Park in Serbia.

e. Cultural heritage monuments and local ethnographic elements

Items of cultural heritage present in the Iron Gates Natural Park are regional and national importance by populating the space age, and strategic importance.

Among the most significant cultural elements are:

- Vodita Monastery, built between 1370 and 1372 on the territory of Vârciorova, about 500 m from the Danube, near the border of the Austro-Hungarian and Romanian State;
- Monastery of St. Anne, conducted between the years 1936-1939;
- Mraconia Monastery, located in a picturesque place in the former way of Traian on the Serbian side, where the Tabula Traiana is;
- Decebal's face, carved into the rock, located at the mouth of the Mraconiei into the Danube, having a height of 40 meters and a width of 25 meters;

- Tri Kule Fortress, built in the fifteenth century to stop the Ottoman expansion westward ruins and currently observing near the village Svinița;
- Ladislaus city, built on the left bank of the Danube near the village Coronini, being mentioned as early as the fourteenth century;
- Gaura Chindia II archaeological reserve where they found traces of art belonging to the Paleolithic and Neolithic cave, and traces of habitation from the protodacica and Dacian period;
- Veterans Cave is known from ancient times, being enshrined as a sanctuary of the god Zamolxis, being centrally located in the nature reserve Cazanele Mari;
- Dacian fortress and village settlement Divici, in the point "Grad", is a Dacian living testimony of this area, the site is considered of national importance.

On the surface of the park there are some museums, some remarkable:

- Pemilor Museum - town Eibenthal;
- Sichevita Museum - ethnographic museum;
- Ethnographic Museum Eșelnița;
- Ethnographic and Archaeological Museum Girnic;
- Museum of the Iron Gates hydroelectric I.

In most of the localities in the Iron Gates Natural Park is held annually traditional events related to religious or secular events, including:

- Ball Trinket - Ilovita, February 28;
- Ball Turkey - Belobreșca, Svinița February 27, Sichevita March 2;
- Figs Festival - Svinița;
- Danube Village Festival - Svinița 1-2 May;
- Minorities Music Festival - Svinița in August;
- Minorities Festival - Bigăr.

f. Elements regarding the land ownership and especially of those from wetland areas

Most of the Iron Gates Natural Park area consists of forest land, with an area of 75,476.6 ha, accounting for 65.26% of the total area.

Property rights on forests through restitution laws, namely: Law no. 18/1991, Law no. 1/2000 and Law no. 247/2005 are:

Table 3 Type of ownership of forests in the park

Nr. crt.	Forest range/Department forest	Standing crop of the state (ha and %)		Forests Local Councils (ha and %)		Forest Individuals (ha and %)		Total Surface in NPIG (ha and %)	
		ha	%	ha	%	ha	%	ha	%
1	O.S. Moldova Nouă	19001,5	16,42	521,55	0,45	16,3	0,01	19539,3	16,89
2	O.S. Berzasca	17457,8	15,09	369,21	0,31	26,9	0,02	17853,9	15,43
3	O.S. Sasca Montană	1884,6	1,62	-		-		1884,6	1,62
4	O.S. Bozovici	244,4	0,21	-		-		244,4	0,21
5	O.S. Băile Herculane	457,4	0,39	-		-		457,4	0,39
6	D.S. Resița	39045,7	33,76	890,77	0,77	43,2	0,03	39979,6	34,56
7	O.S. Orșova	27808,1	24,04	277,94	0,24	17,3	0,01	28103,3	24,29
8	O.S. Dr. Tr. Severin	7215,9	6,23	60,0	0,05	117,8	0,10	7393,7	6,39
9	D.S. Dr. Tr. Severin	35024,0	30,28	337,99	0,29	135,1	0,11	35497,0	30,69
	TOTAL PARC	74069,7	64,04	1228,6	1,06	178,3	0,154	75476,6	65,26

The distribution of these areas, on categories of landowners, are to undergo changes after completing the implementation of Law no. 247/2005 of the reform of the property, with repercussions on the ownership or management.

Currently the forest management is provided by the state forest districts.

On the other hand, the Iron Gates Natural Park's southern boundary is the river Danube and it is crossed in longitudinal profile of its numerous tributaries which makes the A.N. "Romanian Waters", represented on the ground by A.B.A Jiu and A.B.A. Banat, being the second largest landowner in the area, justified by the Water Law. 107/1996, as amended and supplemented.

Agricultural land occupies 28,500 ha, representing 24.6% of the total area of the park. The largest share of agricultural land, over 70% of the town, meet in villages Coronini and Socol, and the lowest, those below 15%, in the municipalities: Dubova, Eselnita and Carburnari and in the city Drobeta Turnu Severin.

Structure of the agricultural surface, according to statistics from the 2010:

a) Pastures, representing 44.6% of the total and of this: 48.8% owned by individuals and 51.2% owned by privately-administrative units;

b) Arable land, representing 29.1% of total;

c) Grassland, representing 24.9% of total;

d) Vineyards and orchards, representing 1.5% of the total;

Other land in the Iron Gates Natural Park has the following structure:

a) Water and reed 8900 ha, representing 7.7%;

b) City and Road 2789 ha, representing 2.4%;

Proportion of land by category of owners is:

a) State 64.0%;

b) The local 16.8%;

c) Individuals 19.2%.

It was also developed the GIS database structure so that in the next period to be completed with GIS data distribution of the forms of ownership and GIS database with the identified landowners.

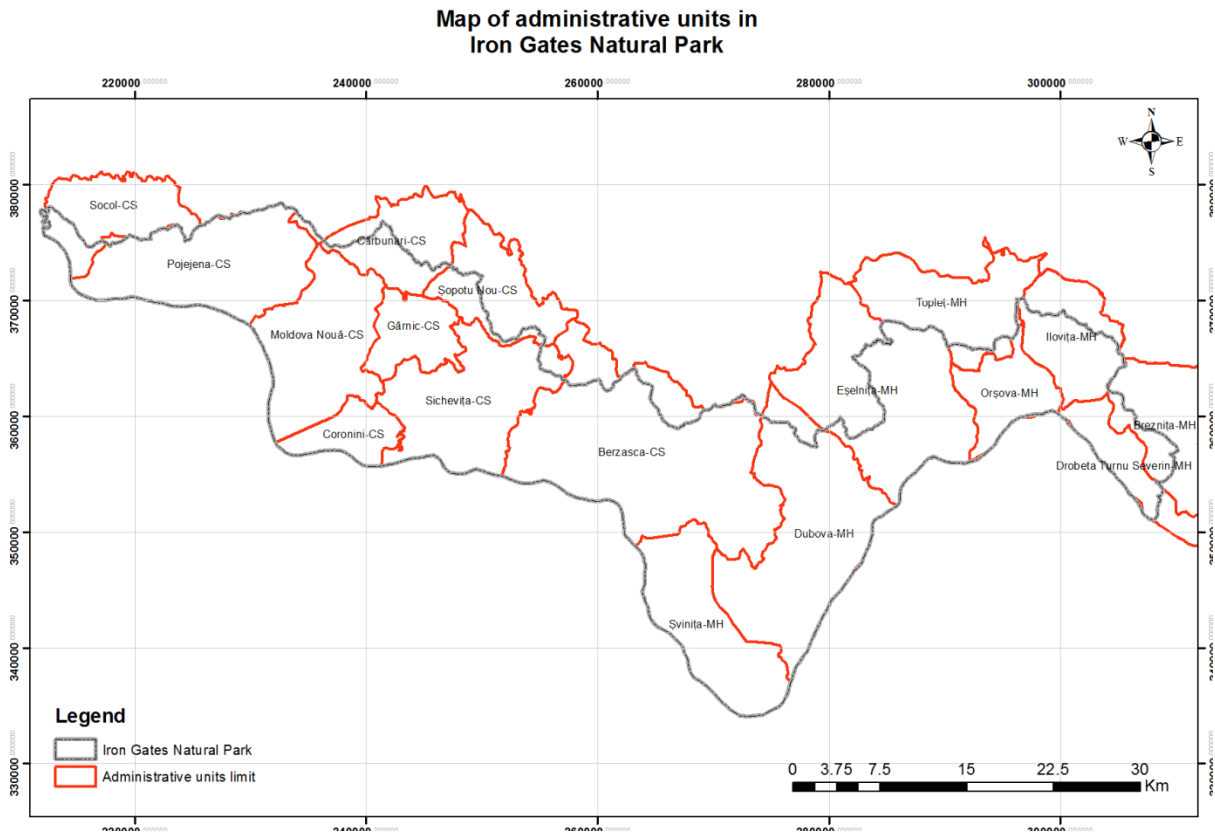


Figure 3 Map of administrative units in Iron Gates Natural Park

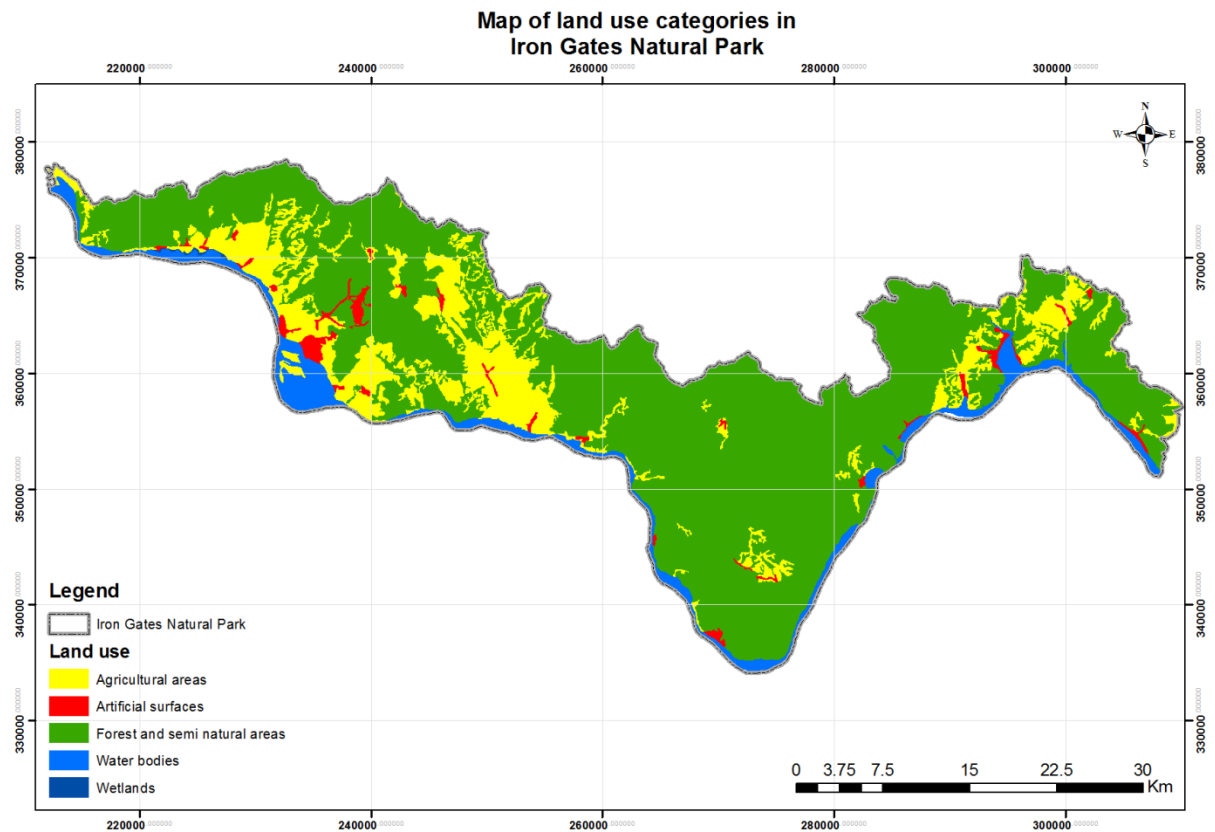


Figure 4 Map of land use categories in Iron Gates Natural Park

1.3. COMPARATIVE ELEMENTS REGARDING THE TWO PROTECTED AREAS

Djerdap National Park - corresponds to category II of IUCN. It was established for the protection and preservation of representative samples for Serbian national bio geographical area, comprising natural elements with particular value and gives the possibility of visiting for scientific, educational, and recreational and tourist purpose.

Djerdap National Park is managed by the Djerdap National Park Public Enterprise (NPPE) based in the city of Donji Milanovac. The territory of the park is divided into three different zones of protection.

1. The first zone is dedicated to the strict protection of natural and cultural heritage.
2. The second one covers the area surrounding the first zone and applies to special nature values (specific ecosystems, landscapes etc.), and natural areas around cultural monuments.
3. The third zone applies to NP territory outside the borders of the first and second zones of protection, and permits activities such as: tourism, sports, recreation, forestry, water use, potential exploitation of mineral resources, urban construction and development etc.

The Spatial Plan for special purposes of Djerdap National Park establishes the following protected areas in this territory:

1. **The areas of protection level I** were established for 10 territorial units, covering the areas of most valuable and best preserved parts of the national park (the representative vegetation of Djerdap gorge, or parts of modern and relict polydominant and depleted plant communities with beech, oak, wild hazelnuts, nuts, maple, lilac, holly, yew and other species) with the total area of 2,664.26 ha.
2. **The areas of protection level II** were identified for 10 units in the category of other natural resources of the national park, covering the areas in the hinterland or the surrounding territories and localities with protection level I, the source waters and the valleys of the Danube tributaries, rocky and steep sloping sections of the Danube gorge, karst landscapes, hills and other prominent parts of the areas important for the protection of wildlife and geo diversity, with extraordinary beautiful landscapes and traditional life forms and architecture with the total area of about 15,262 ha.
3. The **area of protection level III** covers the rest of the national park (the areas not included in the zones of protection level I and II), covering about 45,682.02 ha and

with highly valuable landscape, biological and geo diversity. The primary purpose of this zone is to secure the integrity of Djerdap area as a protected nature reserve which is intended for selective and limited use of natural resources, activities to improve the protected areas, environmental and cultural-historical values, rural development, the improvement of economic situation and living conditions of local residents, the construction of housing and infrastructure objects and facilities for tourism, and other activities based on the principles of sustainability.

Protection zone of Djerdap National Park was determined in order to preserve the natural and man-made environment from pollution and unplanned construction in neighboring areas. The area of protection zone borders with Djerdap National Park, meaning parts of cadaster municipality which are partially covered by Djerdap National Park or entire adjacent cadaster municipalities:

- Golubac, Dvoriste and Krivaca – in Golubac municipality
- Majdanpek, Miroc, Topolnica, Rudna Glava and Golubinje – in Majdanpek municipality
- Davidovac, Manastirica, Kladusnica, Podvrška, Velika Kamenica and Brza Palanka - in Kladovo municipality
- Radenka and Voluja - in Kucevo municipality
- Urovića and Vratna - in Negotin municipality

The protection zone has a total area of 93,967.58 ha, of which the municipality Majdanpek covers 33,889.40 ha, Kladovo 19,703.58 ha, Kucevo 20,591.64 ha, Golubac 5,656.96 ha and Negotin 14,126.00 ha.

Areas of protection level I

The area of special natural features:

(1) "Veliki & Mali Strbac (Strbac - Kazani)" includes 30 plant communities arranged in six vegetation series, of which 16 communities are characterized as relict polydominant communities; area includes the habitats of extremely diverse fauna, especially birds, mammals and reptiles and presents the most spacious area of wildlife in Djerdap area.

Strict nature reserves

- (1) "Golubacki grad" includes extremely rich mosaic of plant communities;
- (2) "Bojana" includes exceptionally well-preserved pure stands of autochthonous nuts;
- (3) "Tatarski vis" is comprised mostly of oak, hornbeam and beech in the contact of

geological surface constructed of crystalline schist and limestone;

(4) "Bosman-Sokolovac" includes relict polydominant and a paleontological site with fossils of marine fauna from the early Jurassic epoch;

(5) "Somrda" includes the site and the most northern habitat in Serbia of the relict tertiary;

(6) "Coka Njalta with Pesac" includes the richest relict forest of Djerdap area communities with complex composition, which contain about 40 species of trees and present a natural arboretum, as well as a fossils site from the time of early and middle Jurassic epoch;

(7) "Lepenski vir" includes the refuge of thermophile plant life with a series of relict forest and shrub communities of great importance, with many rare and interesting species of trees and shrubs;

(8) "Kanjon Boljetinke reke - Greben" includes an impressive canyon valley of Boljetinska river and a steep Danube section on the hill Greben, with remarkably distinct geological profiles that show the structure and stratigraphy of fossil sediments formed in Jurassic and early Cretaceous period;

(9) "Ciganski potok" includes a pure autochthonous stand of walnuts and mixed community of walnut and beech;

Natural monuments

(1) "Pecina Gradasnica" is the largest investigated form of underground karst in the Park, with a very interesting morphology of cave channels;

(2) Lake "Baltu alu Sontu – Paprenicki potok";

(3) "Glavica" is a characteristic conical elevation built of gabbro with a specific morphology and geological structure;

(4) "Velika Pester";

Areas of protection level II

Natural landscape units

(1) "Golubacka klisura" includes a natural landscape area;

(2) "Klisura reke Brnjice" includes natural landscape unit in the immediate environment of the Brnjica river gorge with high and rocky limestone cliffs;

(3) "Strpsko korito - Miroc" presents one of the largest refuge of tertiary flora and relict vegetation in the Balkans;

(4) "Sokolovac - Vlasac" includes the natural landscape area from the mouth of the Danube to Boljetinsko brdo

(5) "Somrda " is one of the most significant forest complexes in Djerdap area with specific characteristics of ecosystems, which is reflected in the existence of many relict communities.

Natural areas around immovable cultural properties:

(1) "Čezava - Castrum" includes the wider natural area around the archaeological site of Roman castrum and medieval necropolis in Cezavsko polje;

(2) "Lepenski vir - lokalitet" includes the wider natural area around the very important immovable cultural heritage Lepenski vir;

(3) "Hajducke vodenice – Trajanova tabla" includes the wider natural area around the archaeological site "Hajducke vodenice" ;

(4) "Diana - Karatas" includes the wider natural area around the very important immovable cultural heritage "Diana";

(5) "Vlasac - lokalitet" includes the area around *Golubacka tvrđava*;

Areas of protection level III

The area of protection level III includes the rest of Djerdap National Park, covering about 45,682.02 ha. This zone includes the forest outside protection levels I and II, as well as agricultural areas, construction areas, tourist centers. The primary purpose of this zone is to secure the integrity of Djerdap area as a protected nature reserve which is intended for selective and limited use of natural resources, activities to improve the protected areas, environmental and cultural-historical values, rural development, the improvement of economic situation and living conditions of local residents, the construction of housing and infrastructure objects and facilities for tourism, and other activities based on the principles of sustainability.

Iron Gates Natural Park - corresponds to category V of IUCN. It is a protected natural area whose purpose is the protection and preservation of zones where the interaction of human activity with nature has created over the time natural value and / or high culture areas. Are encouraged traditional practices of the local population, scientific and educational activities and are offered leisure and tourist activities.

Iron Gates Natural Park is managed by NFA Romsilva-Iron Gates Natural Park Administration based in Orșova. The park is divided into three different areas of protection.

1. Integral protection zones, includes the most valuable assets of the natural heritage within the Iron Gates National Park, described and delimited according to the Management Plan.

The **Integral protection zones** of the park include:

- a) Special conservation areas delimited by the Minister of Agriculture, Forests, Waters and Environment Order no. 552/2003;
- b) Special Protection Areas: Ostrov Moldova Veche Wetlands; Calinovăț și Divici – Pojejena Island;
- c) Natural reservations: Balta Nera-Dunare, Valea Mare, Bazias, Gura Văii Vârciorova, Valea Oglanicului, Dealul Duhovnei, Dealul Varanic, Cazanele Mari și Cazanele Mici, Locul fosilifer Svinita, Locul fosilifer Bahna, Cracul Găioara, Cracul Crucii, Fata Virului.
- d) The ruins of medieval fortress Tri Kule - historical monument;
- e) The natural amphitheater from the northwest side of Svinîța village -geomorphological formations;
- f) Glaučina - geomorphological significance formation;
- g) Trescovăț rhyolite dome – geological significance formation;
- h) Zamonița cave;
- i) Babacaiia rock - geomorphological significance formation;
- j) Ladislau fortress ruins - historical monument;
- k) Chindia cave - speleological and archaeological monument;
- l) Natural limestone bridge in the St. Helena village area, yet unreported in the literature, on the Plevii Valley in the vicinity of the cave;
- m) Gaura cu Muscă cave - protected species habitat - *Rhinolophus* spp, are known because of endemic fly species - *Simulium colombaschense*;

In these areas are included the most valuable elements of the natural heritage of the Iron Gates National Park preservation of which is absolutely mandatory.

2. Sustainable management zones, described and delimited according to the Management Plan, are making the transition between full protection and sustainable development areas and includes all areas from the park except the integral protection zones and areas of sustainable development.
3. Sustainable development areas of human activities comprise all other areas from the Iron Gates National Park not included in the first two categories, described and delimited according to the Management Plan. Sustainable development areas of

human activities are the zones in which are permitted investment / development activities, as a priority those of tourist interest, but with the compliance of the principle of sustainable use of natural resources and prevention of any significant adverse effects on biodiversity.

The activity was elaborated in proportion of 100 %.

ACTIVITY 2. THE HABITATS IDENTIFICATION FROM THE INVESTIGATED WETLANDS

Wetland inventory was done in accordance with the categories of the manual interpretation RAMSAR, followed by the classification of the inventoried wetland habitats under the Habitats Directive and the habitats specific to Natura 2000 network classification was conducted by field validation potential areas determined by extensive study using surveying methodology of the flora. Braun-Blancke method was used to identify the phytocenologic association and classifying it in the Natura 2000 habitat type. GIS mapping was done by means of modern mapping based on remote sensing imagery and LANDSAT type and validation based on direct mapping with GPS technology. Thus was obtained a geo-relation database type ESRI geodatabase.

Stage performing surveying

Phytosociological survey (lift Phytocenology / phytosociology). It is based, as a fundamental element in the study field, the phytosociological survey, as interpreted by the Central European Phytosociological School from Zurich-Monpellier, Flahault's and Braun-Blanquet, French-Swiss. Phytocenological survey (Braun-Blanquet and Pavillard, 1928) is designed as a set of measurements and observations on the vegetation and resort performed on a sample of plant formation considered to be representative. Is a survey of floristic inventory (list of species) with additions or coefficients corresponding to certain sociological, analytic or synthetic views. In fact, this basic operation on the study of vegetation is measuring activity and reading of values with diversified variables of the same element.

To achieve the surveys the botanist crosses the study region so as to include all types of resorts and their variants characteristic of that land, following certain routes and itineraries. Within each type of vegetation the characteristic portions are selected together in a high degree, the general characteristics of that type, avoiding the transition portions, the eco-tone. On this

surfaces delimited portion is accurate, referred to sample surfaces, having different shapes, generally rectangular or square, depending on the type and size of vegetation studied.

Identifying habitats

For detailed identification of habitats - were used: Manual identification of Natura 2000 habitats in Romania (Gafta, Mountford, 2008), Habitats from Romania (Doniță et al., 2005).

CHAPTER 2. IDENTIFIED WETLAND HABITATS

Wetlands are defined as stretches of ponds, swamps, and natural waters or artificial, permanent or temporary, with water standing or flowing, fresh or salt, including stretches of sea water with a depth at low tide does not exceed six meters (Article 1.1 Ramsar). Wetlands may include riparian areas, wetlands adjacent coastal areas, islands or bodies of marine water deeper than six meters at low tide (Article 1.2 Ramsar).

In 1971 in Iran is signed the Convention on the Protection of Wetlands of International Importance (Ramsar) Convention's mission is "the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution to achieving sustainable development throughout the world". In total so far, 2161 sites have been designated covering an area of 205 681 158 ha. In Romania, from 1991 when the Convention was ratified, 19 sites have been designated. From 2011 Iron Gates Natural Park is designated a Ramsar site representing a particular importance in terms of ecology, botany, zoology, limnology and hydrology. Of the total area of the Iron Gates Natural Park, wetlands occupy 7.7% of these watercourses and permanent swamps but also the freshwater lakes occupy the largest areas season.

Wetlands have an important role providing a range of environmental ecological functions including: hydrological transfer and water tank, biogeochemical transfer, primary productivity and production, nitrogen and carbon cycling helps in flood control, filtering, cleaning and retention of nutrients, sediment participating in water purification. Also offers a variety of recreational activities including fishing, swimming, bird watching, boating, kayaking, cruises, being attractive to visitors because of high biodiversity that supports.

Wetlands are important because they provide habitat for wildlife and for maintaining a specific biodiversity. In the wetlands of the Iron Gates Natural Park are present over 20,000 individuals belonging avifauna. Water birds depend on wetlands for a variety of activities including feeding, breeding, nesting, migration, shelter and specific adaptations that allow them

to exploit a particular habitat in a wetland, limiting direct competition with each other. The highest number of waterfowl is often found in wet areas with the greatest diversity of plant species and vegetation types (Balla, 1994), thus protecting wetland habitats imply waterfowl automatically.

According to Ramsar sheet in the Iron Gates Natural Park there are these types of natural wetlands in order of surface occupied, starting with the largest:

M - Rivers / streams permanent

Tp - Marshes / Pools, (less than 8 ha) permanent ponds with freshwater, marshes and swamps on inorganic soils with emergent vegetation, stagnant water throughout the growing season;

P - Seasonal freshwater lakes / intermittent (over 8 ha); includes floodplain lakes

L – Continental permanent Deltas

Xf - Freshwater wetlands dominated by trees, including forests seasonally flooded with freshwater, marshes with arboreal on inorganic soils

W - Wetlands dominated by shrubs

Xp - Peat swamp forest

N - Rivers / para / Streams Seasonal / intermittent / irregular

U - Peat swamp without trees, including shrubs or oligotrophic peat bogs, swamps, peat bogs and meso and eutrophic

Ts - Marshes / Pools Seasonal / intermittent freshwater inorganic soils, seasonally flooded meadows, marshes with Cyperaceae. But also created by man:

4 - Seasonally flooded agricultural lands (this includes meadows and pastures used intensive)

6 - Water storage areas, reservoirs / dams / barrages (generally exceed 8 ha).

7 - Excavations; gravel / brick / clay quarries, borrow pits, mining pools.

2.1. WETLAND HABITATS IN THE AREA OF DJERDAP NATIONAL PARK

a. Listing wetland habitats identified in the area and their location

Tabel 4 Identified habitats in the Djerdap National Park

Nr. crt.	CODE Natura 2000	NAME	AREA (ha)	LOCATION
1.	3150	Natural eutrophic lakes with <i>Magnopotamion</i> or	9.46	

Nr. crt.	CODE Natura 2000	NAME	AREA (ha)	LOCATION
		<i>Hydrocharition</i> -type vegetation.		
2.	3160	Natural dystrophic lakes and ponds	184.13	Massive expansion on the Serbian side between localities Dobra and Mala Orlova
3.	3270	Rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation		It was observed at the mouth of the Danube tributaries: Donji Milanovac

b. Description of each habitat according to the general and specific characteristics of the studied area

HABITAT 3150

Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation

Based on the classification of habitats in Romania for habitat 3150 are corresponding the following types of habitat: R2202 Danube Communities with *Lemna minor*, *Lemna trisulca*, *Spirodella polyrhiza* and *Wolff arrhiza* (Fig. 9); R2203 Danube Communities with *Salvinia natans*, *Marsilea quadrifolia*, *Azolla caroliniana* and *A. filiculoides*; R2205 Danube Communities with *Hydrocharis morsus-ranae*, *Statioides aloides* and *Utricularia vulgaris*; R2206 Danube Communities with *Potamogeton perfoliatus*, *P. gramineus*, *P. lucens*, *Elodea canadensis* and *Najas marina* (Fig. 5,6,7,8).



Figure 5 Potamogetonetus nodosi Passarge



Figure 6 Potamogetonetus lucentis Hueck 1931



Figure 7 Potamogetonetus pectinati Horv.



Figure 8 Ceratophylletum demersi Corillion 1957

It was observed in all existing wetlands from parks. Since its component species are most hydrophilic, the habitat is extremely sensitive to water level variations. Conservation value is high, this habitat supports species on Red List as *Azolla filiculoides*, *Salvinia natans*, *Vallisneria spiralis*, *Najas marina*, *Potamogeton trichoides*, *Wolffia arrhiza*. Aquatic macrophytes are considered to be very sensitive to changes / degradation of the physical environment, which are in direct contact with the environmental conditions in wetlands through the root system and especially the leaves, which requires permanent presence of water. For this reason, this sensitivity is widely used in determining the quality of an aquatic ecosystem (O'Hare et al, 2006). Phytobenthos is considered an early warning indicator, and macrophytes due to longer life cycle and short-term tolerance to changes in environmental conditions indicate persistent environmental disturbances.

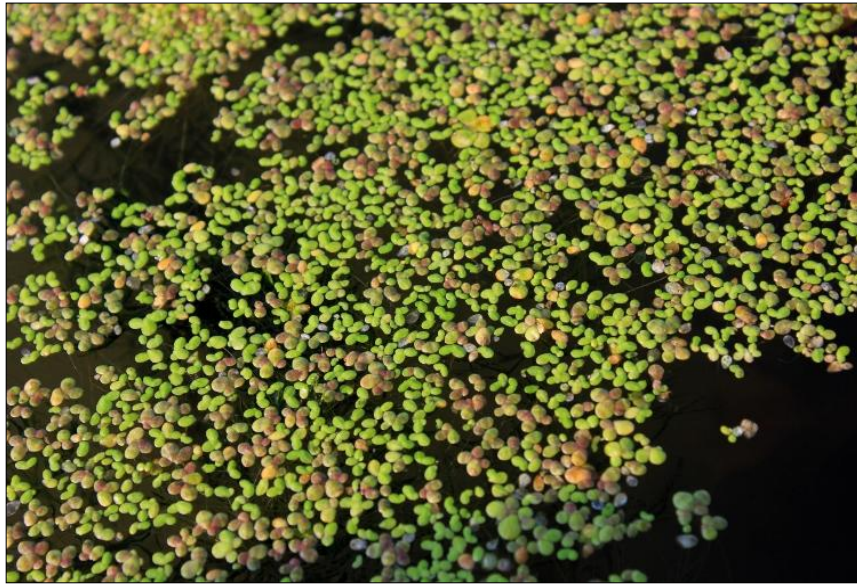


Figure 9 Lemnetum minoris Soo 1927

HABITAT 3160

Natural dystrophic lakes and ponds

Based on the classification of habitats in Romania to habitat 3160 are corresponding the following types of habitat: R2207 Danube Communities with *Nymphaea alba*, *Trapa natans*, *Nuphar luteum* and *Potamogeton natans*.

In the study area the plant communities belong to the following associations: *Trapetum natantis* Karpati 1963, *Nymphoidetum peltatae* (Allorge 1922) Bellot 1951, *Potametum natantis* Soó 1927.

The association *Trapetum natantis* Karpati 1963 associated with this type of habitat has a massive development on the Serbian side between localities Dobra and Mala Orlova.

HABITAT 3270

Rivers with muddy banks with *Chenopodium rubri* p.p. and *Bidention* p.p. vegetation

Based on habitat classification in Romania to habitat 3270 are corresponding the following types of habitat: R5312 Pontic-Danubian Community with *Bidens tripartita*, *Echinochloa crus-galli* and *Polygonum hydropiper*.

It was observed at the mouth of the Danube tributaries: Donji Milanovac.

The association correspondence to habitat *Bidenteti - Polygonetum hydropiperis* Lohm R. Tx 1950 is a nitrofile association that develops on sandy substrates, alluvial deposits, most plants composing the weeds known as grass pond. The dominant species are *Polygonum hidropiper*, *Mentha pulegium*, *Lycopus europaeus*, *Bidens tripartite* they form the top layer of vegetation. Conservation value of this habitat is moderate.

c. Details of the landowners in the area of each wetland identified

Following the visit to the Serbian side were identified the lands in the wetland areas of Djerdap National Park and determined the management area and ownership. At the city hall of Kladovo we were provided the following information: Kosova wetland is state owned and private and Kasajna wetland is state property. At the city hall from Golubac and Kladovo we were informed that more accurate data can be provided only after some official letters were submitted by Djerdap PN administration. The data transmitted by the surveyor of Djerdap National Park on identifying the ownership of land, especially land in wetland areas are:

The expert team was accompanied by a Serbian translator for a better communication.

Tabel 5 Elements on the ownership of land provided by the surveyor of Djerdap National Park

Name	Category of property	Land use	Category of use	Construction destination	Area
BRNJICKA REKA 2	Private and public domain	Land permanently under water and land for special use	Streams and yards / courtyards construction	Construcții edilitare și industriale	10 ha-15ha
BRNJICKA REKA	Public domain	Land permanently under water	Streams		1ha – 5ha
GOLUBAC	The public domain of the administrative-territorial units	Land permanently under water and land for special use	Running water and unproductive and degraded land		1ha – 5ha
GOLUBAC 2	Public domain	Land permanently under water	Running water		< 1ha
ZLATICA	Public domain	Land permanently under water	Running water		1ha – 5ha

PORECKI ZALIV	Public domain	Land permanently under water	Running water		15 ha <
MALI KOVILOVSKI POTOK	Public domain	Land permanently under water	Running water		1ha – 5ha
KASAJNA	Public domain	Land permanently under water	Running water		< 1ha
KOSOVICA	Public domain	Land permanently under water	Running water		1ha – 5ha

2.2. WETLAND HABITATS IN THE AREA OF IRON GATES NATURAL PARK

In the Iron Gate Park were declared four protected areas: a natural reservation and three Special Protection Areas:

Pond Nera – Danube Nature Reserve is one of the youngest areas of Romania, in continuous formation and that is why one of the most fragile ecosystems in the country. It is a complex reservation with an area of 10 ha of very high importance for wetland habitats (3 habitats of community importance) and vulnerable aquatic species: *Salvinia natans*, *Elodea canadensis*, *Vallisneria spiralis*, *Najas marina*, but also for a particular rich fauna.

Special Protection Area - Ostrov - Moldova Veche has an area of 1627 ha of which 345 ha are occupied by the island itself, the remainder being represented by the water surface limitrophe to the island to a depth of 2 m. Avifauna is very rich, there were found 72 species of birds, of which 28 species are included in the Directive on the conservation of wild birds. Flora is represented by species characteristic to sand dunes, lakes and swampy areas, the plant species with protection status: *Salvinia natans*, *Elodea canadensis*, *Marsilea quadrifolia*, *Ammannia verticillata*, *Acorus Calamus*.

Special Protection Area – Insula Calinovăț has an area of 24 ha, comprising the island and the water surface limitrophe to the island to a depth of 2 m. On the Calinovăț Island the dominant vegetation is represented by the *Salix alba* and *Populus alba* an important habitat for the birds species.

Special Protection Area Divici - Pojejena has an area of 498 ha of ponds, 5 ponds, and the area with bushes and herbaceous formations where the water level is very close to the surface. Vegetation is mainly characterized by the floating communities (*Trapa natans*, *Potamogeton ssp*, *ssp Lemna*) and submerged, but also the emergent vegetation beside the

banks where the water level has enabled the development of *Thypha ssp* scrubs, *Phragmites australis*, *Carex ssp*, *Juncus ssp*.

In the Iron Gates Natural Park has been identified and listed in the management plan three freshwater habitats:

3130 - Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoëto-Nanojuncetea*. In the Iron Gates Natural Park Isoëto – Nanojuncetea associations class it's represented by Nanocyperetalia order, Nanocyperion flavescentis W. Koch 1926 Verberion supinae Slavnic 1951 alliances and the following associations: Dichostyli – Gnaphalietum uliginosi, Horvatic 1931 Soó et Timar 1947; Lythrum tribracteatum – Lythrum hyssopifolia Slavić 1951; Cypero – Juncetum Soó et Csürös 1944; Ranunculo lateriflori – Limosella aquatica I. Pop 1962 și Pulicaria vulgaris – Mentheum pulegi Slavić 1951.

According to the Natura 2000's standard form of the ROSCI0206 Iron Gate the surface of this habitat occupies a share of 1% of the total area of the site.

3140 - Hard oligo-mesotrophic waters with benthic vegetation of *Chara spp.* in the Iron Gates Natural Park this habitat is represented by the association of Charetum braunii Coriolan 1957.

According to the Natura 2000's standard form of the ROSCI0206 Iron Gate the surface of this habitat occupies a share of 0,4% of the total area of the site.

3150 - Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation. In the Iron Gates Natural Park this habitat is represented by Lemnetea and Potametea associations' classes, Lemnetalia și Hydrocharietalia orders, respective Potametalia, Lemnion minoris alliances, Hydrocharition and Potaminion pectinati, Nymphaeion and the following associations: Lemnetum minoris, Oberd. 1957, Muller et Gors 1960; Lemno-Spirodeletum polyrhizae Koch, 1954; Hydrocharitetum morsusranae van Langendonck, 1935; Ceratophylletum demersi Hild, 1956, Salvinio- Spirodeletum, Slavić 1956.; Potamogetonetum nodosi, Soó 1960; Nymphoidetum peltatae, Allorge 1922, Oberd. et Th. Muller 1960, Trapetum natans Karpati 1963, Polygono-Potametum natantis Soó 1964.

According to the Natura 2000's standard form of the ROSCI0206 Iron Gate the surface of this habitat occupies a share of 3% of the total area of the site.

After constructing the dam for creating the Iron Gate I reservoir, it has been made major changes in aquatic ecosystems and their transition from freshwater ecosystem into a lake one.

Most wetland ecosystems are located in the western area of the park and they were created as a result of the Iron Gate I reservoir rising waters and permanent flooding of adjacent

agricultural lands. Those ecosystems represent transit areas for many species of birds in migration.

Regarding species protection status, according to IUCN, they are: *Marsilea quadrifolia* Near Threatened (NT) and *Eleocharis carniolica* Least Concern (LC).

On the list of the Habitats Directive (Council Directive 92/43/EEC) Annexes IIb, IVb, 3 species can be found in the park's wetlands: *Marsilea quadrifolia* (Fig. 10), and *Eleocharis carniolica* and *Lindernia procumbens*.

Under the Berne Convention, Annex I, three species characteristic to wetlands are present: *Salvinia natans*, *Typha shuttleworthii* and *Eleocharis carniolica*.



Figure 10 Marsilea quadrifolia



Figure 11 Najas marina

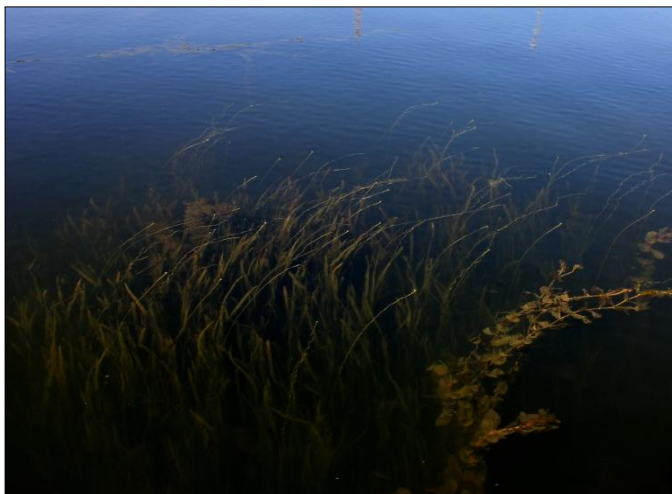


Figure 12 Vallisneria spiralis

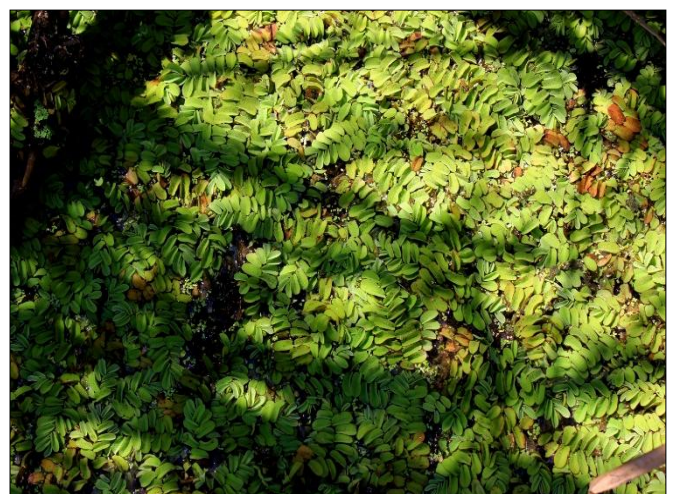


Figure 13 Salvinia natans

Based on the national red lists (Oltean et al., 1994 Boşcaiu et al., 1994 seen Dihoru and Dihoru et 19 ..) more species have been identified as having different degrees of vulnerability (Table 7), namely: *Acorus calamus*, *Ammann verticillata*, *Carex bohemica*, *Cyperus serotinus*, *Elodea canadensis*, *Epipactis palustris*, *Fimbristylis bisumbellata* *Groenlandia densa*, *Iris spuria*, *Juncus articulatus*, *Juncus bulbosus*, *Leucanthemella serotina*, *Leucojum aestivum*, *Lindernia procumbens*, *Litorella uniflora*, *Marsilea quadrifolia*, *Montia fontana* , *Najas marina* (Fig. 11), *Nasturtium officinale*, *Oenanthe aquatica*, *Oenanthe peucedanifolia*, *Potamogeton obtusifolius*, *Potamogeton trichoides*, *Ranunculus circinatus*, *Salvinia natans* (Fig. 13), *Sagittaria trifoliata*, *Schoenoplectus triqueter*, *Typha laxmannii*, *Vallisneria spiralis* (Fig. 12), *Veronica catenata*.

In the Red Book of vascular plants species in Romania (Dihoru et Negrean, 2009), a total of six species present at the site are considered as having protected status (*Azolla filiculoides*, *Glycyrrhiza glabra*, *Juncus bulbosus*, *Litorella uniflora*, *Veronica scardica*, *Wolffia arrhiza*).

Tabel 6 List of plant species with national protected status from wetlands of Iron Gates Natural Park

Species	Boscaiu et al., 1994	Oltean et al., 1994	Dihoru et Negrean, 2009
<i>Acorus calamus</i>	Vulnerable	-	-
<i>Ammannia verticillata</i>	-	Vulnerable /Rare	-
<i>Azolla filiculoides</i>	-	-	Vulnerable
<i>Carex bohemica</i>	Rare	Rare	-
<i>Cyperus serotinus</i>	-	Rare	-
<i>Eleocharis carniolica</i>	-	-	-
<i>Elodea canadensis</i>	Rare	-	-
<i>Epipactis palustris</i>	-	Rare	-
<i>Fimbristylis bisumbellata</i>	-	Rare	-
<i>Glycyrrhiza glabra</i>	-	-	Critically endangered (CR)
<i>Groenlandia densa</i>	Endangered	Vulnerable / Rare	-
<i>Iris spuria</i>	-	Rare	-
<i>Juncus articulatus</i>	-	Rare	-
<i>Juncus bulbosus</i>	-	Rare	Critically endangered (CR)

<i>Leucanthemella serotina</i>	-	Rare	-
<i>Leucojum aestivum</i>	-	Vulnerable / Rare	-
<i>Lindernia procumbens</i>	-	Vulnerable / Rare	-
<i>Litorella uniflora</i>	Endangered	Vulnerable / Rare	Critically endangered (CR)
<i>Marsilea quadrifolia</i>	Endangered	Vulnerable	-
<i>Montia fontana</i>	Rare	Rare	-
<i>Najas marina</i>	Vulnerable	-	-
<i>Najas minor</i>	-	Rare	-
<i>Nasturtium officinale</i>	Rare	-	-
<i>Oenanthe aquatica</i>	Rare	-	-
<i>Oenanthe peucedanifolia</i>	-	Rare	-
<i>Potamogeton obtusifolius</i>	Rare	Rare	-
<i>Potamogeton trichoides</i>	-	Rare	-
<i>Ranunculus circinatus</i>	Rare	Rare	-
<i>Salvinia natans</i>	-	-	-
<i>Sagittaria trifoliata</i>	-	Rare	-
<i>Schoenoplectus triqueter</i>	-	Rare	-
<i>Typha laxmannii</i>	Rare	-	-
<i>Vallisneria spiralis</i>	Vulnerable	Vulnerable / Rare	-
<i>Veronica catenata</i>	-	Rare	-
<i>Veronica scardica</i>	-	-	Vulnerable
<i>Wolffia arrhiza</i>	-	-	Endangered

Tabel 7 List of plant species with internationally protected status from wetlands of the Iron Gates Natural Park

Species	IUCN	Habitat Directive	Berne Convention
<i>Eleocharis carniolica</i>	LC	x	x
<i>Marsilea quadrifolia</i>	NT	x	-
<i>Typha shuttleworthii</i>	-	-	x
<i>Lindernia procumbens</i>	-	x	-
<i>Salvinia natans</i>	-	-	x

a. Listing wetland habitats identified in the area and their location

During the study in the Iron Gates Natural Park were identified nine types of habitats of European importance for wetlands.

Habitats 3130, 3150 and 3160 are well represented, with great diversity in Ostrovul Moldova Veche and the other six are less represented.

Tabel 8 Identified habitats in the Iron Gates Natural Park

Nr. crt.	CODE Natura 2000	NAME	AREA (ha)	LOCATION
1.	3130	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoëto-Nanojuncetea</i>	1.01	Ostrovul Moldova Veche and Liubcova
2.	3140	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp		
3.	3150	Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> -type vegetation.	1482.33	Balta Pojejena, Balta Şuşca, Balta Divici, Balta Belobreşca, Ostrovul Moldova Veche, Balta Nerei, Delta Nerei but also portions of the shore with slow flow or smaller bays: V. Slătinicul Mare, V. Vodiţei, Orşova, Eşelniţa, Golful Mala, Golful Dubova, Liubcova, Trikule.
4.	3160	Natural dystrophic lakes and ponds	403.62	Balta Şuşca, Balta Divici, Balta Belobreşca, Golful

Nr. crt.	CODE Natura 2000	NAME	AREA (ha)	LOCATION
				Mala, Balta Pojejena, Ostrovul Calinovăț, Ostrovul Moldova Veche, Balta Nerei, Delta Nerei, but also portions of the shore with slow flow or smaller bays V. Slătinicul Mare, V. Vodiței, Orșova, Eșelnița, Golful Dubova, Liubcova, Trikule, upstream to Valea Grăniceri, mouth of the river Sirinia.
5.	3260	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho Batrachion</i> vegetation	0.06	Delta Nerei and Ostrovul Molvoda Veche
6.	3270	Rivers with muddy banks with <i>Chenopodion rubri</i> p.p. and <i>Bidention</i> p.p. vegetation	12.91	Valea Vodiței, Orșova, Valea Iloviței, to Liubcova, Valea Liubotina, Sirinia, Liuborajdea, Depresiunea Dubova, Valea Mraconiei, Danube shore to Berzeasca, balta Cozla.
7.	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels		Valea Vodiței

Nr. crt.	CODE Natura 2000	NAME	AREA (ha)	LOCATION
8.	6440	Alluvial meadows of river valleys of the <i>Cnidion dubii</i>	133.83	Ostrovul Moldova Veche
9.	92A0	<i>Salix alba</i> and <i>Populus alba</i> galleries	278.87	Insula Calinovaț, to the river mouth of Eselniței in the Danube, Ostrovul Moldova Veche, on the Danube shore in the Divici-Pojejena area and Balta Nerei.
10.	91E0*	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i>	37.59	Golful Mraconia and Valea Eselnița

b. Description of each habitat according to the general and specific characteristics of the studied area

HABITAT 3130

Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoëto-Nanojuncetea*

CLAS. PAL.: 22.12 x (22.31 și 22.32)

Habitats in Romania: R2211, R2212, R2213

Habitat 3130 consists of short perennial vegetation, aquatic until amphibious, oligotrophic to mesotrophic, the banks of lakes, ponds and marshes, and ecotonal water area - land belonging to the order *Littorelletalia uniflorae* and annual short vegetation, amphibious, pioneer, of the ecotonal area with the shore at the edge of lakes, marshes and ponds, with poor soils in nutrients, or which grows during periodic drying of these backwaters: *Isoëto - Nanojuncetea* class.

These two units can grow together in close association or separately. Characteristic species of plants are generally small efemerofits.

Floristic Composition: *Schoenoplectus triqueter*, *articulatus Juncus* , *Typha laxmannii*, *Fimbristylis bisumbellata* , *Ammann verticillata* , *Cyperus serotinus quadrifolia Marsilea*.

Plant associations: *Cyperetum flavescens* W. Koch 1933 ex Aisinger vegetate abundant on Ostrovul Moldova Veche on the edge of lakes and ponds. It is a pioneer association, consisting of small size mesophilic and hidrophilic species that sometimes is forming large coverage: *Eleocharis palustris*, *Cyperus glomeratus*, *C. flavescens*. Other plant associations are *Eleocharidetum acicularis* W. Koch 1926, *Cypero Paspaletum distichi* Horvatic 1954 - *Fimbristyletum Dichostyli dichotomae* Horvatic 1954.

Location: Ostrovul Moldova Veche and Liubvova.

HABITAT 3140

Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp

Habitats in Romania: R2201 Danube Communities with *Chara tomentosa*, *Nitella gracilis*, *Nitellopsis obtusa*, *Lychnothamnus barbatus*

Plant associations: *Charetum braunii* Coriolan 1957, the species of this association are mostly submerged the floating layer consists of protected species such as *Salvinia natans*.

HABITAT 3150

Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.

CLAS. PAL.: 22.13 x (22.41 sau 22.421)

Habitats in Romania: R2202 Danube Communities with *Lemna minor*, *Lemna trisulca*, *Spirodella polyrhiza* and *Wolffia arrhiza* (Fig. 9), R2203 Danube Communities with *Salvinia natans*, *Marsilea quadrifolia*, *Azolla caroliniana* and *A. filiculoides*, R2204, R2205 Danube Communities with *Hydrocharis morsus-ranae*, *Statioides aloides* and *Utricularia vulgaris*, R2206 Danube Communities with *Potamogeton perfoliatus*, *P. gramineus*, *P. lucens*, *Elodea canadensis* and *Najas marina* (Fig. 5,6,7,8).

Habitat 3150 is represented by lakes and ponds with waters dark gray to blue -green, more or less turbid, especially rich in dissolved bases (pH usually > 7), with *Hydrocharition* communities floating free on the surface or in deep water, open, with *Magnopotamion* associations. Since its component species are most hydrophilic, the habitat is extremely sensitive to water level variations. Conservation value is high, this habitat supports species listed as red as *Azolla filiculoides*, *Salvinia natans*, *Vallisneria spiralis*, *Najas marina*, *Potamogeton trichoides* *Wolffia arrhiza*. Aquatic macrophytes are considered to be very sensitive to changes / degradation of the physical environment, which are in direct contact with

the environmental conditions in wetlands through the root system and especially the leaves, which requires permanent presence of water. For this reason, this sensitivity is widely used in determining the quality of an aquatic ecosystem (O'Hare et al, 2006). The phytobenthos is considered an early warning indicator and macrophytes, due to longer life cycle and short-term tolerance to changes in environmental conditions indicate persistent environmental disturbances.

Floristic Composition: *Azolla filiculoides*, *Najas marina*, *Najas minor*, *Elodea canadensis* in phytocoenosis Lemnetaea class associations, namely *Azolla filiculoides*, *Potamogeton obtusifolius* f. *latifrons* , *Trichoides Potamogeton* , *Vallisneria spiralis* , *Elodea canadensis* , *Potamogetonetea*. *Salvinia natans*.

Plant associations: *Lemnetum minoris* Oberd . ex T. Müller et Gorse 1960 *Lemno - Spirodeletum* W. Koch 1954 (*Syn. Spirodeletum polyrizae* W. Koch) *Slavna polyrizae Spirodeletum* Slavnic – 1956, *Salvinietum Lemno natantis* Myawaki et Tx . 1960, *Lemno minoris - Azolletum filiculoides* Br.-Bl. 1952, *Lemni Utriculariteum vulgaris* - Soo (1928) 1947, *Ceratophylletum Demersi* Corillion 1957, *Hydrocharitetum morsus - ranae* Van Langendonk 1935 *Potamogetonetum Lucentis* Hueck 1931, *Myriophyllo - Potamogetonetum Lucentis* Soó 1934 (including *vallisnerietosum*) *Potamogetonetum pectinates* Horv . 1931 *Potamogetonetum pusilli* von Soó 1927, *Najadetum marinae* Fukarek 1961 *Najadetum minoris* Urbizsy 1961 *Elodeetum canadensis* (Pign. 1953) Pass . 1964 *Potamogetonetum perfoliate* Miljan 1933 *Potamogetonetum nodosi* Passarge 1964.

Location: Pojejena Pond, Susca Pond, Divici Pond, Belobreșca Pond, Ostrovul Moldova Veche, Nera Pond, Nera Delta and portions of the shore with slow flow or smaller bays: V. Slătinecul Mare, V. Vodita, Orșova, Eșelnița, Mala Bay, Dubova Bay, Liubcova, Trikule.

HABITAT 3160

Natural dystrophic lakes and ponds

CLAS. PAL.: 22.14

Habitats in Romania: R2207

Artificial and natural lakes with brown water due to peat and humic acids, generally on peaty soils in marshes and on heaths with natural evolution toward bogs. The pH is often as low as 3 to 6. Plant communities belong to the order *Utricularietalia*.

Floristic Composition: *Azolla filiculoides*, *Elodea canadensis*, *Najas marina*, *Potamogeton trichoides*. *Salvinia natans*.

Plant associations: *Trapetum natantis* Karpati 1963, *Potamogetonnetum natantis* Soó 1927, *Nymphoidetum peltatae* (All. 1922) Bellot 1951.

The association *Trapetum natantis* Karp 1963 associated with this type of habitat has a massive development in permanent ponds as Divici-Pojejena on Ostrovul Moldova Veche and its banks, Balta Nera.

The association *Nymphoidetum peltatae* (Allorge 1922) Bellot 1951 in Cozla pool (Berzasca) (Fig. 14), Ostrovul Moldova Veche, and along the Danube in areas where the water level is low and the rate of water flow is low.



Figure 14 *Nymphoidetum peltatae* (All. 1922) Bellot 1951 in Balta Cozla

The association *Potametum natantis* Soó 1927 was identified on Ostrovul Moldova Veche (Goia, 2013, AMH Report ENVIRONMENTAL EXPERT).

Despite a low specific wealth, conservation value of this habitat is very high. Here you find place for nesting, feeding and resting for many bird species.

Location: Susca Pond, Divici Pond, Belobreșca Pond, Mala Bay, Pojejena Pond, Ostrovul Calinovat, Ostrovul Moldova Veche, Nera Pond, Nera Delta, and portions of the shore with slow flow or smaller bays: V. Slătincul Mare V. Vodita, Orșova, Eșelnița, Dubova Bay, Liubcova, Trikule, upstream of the Valley Graniceri, mouth of the river Sirinia.

HABITAT 3260

Water courses of plain to montane levels with the *Ranunculon fluitantis* and *Callitricho Batrachion* vegetation

CLAS. PAL.: 24.4

Habitats in Romania: R2208

Watercourses in the plains up to the mountain, with submerged vegetation or supernatant from *Ranunculon fluitantis* and *Callitricho-Batrachion* (low water in summer) or aquatic moss. This habitat is sometimes associated with *Butomus umbellatus* communities on the shores. It is important to take this into account in the selection of sites of Community importance.

The habitat was observed in Balta Nera (Goia, 2013, AMH Report ENVIRONMENTAL EXPERT). *Trichophyllum Ranunculus* species has been reported on Ostrovul Moldova Veche - in the southern part of its, in lakes with deeper water (Morariu et al., 1973) but without forming a well-defined association where vegetate together with *Potamogeton gramineus*, *P. trichoides*, *Myriophyllum spicatum*, *Ceratophyllum demersum*. The habitat is very sensitive, being addicted to a certain water level. Conservation value of this habitat is very high due to the presence of sensitive species such as *Salvinia natans*, *Wolffia arrhiza*.

Floristic Composition: *Ranunculus trichophyllus*

Plant associations: *Ranunculetum (Batrachietum) trichophylli* Soo (1927) 1971.

Location: Nera Delta.

HABITAT 3270

Rivers with muddy banks with *Chenopodion rubri* p.p. and *Bidention* p.p. vegetation

CLAS. PAL.: 24.52

Habitats in Romania: R5312

Muddy banks of rivers in the plains, with annual pioneer vegetation, which grow on ground rich in nitrate, of alliances *Chenopodion rubri pp* and *Bidention pp*. In spring and early summer, this habitat of muddy banks is without any vegetation (it is developing later in the year). If conditions are not favorable, this vegetation can grow a little or totally absent.

This habitat is found in close association with dense populations of *Bidens* genus or species of neophytes. To facilitate the conservation of these communities, with a late annual growth or irregular, it is important to consider banks with widths between 50 and 100 m and even bare portions.

It was observed at the mouth of the Danube tributaries: Sirin, Liuborajdea, Dubova Depression Mraconiei Valley, Danube at Berzeasca, Balta Cozla, Liubcova.

Floristic Composition: *Filiculoides Azolla*, *Salvinia natans*, *Cyperus serotinus*. *Salvinia natans*

Plant associations: The association corresponding to habitat *Bidenteti - Polygonetum hydropiperis* Lohm in R. Tx 1950 is a nitrophil association that develops on sandy substrates, alluvial deposits, most plants composing the weeds known as grass pool. The dominant species are *Polygonum hidropiper*, *Mentha pulegium*, *Lycopus europaeus*, *Bidens tripartite* they form the top layer of vegetation. Conservation value of this habitat is moderate. *Polygonetum hydropiperis* Passarge 1965

Location: Valea Vodiței, Orșova, Valea Iloviței, Liubcova, Valea Liubotina, Sirinia, Liuborajdea, Depresiunea Dubova, Valea Mraconiei, Danube at Berzeasca, Balta Cozla.



Figure 15 *Bidenteti – Polygonetum hydropiperis* Lohm in R. Tx 1950 to the river mouth of Sirinia in the Danube

HABITAT 6430

Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels

CLAS. PAL.: 24.52

Habitats in Romania: R5312

Hydrophilic and nitrophos of tall grass communities, along water courses and skirts forest belonging to *Glechometalia hederaceae* and *Convolvuletalia sepium* orders (*Senecion fluviatilis* *Aegopodion podagrariae*, *Convolvulion sepium*, *Filipendulion*).

Floristic Composition: *Scirpus sylvaticus* communities

Plant associations: *Scirpetum sylvatici* Ralski 1931

Location: Valley Vodita

HABITAT 6440

Alluvial meadows of river valleys of the *Cnidion dubii*

CLAS. PAL.: 37.23

Habitats in Romania: R3712, R3715, R3716

Alluvial meadows with natural flooding regime belonging to alliance *Cnidion dubii*, in continental to subcontinent climatic conditions. This is a transitional habitat between the hydrophilic and the xenophile meadows, covering small areas.

Floristic Composition: *Ammann verticillata*, *Typha laxmannii*, *Juncus articulatus*, *Juncus bulbosus*

Plant associations: *Agrostietum stoloniferae* (Újvárosi 1941) Burduja et al. 1956 (Syn. *Rorippo sylvestris*-*Agrostietum stoloniferae* (Moor 1958 and Oberd. Müller et al 1961).

Location: Ostrovul Moldova Veche.

HABITAT 92A0

Salix alba and *Populus alba* galleries

For this type of habitat the correspondent association is *Salicetum alba fragilis* Issler 1926 em. Soo 1957. It was recorded on Calinovăț Island where this habitat is dominant at the mouth of the Eselniței in the Danube, on Ostrovul Moldova Veche, on the Danube shore in the Divici-Pojejena area and Balta Nera. Richness of this association is not very high, and consisted mainly of *Salix alba* and rarely *Populus nigra* or *Alnus glutinosa*, together performing over 80% coverage. Herbaceous layer is poorly represented, is composed of *Rubus caesius*, *Galium aparine*, and *Humulus lupulus*, *Clematis vitalba* vines. It was noted the presence of invasive species *Amorpha fruticosa*. The species forming this habitat are adapted to extreme humidity conditions, able to withstand fluctuations of water level. Conservation value is high, many species of birds find here an ideal place for nesting, shelter and food.

Floristic Composition: *Rubus caesius*, *Galium aparine*, and *Humulus lupulus*, *Clematis vitalba* vines.

Plant associations: *Salicetum albae – fragilis* Issler 1926 em Soo 1957

Location: on Insula Calinovăț, at the river mouth of Eselniței into the Danube, on Ostrovul Moldova Veche, on the shore of Danube in the Divici-Pojejena area and Balta Nerei.

HABITAT 91E0*

Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*

The habitat is represented by the association *Stellario nemoral-Alnetum glutinosae* (Kastner 1938) Lohm. , 1957. It was identified in Gulf Mraconia, Eselnita Valley in clusters of varying sizes being affected by human intervention. Arboreal and shrub layer consists mainly of *Alnus glutinosa* (black alder) plus *Salix purpurea*, *Populus nigra*, *Salix alba* and *Humulus lupulus* *Calystegia sepium* vines; the herbaceous layer contains hydrophilic to mesophilic species as *Stellaria nemorum*, *Scrophularia nodosa*, *Polygonum lapathifolium*, *Mentha longifolia*, *Stachys palustris*, *Aegopodium podagraria*.

Floristic Composition: *Alnus glutinosa*, *Salix purpurea*, *Populus nigra*, *Salix alba*, and *Humulus lupulus*, *Calystegia sepium* vines, *Stellaria nemorum*, *Scrophularia nodosa*, *Polygonum lapathifolium*, *Mentha longifolia*, *Stachys palustris*, *Aegopodium podagraria*.

Plant associations: *Stellario nemori-Alnetum glutinosae* (Kastner 1938) Lohm. 1957

Location: Golf Mraconia and Valea Eselnița.

Wetland habitats without correspondence in the Natura 2000 network

These habitats have a moderate to low conservation value because of the absence of plant species of national interest or community, but it has a great importance for aquatic bird populations by giving them food, nesting material, a place of rest and shelter migration period.

R3709 Danube communities with *Juncus effusus*, *J. inflexus* and *Agrostis canina*

R4418 *Salix purpurea* bushes

R5302 Mezohigrofile Danube communities with *Eleocharis palustris*

R5303 Danube communities with *Oenanthe aquatica* and *Rorippa amphibia*

R5305 Danube communities with *Typha angustifolia* and *T. latifolia*

R5309 Danube Communities with *Phragmites australis* and *Schoenoplectus lacustris*

R5310 Danube Communities with *Carex elata*, *C. rostrata*, *C. riparia* and *C. acutiformis*

c. Details of the landowners in the area of each wetland identified

Tabel 9 Categories of property in Iron Gates Natural Park wetlands

Name	ATU	Category of property Code	Category of property	Area (ha)
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Balta Nerei	Socol	DAT	Private domain of administrative units	111.42
Balta Nerei	Socol	PF	Private property of individuals	1.32
Divici - Pojejena	Pojejena	DAT	Private domain of administrative units	485.85
Divici - Pojejena	Pojejena	PF	Private property of individuals	11.98
Golf Cerna	Orsova	DAT	Private domain of administrative units	14.46
Golf Cerna	Orsova	PF	Private property of individuals	3.46
Golf Eselnita	Eselnita	DAT	Private domain of administrative units	43.57
Golf Mraconia	Dubova	DAT	Private domain of administrative units	37.44
Golf Mraconia	Dubova	PF	Private property of individuals	0.15
insula Calinovat	Pojejena	DAT	Private domain of administrative units	26.75
Ostrov Moldova Veche	Moldova Noua	DAT	Private domain of administrative units	1627.94
Valea Liborajdea	Sichevita	DAT	Private domain of administrative units	9.55
Valea Liborajdea	Sichevita	PF	Private property of individuals	1.62
Zona umeda Gornea-Sichevita	Sichevita	DAT	Private domain of administrative units	16.21
Zona umeda Gornea-Sichevita	Sichevita	PF	Private property of individuals	0.50
Zona umeda Sirinia	Berzasca	PF	Private property of individuals	1.74

2.3. COMPARATIVE ELEMENTS REGARDING THE IDENTIFIED HABITATS IN THE TWO PROTECTED AREAS

In the two protected areas were identified three common habitat: habitat 3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation, habitat 3160 Natural dystrophic lakes and ponds and habitat 3270 Rivers with muddy banks with *Chenopodium rubri* p.p. and *Bidention* p.p. vegetation.

Tabel 10 Common habitats identified in the two protected areas

Nr. crt.	CODE Natura 2000	Habitat Iron Gates NP	Habitat Djerdap NP
1.	3150	Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> -type vegetation	Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> -type vegetation
2.	3160	Natural dystrophic lakes and ponds	Natural dystrophic lakes and ponds
3.	3270	Rivers with muddy banks with <i>Chenopodion rubri</i> p.p. and <i>Bidention</i> p.p. vegetation.	Rivers with muddy banks with <i>Chenopodion rubri</i> p.p. and <i>Bidention</i> p.p. vegetation.

Regarding the similarities between the habitats from the two protected areas was observed the presence of a number of 3 habitats present in the Djerdap NP and Iron Gates NP. These are habitats 3150, 3160 and 3270. Habitat features present in the two protected areas are similar, so the floristic composition and plant associations thereof. The difference between the two protected areas is that Iron Gates NP is currently a total of 10 habitats, while the Djerdap NP only 3 habitats.

As surface habitat 3150 is 9.46 ha in Djerdap NP, while in the Iron Gates NP it has an area of 1482.33 ha, much better represented. Habitat 3160 has an area of 184.62 ha in the Djerdap NP and in the Iron Gates PN an area of 403.62 ha. Habitat 3270 was also identified into the two protected areas but it is very poorly represented in both areas.

Most of the land in the habitats mentioned from the two protected areas are owned by private domain administrative units or public domain.

The activity was elaborated in proportion of 100 %.

ACTIVITY 3. INVENTORY OF THE INVESTIGATED WETLANDS THREATS

CHAPTER 3. THREATS

During this activity, was performed the identification of threats upon the investigated wetlands. The main threats are habitat destruction by pollution (in this case, the source of degradation should not be near to feel the negative effects), habitat fragmentation (a known cause for the extinction of species with low dispersal capacity or travel for food and reproduction).

A good conservation status of a species, inter alia: maintaining an undisturbed habitat, not degraded and undivided, a healthy population with a greater genetic variety that can sustain it for a long time, the lack of natural and anthropogenic threats there with food resources.

NATURAL THREATS

Plant community invasion by non-native species, or native in certain circumstances that become invasive is a global phenomenon affecting large areas from ecologically, socially and economically point of view (Barrat-Segretain et al., 2001). The ability of a species to become invasive depends on taxonomic isolation, growth rate, some features on reproduction, etc.

Wetlands are more susceptible to biological invasions than other types of ecosystems. Due to their functioning as a reservoir, accumulating sediment, nutrients and other materials facilitating invasions by creating goals and the occurrence of opportunistic species. Many invaders of wetlands can form monotypic communities that can alter habitat structure, nutrient cycles and productivity, reduces biodiversity, and alter the food chain. They can limit the boats sailing, fishing, swimming, and other recreational activities.

Potentially invasive native species

Trapa natans (water chestnut) is a protected species at national and European level, but in certain circumstances it becomes invasive.

Trapa natans is an aquatic species, rooted to the substrate. It has two types of leaves: natant and submerged. The fruit is a drupe with 4 spiny formations. It has a high capacity for regeneration and other popular areas (Fig. 17). The plant, fruit (that is detached) from the stem and even the seeds can float on the water surface to the rooting zone of possible meeting / germination. The seeds can remain viable even 12 years.

In Balta Divici it occupies more than 30 % of the surface. This plant forms a carpet of impenetrable supernatant vegetation (Fig.16), the real threat to the life boats and other aquatic organisms. In the summer months the plant density is very high , which limits light penetration in water and thus can eliminate or reduce the growth of other species of aquatic plants . Plant decomposition leads a reduction of oxygen dissolved in water , with difficulty the existence of species of aquatic animals. *Trapa natans* has a very fast growth competing with other species of aquatic plants. Having a low nutritional value , fish and birds do not consume it.

In the studied area, the situation is very worrying. It can be controlled by eliminating the excessive multiplication of strips of the population of *Trapa natans*, enabling an eventual recovery would be an appropriate solution.



Figure 16 Danube communities with *Nymphaea alba* , *Trapa natans* and *Pontamogeton natans* in Blata Divici (original)



Figure 17 *Trapa natans* (detail)

Acoretum calami Eggler 1933 association vegetate abundant in Moldova Veche islet and is referred to the area between the Danube Gorge Valley Mraconiei by Dihoru et al. , 1973. Sanda et al. , 2008 noted the presence of the association only in a few localities in southwestern Romania from Timis , Caras -Severin , Mehedinti . Dominant species of this association, *Acorus calamus* is Asian , and naturalized in our historical presence in all provinces of the country. It is an aromatic and medicinal species that has been exploited almost entirely in some areas (Dihoru et al. , 1973). Although Boşcaiu et al. (1994) in the Red List of vascular plants in Romania declares it a vulnerable species , in recent years there has been a trend of expansion of the species (Anastasius et al. , 2007) putting it on the list of Romania's neophytes present in wetlands .

In the Nera Delta, *Vallisneria spiralis*, vulnerable species in Romania grows abundantly and is potentially invasive and can eliminate *Najas* communities.

Potentially invasive introduced species

Amorpha fruticosa is a shrub in the family Fabaceae species that was introduced for ornamental purposes, but managed to colonize new areas very easily. It was observed in Liborajdea (Fig. 17) , Moldova Veche islet, Berzeasca , Mraconia , Ieselnita , Svinita .



Figure 18 *Amorpha fruticosa* on Liborajdea Valley (original)



Figure 19 *Asclepias syriaca* in Moldova Veche islet (original)

Elodea canadensis, *E. nuttallii* both originating in North America were introduced in Europe in the 19th and 20th century . Both have a capacity of invasion due to reclamation and colonization by vegetative fragments, competing with Potamogeton species of *Vallisneria spiralis* . Elimination of *E. canadensis* was observed by *E. nuttallii* . The latter has a higher rate of stem elongation and auxiliary production strains than *E. canadensis*, thus inhibiting the development of *E. canadensis* (Simpson , 1990). In the Nera Delta both vegetate abundantly

In wetlands across the Iron Gates Park could be seen a number of invasive species as a result of storage by residents crop residues from gardening along watercourses . This way they could be labeled a series of species: *Citrullus lanatus* - Ieselnita , *Commelina communis* - Ieselnita , Dubova Liubcova , *Cucurbita pepo* - Ieselnita , Liubcova , *Perilla frutescens* - Ieselnita; *Pharbitis purpurea* - Svinos ; *Polygonum oriental* - Liubcova , *Tagetes patula* - Svinița (Anastasius et al. , 2007.

Other invasive species observed in wet areas investigated: *Ambrosia artemisiifolia* , *Erigeron strigosus*, *Euphorbia maculata* , *Asclepias syriaca* (Fig. 19) , *Ailanthus altissima*.

ANTROPIC THREATS

Intentional introduction of herbivores

In the wetlands along the Danube semi-wild horses were identified on the islet Moldova Veche (Fig. 21), where it forms a population of over 30 individuals.

Moldova Veche Isle is a Special Protection Area, where habitats and plant species of Community interest can be found. Here can be found *Marsilea quadrifolia* that is of particular interest, being a protected species at national and international understanding.

Here habitats of European interest can be found, together forming a mosaic of great value plants: sand dunes, forests of white willow, rush and reed bushes, lakes and marshes that are home to a variety of flora and fauna, all evolved without horses.

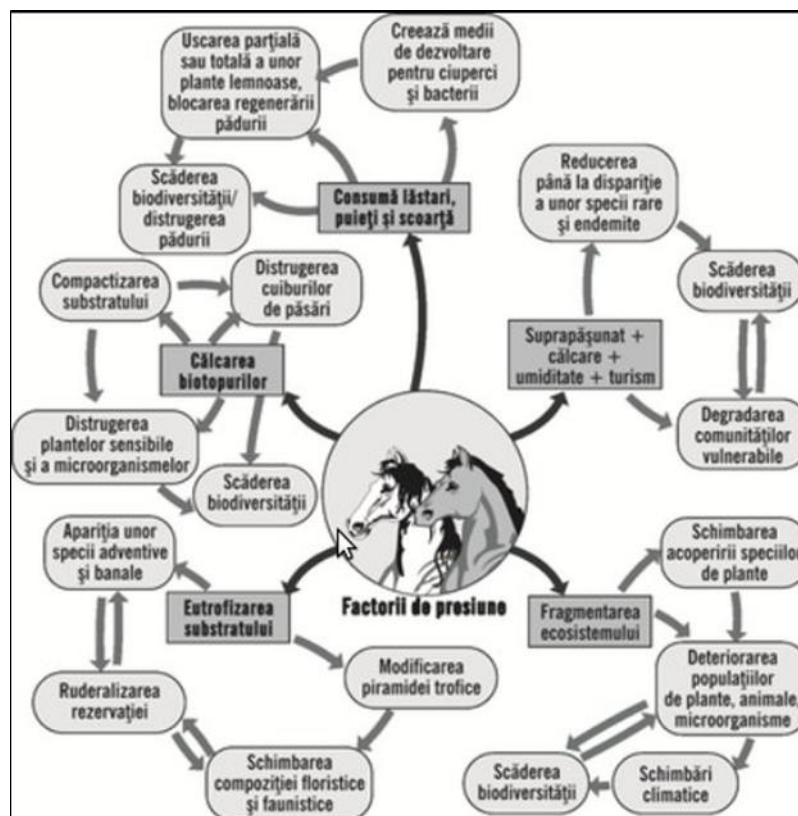


Figure 20 The damage caused by wild horses (after Andrei M. et al., 2011)

As observed by Andrei et al. (2011) in the case of Letea Forest in Danube Delta Biosphere Reserve (Fig. 20) , the impact is very large, horses representing a threat to the

population of *Marsilea quadrifolia* . By overgrazing and breaking vegetate areas where the species occurs the substrate is compacted and the damage of the plant body produces eutrophication favoring the emergence of opportunistic species that can remove more sensitive plants to changes in habitat with determines ecosystem fragmentation.

Having a selective diet, they have the potential to change the composition of plant communities, especially protected. Ferns have a lower tolerance to limestone (Fig. 22, 23) , which allow the installation of more tolerant species . By changing the conformation of the soil to less moisture, the male gamete zygote requires water to move and fertilize the female gamete.



Figure 21 Horses placed on the Moldova Veche islet (original)



Figure 22 Traces of horses in *Marsilea quadrifolia* population (original)



Figure 23 Area affected by *Marsilea quadrifolia* (detail) on Moldova Veche islet (original)

Agriculture activities

Agricultural practices can have a major impact on wetlands , through eutrophication , water infiltration contaminated with toxic and intake of dust and sediment . Eutrophication is the result of using chemical fertilizers or organic in an excessive way, or on land adjacent to wetlands or wastewater of animal farms . Toxic substances can be organic or anorganic and come from use of pesticides and herbicides, chemical fertilizers and organic decomposition compounds in wastewater. Organic pollutants can be degraded either physically or through the action of microorganisms , thereby improving the situation after reduction. Main inorganic

pollutants are heavy metals from the use of organic fertilizers, and salts . Unlike the organic compounds , anorganic ones , in particular heavy metals , can be biologically degraded physically or if their rate of the exhaust is lower than the input , the accumulation time is becoming stronger.

Issuance of domestic herbivores have strong detrimental effects. The destruction of wetland vegetation by grazing and ironing involves destruction of nesting and increased stress on wildlife. Other aspects are the eutrophication of soft soil erosion by introduction of large amounts of feces .

Other risks associated with agriculture are the drainage of wetlands and creation of farmland flooded by fishery infrastructure.

Industrial activities

Different industries may have a negative impact on wetlands , both directly by physical damage to them for the development of industrial activities in the wetland , and indirectly , through the effects of carrying out these activities in areas more or less close. Direct effects can be observed in the construction of facilities or industrial facilities in wet areas such as the location of waste dumps or industrial waste, while indirect effects are manifested when certain products (dust, organic pollutants , waste metal heavy) get accidentally or intentionally near or in wetlands, causing their contamination.

Exploitation of mineral resources may be in galleries or pits deep surface of metal or non-metallic minerals.

In general, metal mining has a negative impact on wetlands by their contamination with heavy metals. Contamination is about atmospheric or spillage / leakage of contaminated water or mine water . Air pollution occurs by dispersion of dust particles resulting from surface mining or surface wind erosion of waste dumps nonvegetable and tailings in solid phase . Contamination by water rich in heavy metals can be done on several ways : discharge meaning / accidental water from processes , infiltration through the dam waters constituting the liquid fraction of tailings and mine water drainage . Due to the high content of organic matter and microorganisms diversity, coupled with reduced water flow rate and low depth associated with aquatic plants, wetlands are a major reservoir for heavy metals , which are assets in large quantities. Accumulation of heavy metals exposes all organisms using these ecosystems to their toxic effects. Degradation due to the impossibility of heavy metals, their detrimental influence persists for very long periods of time, only occurring neutralizing dilution associated with

organic compounds and mineralization. Plants and animals exposed to accumulate metals, sometimes the amount of metal relative to body weight increases with each trophic level. When using these areas for grazing or fishing, toxic elements pass to humans, which lead to a number of diseases whose severity depends on the amount of metal accumulated and entered into the body. Also, strong increases water flow can be massive mobilization of heavy metals to contaminate downstream areas seriously.

Tourist activities

Tourism in the area still has a negative impact on wetlands, especially the waste caused by irresponsible tourism. In addition to non-biodegradable waste, or biodegradable plastics and metals present in large amounts in areas with large influx of tourists has been shown to affect areas by forming camp fires. A high-impact problem is the tourists who camp with cars (Fig. 24), and the lack of toilets are a cause of eutrophication. Throwing aluminum containers wetlands is a particular problem because of the nature known as phytotoxic aluminum that is released to the degradation of mechanical and chemical waste from tourism. Another issue is the construction of accommodation facilities on the Danube, near wetlands. They may have a detrimental effect by potential pollution resulted from construction, the waste released during their operation, especially when sewage is released into the Danube.

Fishing tourism affects wetlands through trash left on the fishing site, destruction caused by the arrangement of places to fish, especially the construction of wood and reeds local shelters. A strong negative effect on avifauna is the abandonment of broken fishing lines and monofilament, which can choke or kill adult birds and chicks by tying limbs.



Figure 24 Irresponsible tourism (original)

Transport activities

Wetlands border area Djerdap - Iron Gates are exposed to threats resulting from rail, road and river transportation.

In the case of railroad transportation a problem is represented by Turnu Severin – Orșova track. with a traffic of more than 20 passenger and freight trains per day. Threats consist from the repair and maintenance of rail which generates a number of toxic substances to leak from freight trains and stress on animals generated by passing trains . On the Serbian side there is no railway area. Road infrastructure consists of highways on both sides of the Danube and a series of smaller roads serving industrial facilities in the area, one being the mine road, that ends in a loading zone transport craft . Traffic is more intense at the ends than in the center of the studied area , most vehicles focusing on wider roads between major towns .

The impact of road transport on wetlands consists of dust from the road erosion, atmospheric deposition of various organic toxic substances from the exhaust gas and fuel oil spills different from moving vehicles, parking, gas stops and various wastes from the stationary vehicles stopping areas . Another threat has ceased to manifest but it's very persistent character lead to pollution deposited form leaded fuel.

Water transport is the most important branch of transport. The Iron Gates is a major route for transporting goods. Threats to wetlands are leaking fuel / oil or loss of cargo craft, toxic organic compounds in the exhaust gases, water contamination resulting from the loading-

unloading and erosion caused by passing boats. Most traffic consists of transport ships in transit, only a quarter of stopping traffic in the ports of loading or unloading area. As a type of craft the barges prevail.

Eutrophication

Eutrophication is triggered when there are strong inputs of nutrients in an aquatic ecosystem. Nutrients are represented by nitrates and phosphates, which may come from organic farming and chemical fertilizers, feces, rotting food and organic compounds. High intake of nutrients stimulates rapid growth of photosynthetic algae in large amounts (flowering water). Once finished the lifecycle the algae dies and is decomposed by aerobic bacteria with oxygen consumption. Due to the huge amount of dead algae, bacteria grow extremely powerful, which to decompose the algae consumes dissolved oxygen in the water and releases large amounts of carbon dioxide, resulting in anoxic conditions that affect fish populations and lead to their death in extreme cases. A consequence of eutrophication of water may be uncontrolled proliferation of non-invasive species of aquatic plants (Fig. 25), leading to the slick cover. It blocks light penetration, stopping submerged plant growth and algae that produce oxygen in water resulting in all anoxic conditions.

In a recent study (LIFE10 NAT/RO/000740) which were measured several of the representative chemical indicators for monitoring eutrophication was observed as follows:

- Spatial and temporal dynamics of dissolved oxygen values in the Iron Gate reservoir during March-July 2012 indicate very low values for ponds Divici, Șușca and Pojejena especially in June and July, where were observed with *Trapa natans* communities.

- Nitrogen compounds (ammonia and nitrites) and phosphates recorded maximum values at the beginning of the growing season, so that in the summer will record the lowest values, clearly indicating the process of eutrophication.



Figure 25 Blossoming algae on the Danube, near the village Berzasca (original)

Housing, construction, household waste

The major impact of housing in the Iron Gates - Djerdap consists of releasing untreated wastewater or improperly treated in the Danube and its tributaries, poor waste management and housing on the Danube.

Sewage containing feces causes eutrophication, detergents, chemicals and pharmaceutical elements have a toxic effect on wetland flora and fauna. Housing on the Danube could result in partial destruction of wetlands, construction waste issue that alter water quality (pH change, eutrophication, introduction of toxic substances), disturbance of wildlife by noise, and water pollution future presentation by release of sewage and garbage. The major impact is represented by the presence housing itself as it releases products from their use.

Thus, the construction of water treatment plants for settlements to individual homes using septic tanks and cesspools can significantly improve housing impact on wetlands. Disposal hard floating biodegradable plastic in the Danube and its tributary rivers or the storage in flood plains, generates large amounts of waste aggregate in areas with slower water, especially in areas wetlands and inlets created by the dam where stagnant and water was covering large areas. In addition to aesthetics, these wastes have a negative impact by blocking gas exchange between air and water, land use and growth of aquatic plants blocking light penetration necessary for the growth of algae and submerged plants, with negative effects on biodiversity –flora and fauna. Small fragments of plastic, such as PET bottles, caps that are

often ingested by birds and leading to their death. Over time, plastics can suffer mechanical fragmentation and small pieces can be ingested by fish. Plastics can be brought from great distances along the Danube and its tributaries and their impact is not limited to the close sources.

3.1. THREATS TO WETLANDS HABITATS IN THE DJERDAP NATIONAL PARK

Main threats identified so far that influence the conservation status of wetland habitats in the Djerdap national Park are:

- Phenomena of ruderalised vegetation
- Eutrophication of wetlands
- Mining activities
- Breeding activities
- Pollution of surface water due to mining activities
- Disposal of wastewater
- Agriculture through the use of pesticides and fertilizers
- Transportation / Navigation
- Waste
- Invasive Species

Tabel 11 Threats identified in Djerdap National Park wetland habitats

Nr. crt.	CODE Natura 2000	Name	Natural threats	Anthropic Threats
1.	3150	Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> -type vegetation.		Discharges (sewage, biocides), consolidation / concreting banks, leisure activities, intensive fishing, debris filling especially of small water, waste deposits.
2.	3160	Natural dystrophic lakes and ponds	Invasive species <i>Trapa natans</i>	Pollution, eutrophication,

Nr. crt.	CODE Natura 2000	Name	Natural threats	Anthropic Threats
				groundwater lowering, storage of garbage.
3.	3270	Rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation		Pollution, construction of dams, water course correction, consolidation of banks, changing river dynamics and flooding regime, invasions of the neophytes, storage of garbage.

3.2.THREATS TO WETLANDS HABITATS IN THE IORN GATES NATURAL PARK

Main threats identified so far that influence the conservation status of wetland habitats in the Iron Gates Natural Park are:

- Phenomena of ruderalised vegetation
- Eutrophication of wetlands
- Mining activities
- Breeding activities
- Pollution of surface water due to mining activities
- Disposal of wastewater
- Agriculture through the use of pesticides and fertilizers
- Transportation / Navigation
- Waste
- Sport fishing in a fixed location
- Invasive Species
- Management of water levels
- Poaching, poisoning, trapping
- Taking / removal of fauna
- Arson

- Collecting (insects, reptiles, amphibians, etc.).

Tabel 12 Threats identified in Iron Gates Natural Park wetland habitats

Nr. crt.	CODE Natura 2000	Name	Natural threats	Anthropic Threats
1.	3130	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoëto-Nanojuncetea</i>	Invasive Species <i>Ambrosia artemisiifolia</i> , <i>Amorpha fruticosa</i> , <i>strigosus Erigeron</i> , <i>Euphorbia maculata</i> , the first three representing a danger to swamp communities	Pollution, eutrophication, enhancing work / concreting banks, recreational activities, fishing, boating traffic, lowering the groundwater, waste deposits.
2.	3140	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp	No threats.	Pollution, eutrophication, acitivități recreational mining gravel / pebbles, consolidation / concreting banks, fishing.
3.	3150	Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> -type vegetation.	Invasive alien species identified in this habitat <i>Elodea canadensis</i> , <i>E. nuttallii</i> and <i>Vallisneria spiralis</i>	Discharges (sewage, biocides), consolidation / concreting banks, leisure activities, tourism, boating, fishing, intensive, especially rubble filling low water, waste deposits.
4.	3160	Natural dystrophic lakes and ponds	Invasive alien species identified in this habitat <i>Elodea canadensis</i> , <i>E. nuttallii</i> represents a real danger.	Pollution, eutrophication, groundwater lowering, storage of waste, pressures from tourism stakeholders in order to use these areas for recreation.
5.	3260	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho</i>	Water withdrawal	Eutrophication, toxic pollution, thermal pollution, construction of dams and hydropower plants, rectification watercourses, consolidation (paving,

Nr. crt.	CODE Natura 2000	Name	Natural threats	Anthropic Threats
		<i>Batrachion</i> vegetation		concreting) banks, channeling and concreting river beds, extracting water from the river bed, lowering groundwater drainage basin or works of river flood, protection measures, navigation, fishing.
6.	3270	Rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidention</i> p.p. vegetation	Poor stability of this habitat, on the one hand due to temporary flooding, on the other hand due to the accumulation of waste water. 5 species with invasive traits <i>Echinochloa crus-galli</i> , <i>Ambrosia artemisiifolia</i> , <i>Amorpha fruticosa</i> , <i>strigosus Erigeron</i> , <i>Euphorbia maculata</i>	Precarious stability of this habitat due to the accumulation of waste water. Pollution, construction of dams, water course correction, consolidation of banks, changing river dynamics and flooding regime, leisure activities.
7.	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	There were no reported threats	Construction and road management, consolidation of banks (stone, concrete), and other hydraulic structures such as weirs, dams, enhancing mowing, grubbing up grazing, reforestation. Over-harvesting of medicinal plants (eg <i>Angelica archangel</i> <i>Filipendula ulmaria</i> , <i>Aconitum</i> etc.).
8.	6440	Alluvial meadows of river valleys of the <i>Cnidion dubii</i>	Two invasive alien species: <i>Ambrosia</i>	Changing hydrological regime of flooding, drainage and groundwater decline,

Nr. crt.	CODE Natura 2000	Name	Natural threats	Anthropic Threats
			<i>artemisiifolia</i> and <i>Conyza canadensis</i>	increased mowing or grazing, application of fertilizers, afforestation.
9.	92A0	<i>Salix alba</i> and <i>Populus alba</i> galleries	Invasive species <i>Amorpha fruticosa</i>	Affected by anthropogenic interventions
10	91E0*	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i>	No threats.	Affected by anthropogenic interventions

3.3. COMPARATIVE ELEMENTS OF THE THREATS IDENTIFIED IN THE TWO PROTECTED AREAS

In both protected areas have been identified threats, they can be found also in Djerdap National Park wetlands and wetlands in the Iron Gates Natural Park.

NATURAL

Invasive Species

In the area studied by us, the situation is very worrying. Control by eliminating the excessive multiplication of strips of the population of *Trapa natans*, enabling an eventual recovery would be an appropriate solution.

ANTHROPIC

Agricultural activities

Regarding the specific situation of the area Djerdap - Iron Gates, on the north bank of the Danube there is an extensive agricultural area Nera Valley. Intense fragmentation of parcels near the Danube suggests subsistence agriculture, but large parcels are observed to the north, typical farms. Although most of these agricultural lands are not on the Danube banks, particularly large ones, yet it is evident that all are drained by Nera that brings substances into the Danube. Near Moldova Veche there are numerous small plots close to the Danube River,

with drainage directly into the Danube and adjacent wetlands. On the southern bank of the Danube can be seen in the large plots Ostrovo – Kuman area and north of Drmno, suggesting the presence of intense industrial agriculture. On the isle of Moldova Veche it was noted the presence of semi wild horses.

While much of agriculture held in the area Iron Gates - Djerdap is subsistence, especially on the Romanian bank, there are no mechanisms to control the use of fertilizers and pesticides, their excessive use is very plausible.

Industrial activities

From the point of view of industry, industrial sources with the largest impact on wetlands along the Danube in the Iron Gates – Djerdap area are : exploitation of mineral resources deep and surface, processing plants products from previous work and installation of energy industry.

The border area Iron Gate - Djerdap comprises two large metal mines : the copper mine in Moldova Nouă and cupro - gold operation Majdanpek. The first is located closest to the Danube. The Moldova Npuă exploitation was opened in 1965 as a deep mine, from 1974 is operating from the career mode . Activity ceased in 2006, currently being privatization plans and resuming. As a threat to wetlands, currently there are only mud-setting ponds along the Danube. They contaminate adjacent areas by air pollution resulting from wind entrainment of dust rich in heavy metals on the surface of mud-setting ponds that are completely non-vegetable. Danube water is contaminated with dissolved heavy metals leached into the water which diffuses from these mud-setting ponds.

Exploitation of Majdanpek is historical, work still continuing. Although no data could be found on the Danube environmental impact of the area, proximity to the Danube riverbed (about 14 Km) and the nature and extent of operation make it very important as strong evidence of contamination of adjacent forests.



Figure 26 Mine drainage from Cozla (original)

Another category of exploitations consists of the non-metal mines. The largest of this kind are coal mines in Drmno (Serbia) and Cozla (Romania). Cozla mines have ceased operations and have impact only through mine drainage which is insufficient treated in tailings dammed basin near Danube (Fig. 26) . Although the drainage is not acid due to the nature of alkaline rocks, so low in heavy metals, however, exceed the maximum permissible quantities of suspensions, TDS and iron. Mine Drmno is represented by a large quarry in continuous operation, with drainage visible in the Danube.

In addition to these mines there are numerous other smaller mining of clays, limestone, quart , granite and bentonite, as pits and quarries for sand and gravel operation, processing stations and some illegal logging. Impact on wetlands is manifested by air pollution with dust, which may contain toxic elements with detrimental effect on plants and animals.

Another source of degradation of wetlands is the energy generating industry by the action of the water level of dams in the area .

After building the Iron Gate dam , all tributaries of the Danube river mouth areas were flooded and turned into bays : Nera, Velica Reca, Tigansca Reca, Radimna, Liuborajdea,

Crusovita, Camenita, Oravita, Berzaasca, Cozla, Sirinia, Eliseva, Povalina, Svinita, Tisovita, Plavisevita, Mraconia, Costinet, Ieselnita, Cerna, Bahna, Vodita, Slatinicul Mare, Jidostita,, the largest being Cerna , Bahna and Mraconia.

Raising the water level led to the forever loss of plant communities that could not adapt to the transition from river regime to the lake regime. Meanwhile appeared new wetland habitat resistant to water level variations .

Growth and rapidly falling water levels strongly affect populations of plants and aquatic birds. Plants can be flooded or left without water fluctuations. Birds nesting in earth banks or reed water may suffer loss of nests and cubs and those that use the areas for shelter and / or food lose the benefit of these ecological functions on rapid fluctuations of water level . A direct effect of these fluctuations is the erosion of banks.

Although not directly affect wetlands, construction of wind generators, becoming more pronounced in the context of sustainable development will have an impact on bird populations, being major migration routes, having a detrimental effect indirectly.

Production industry is a major representative at Orsova Shipyard, and a number of manufacturers of furniture, textiles and construction materials with a low impact on wetlands, the relatively small quantities of water motors.

Tourism activities

Parks Administrations of Djerdap and Iron Gates recently showed efforts to promote eco-tourism in the area, especially by arranging hiking trails for hiking and biking. On the Serbian side there is an initiative to extend the Eurovelo 6 route along the Danube. Although the guides, it appears in Romania, was not made any effort from the Romanian authorities for the physical embodiment of his country, markings and information points.

Transport activities

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penetration necessary for the growth of algae and submerged plants , with negative effects on biodiversity –flora and fauna. Small fragments of plastic, such as PET bottles, caps that are often ingested by birds and leading to their death. Over time, plastics can suffer mechanical fragmentation and small pieces can be ingested by fish. Plastics can be brought from great distances along the Danube and its tributaries and their impact is not limited to the close sources.

The activity was elaborated in proportion of 100 %.

ACTIVITY 4. CONSERVATION MEASURES FOR PREVENTING AND REDUCING THE NEGATIVE IMPACT

CHAPTER 4. MEASURES TO PREVENT AND MITIGATE THE NEGATIVE IMPACT ON WETLANDS

1. Specific conservation management measures

Protective measures

Passive management

Passive management is one of the management options for the wetlands. It means, that no management interventions are applied on the site, except for visitor's management.

Such an option is not suitable for all wetland types, it is relevant only for the wetlands with relatively good conservation status with functional hydrological regime (e.g. wetland forest, raised bogs, swamps etc.)

Buffer zones

Creation of buffer zones is another management option, which can be applied on wetlands. It is especially suitable for the wetlands located in intensively used agricultural land. The use of fertilizers and pesticides may have very harmful effect on wetlands. During rainy days, polluted water may flow from the fields into the wetlands and it may cause eutrophication. The consequences of eutrophication are a decrease of species richness, increase of tall species, which positively react to increased supply of nutrients and loss of some wetland specialists with lower competition ability.

Buffer zones may be applied in many different modifications, as the only restriction of fertilizer and pesticide use or creation of grass stripes along the wetlands or planting of shrub hedges.

Management of water extraction and use

Extraction of surface water for industrial or agricultural purposes. is always quite a controversial issue. Large industrial enterprises like power-plants need enormous amount of water, which is taken from surface water bodies. However any water uptake may negatively affect river ecosystems, because lower flow in the rivers may be insufficient for some organisms. In addition, surface water uptake may have negative impact on water quality. Therefore water management has to be managed very carefully with respect to river ecosystems. It is particularly important in the periods of droughts, when the flows in the rivers are very low. Even total drying up of small rivulets was recorded from Hungary. It is important to protect all the water bodies that are in good ecological status. But to maintain the ecological minimum water level in all types of water bodies is a priority.

Management of sewage and waste waters

Wetland ecosystems are not dependent only on quantity, but also on quality of the water. However, overall level of eutrophication and water pollution is probably lower than in the western Europe, water pollution and eutrophication may be a local problem. Therefore management of water quality is a very important aspect of wetland management.

Waste and sewage waters are mostly produced by industrial sector, agriculture and urban areas. Due to implementation of strict environmental rules in EU countries, the quality of water in water bodies has improved significantly comparing the situation cca 15-20 years ago. Industrial enterprises are obliged to establish proper cleaning systems. The same situation is with cities and larger villages, which have to build cleaning stations for the sewage waters from households. However problematic situation still may occur nearby smaller villages, where such systems are not established.

Specific situation is in agriculture, where Nitrate Directive is implemented in EU countries. Sensitive areas are defined and farmers are obliged to build sufficient capacities for storing organic fertilizers or excrements, especially in liquid form. The rules are incorporated into cross-compliance measures and thus they are one of pre-conditions to receive single area payments. Such requirements are quite strict for farmers.

Regulation of the hydro energetic use of the rivers

Production of electric energy in hydro-power stations is traditional activity on Carpathian rivers, which started many decades ago. Building of hydro-power plants has usually very serious impact on river continuum, because, the river corridors are interrupted by dams, the velocity of the river flow is slowed down in the reservoir. In addition, sedimentation starts before the dam and the section below the power station is influenced by cold water from the bottom part of the reservoir. On the other side there are benefits from a production of relatively clean electric energy.

European Union has introduced recently very ambitious program for the support of renewable energy sources as alternative to conventional power-plants based on burning the coal. It is expected, that overall share of renewable energy sources on produced energy in EU should increase significantly. Establishment of the enterprises producing energy from renewable sources are subsidised from EU funds. Due to this, the interests to build new power plants has risen dramatically in recent years. Many planned plants are located on well-preserved rivers, which were not influenced by dams in the past or they were influenced only a very little. However, fish by-passes are the obligations in most of the cases, they are not fully functional in many cases or they are not projected properly. And even, if they function properly, the dam has negative effect on the whole river ecosystem, which is not negligible.

Exclusion of grazing

Grazing may be a good option for some types of wet grasslands as one the measures for the sustainable use. But especially in the cases, when the groups of the animals are rather large, its effect on wetlands may be very destructive causing massive soil erosion and eutrophication. Exclusion of grazing from wetland localities may be a solution in these cases, very typical is for example on spring fens, where large animal herds may have very negative impact on the habitat. The fen areas are usually fenced by wood and then only mown. On the other hand, there are some wetland species, which require some disturbances for their regeneration, so low intensity grazing by a very low number of animals may be a good alternative to the total exclusion of grazing.

Active management and biotechnical measures for the species habitats and ecosystems

Mowing and grazing

Mowing and grazing are traditional recurring measures used mostly on wet grasslands or fens. They are ultimate conditions for the long-term persistence of these wetland habitats. If no mowing and grazing is applied, wet grasslands may change very quickly, especially the types with high biomass production e.g. floodplain grasslands.

Because of abandonment of regular agricultural practices, mowing and grazing on wet grasslands is very often organized by responsible conservation agencies or NGOs. It may be financed from very different sources, but such conservation management has many capacity and financial limits and only the most important sites can be managed by this approach.

Mulching

Mulching is an alternative technique of grassland use. The biomass is cut into small pieces and left as a layer on the ground of the grassland. The technique is considered to be controversial, because biomass is not exported from the system and thus may cause eutrophication of grassland in long-term perspective.

Removal of trees and shrubs

Abandonment of regular use on wet grasslands may cause fast secondary succession and the locality may be overgrown by trees and shrubs (especially willows and alder). If site is important from biodiversity point of view, its restoration (removal of trees and shrubs) is appropriate.

There are several approaches, how to remove trees and shrubs from wet grasslands. Manual cutting is possible and it is particularly suitable for very wet sites, where groundwater is very close to soil ground. But this method is very expensive, so cheaper mulching by light machinery may be a good alternative in many cases, especially for the trees of lower diameter, approximately up to 8 cm.

It is very important to mention, that re-introduction of regular management (mowing or grazing) is necessary after the removal of trees and shrubs. It is particularly important in first years after restoration, because willows have very high ability of shooting and may re-grow very fast, if they are not regularly cut.

Removal of invasive species

Problem of invasive species is very serious on Carpathian wetlands. There are some attempts to control invasive plants by point application of herbicides or by underwater cutting, but in general, there is no comprehensive program how to deal with invasive plants on Carpathian wetlands and the situation seems to get worse and worse.

Restoration of hydrological regime and river dynamics

Suitable and sufficient hydrological regime is an ultimate condition for persistence of wetlands with a good conservation status. Large-scale drainages, meliorations and river regulations caused many serious changes in hydrological regime of wetlands in the past.

The best option how to restore wetlands is probably restoration on the catchment or river system level. However such an approach is not feasible in many cases due to financial, technical, but also social constraints. Therefore only partial restoration projects are usually implemented like construction of small dams on drained peatlands to rise groundwater level, re-introduction of flooding into selected parts of the floodplain using small dams or barriers or re-connection of oxbows with river and reconstruction of river meanders.

Such measures are only partial, but very often full restoration of wetland system is not possible, because settlements and economic activities have changed since landscape transformation and they are located according to the potential created after large-scale drainages. Exclusion of such activities is usually not feasible and opposed by local inhabitants or it is acceptable only with use of very high incentives. In spite of this even partial hydrological restorations may have very positive impact on wetland habitats and species.

Prevention of sedimentation

Erosion and sedimentation are processes, which normally occur in natural riverine systems. River may behave dynamically and during the floods totally change the location of their beds, but human activities altered most of river systems in the Carpathians and harmed their connectivity. One of the problems related to this fact is the problem with sedimentation of water habitats. The problem is typical mainly for oxbows and mesotrophic or eutrophic lakes.

The best option is always restoration of a river system dynamics, but such a solution is not possible in many cases. If we want to preserve various water habitats, it is necessary to simulate natural erosion processes and to remove sediments from the beds of water bodies. This activity may slow down succession of water habitats and open new space for succession.

Ex-situ Conservation

Ex-situ conservation is an approach, which is considered as controversial in the Carpathian region. There were some attempts for ex-situ conservation of rare and threatened species on the places, where large investments were build (e.g. large dams), but ecologists usually evaluate this measure sceptically and they prefer in-situ methods of conservation. Ex-situ conservation may be understood as last exit possibility, when possibilities of in-situ conservation are not possible.

2. Wider conservation measures

Ecosystem/landscape scale measures

Integrated water management

Integrated water management is an ideal concept which is introduced mainly by Water Framework Directive. It is expected water bodies will be managed across the sectors with very strong involvement of relevant stakeholders. However the reality in the Carpathian countries is much different. Sectoral approach to water management is still dominating and the communication between and among the sectors is usually quite poor. The conflicts are particularly between conservationists and water managers due to totally different views on water management measures. It seems, good way how to improve inter-sectoral communication could be an implementation of joint projects with broader partnership. Such projects are rather complicated to be managed, but they provide much better accepted results.

Ecological networks and restoration of river and wetland connectivity

Fragmentation of wetlands and existence of the barriers on the rivers is one of the serious problems in the Carpathians. However, the examples of complex restoration of river systems and their connectivity are not available from the Carpathians, there are several examples, when barriers were removed from the rivers and fish migration was enabled. It is evident, that it is necessary to promote further similar projects and to implement more complex projects oriented not only on removing of barriers on the rivers, but also restoration of the whole floddplain systems.

Economic measures

Cross-compliance rules

Farmers are obliged to respect rules defined by cross-compliance e.g. buffer zones along the rivers and wetlands, limits of fertilizing, restrictions for the storing of fertilizers etc. When they respect the rules, they may receive single area payments, which are basic agricultural payments.

Payments from rural development programmes

The most important payments related to wetland management are probably agri-environmental payments. Farmers can voluntarily apply for the defined schemes and they agree the contract with paying agency, usually for 5 years.

Compensatory measures

Another possibility how to finance management and restoration measures on wetlands are compensation measures defined by Habitat Directive. Investors are obliged to compensate loss of habitats and species because of any investment. The compensation should be mostly used for the restoration of equivalent habitat, as habitat, which was destroyed by the activity.

Implementation of conservation and restoration projects on wetlands

European operational programmes as well as the programmes of other donors provide several funding schemes for the restoration of wetland habitats. However definition of some funding schemes, especially EU funds seem to be problematic. They are very often defined by very narrow sectoral approach, project partnership is not allowed and there is not enough time space for inter-sectoral discussions and consultations.

3. Measures related to the enabling environment

Legal measures

Management planning

Management planning in nature conservation is one of the crucial points in the wetland management. Management plans should be the documents, which define management strategy in protected areas for longer period. In Romania there are many plans prepared by hired external companies without sufficient interactions with protected area administrations. It results in a dubious quality of some plans, due to a lack of contact of compilers with local stakeholders.

In Romania there are many plans prepared by hired external companies without sufficient interactions with protected area administrations. It results in a dubious quality of some plans, due to a lack of contact of compilers with local stakeholders.

Another serious problem is insufficient approval and implementation of the management plans. Even if good plans are prepared, there are several cases, when stakeholders block the approval of the plans and responsible ministries of the environment are not able to approve plan in spite of stakeholders's refusal.

Another story is the implementation of management plans. Even in situation, when well-prepared management plan is approved, its successful implementation is strongly dependent on available financial sources, which are limited.

Land purchase

Refusal of owners is one of the most critical factors, which may limit plans for wetland restoration. Therefore, some countries try to systematically purchase the land in the protected areas by state agencies or NGOs.

EIA and NATURA 2000 assessment

Environmental impact assessment is an important process which enables independent evaluation of investments in relation to environment. Habitat and Bird Directives even strengthened the role of impact assessment, when it is obligatory for larger activities in NATURA 2000 sites. However there significant differences in the implementation of NATURA 2000 impact assessment. In Romania there is a system of regional scientific councils composed mainly from scientists, which may approve different plans, activities and investments in NATURA 2000 areas. Due to involvement of expert from academic sphere, the decisions of the councils are rather independent. . In the whole process there are still many gaps and the quality of evaluations is not ensured.

Awareness and capacity development measures

Training of stakeholder groups

It is evident, that management of wetlands is a topic, where even professionals like PA staff, experts from NGOs, decision makers have many gaps in their knowledge. Integrated water management as required by Water Framework Directive is still not fully accepted by relevant groups of professionals and the aims of WFD are not properly understood. NGOs may play a very important role in the whole process and they organize several successful series of seminars and workshops which promotes integrated wetland management and the aims of Water Framework Directive. It is very important, that trainings would be cross-sectoral and they would present also information from other sectors.

Awareness campaigns

Rising of public awareness about the wetlands is also a very important aspect. General public still understands the wetlands as waste land with plenty of mosquitos, which does not provide sufficient benefits for the society. Therefor awareness campaigns should explain for example ecosystem services provided by wetland ecosystems, namely their role as sources of drinking water.

Very important target group are also teachers and school pupils. Environmental education of children is very effective and children may then form also attitudes of their parents.

„Soft tourism“ activities

Promotion of wetland tourism is another interesting topic, when lakes and rivers especially attract visitors in the summer with possibilities for swimming. But a lot of effort was done in recent years in building of the infrastructure for tourists on wetlands like peatlands or wet grasslands. Wooden trails on peatland localities are very interesting and attractive for tourists presenting the localities which are usually hardly accessible for normal tourists. They can in combination with information panels present information about wetland importance and functions. Very promising are also guided tours for visitors, when nature observing becomes very popular activity, which may bring also significant income to protected area

administrations. Those money can be the re.invested into wetland management and local communities may also benefit from them.

4. Essential research priorities

Anyway wetlands are targeted by various research activities, but there is still lack of research activities oriented on wetland management and restoration. There are only a few studies which test different management concepts in longer term, there is also a lack of serious research oriented on providing ecosystem services by wetlands. More attention should be paid also to wetland fragmentation and its impact on wetland biodiversity.

4.1. GENERAL ITEMS REGARDING THE PREVENTION AND MITIGATION MEASURES OF NEGATIVE IMPACT

This activity was performed developing measures to prevent and reduce the negative impacts based on field observations and conservation status of the studied habitats. Every feature of conservation community interest belong measurable characteristics or attributes that can be used to define the conditions, conservation status (favorable or not).

The ultimate goal was the development and adoption of measures to prevent and reduce the negative impact, effective to lessen the impact of the threats facing habitats. The main threats are habitat destruction by pollution (in this case, the source of degradation should not be near to feel the negative effects), invasive species, waste. Moreover, tourists who stray from the marked paths can lead to disruption of extremely fragile habitats.

A good conservation status of a species involves, inter alia, maintaining undisturbed habitat, not degraded and undivided, a healthy population with a high genetic variety that can sustain for a long time, the lack of natural and anthropogenic threats with existing food resources.

Main threats identified so far and that influence the conservation status of habitats are:

- Invasive Species
- Deliberate introduction of ruminant
- Agricultural activities
- Industrial Activities
- Tourist activities
- Transport Activities

- Eutrophication

4.2. PREVENTION AND MITIGATION MEASURES OF THREATS IMPACT IN DJERDAP NATIONAL PARK

The final purpose of the activity the drafting and adoption of measures to prevent and reduce the negative impact to lessen the impact of habitat threats facing Djerdap National Park.

In developing the measures were taken into account the status and current conservation status and the presence of human activities that may have negative impact on habitats of community interest.

Depending on the information taken from the field on the distribution of habitats and potential threats to their conservation status, were proposed a series of measures to prevent and reduce negative impacts.

Tabel 13 Prevention and mitigation measures of threats in the Djerdap National Park

Nr. crt.	CODE Natura 2000	Name	Common Integrated Management Measures (CIMM)
1.	3150	Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> -type vegetation.	Under natural conditions are necessary management measures. Depending on the impact factors is necessary to issue restrictions or prohibitions as: prohibition discharges, concreting banks, regulating or if necessary, depending on the degree of impact, recreational activities, prohibition of filling and destruction of the body of water, making measures against pollution.
2.	3160	Natural dystrophic lakes and ponds	In the case where there is no human impact of the management action is not required. The issue of restrictions or prohibitions imposed in those cases, it is found negative by pollution (discharges), eutrophication, storage of garbage.
3.	3270	Rivers with muddy banks with <i>Chenopodion rubri</i> p.p. and <i>Bidention</i> p.p. vegetation	In the natural state of the river banks are not required special management measures. It is necessary, however, to keep in its natural state banks and natural morphodynamics, both crucial for conservation of the habitat. It is recommended

Nr. crt.	CODE Natura 2000	Name	Common Integrated Management Measures (CIMM)
			that wherever possible to restore the structures of natural bank water to create favorable conditions for the habitat type. Restrictions and prohibitions will be issued for the proper conduct of entertainment activities. Is output restrictions to spillage / pollution and disposal of waste on the banks.

4.3. PREVENTION AND MITIGATION MEASURES OF THREATS IMPACT IN IRON GATES NATURAL PARK

The final purpose of the activity the drafting and adoption of measures to prevent and reduce the negative impact to lessen the impact of habitat threats facing Iron Gates Natural Park.

In developing the measures were taken into account the status and current conservation status and the presence of human activities that may have negative impact on habitats of community interest.

Depending on the information taken from the field on the distribution of habitats and potential threats to their conservation status, were proposed a series of measures to prevent and reduce negative impacts.

Tabel 14 Prevention and mitigation measures of threats in the Iron Gates Natural Park

Nr. crt.	CODE Natura 2000	Name	Common Integrated Management Measures (CIMM)
1.	3130	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoëto-Nanojuncetea</i>	In natural conditions are necessary management measures, but it is necessary to issue restrictions or prohibitions based on impact factors. Strengthen the ban on the banks of lakes where the habitat type appears. It is also necessary to take steps to regulate recreational activities issuing the necessary prohibitions.
2.	3140	Hard oligo-mesotrophic waters with benthic	It is necessary to issue prohibitions and restrictions on recreational activities mentioned, banning construction,

Nr. crt.	CODE Natura 2000	Name	Common Integrated Management Measures (CIMM)
		vegetation of <i>Chara</i> spp	consolidation of banks, water pollution control, taking action to improve water quality.
3.	3150	Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> -type vegetation.	Under natural conditions are necessary management measures. Depending on the impact factors is necessary to issue restrictions or prohibitions as: prohibition discharges, concreting banks, regulating or if necessary, depending on the degree of impact, recreational activities, prohibition of filling and destruction of the body of water, making measures against pollution.
4.	3160	Natural dystrophic lakes and ponds	In the case where there is no human impact of the management action is not required. The issue of restrictions or prohibitions imposed in those cases, it is found negative by pollution (discharges), eutrophication, storage of garbage.
5.	3260	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho Batrachion</i> vegetation	If cause of natural river management measures are not required. Rivers that have undergone significant changes will require measures to restore the natural flow by eliminating components and strengthening of concrete slabs banks of the riverbed. It also requires measures to reduce eutrophication, and the issue of restrictions or prohibitions on leisure activities.
6.	3270	Rivers with muddy banks with <i>Chenopodion rubri</i> p.p. and <i>Bidention</i> p.p. vegetation	In the natural state of the river banks are not required special management measures. It is necessary, however, to keep in its natural state banks and natural morphodynamics, both crucial for conservation of the habitat. It is recommended that wherever possible to restore the structures of natural bank water to create favorable conditions for the habitat type. Restrictions and prohibitions will be issued for the proper conduct of entertainment activities. Is output restrictions to spillage / pollution and disposal of waste on the banks.
7.	6430	Hydrophilous tall herb fringe communities of plains and of the	Management is necessary only in cases of side skirts, applying a mown to big time distances (rate of 2 or more years) to prevent the emergence and development of bushes. If high

Nr. crt.	CODE Natura 2000	Name	Common Integrated Management Measures (CIMM)
		montane to alpine levels	weeds developed along natural watercourses, which are maintained by dynamic water and subalpine and alpine skirts natural, does not apply to management. But it is necessary to take action against strengthening banks of rivers and hydraulic structures which damage this type of habitat. It is necessary in all cases of hydraulic structures the elaboration of an environmental impact study, proving the need of an action and to find solutions affecting in the most reduced way the state of the habitat type.
8.	6440	Alluvial meadows of river valleys of the <i>Cnidion dubii</i>	Extensive mowing once a year with the extraction of biomass (hay or bedding in stables) or mowing every 2-3 years for conservative. It can be practiced and very extensive grazing, will not apply fertilizer.
9.	92A0	<i>Salix alba</i> and <i>Populus alba</i> galleries	Increasing the number of forest owners that enhance the economic value of the forest to the forest farm level. Communication with landowners or holders of resource use, local authorities and other stakeholders. Clear delineation of walking trails by ecological principles.
10.	91E0*	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i>	Increasing the number of forest owners that enhance the economic value of the forest to the forest farm level. Communication with landowners or holders of resource use, local authorities and other stakeholders. Clear delineation of walking trails by ecological principles.

4.4 COMMON MEASURES TO PREVENT AND MITIGATE THE IMPACT OF THREATS OF THE TWO PROTECTED AREAS

Nr. crt.	CODE Natura 2000	Iron Gates NP Habitats	Djerdap NP Habitats	Common Integrated Management Measures (CIMM)
1.	3130	Oligotrophic to mesotrophic		Issuing bans / restrictions based on impact factors

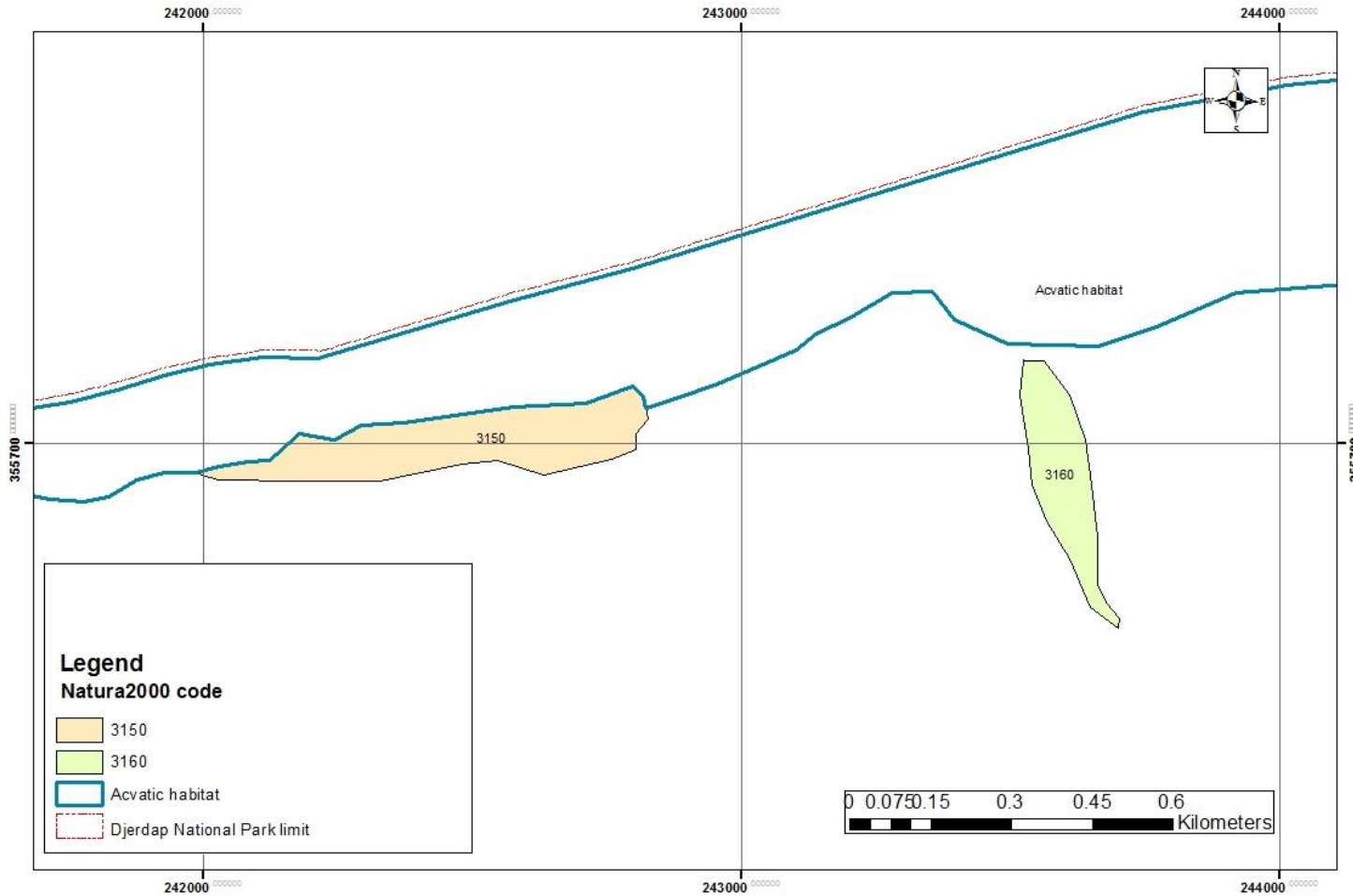
Nr. crt.	CODE Natura 2000	Iron Gates NP Habitats	Djerdap NP Habitats	Common Integrated Management Measures (CIMM)
		standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoëto-Nanojuncetea</i>		common to other types of aquatic habitats.
2.	3140	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp		Take measures to reduce eutrophication, issue of restrictions and prohibitions for recreational activities.
3.	3150	Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> -type vegetation.	Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> -type vegetation.	Common measures or in part similar to those of other types of habitats waters.
4.	3160	Natural dystrophic lakes and ponds	Natural dystrophic lakes and ponds	Take measures against eutrophication and pollution, a requirement to all aquatic habitats.
5.	3260	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho Batrachion</i> vegetation		Avoiding construction of strengthening the banks, the artificiality of the bed, agreeing plans for water management at the basin and sub-basin, avoid eutrophication. In case of all interventions on the water body and banks is imperative to conduct a study of the environmental impact.
6.	3270	Rivers with muddy banks with <i>Chenopodion rubri</i> p.p. and <i>Bidention</i> p.p. vegetation	Rivers with muddy banks with <i>Chenopodion rubri</i> p.p. and <i>Bidention</i> p.p. vegetation	Avoid damaging natural morphodynamics edges of watercourses, strengthening banks, measures to reduce pollution, the issue of restrictions and prohibitions regarding waste deposits on the water, regulating recreational activities.

Nr. crt.	CODE Natura 2000	Iron Gates NP Habitats	Djerdap NP Habitats	Common Integrated Management Measures (CIMM)
7.	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels		Issuance of restrictions and prohibitions regarding the consolidation of banks and change the natural morphological dynamics (similar to the habitat types 3260, 3270).
8.	6440	Alluvial meadows of river valleys of the <i>Cnidion dubii</i>		Maintaining the hydrological regime and the management of traditional mowing.
9.	92A0	<i>Salix alba</i> and <i>Populus alba</i> galleries		Increasing the number of forest owners that enhance the economic value of the forest to the forest farm level. Communication with landowners or holders of resource use, local authorities and other stakeholders. Clear delineation of walking trails by ecological principles.
10	91E0*	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i>		Increasing the number of forest owners that enhance the economic value of the forest to the forest farm level. Communication with landowners or holders of resource use, local authorities and other stakeholders. Clear delineation of walking trails by ecological principles.

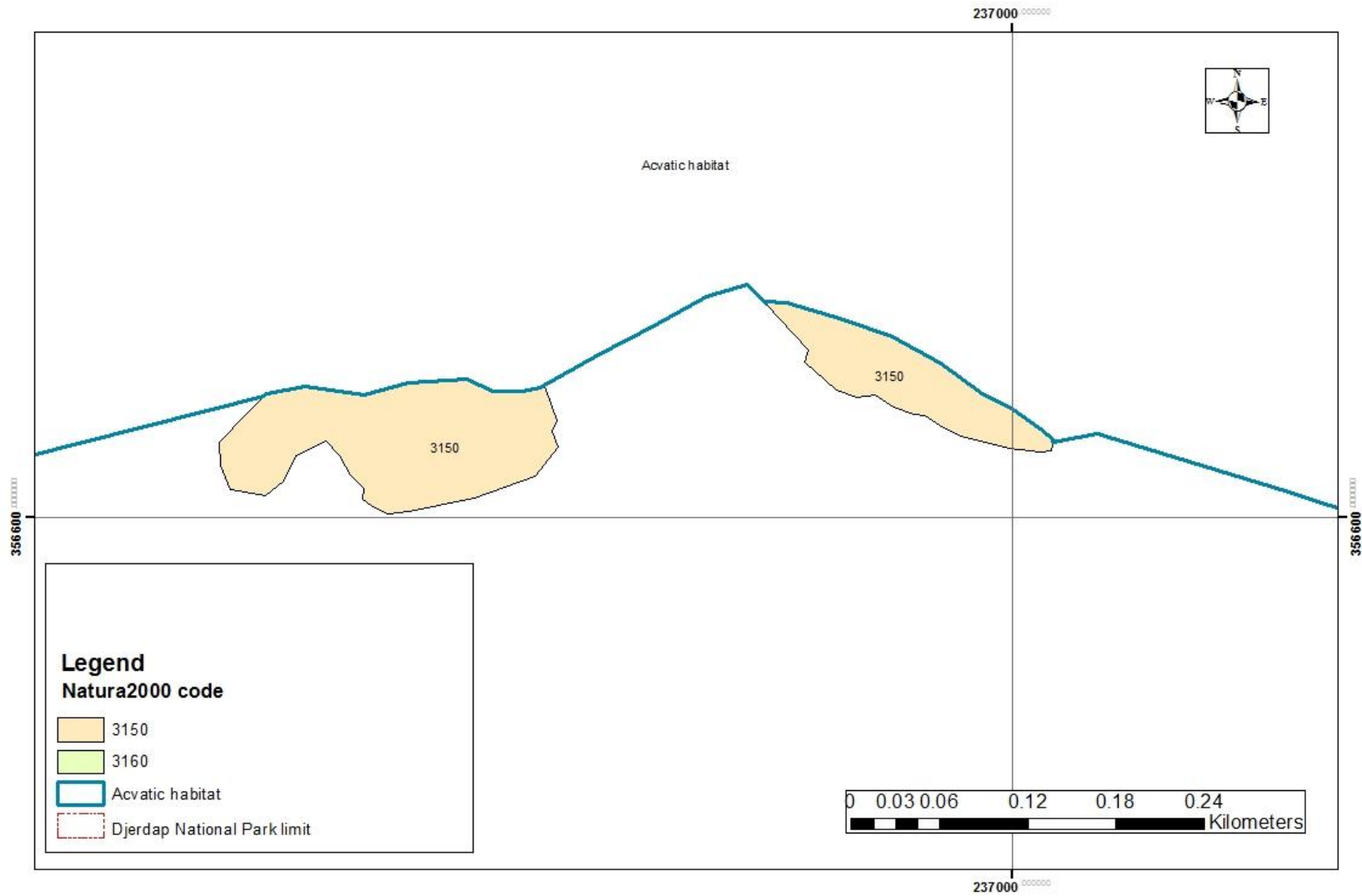
The activity was elaborated in proportion of 100 %.

Appendix 1a Distribution map of wetland habitat types identified in the National Park Djerdap

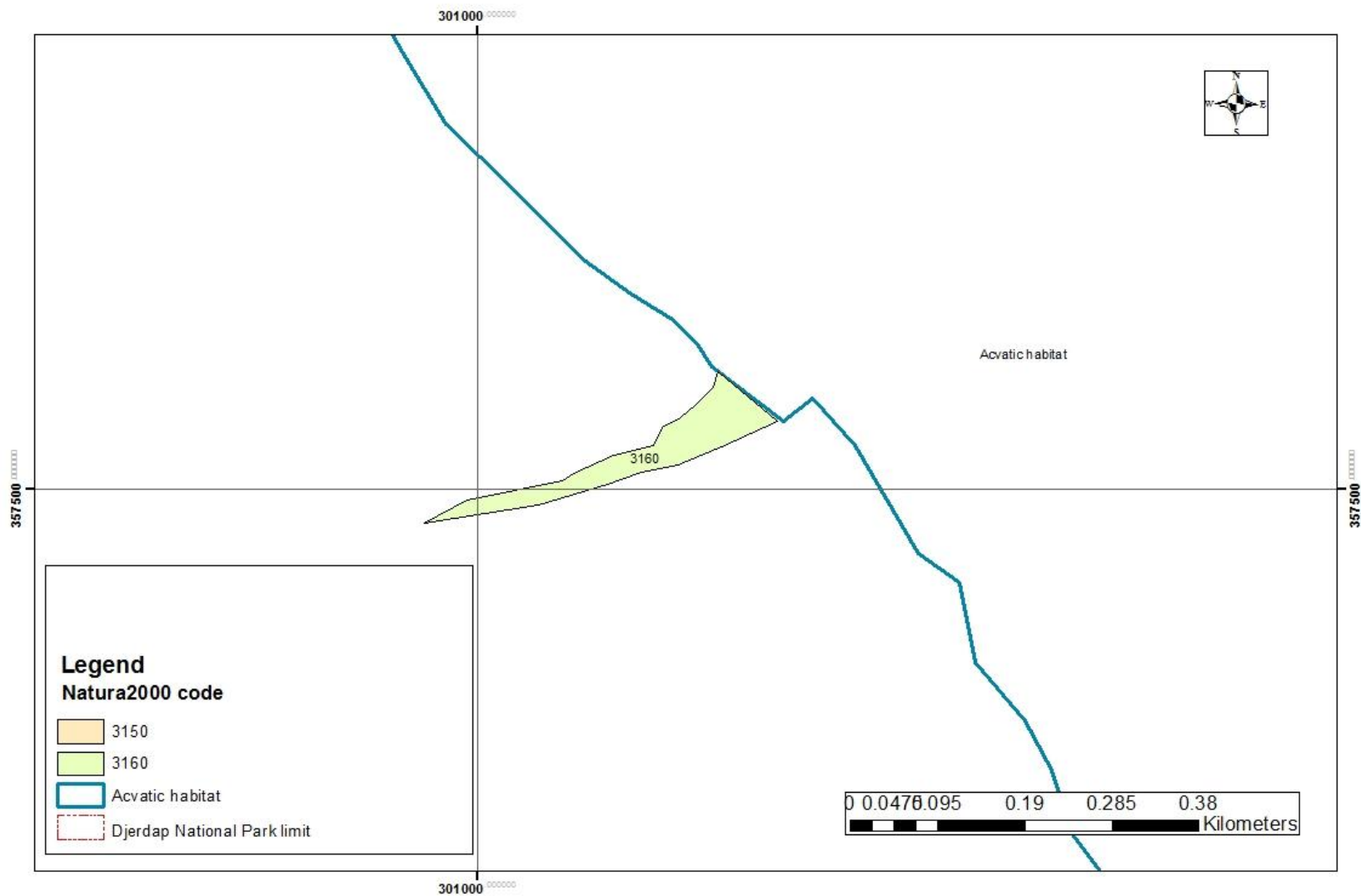
Habitat distribution for Brnjicka wetland



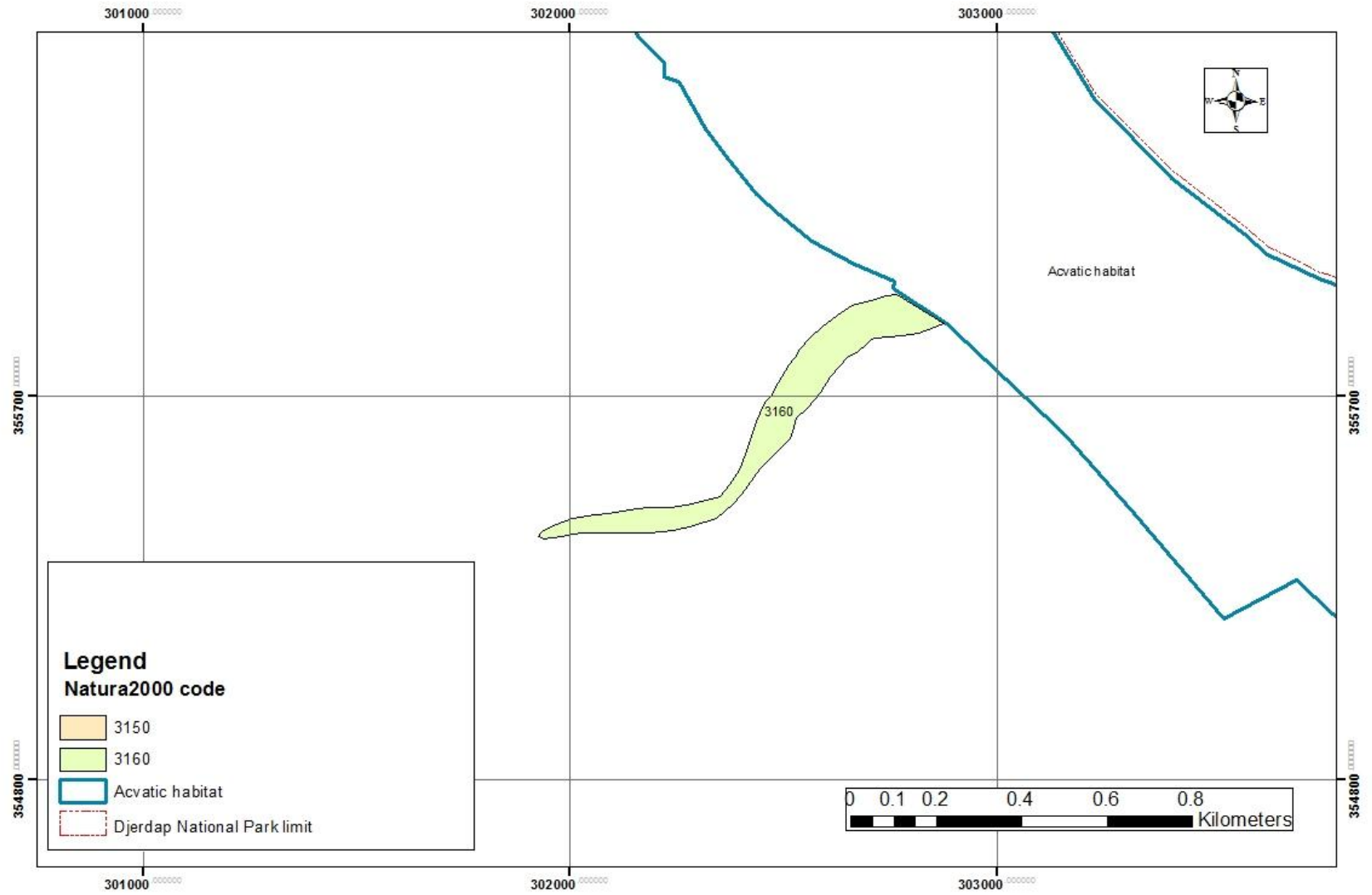
Habitat distribution for Goldubac wetland



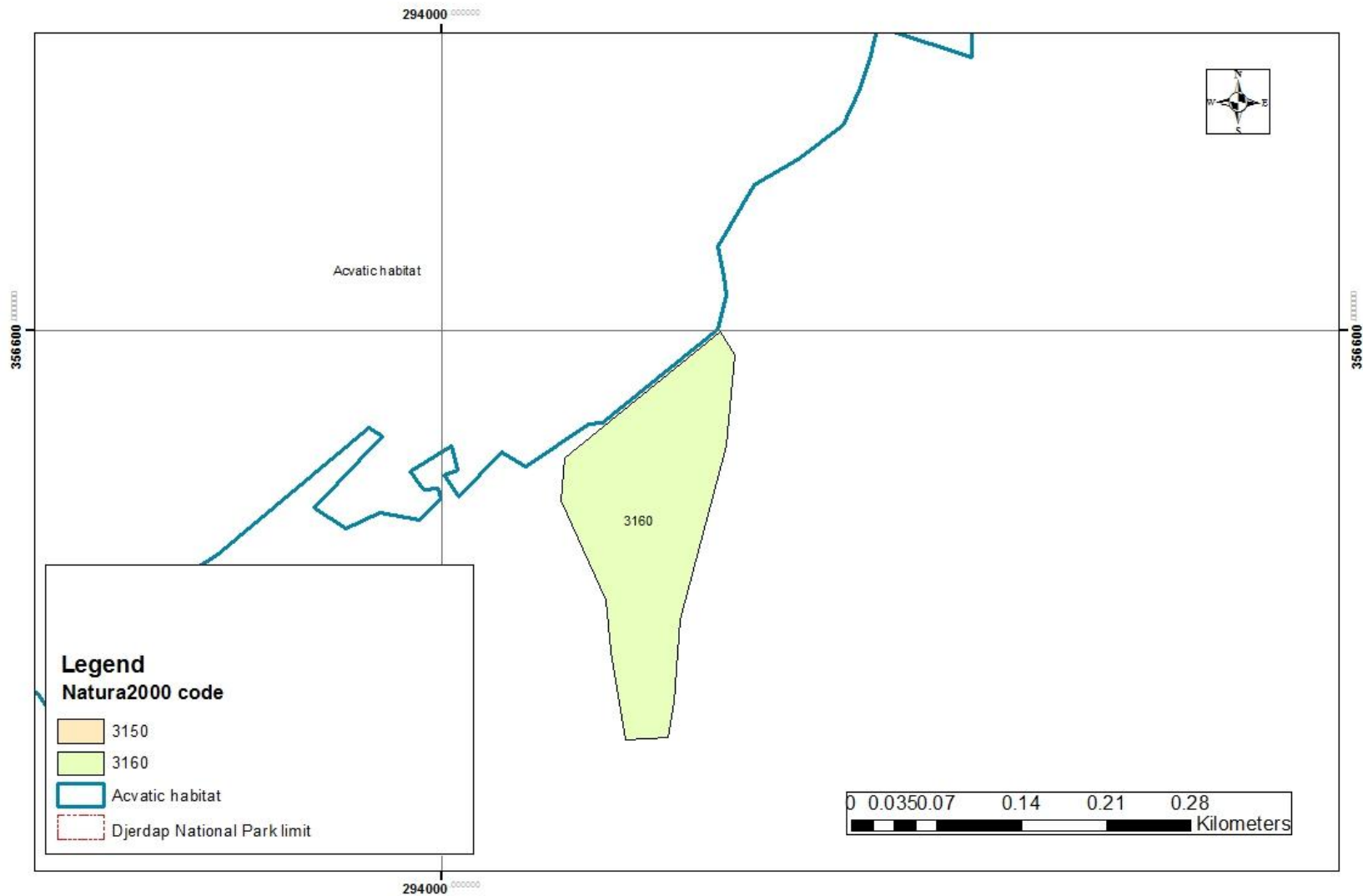
Habitat distribution for Kasajna wetland



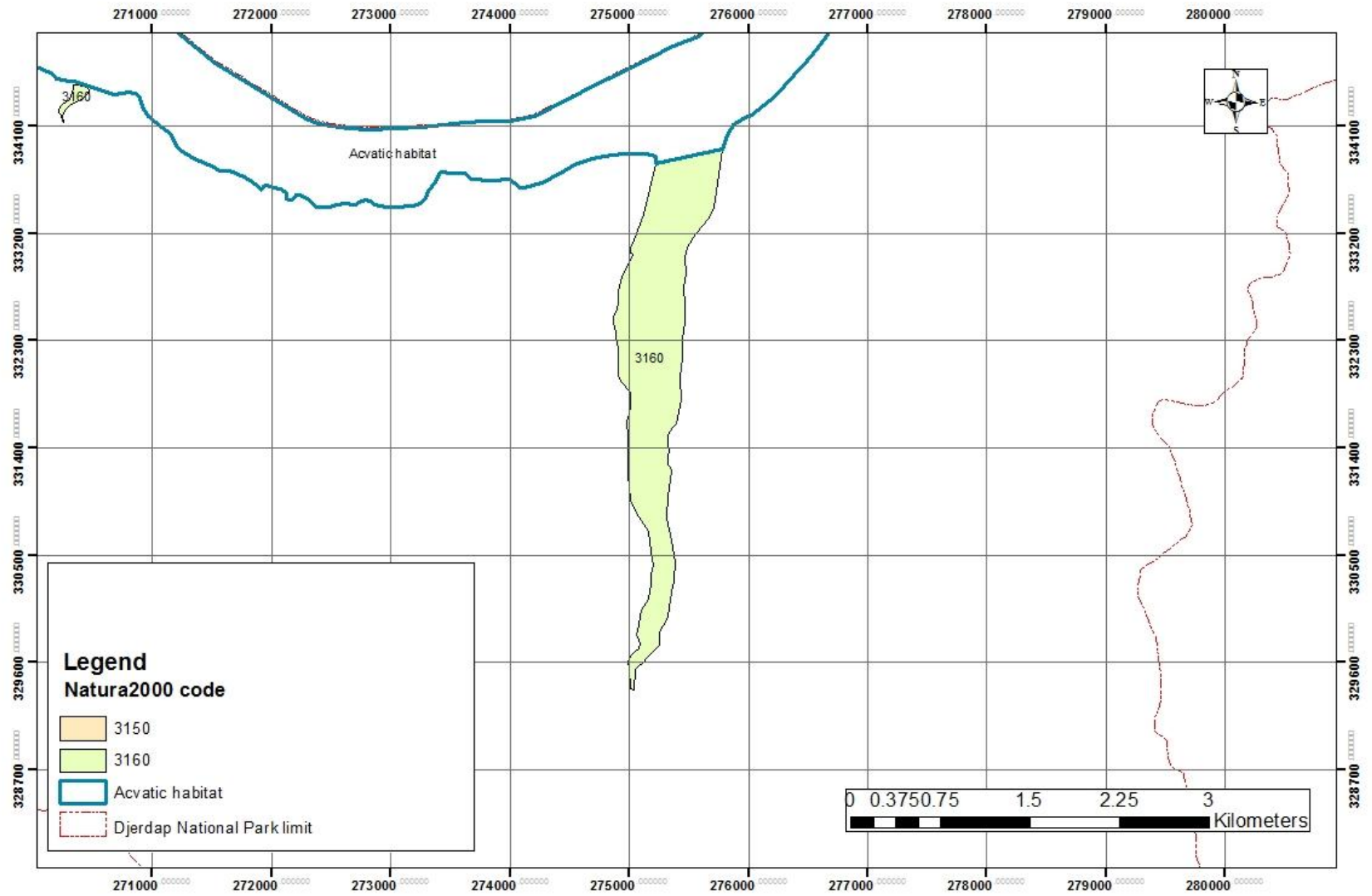
Habitat distribution for Kosovica wetland



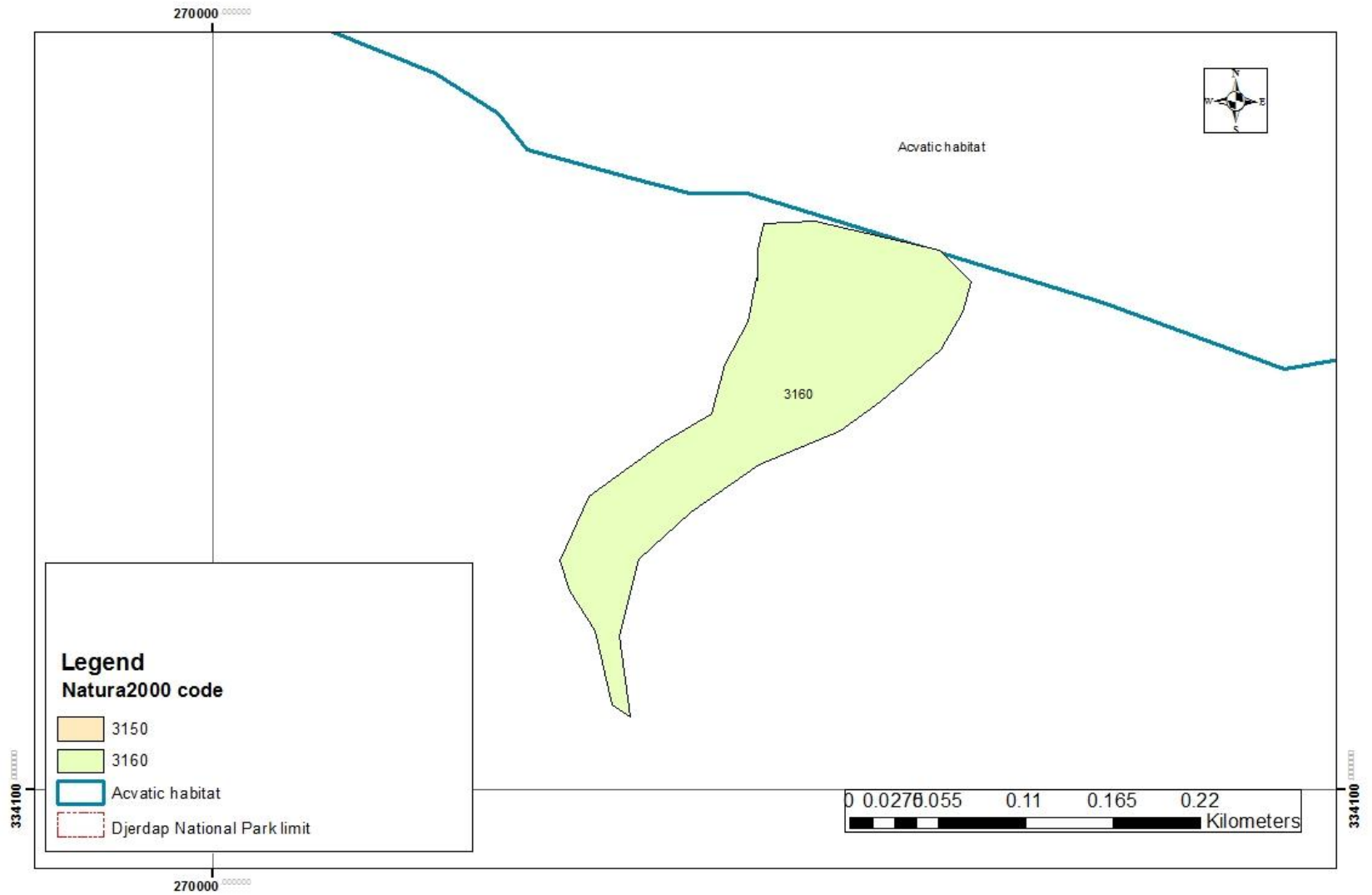
Habitat distribution for Mali Kovilovski Potok wetland



Habitat distribution for Porecki wetland

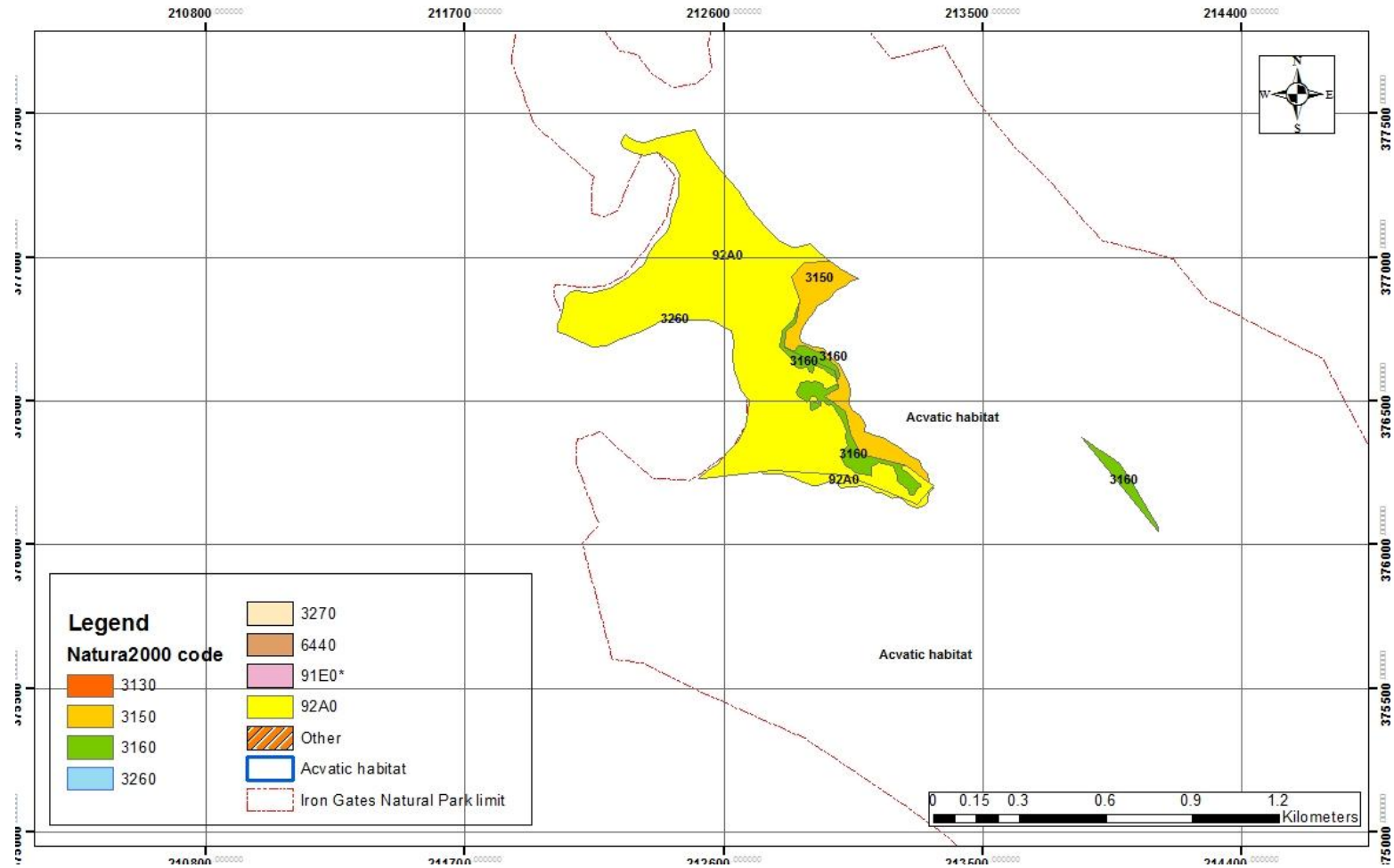


Habitat distribution for Zlatica wetland

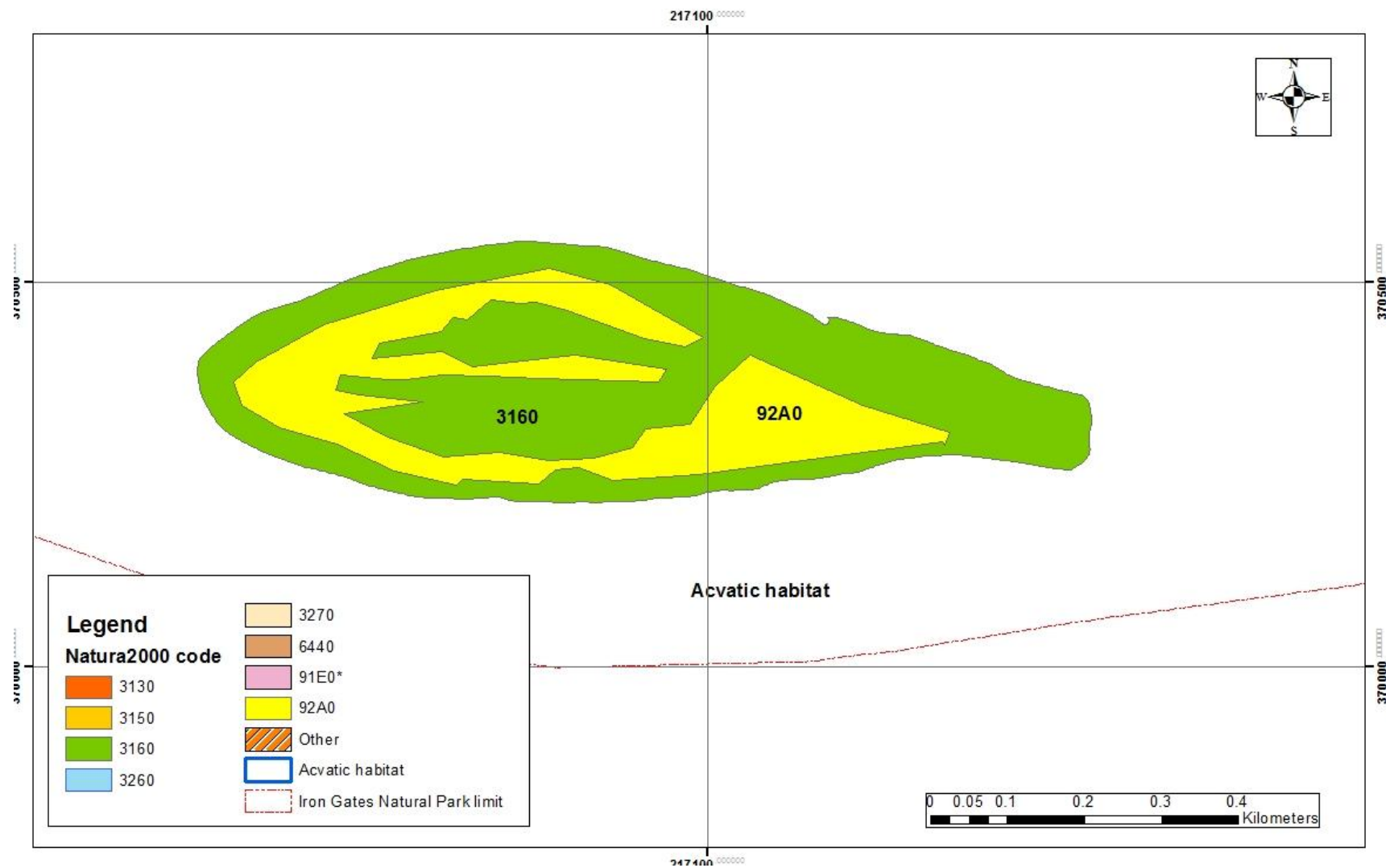


Appendix 1b Distribution map of wetland habitat types identified in the Iron Gates National Park

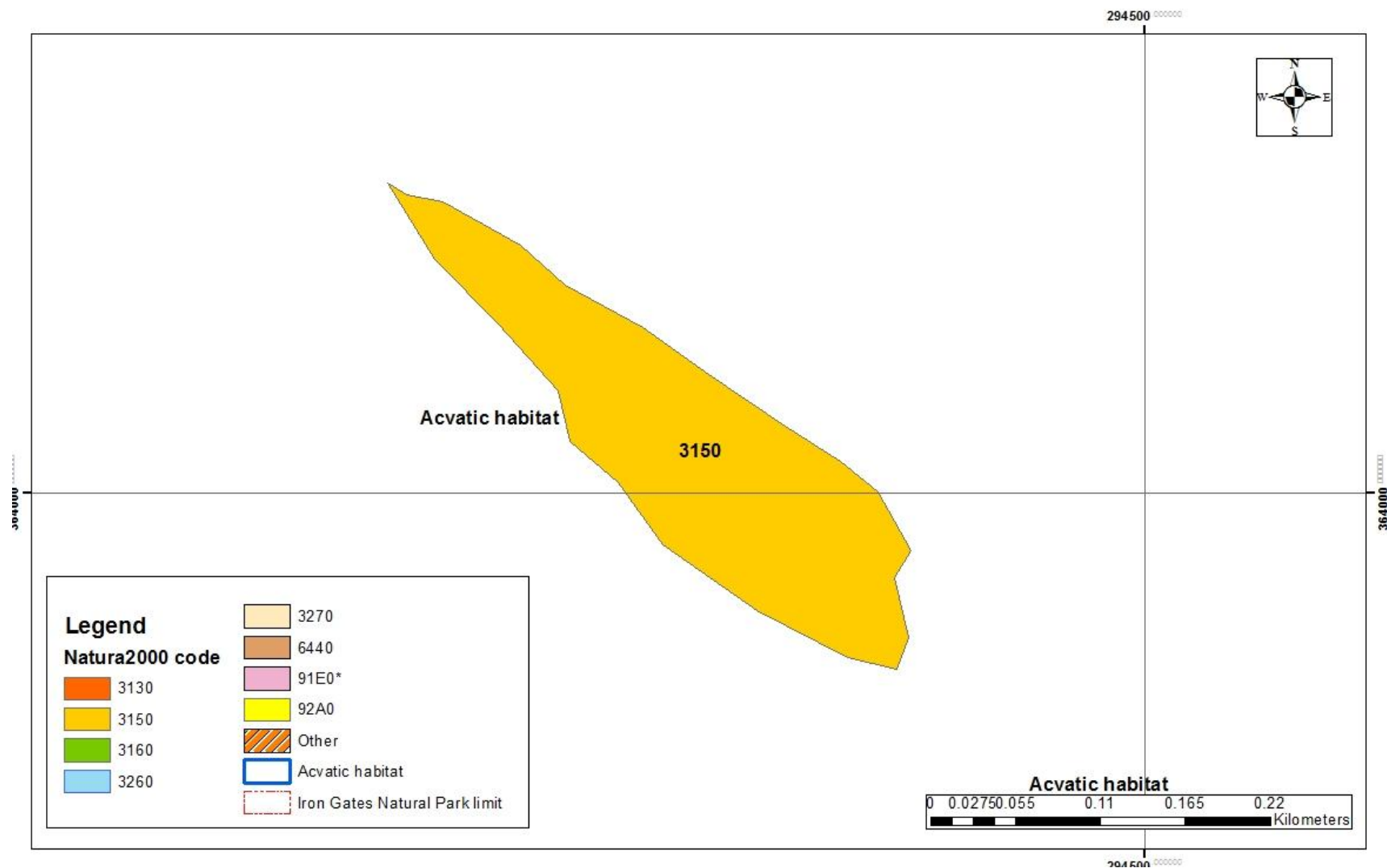
Habitat distribution for Balta Nerei wetland



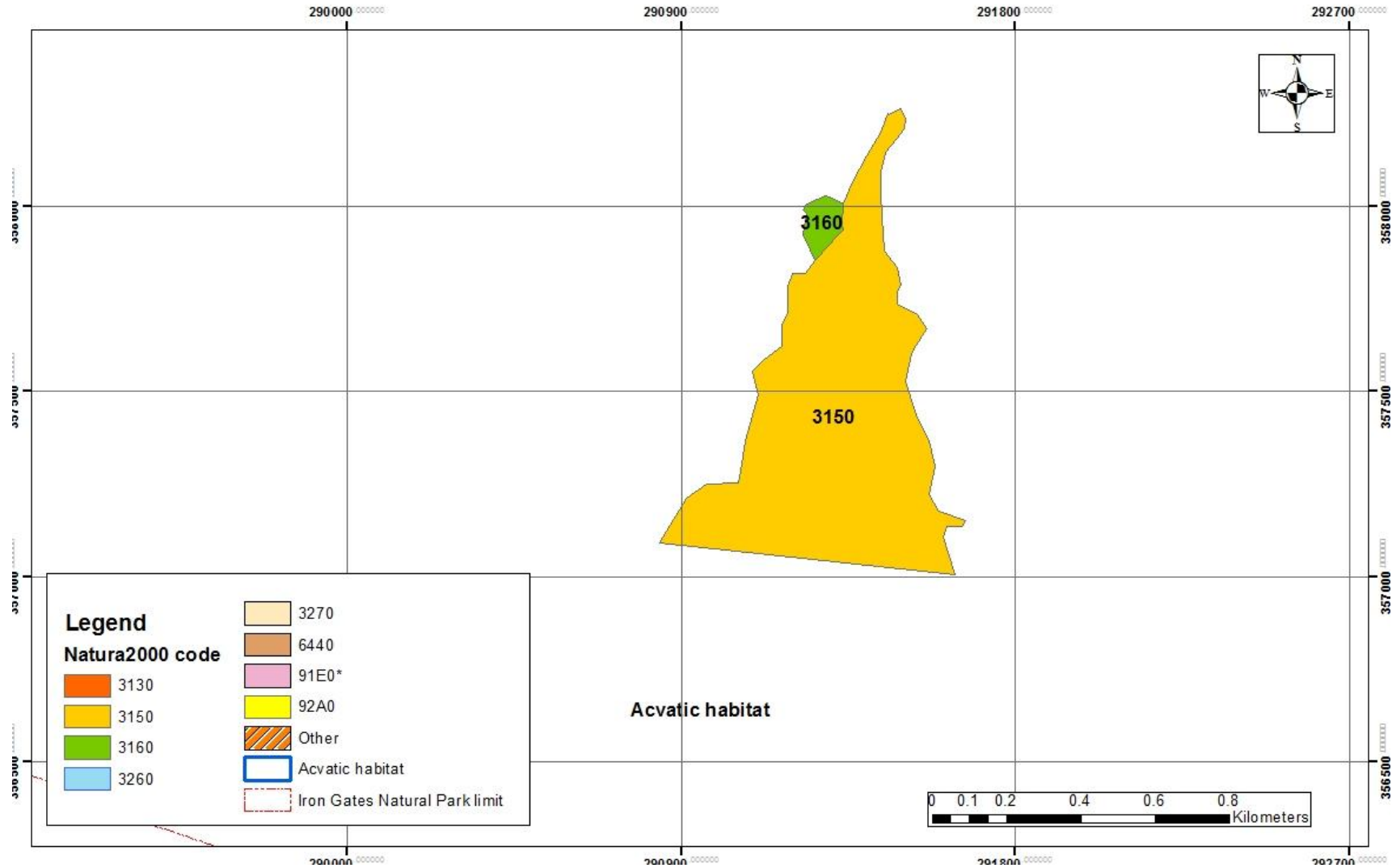
Habitat distribution for Calinovat Island wetland



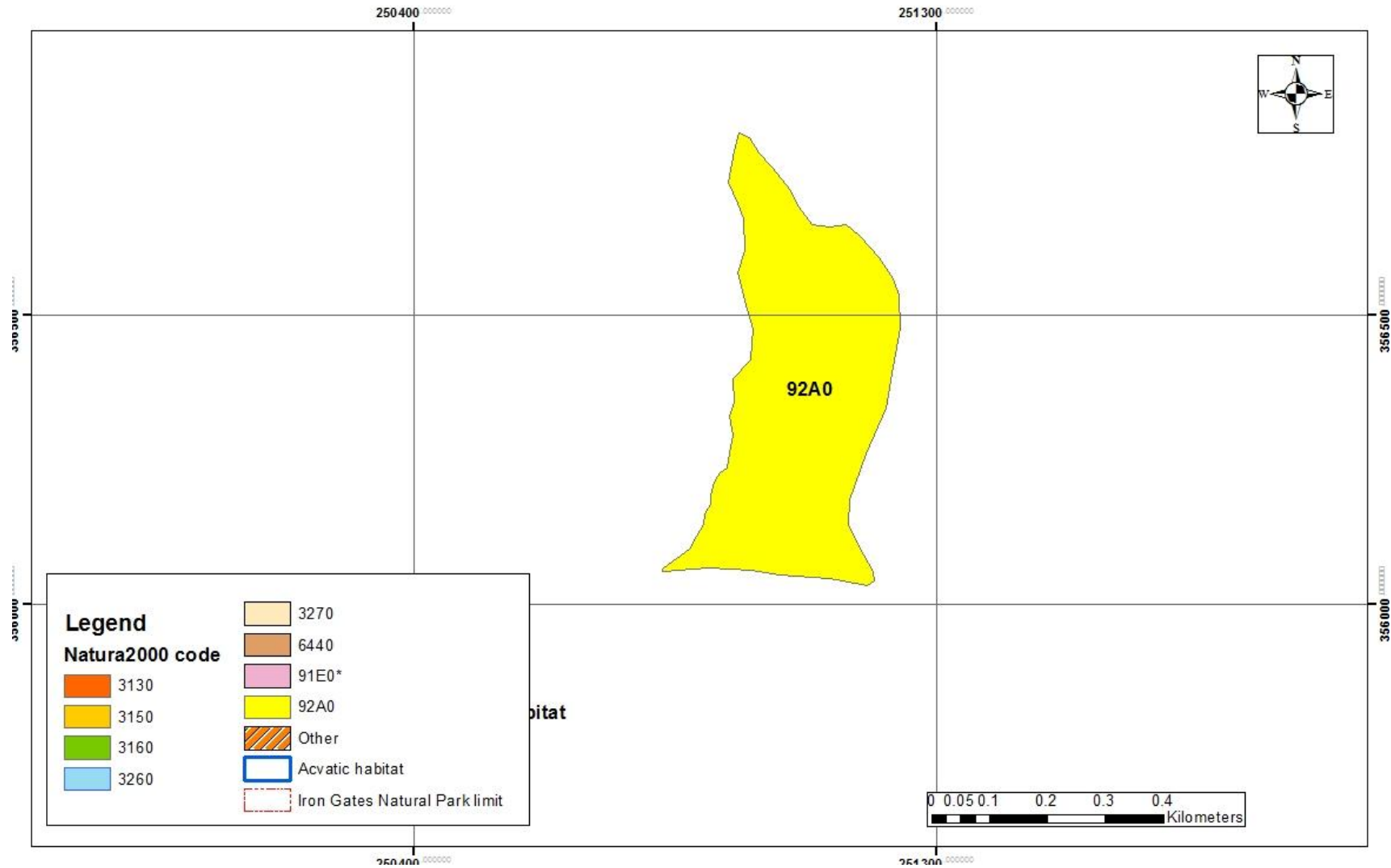
Habitat distribution for Cerna Bay wetland



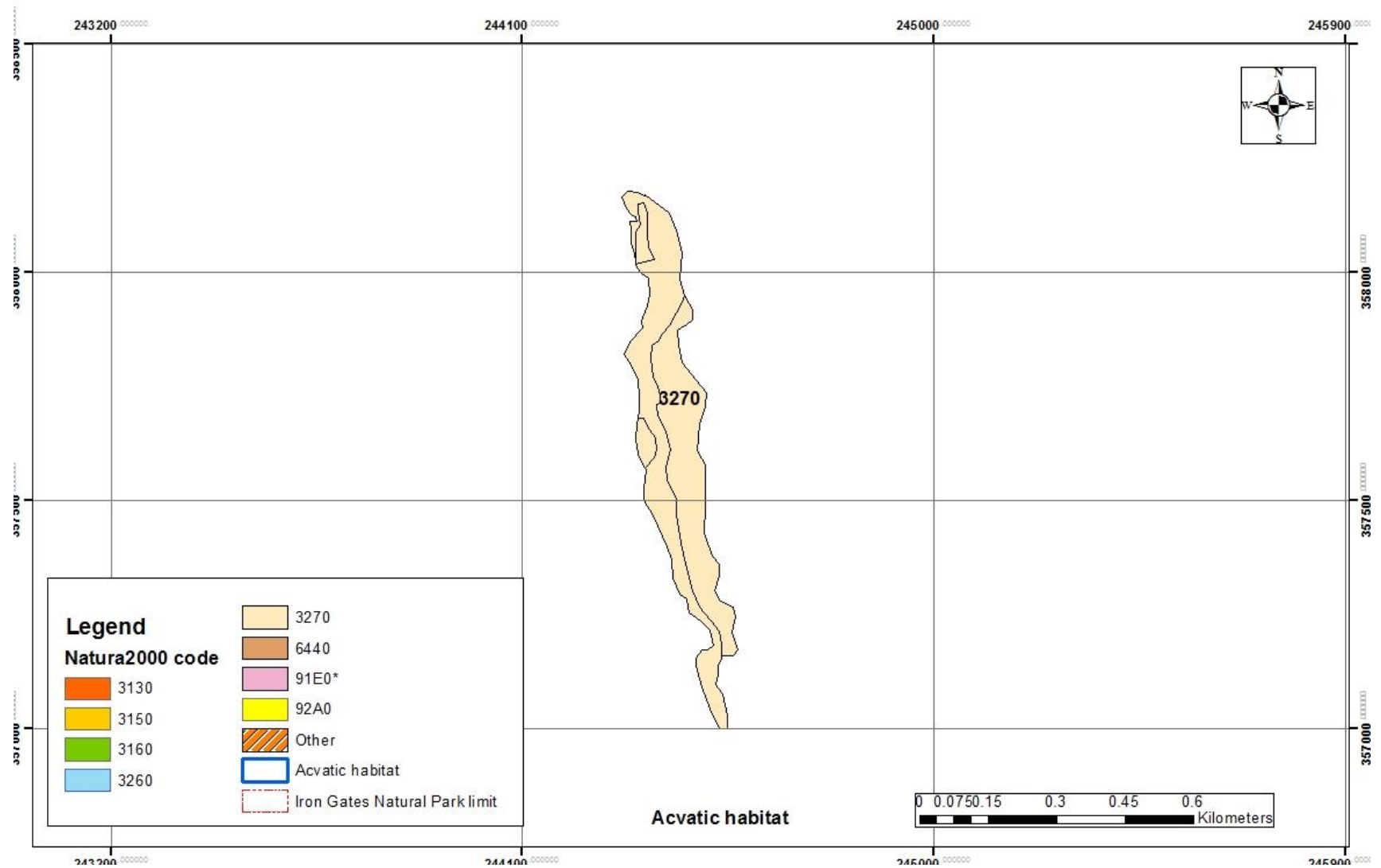
Habitat distribution for Eselnita Bay wetland



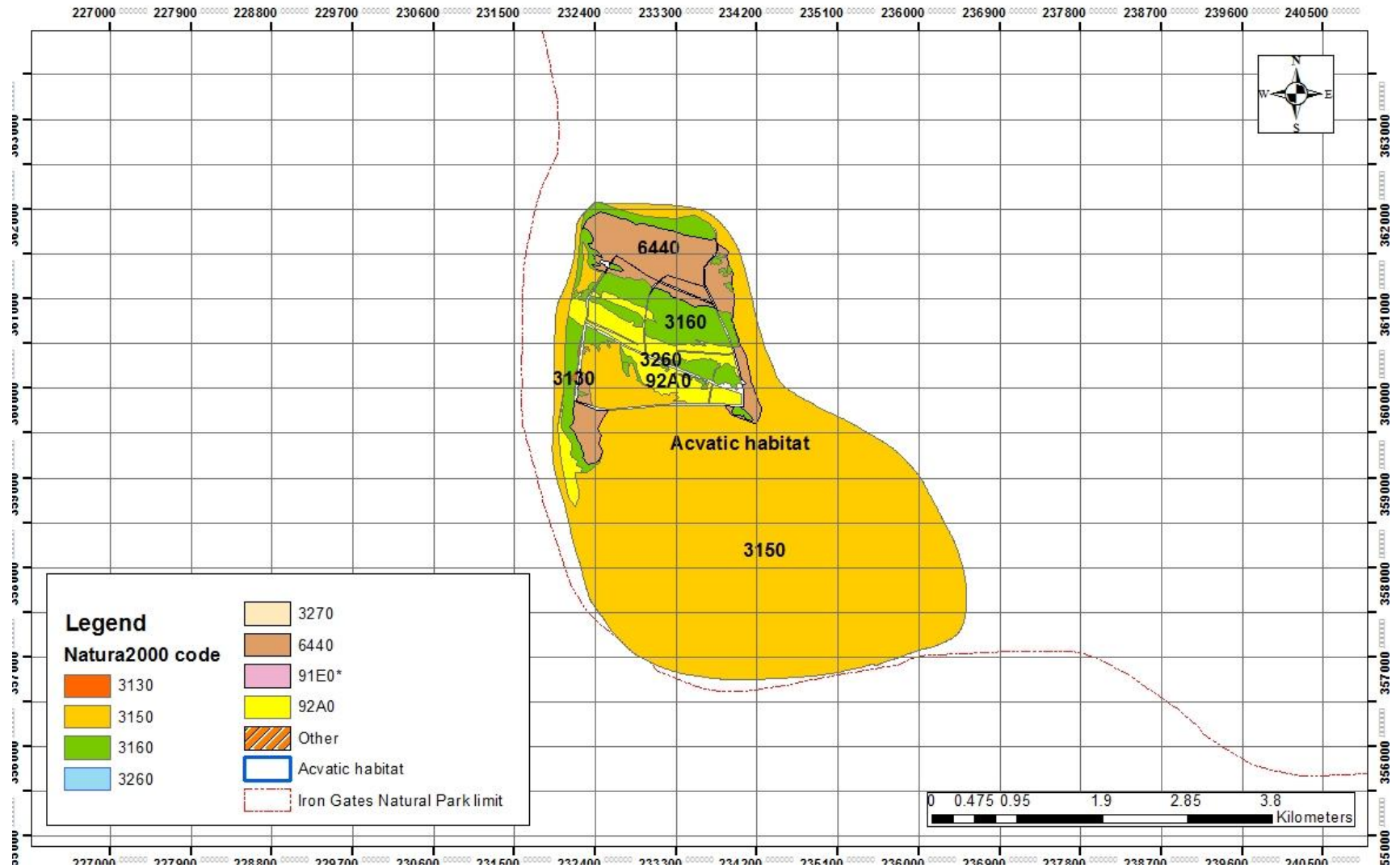
Habitat distribution for Gornea-Sichevita wetland



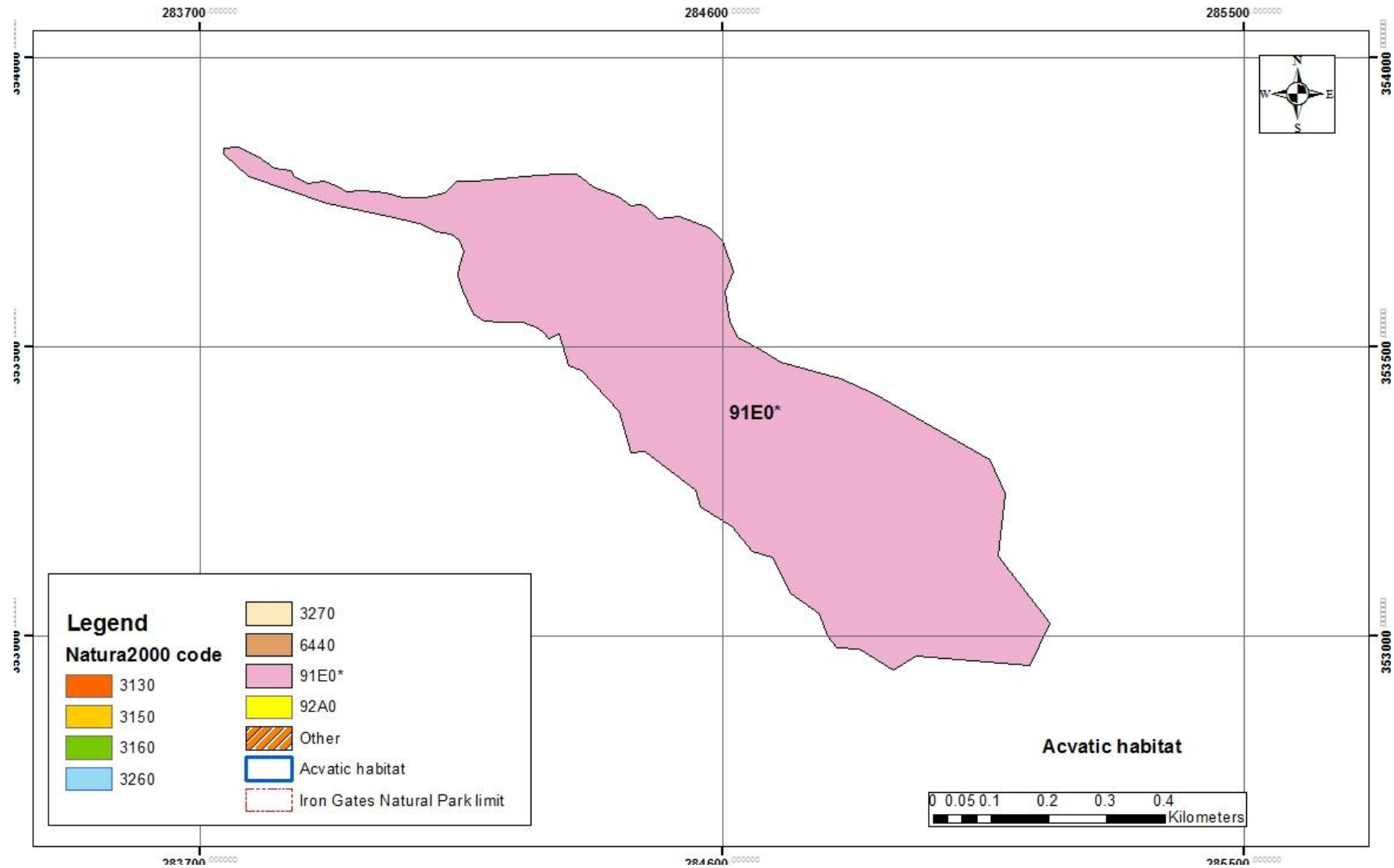
Habitat distribution for Liborajdea wetland



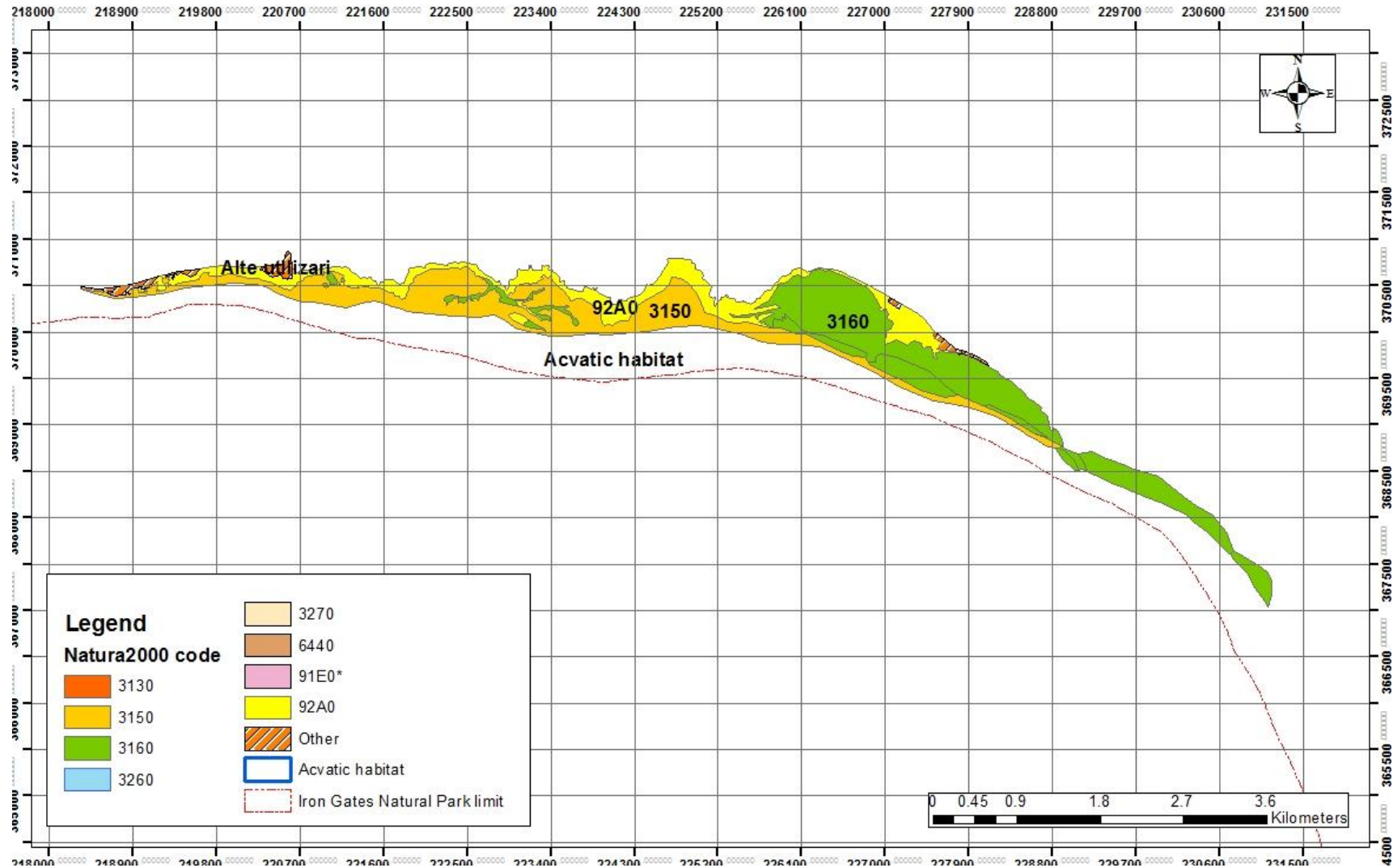
Habitat distribution for Moldova Veche wetland



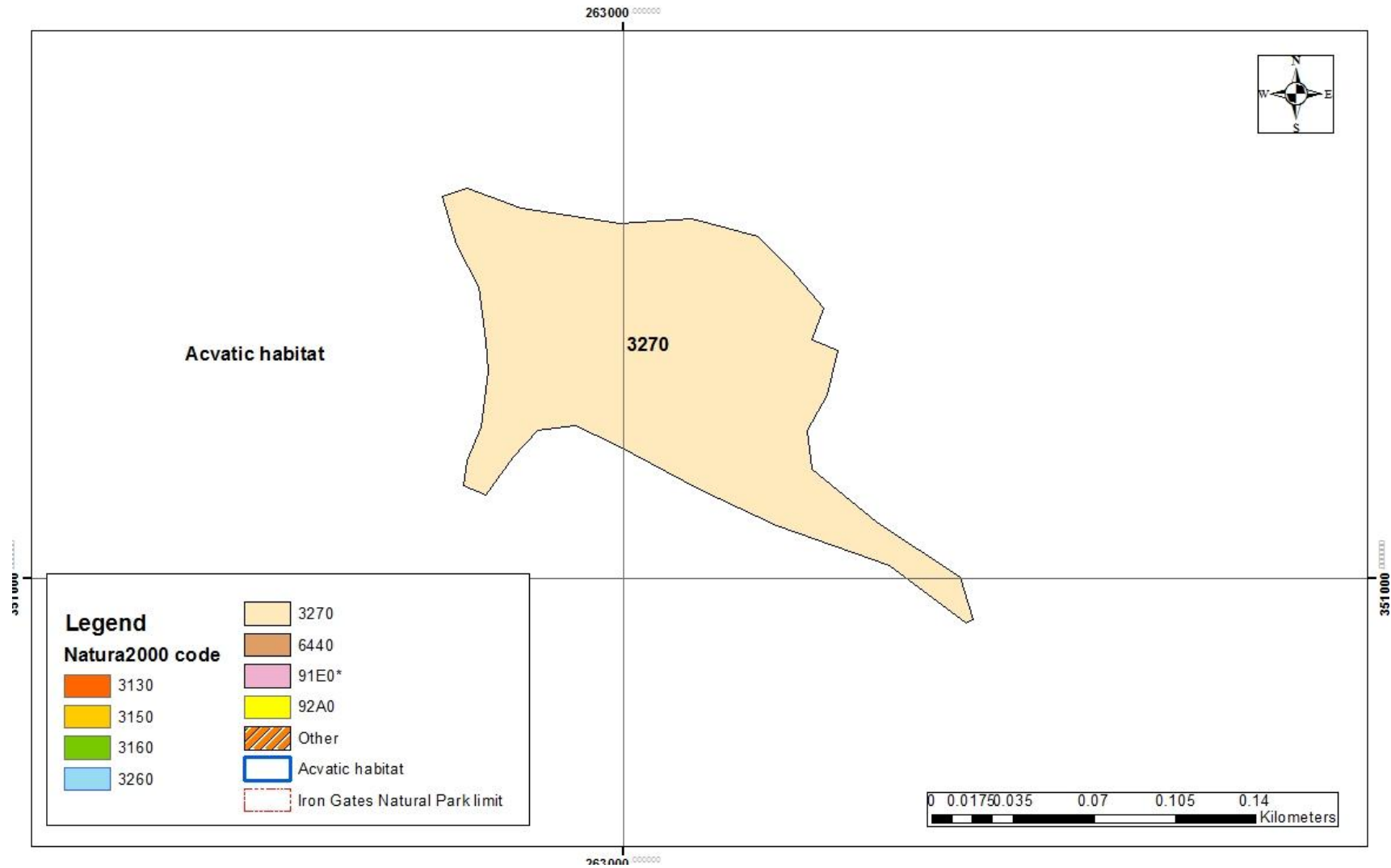
Habitat distribution for Mraconia Bay wetland



Habitat distribution for Divici - Pojejena wetland

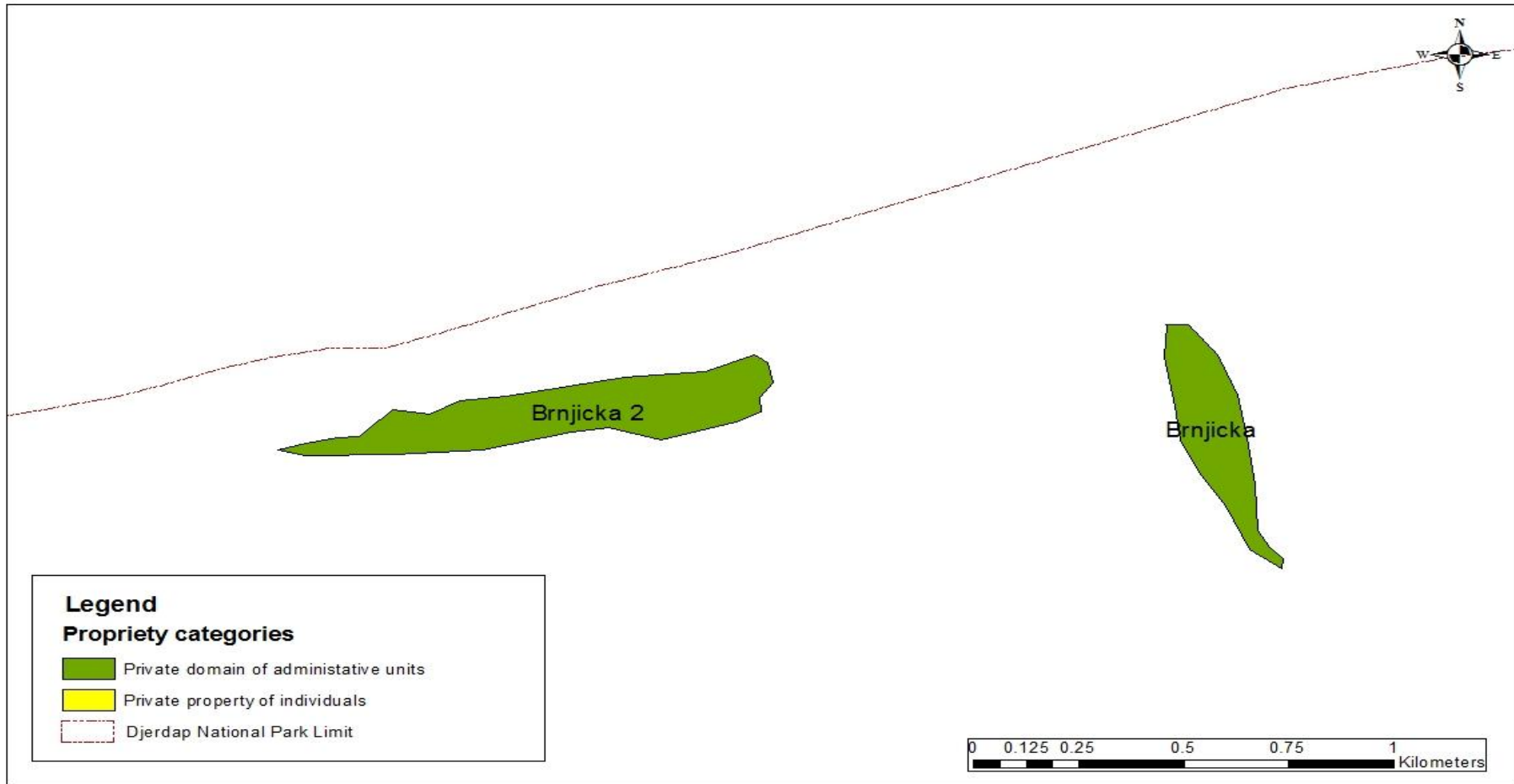


Habitat distribution for Sirinia wetland

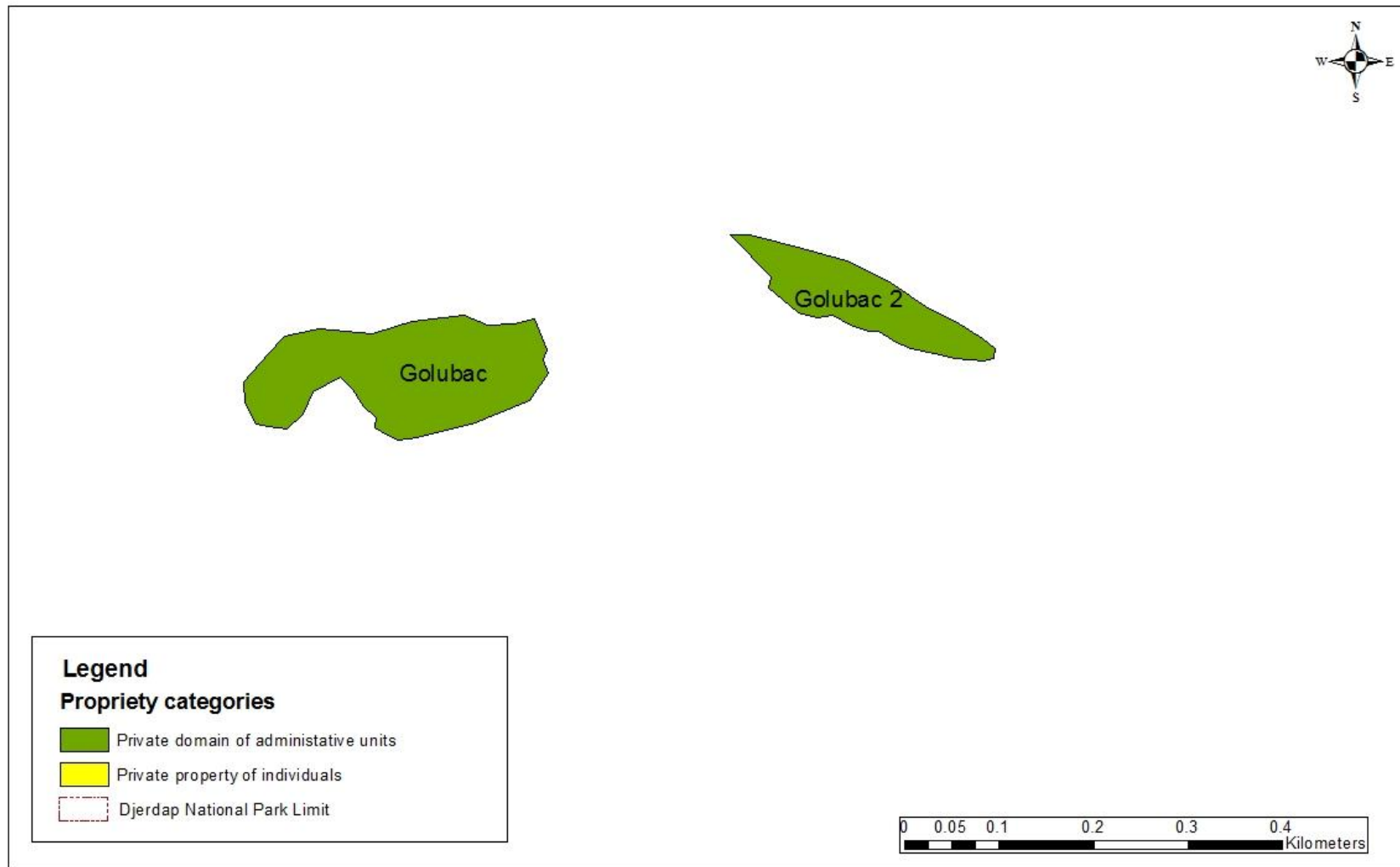


Appendix 2a. Distribuiton map of categories of properties from wetlands in National Park Djerdap

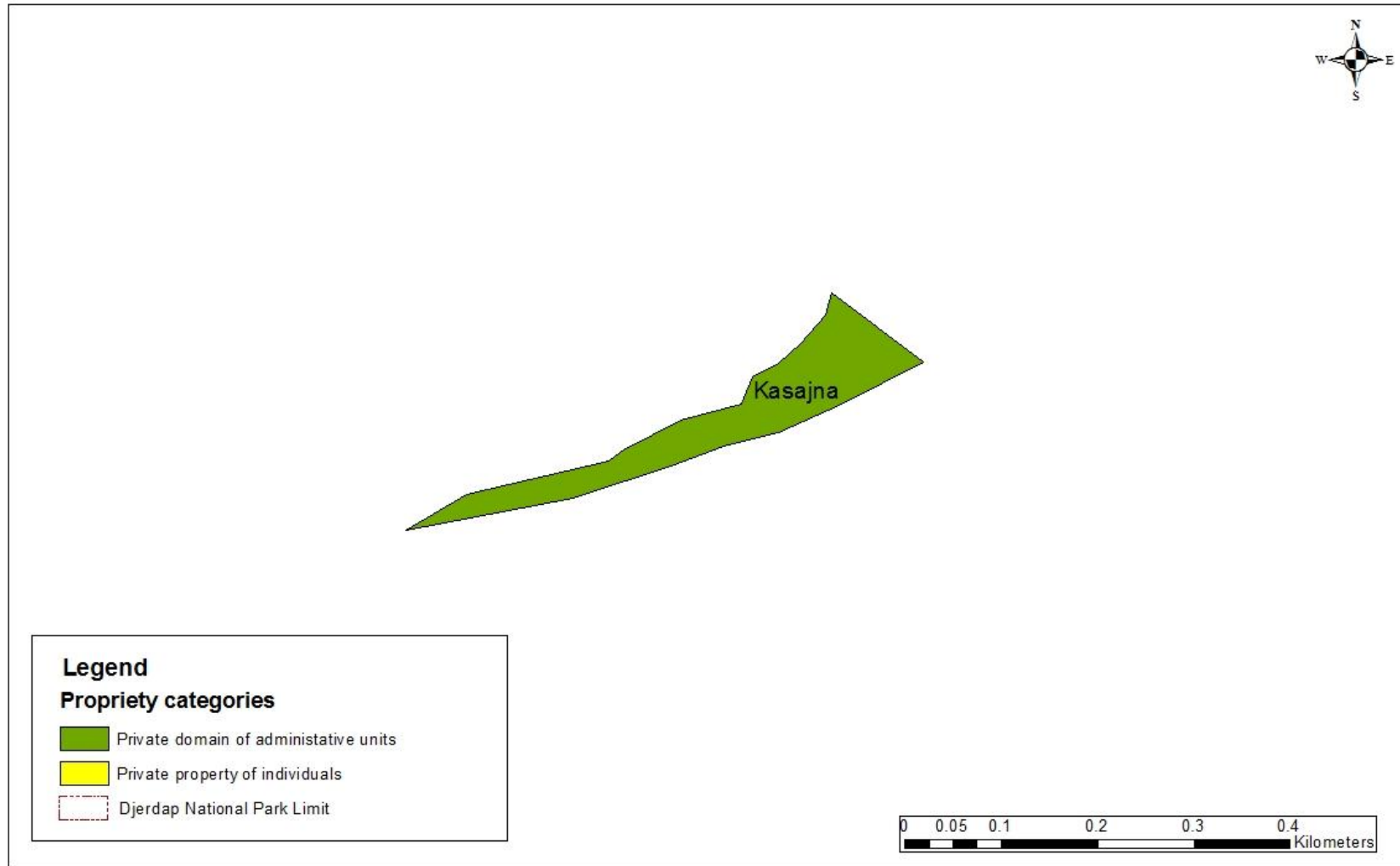
Categories of propriety map for Brnjicka wetland



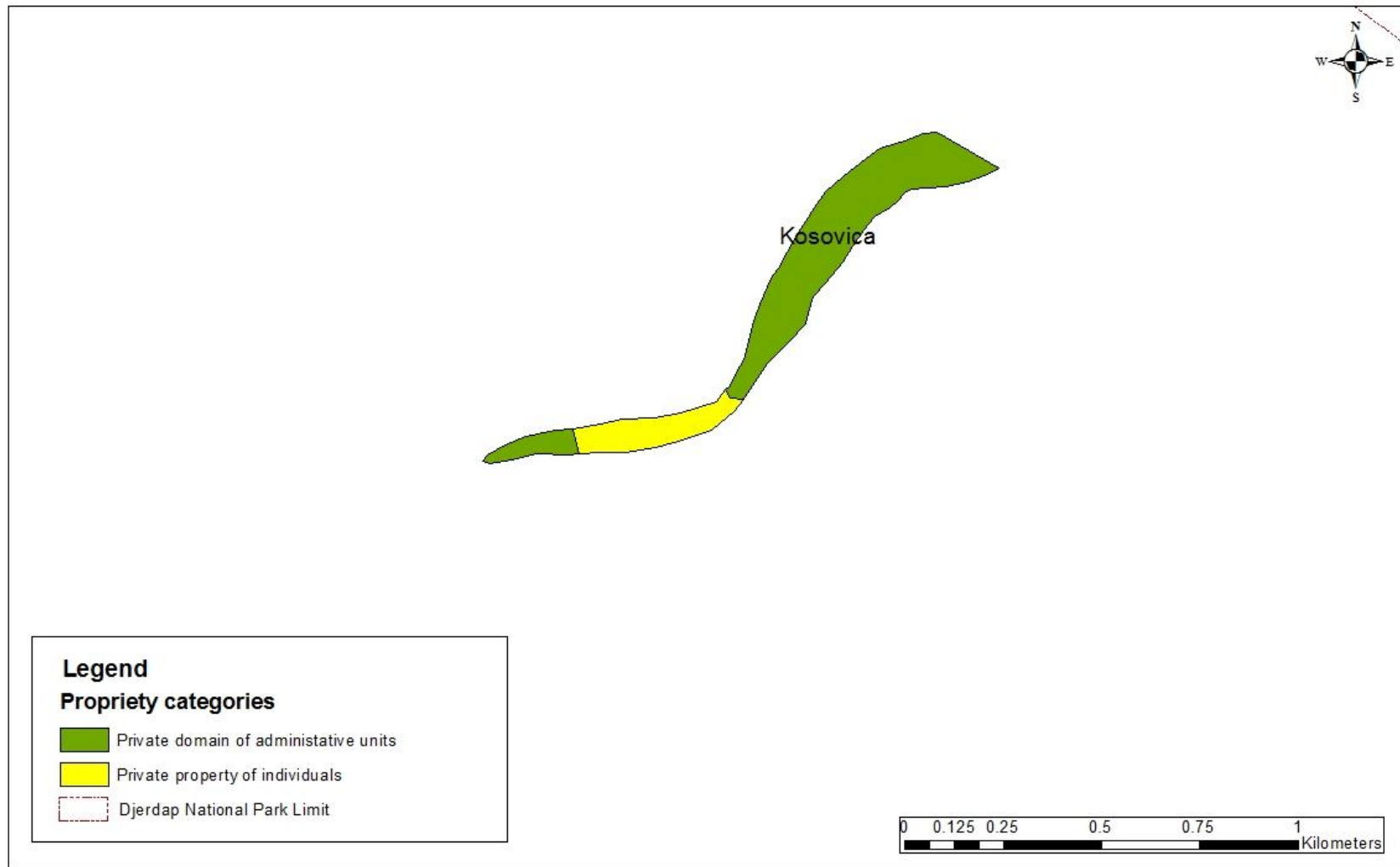
Categories of propriety map for Goldubac wetland



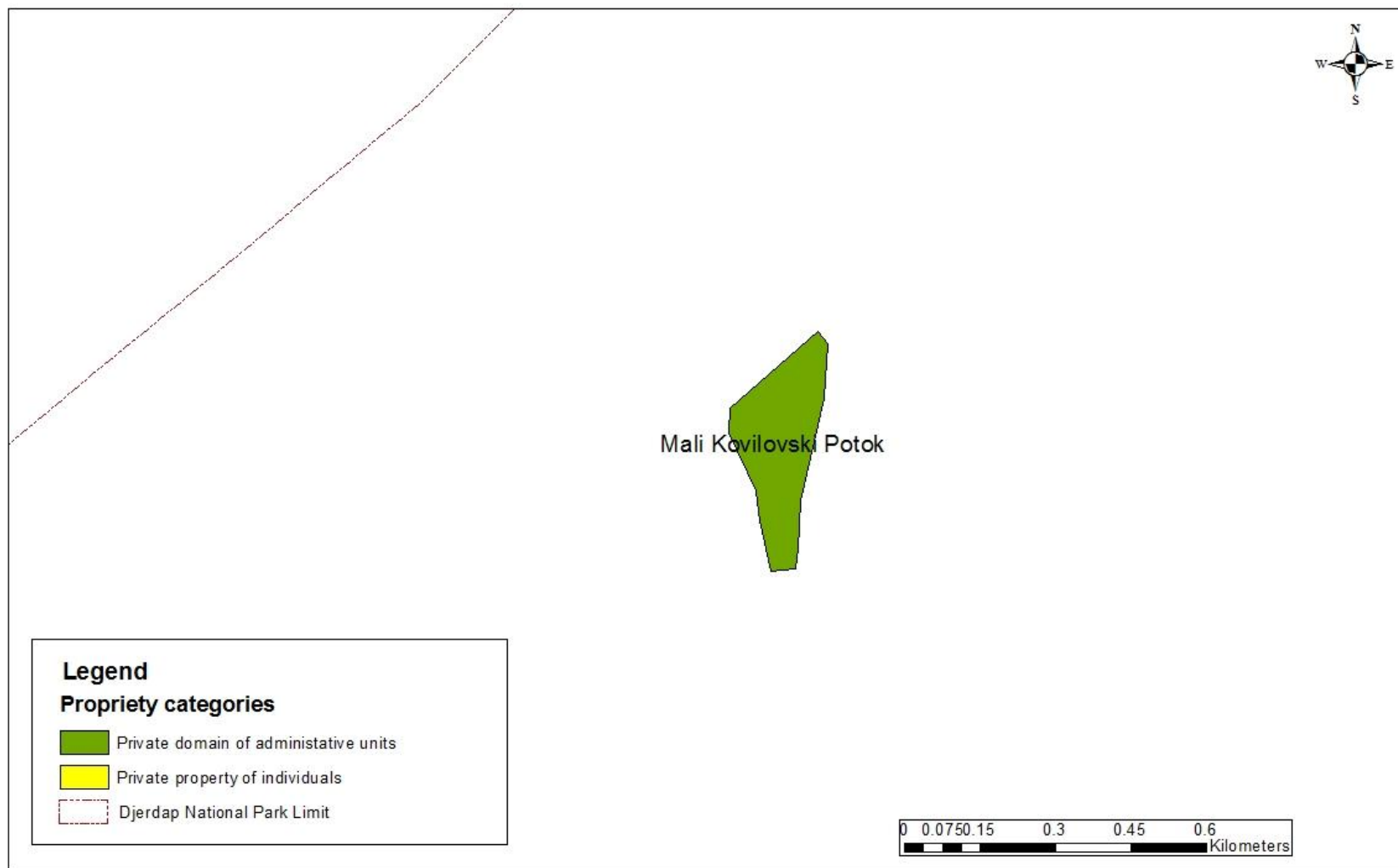
Categories of propriety map for Kasajna wetland



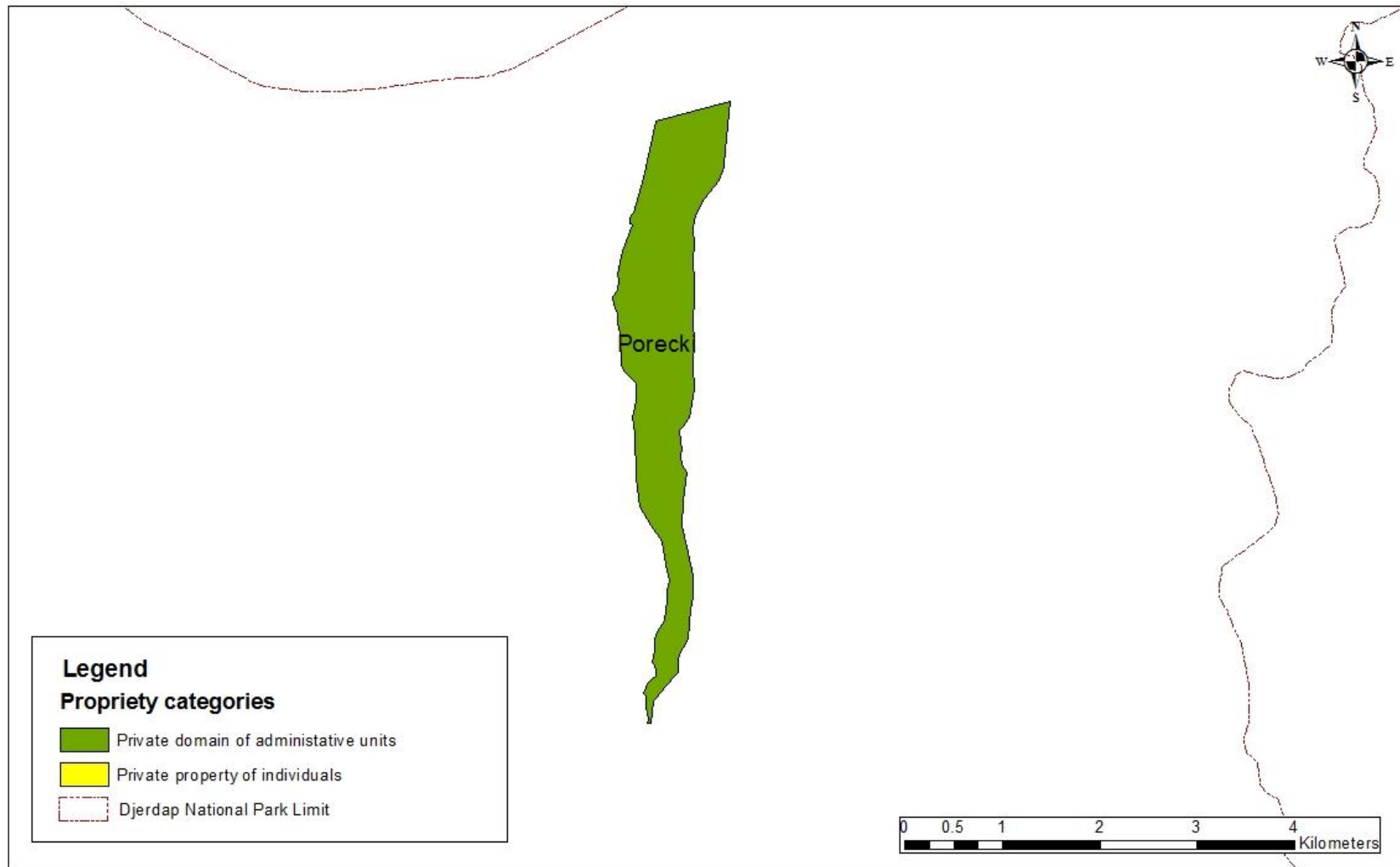
Categories of propriety map for Kosovica wetland



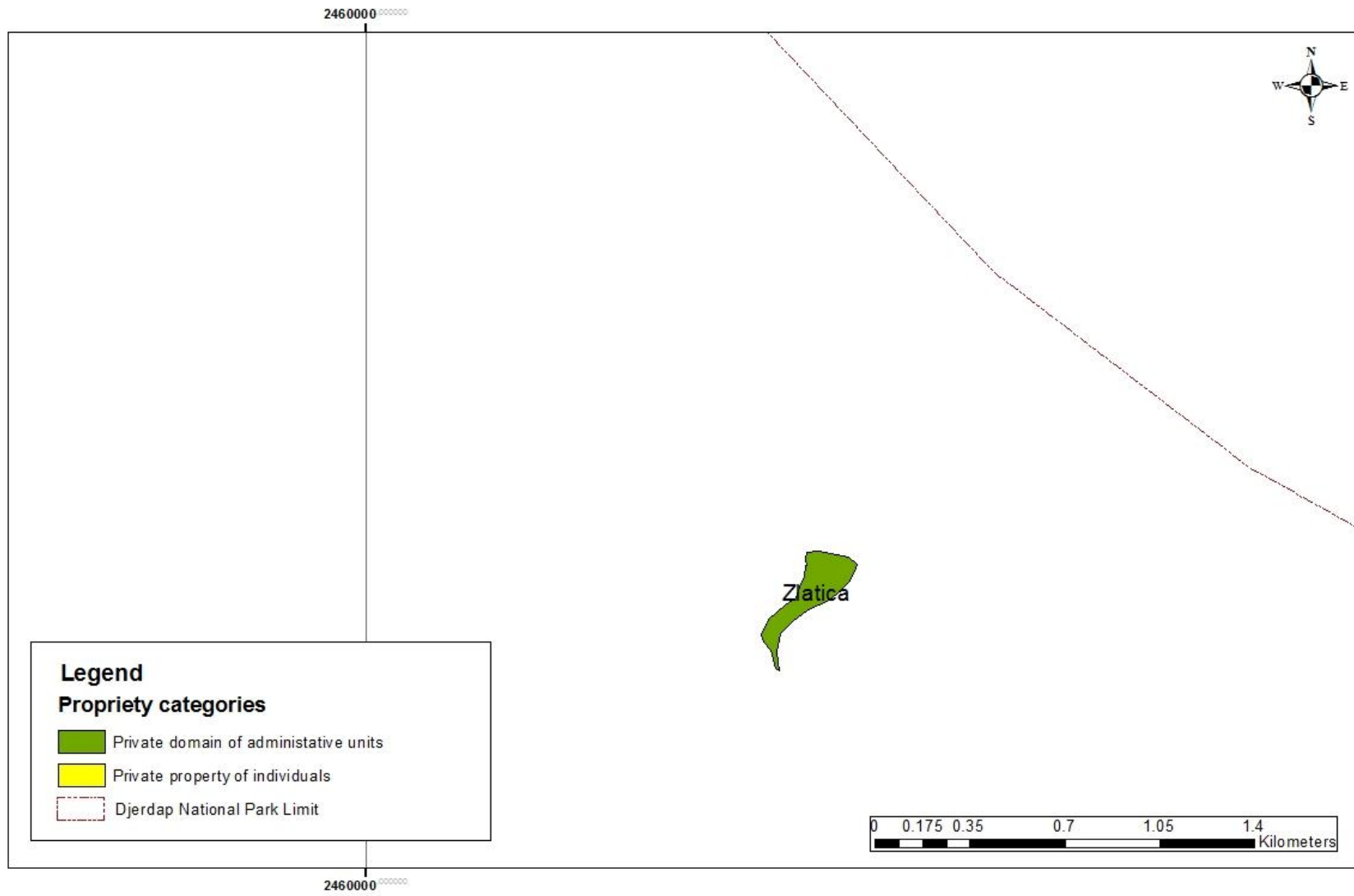
Categories of propriety map for Mali Kavilovski Potoc wetland



Categories of propriety map for Porecki wetland

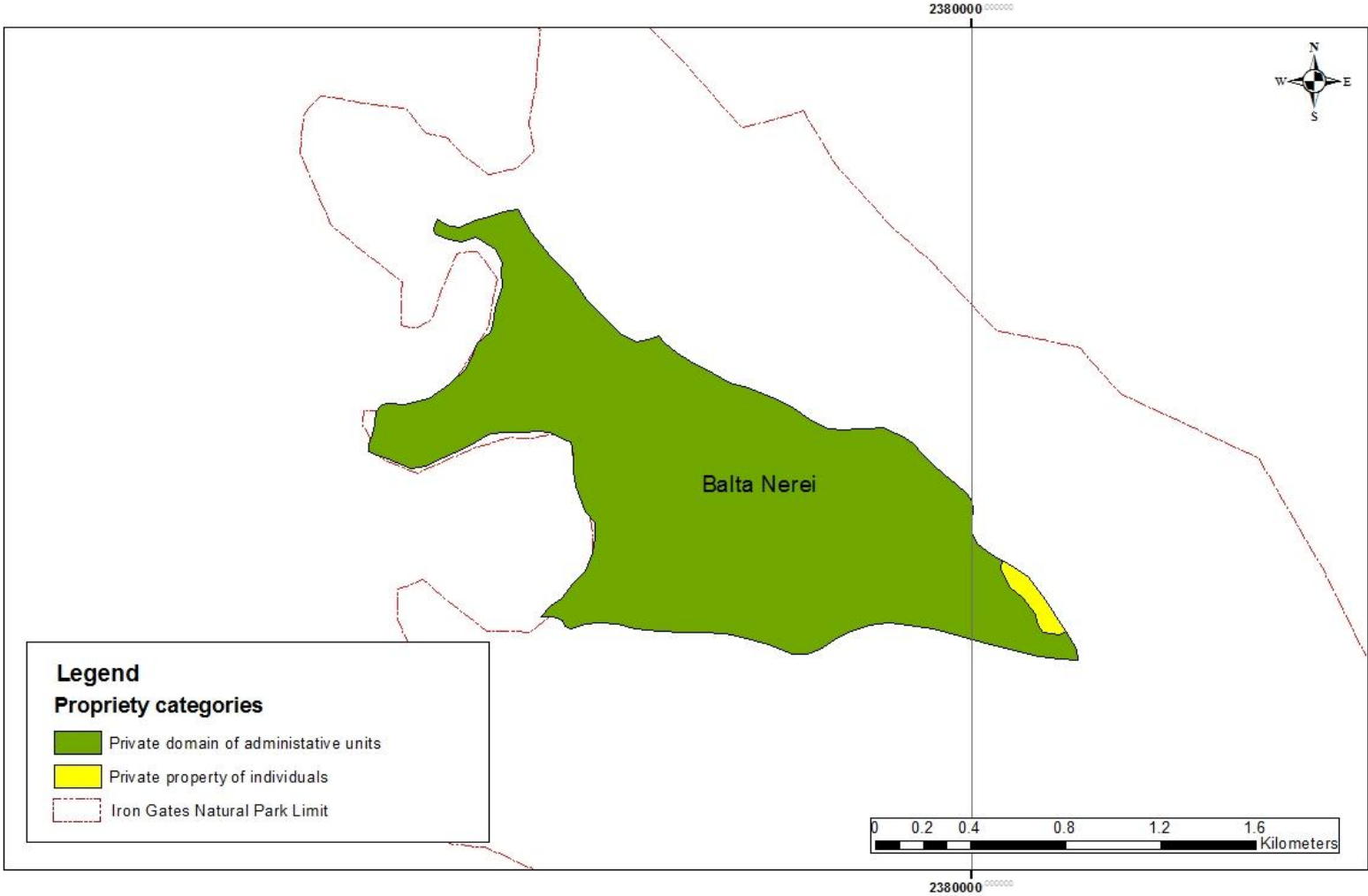


Categories of propriety map for Zlatica wetland

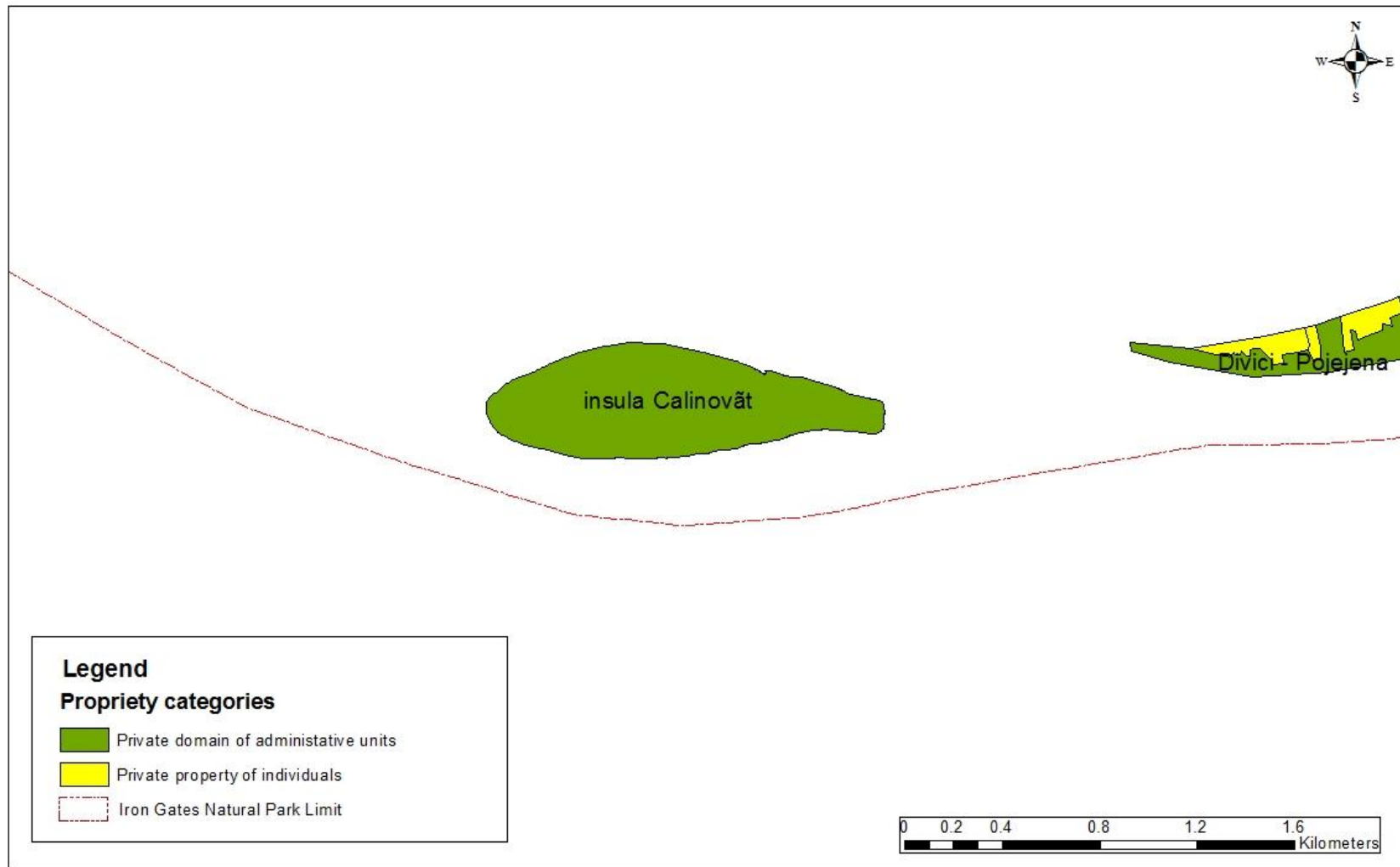


Appendix 2b. Distribution map of categories of properties from wetlands in Iron Gates Natural Park

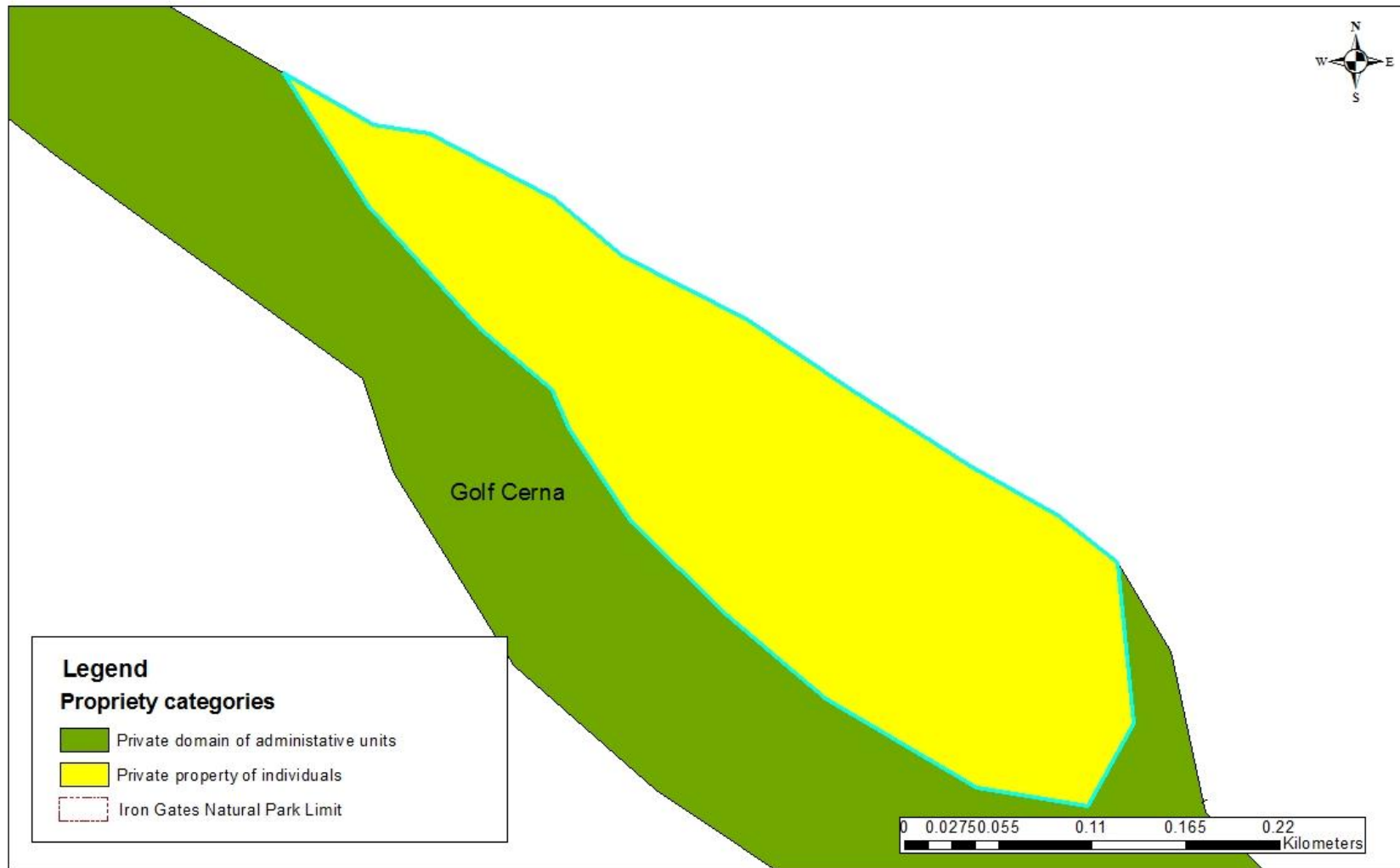
Categories of propriety map for Balta Nerei wetland



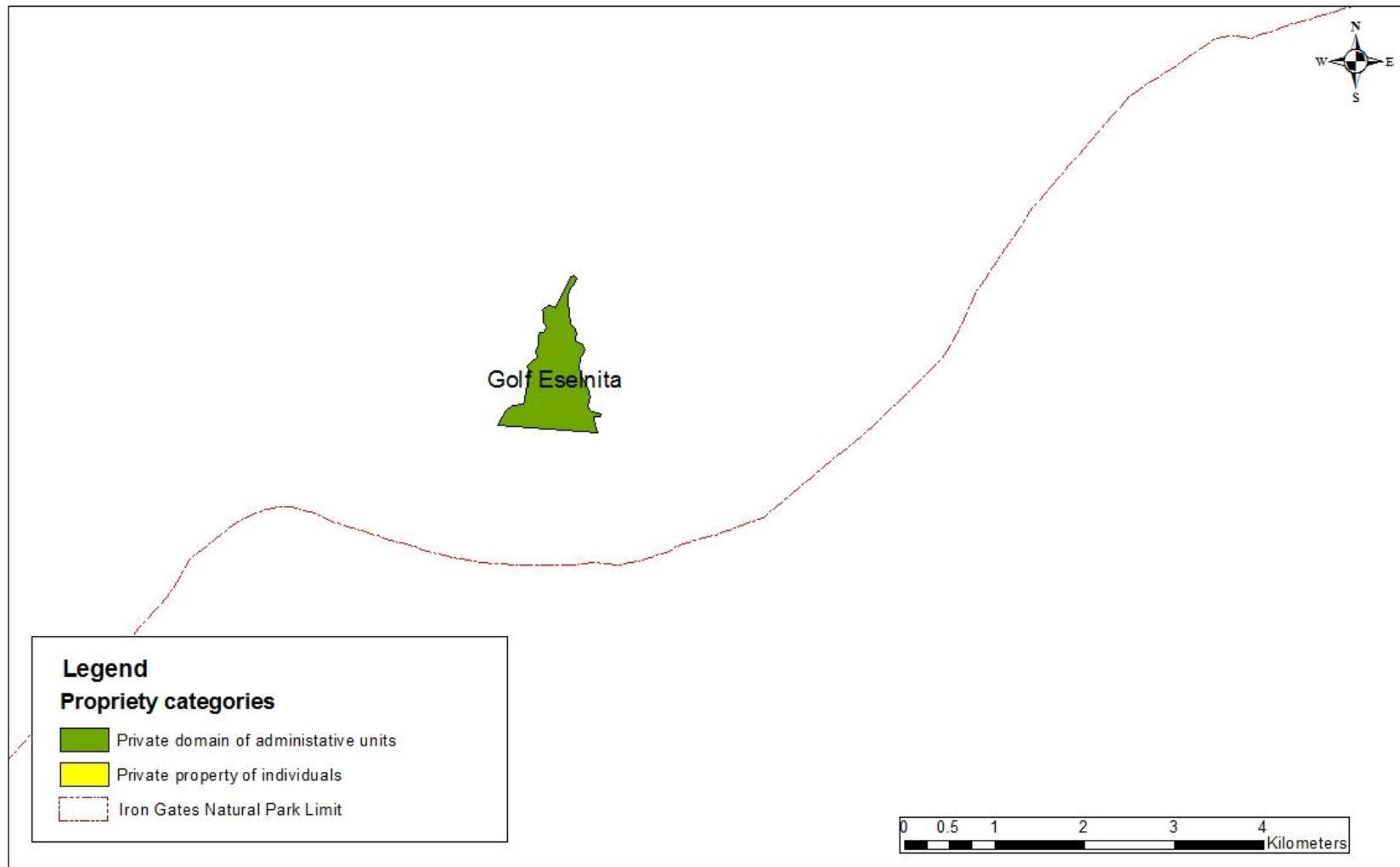
Categories of propriety map for Calinovat Island wetland



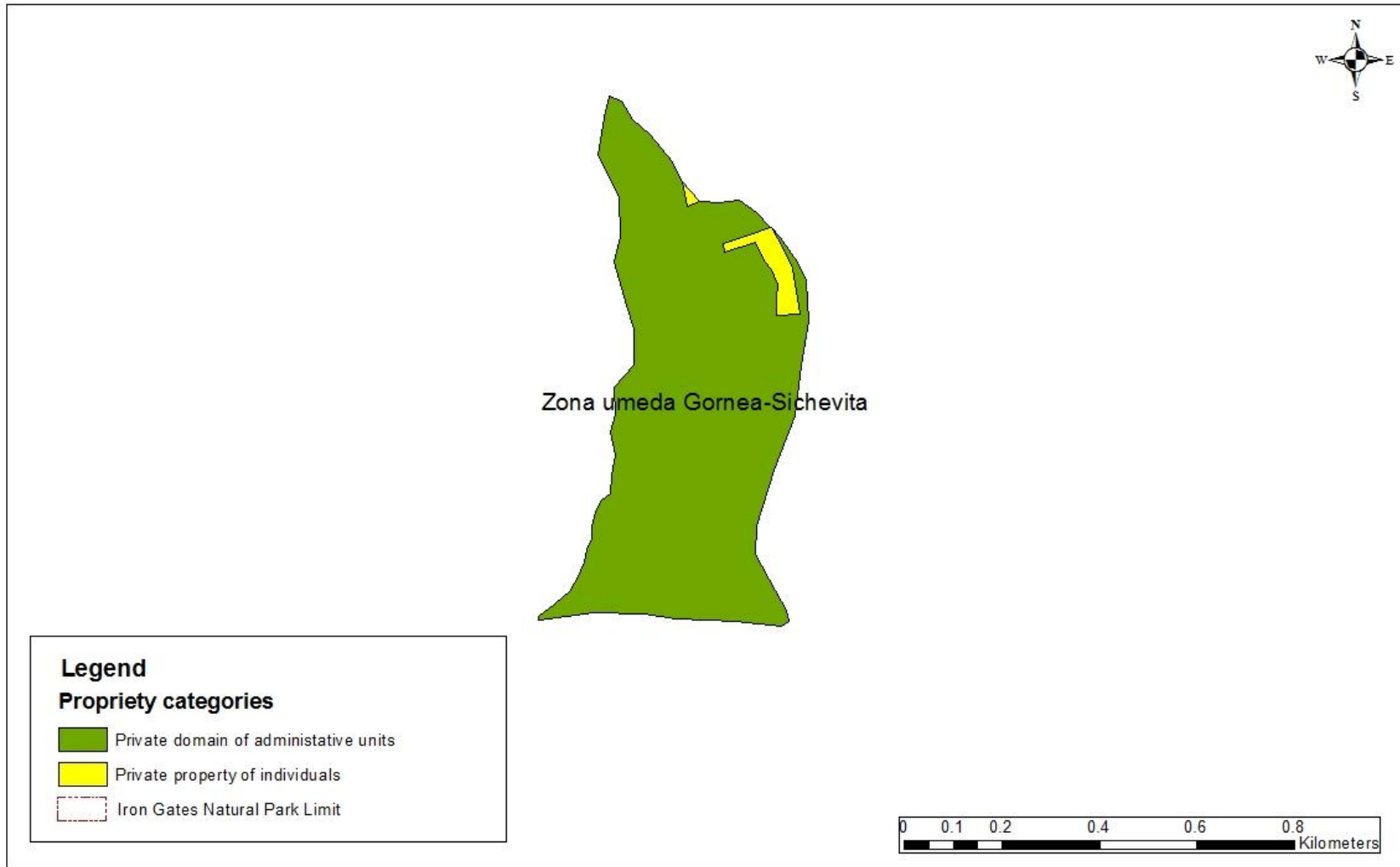
Categories of propriety map for Cerna Bay wetland



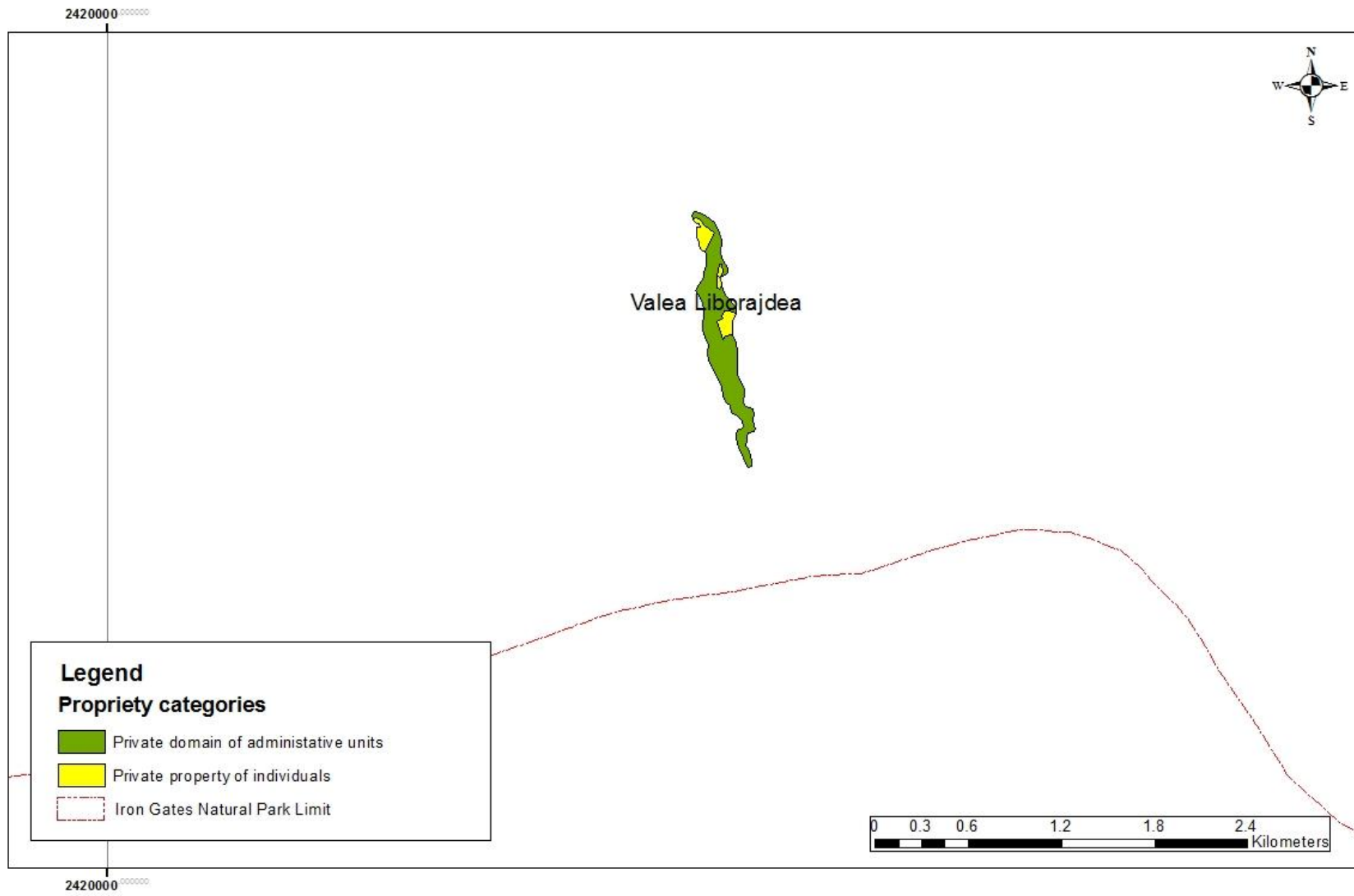
Categories of propriety map for Eselnita Bay wetland



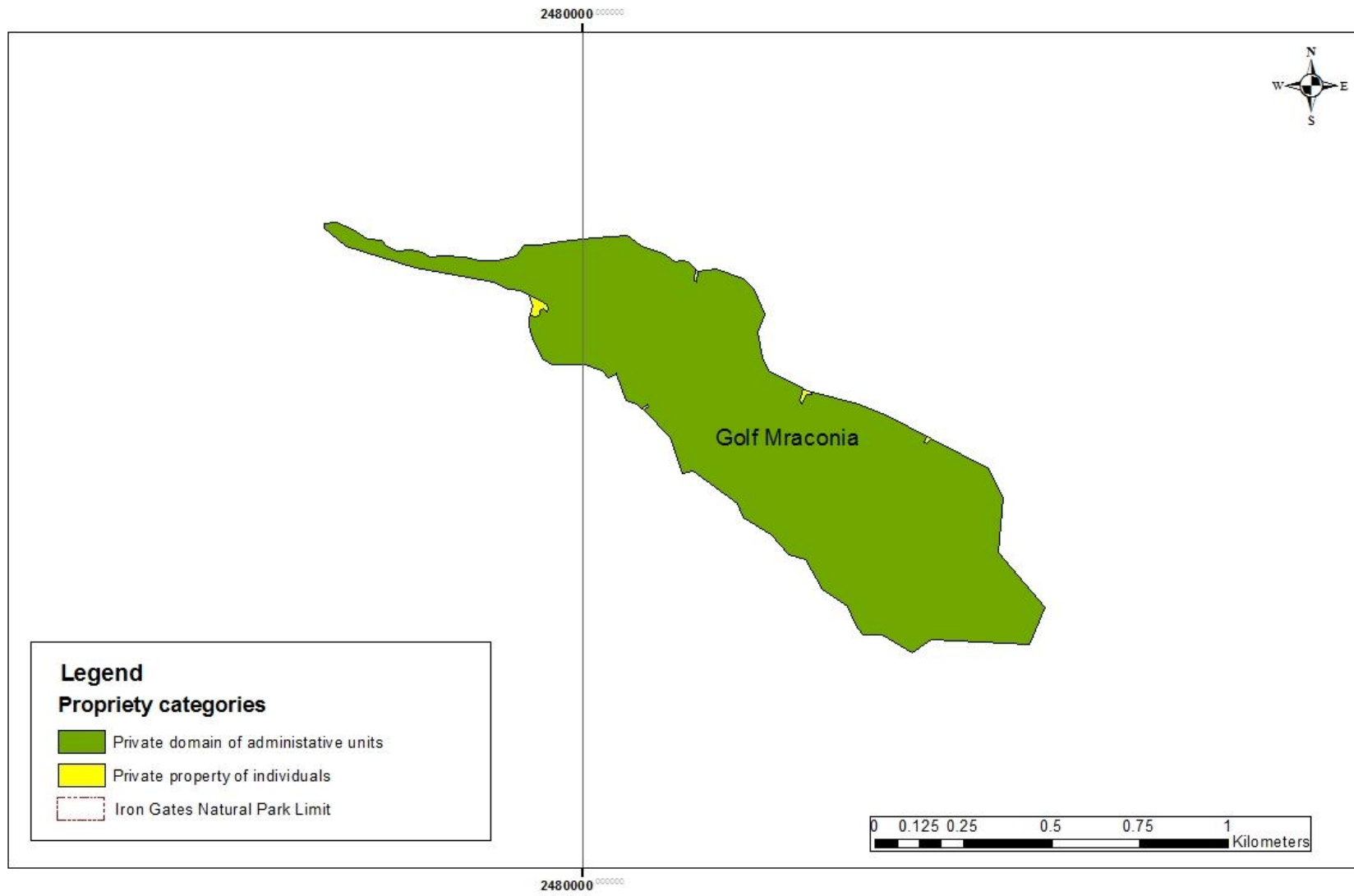
Categories of propriety map for Gornea-Sichevita wetland



Categories of propriety map for Liborajdea Valley wetland



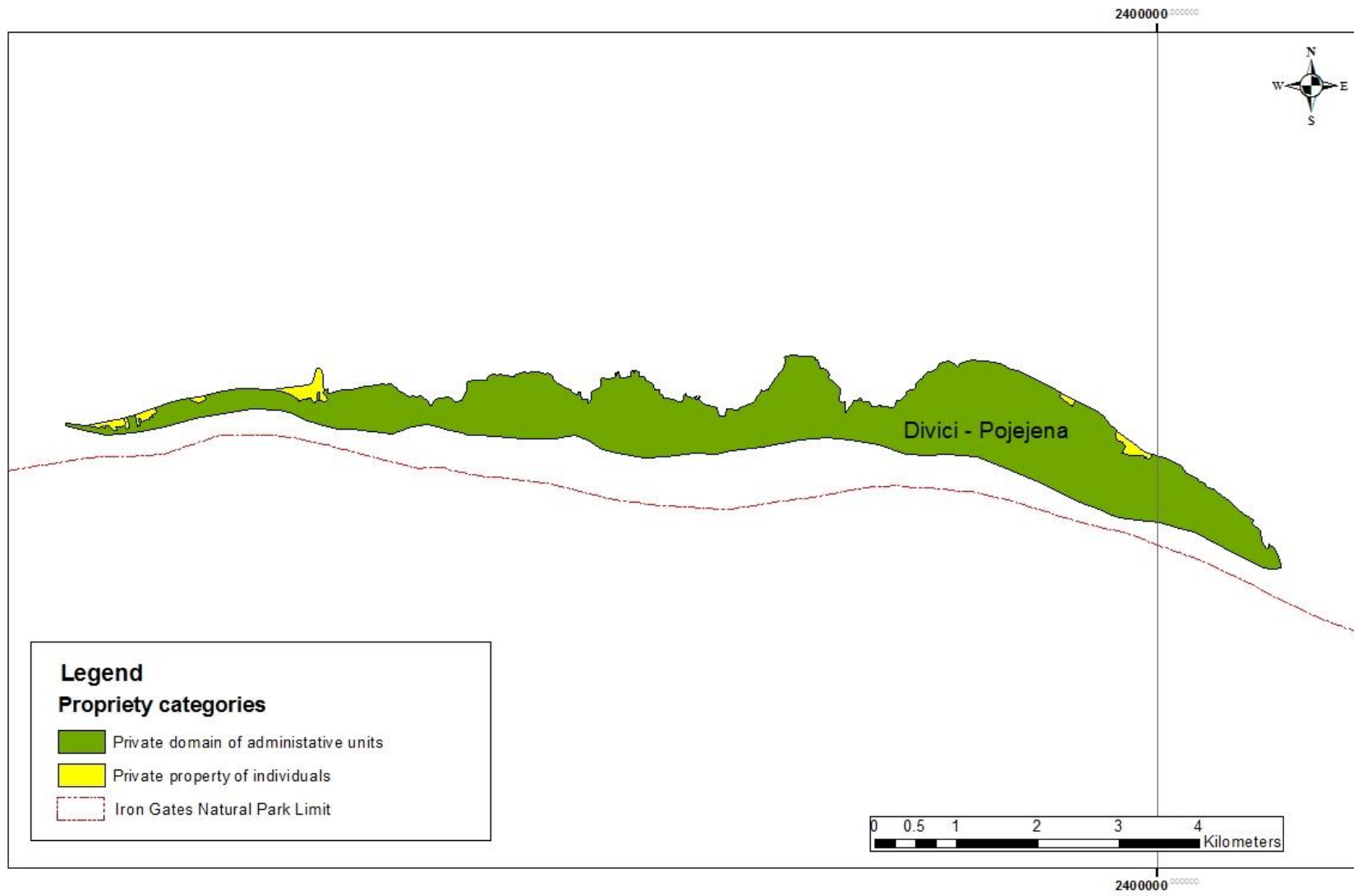
Categories of propriety map for Mraconia Bay wetland



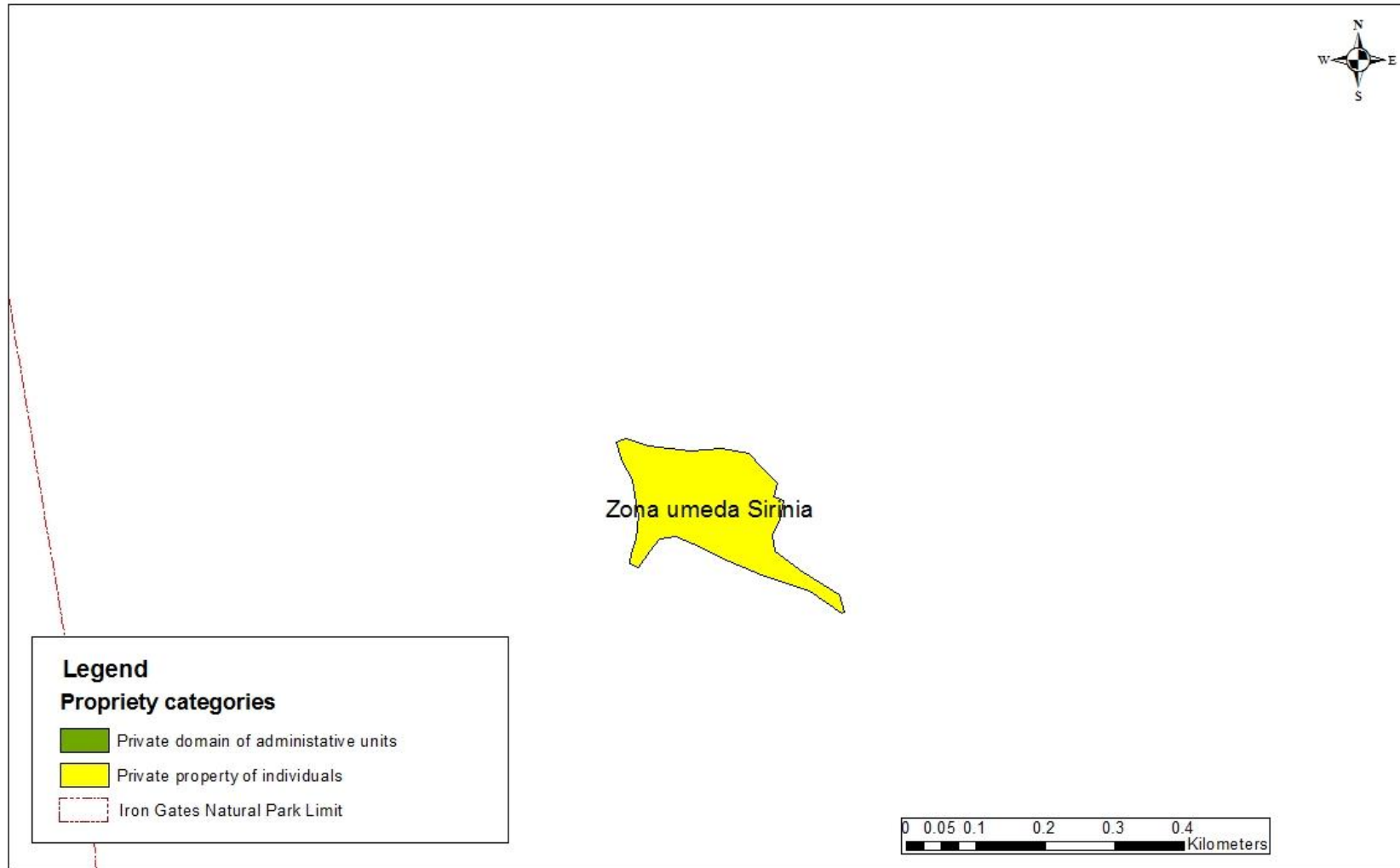
Categories of propriety map for Moldova Veche wetland



Categories of propriety map for Divici - Pojejena wetland



Categories of propriety map for Sirinia wetland



Appendix 3. Table of habitat types records and their distribution in the two protected areas

Nr. crt.	CODE Natura 2000	NAME	AREA (ha) In Iron Gates NP	LOCATION In Iron Gates NP	AREA (ha) in Djerdap NP	LOCATION in Djerdap NP
1.	3130	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoëto-Nanojuncetea</i>	1.01	Ostrovul Moldova Veche and Liubcova		
2.	3140	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp				
3.	3150	Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> -type vegetation.	1482.33	Balta Pojejena, Balta Șușca, Balta Divici, Balta Belobreșca, Ostrovul Moldova Veche, Balta Nerei, Delta Nerei but also portions of the shore with slow flow or smaller bays: V. Slătincul Mare, V. Vodiței, Orșova, Eșelnița,	9.46	

Nr. crt.	CODE Natura 2000	NAME	AREA (ha) In Iron Gates NP	LOCATION In Iron Gates NP	AREA (ha) in Djerdap NP	LOCATION in Djerdap NP
				Golful Mala, Golful Dubova, Liubcova, Trikule.		
4.	3160	Natural dystrophic lakes and ponds	403.62	Balta Șușca, Balta Divici, Balta Belobreșca, Golful Mala, Balta Pojejena, Ostrovul Calinovăț, Ostrovul Moldova Veche, Balta Nerei, Delta Nerei, but also portions of the shore with slow flow or smaller bays V. Slătincul Mare, V. Vodiței, Orșova, Eșelnița, Golful Dubova, Liubcova, Trikule, upstream to Valea Grăniceri, mouth of the river Sirinia.	184.13	Massive expansion on the Serbian side between localities Dobra and Mala Orlova

Nr. crt.	CODE Natura 2000	NAME	AREA (ha) In Iron Gates NP	LOCATION In Iron Gates NP	AREA (ha) in Djerdap NP	LOCATION in Djerdap NP
5.	3260	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche Batrachion</i> vegetation	0.06	Delta Nerei and Ostrovul Molvoda Veche		
6.	3270	Rivers with muddy banks with <i>Chenopodion rubri</i> p.p. and <i>Bidention</i> p.p. vegetation	12.91	Valea Vodiței, Orșova, Valea Iloviței, to Liubcova, Valea Liubotina, Sirinia, Liuborajdea, Depresiunea Dubova, Valea Mraconiei, Danube shore to Berzeasca, balta Cozla.		It was observed at the mouth of the Danube tributaries: Donji Milanovac
7.	6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels		Valea Vodiței		

Nr. crt.	CODE Natura 2000	NAME	AREA (ha) In Iron Gates NP	LOCATION In Iron Gates NP	AREA (ha) in Djerdap NP	LOCATION in Djerdap NP
8.	6440	Alluvial meadows of river valleys of the <i>Cnidion dubii</i>	133.83	Ostrovul Moldova Veche		
9.	92A0	<i>Salix alba</i> and <i>Populus alba</i> galleries	278.87	Insula Calinovaț, to the river mouth of Eselniței in the Danube, Ostrovul Moldova Veche, on the Danube shore in the Divici-Pojejena area and Balta Nerei.		
10.	91E0*	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i>	37.59	Golful Mraconia and Valea Eselnița		

Appendix 4. Table of categories records of owners

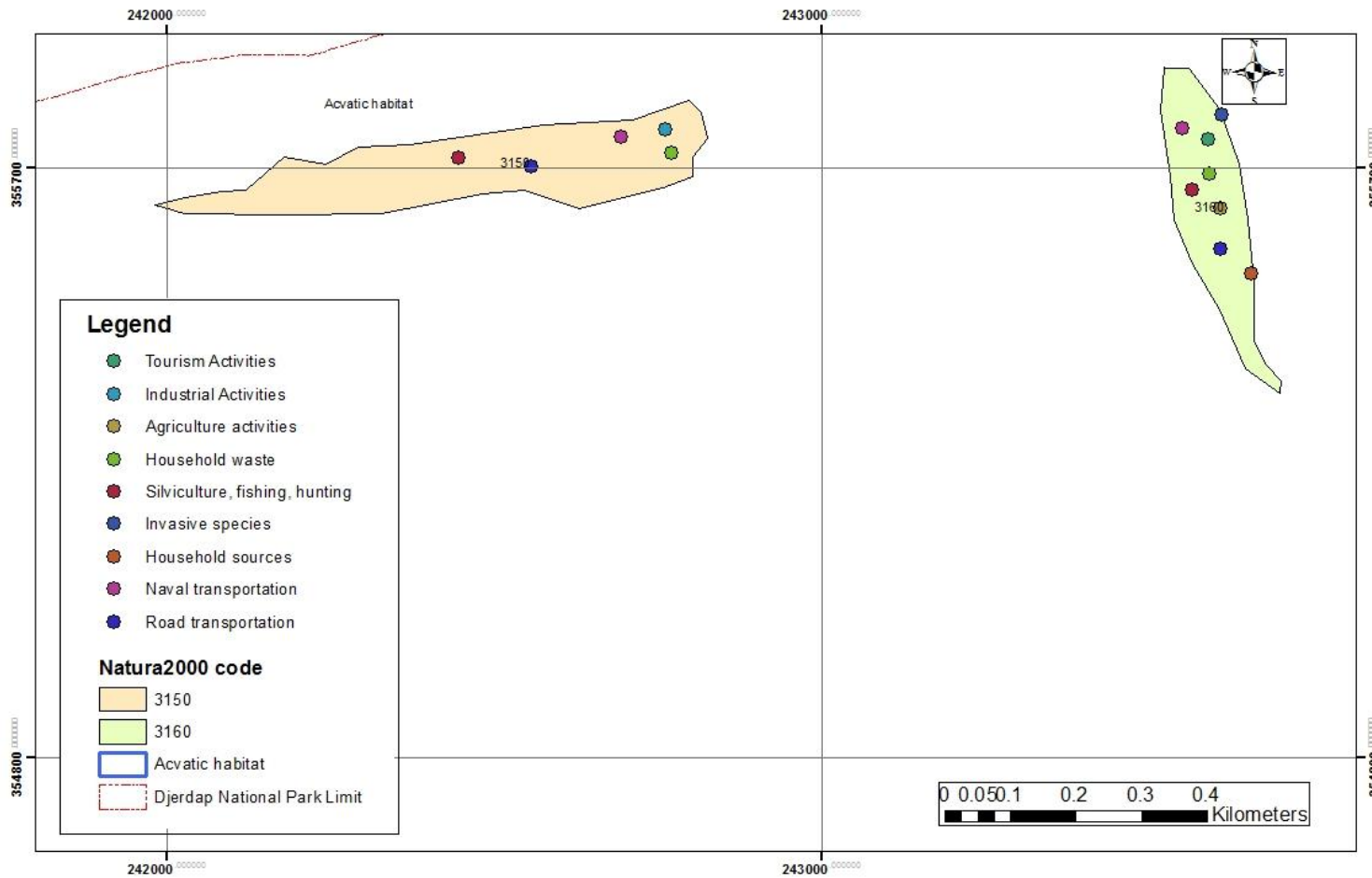
Name PN Djerdap	ATU PN Djerdap	Category of property Code PN Djerdap	Category of property PN Djerdap	Area (ha) PN Djerdap	Name PN Iron Gates	ATU PN Iron Gates	Category of property Code PN Iron Gates	Category of property PN Iron Gates	Area (ha) PN Iron Gates
Golubac	Golubac	DAT	The public domain of the administrative-territorial units	1.46	Balta Nerei	Socol	DAT	The public domain of the administrative-territorial units	111.42
Golubac 2	Golubac	DAT	The public domain of the administrative-territorial units	0.68	Balta Nerei	Socol	PF	Private property of individuals	1.32
Brnjicka 2	Golubac	DAT	The public domain of the administrative-territorial units	7.32	Divici - Pojejena	Pojejena	DAT	The public domain of the administrative-territorial units	485.85
Brnjicka	Golubac	DAT	The public domain of the administrative-territorial units	3.81	Divici - Pojejena	Pojejena	PF	Private property of individuals	11.98
Zlatica	Majdanpek	DAT	The public domain of the administrative-territorial units	2.32	Golf Cerna	Orsova	DAT	The public domain of the administrative-territorial units	14.46

Porecki	Majdanpek	DAT	The public domain of the administrative-territorial units	166.81	Golf Cerna	Orsova	PF	Private property of individuals	3.46
Mali Kovilovski Potok	Kladovo	DAT	The public domain of the administrative-territorial units	2.57	Golf Eselnita	Eselnita	DAT	The public domain of the administrative-territorial units	43.57
Kasajna	Kladovo	DAT	The public domain of the administrative-territorial units	1.17	Golf Mraconia	Dubova	DAT	The public domain of the administrative-territorial units	37.44
Kosovica	Kladovo	DAT	The public domain of the administrative-territorial units	14.91	Golf Mraconia	Dubova	PF	Private property of individuals	0.15
Kosovica	Kladovo	PF	Private property of individuals	7.45	insula Calinovat	Pojejena	DAT	The public domain of the administrative-territorial units	26.75
					Ostrov Moldova Veche	Moldova Noua	DAT	The public domain of the administrative-territorial units	1627.94
					Valea Liborajdea	Sichevita	DAT	The public domain of the administrative-territorial units	9.55
					Valea Liborajdea	Sichevita	PF	Private property of individuals	1.62

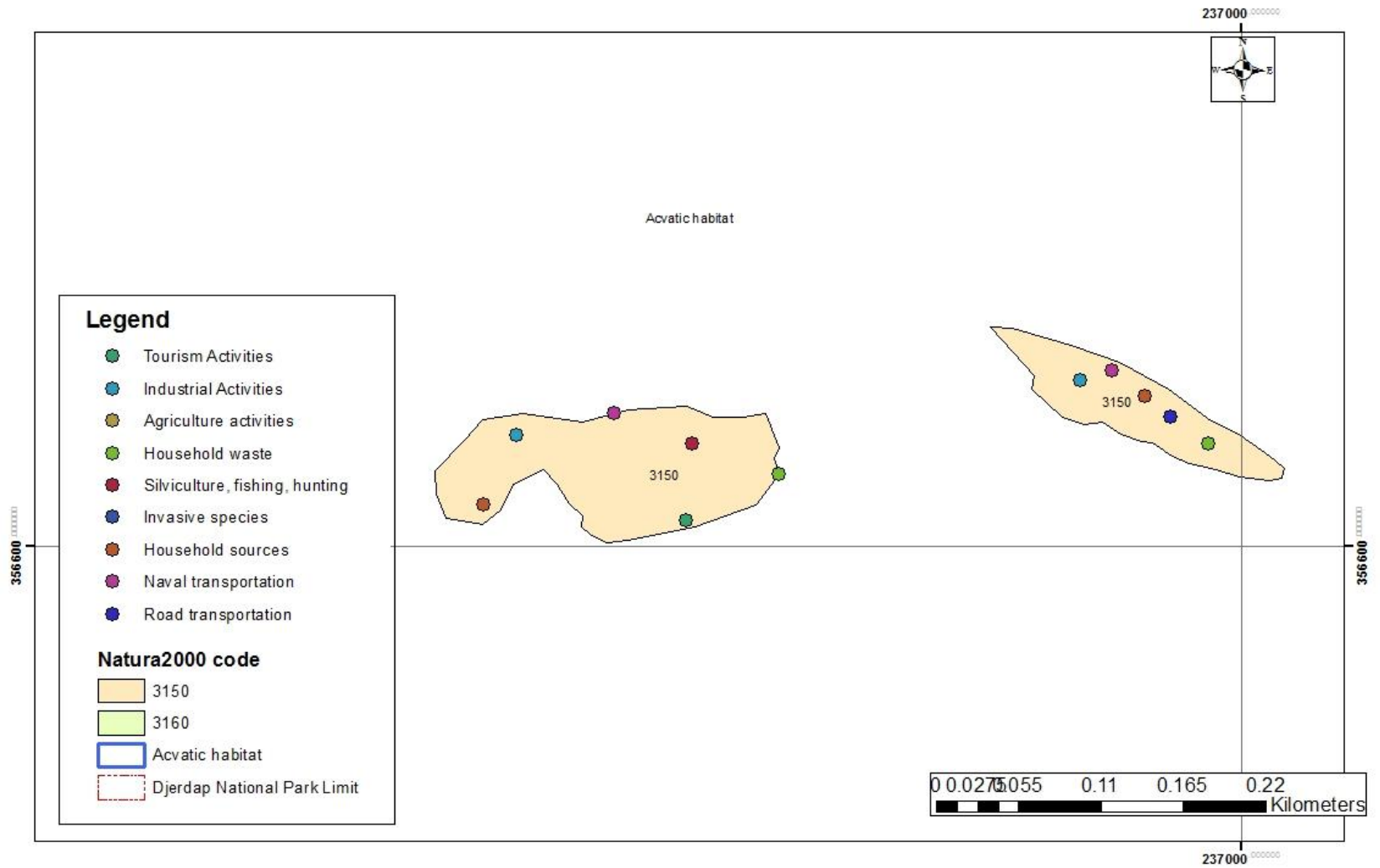
					Zona umeda Gornea- Sichevita	Sichevit a	DAT	Domeniul privat al unitatilor administrativ teritoriale	16.21
					Zona umeda Gornea- Sichevita	Sichevit a	PF	Private property of individuals	0.50
					Zona umeda Sirinia	Berzasc a	PF	Private property of individuals	1.74

Appendix 5a. Threats of wetland habitats in Djerdap National Park

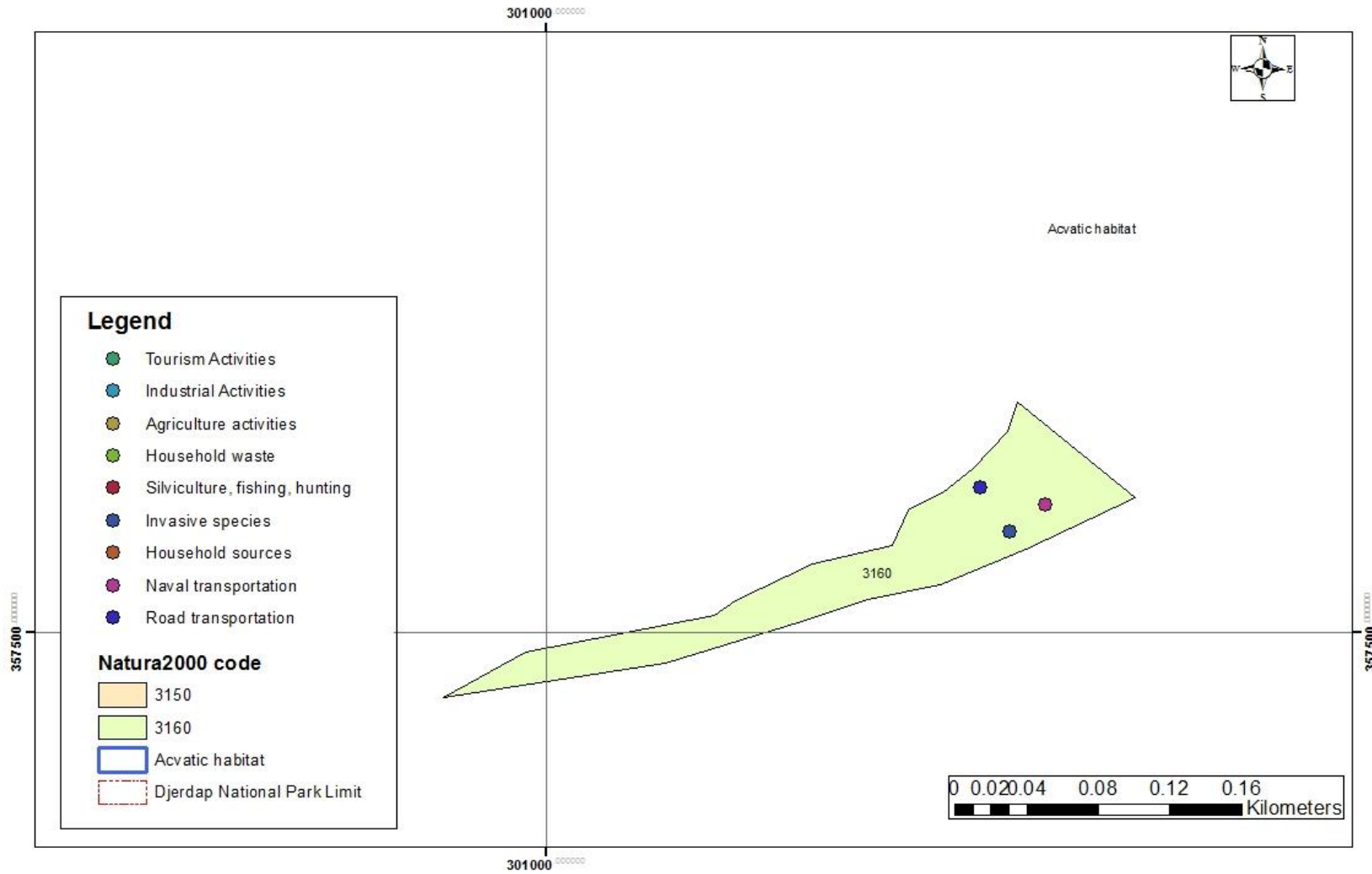
Threats for Brnjicka wetland habitats



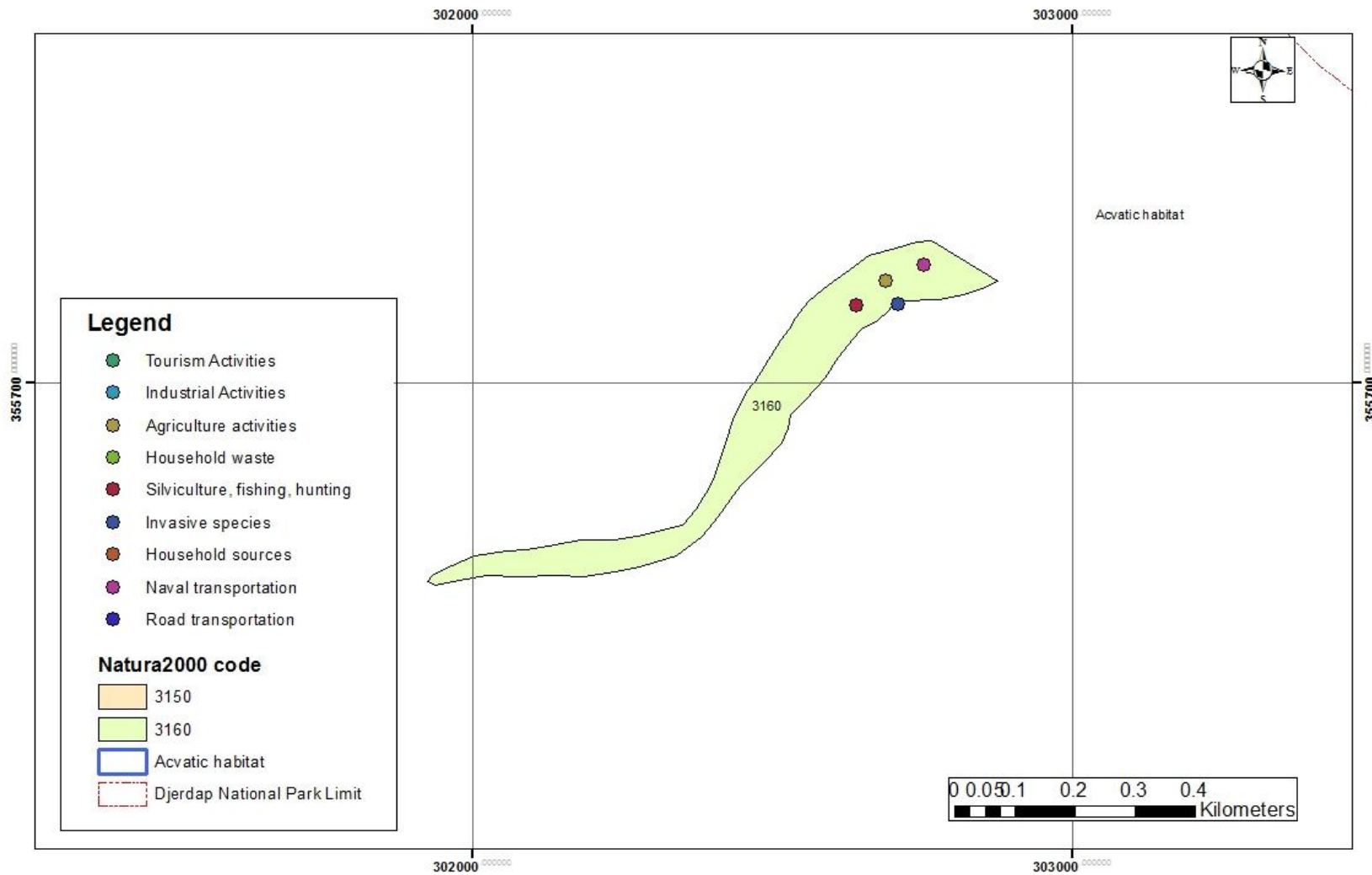
Threats for Goldubac wetland habitats



Threats for Kasajna wetland habitats



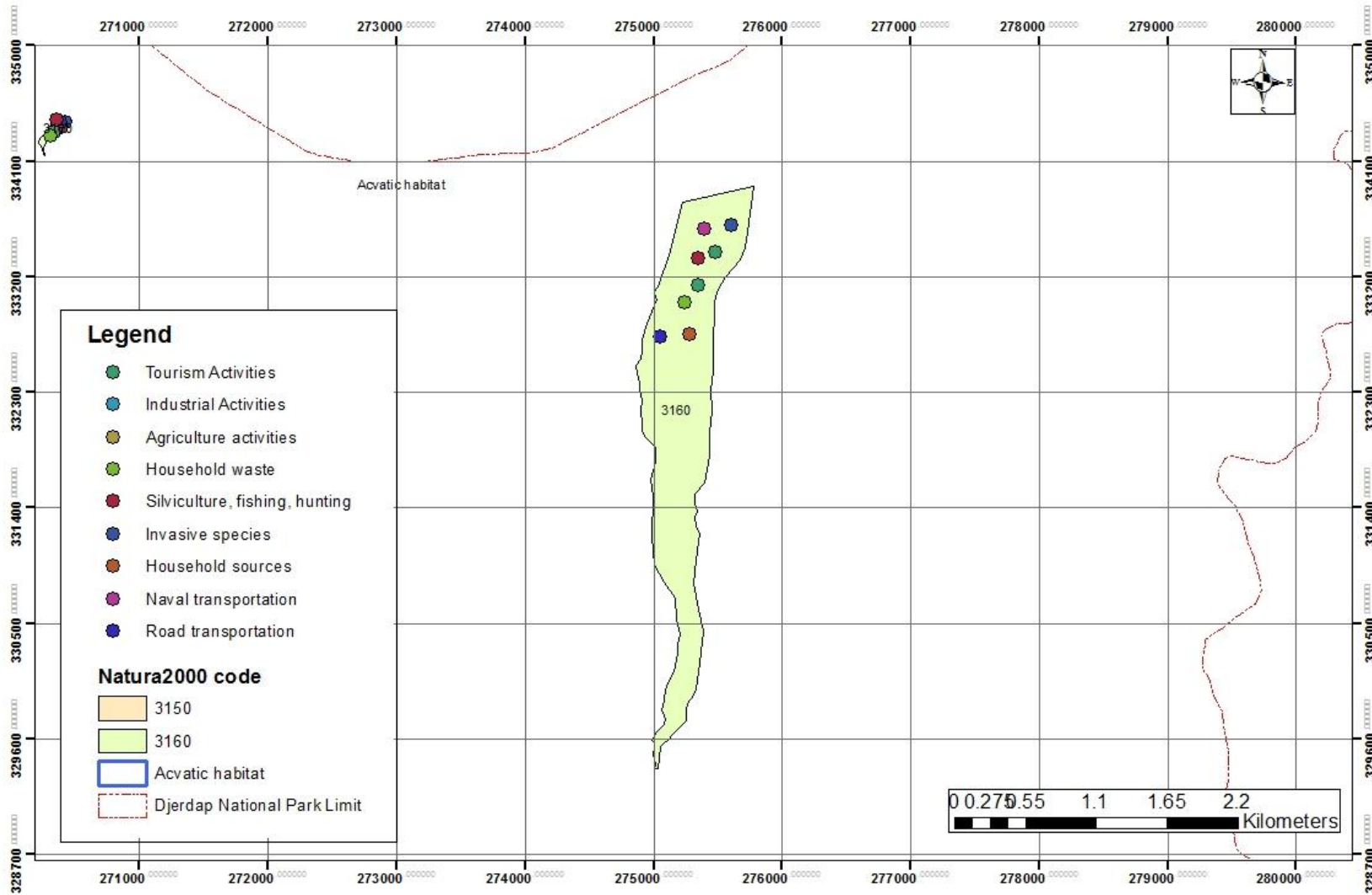
Threats for Kosovica wetland habitats



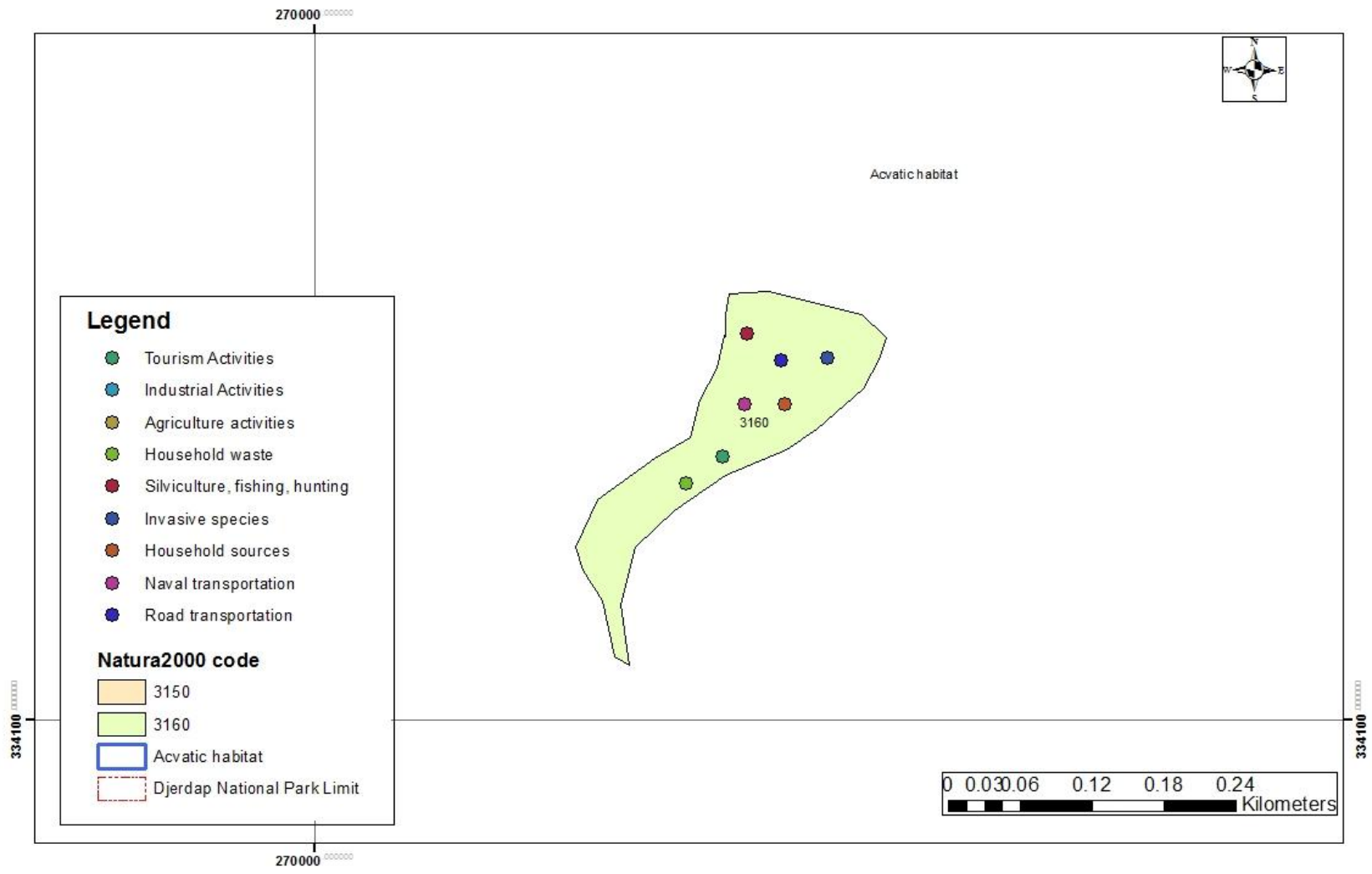
Threats for Mali Kovilovski Potok wetland habitats



Threats for Porecki wetland habitats

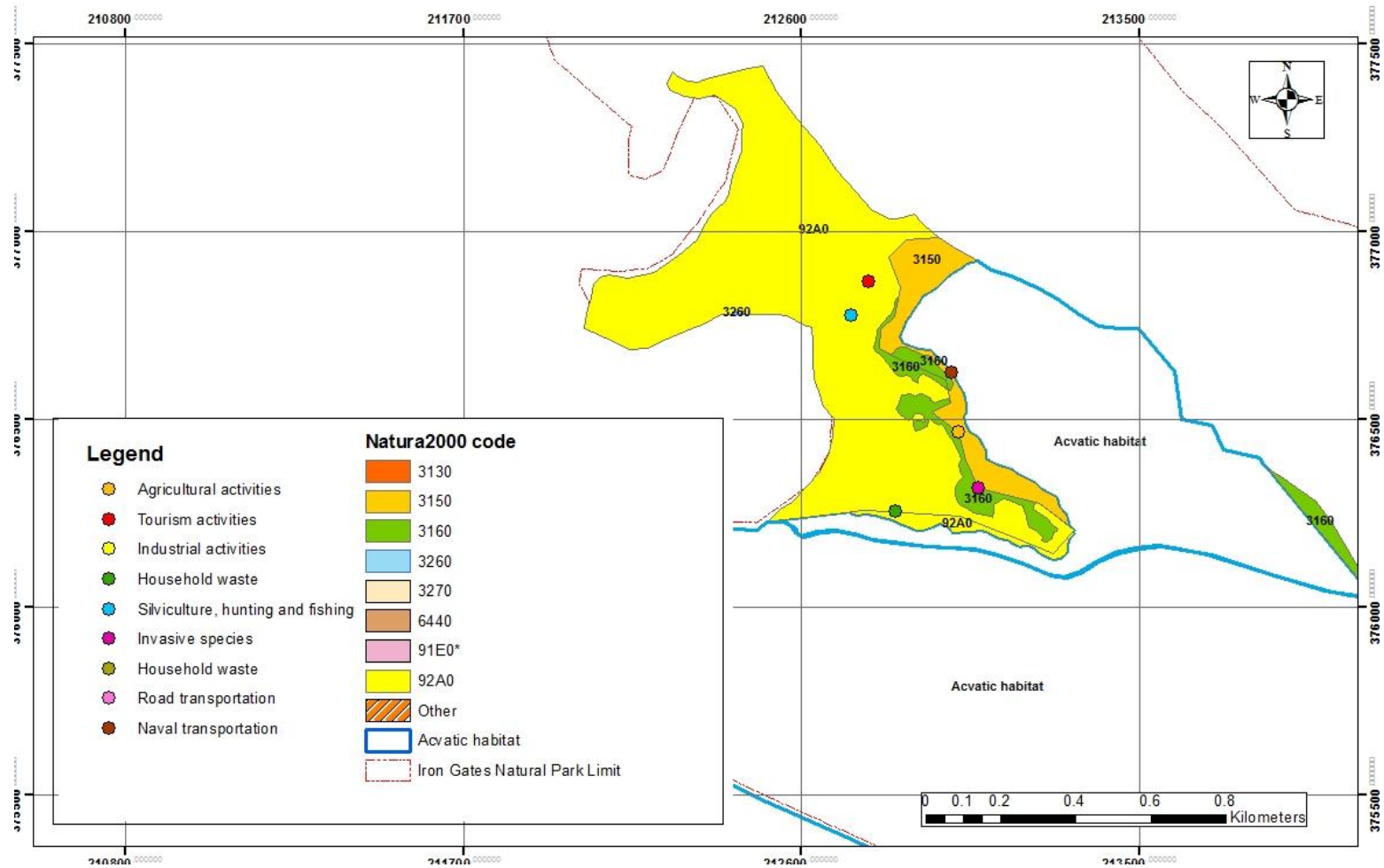


Threats for Zlatica wetland habitats

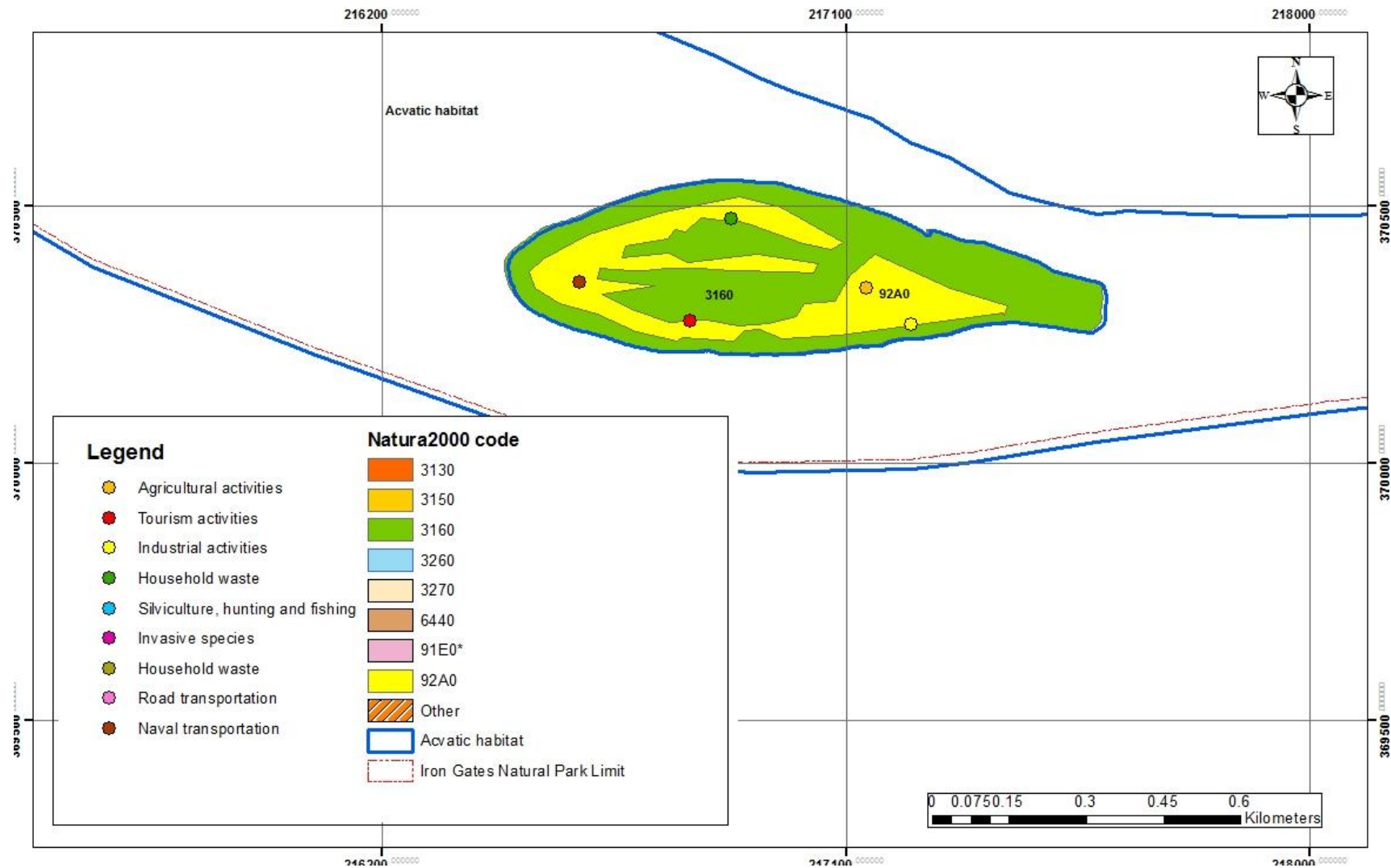


Appendix 5b. Threats of wetland habitats in Iron Gates Natural Park

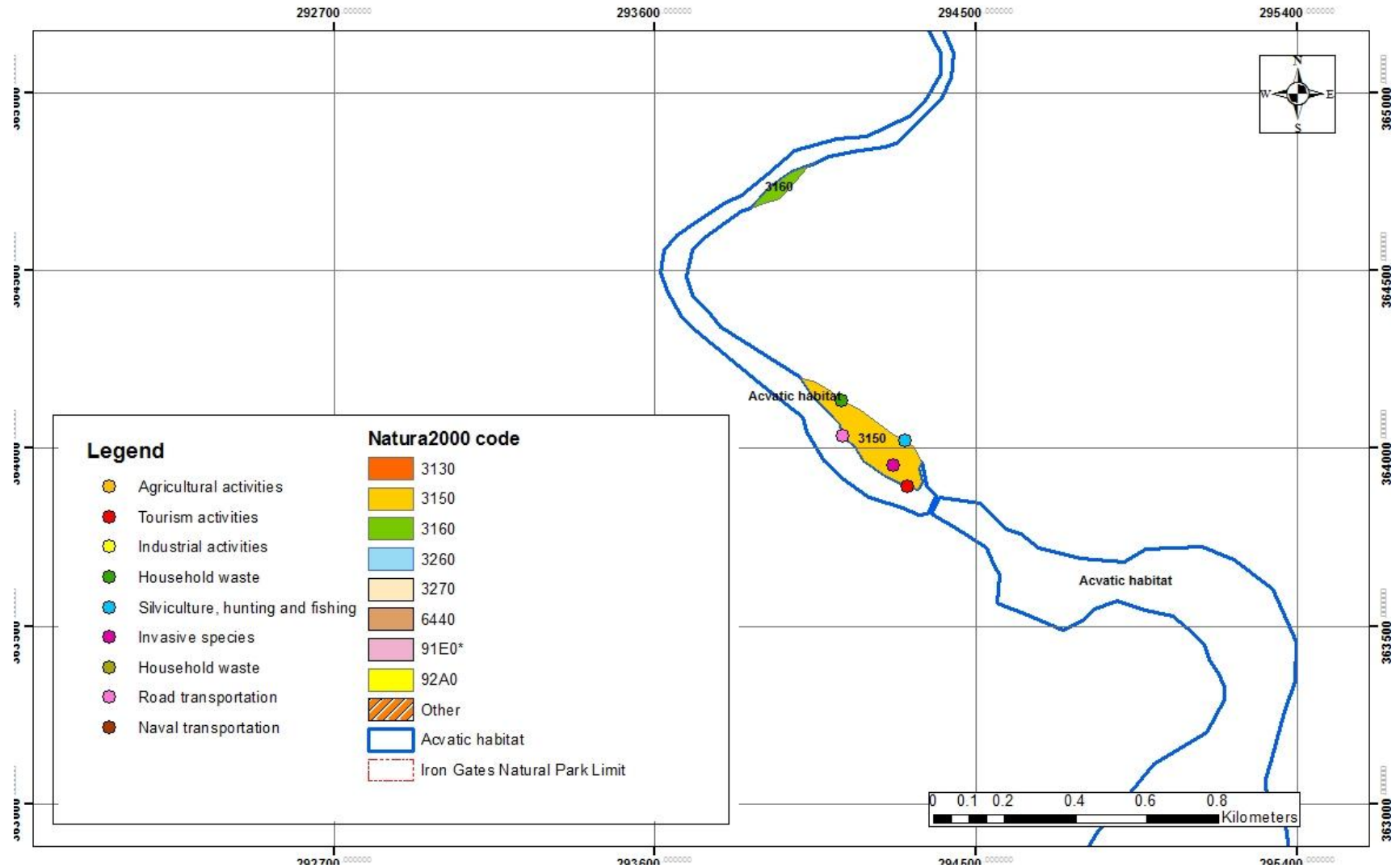
Threats for Balta Nerei wetland habitats



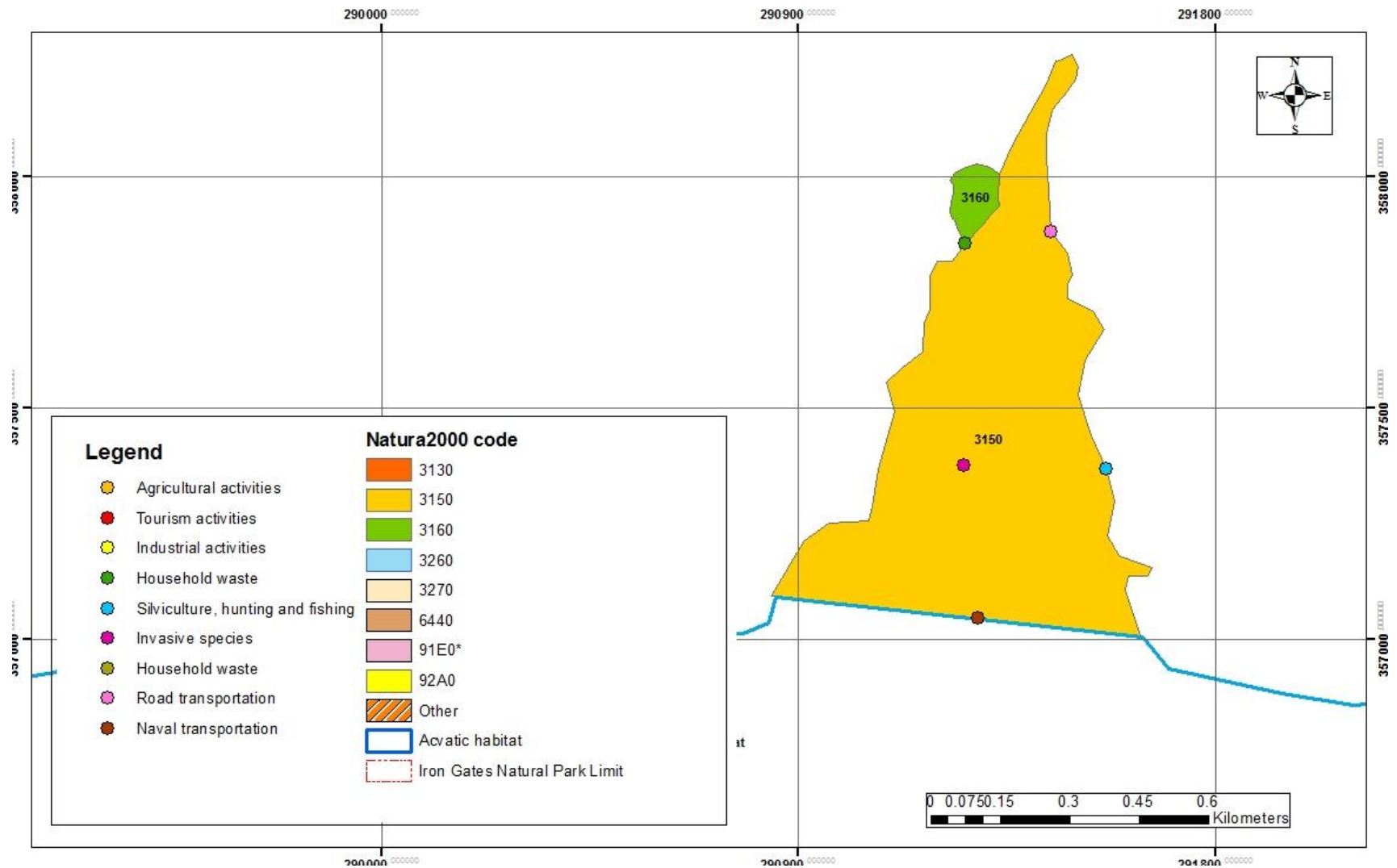
Threats for Calinovat wetland habitats



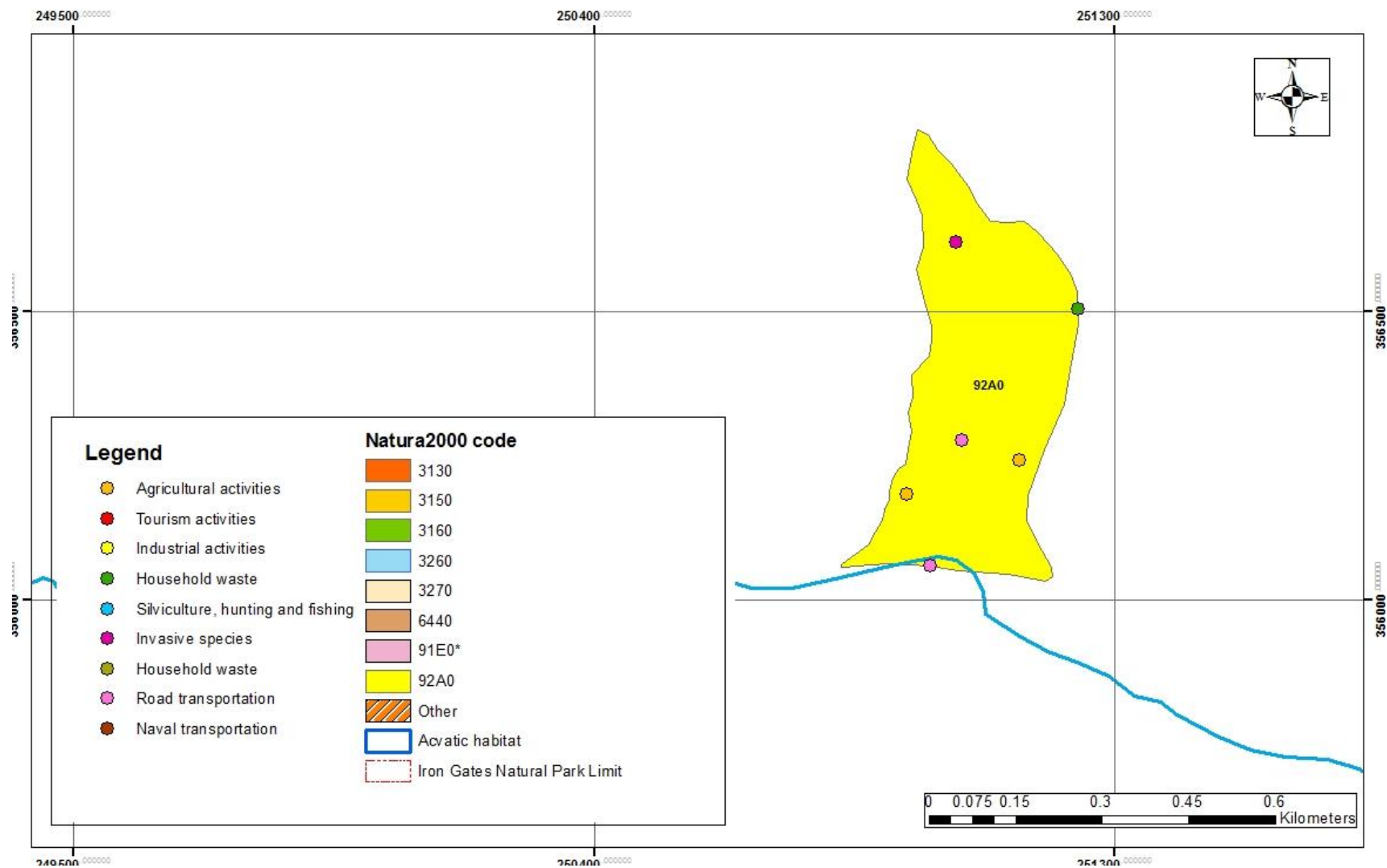
Threats for Cerna Bay wetland habitats



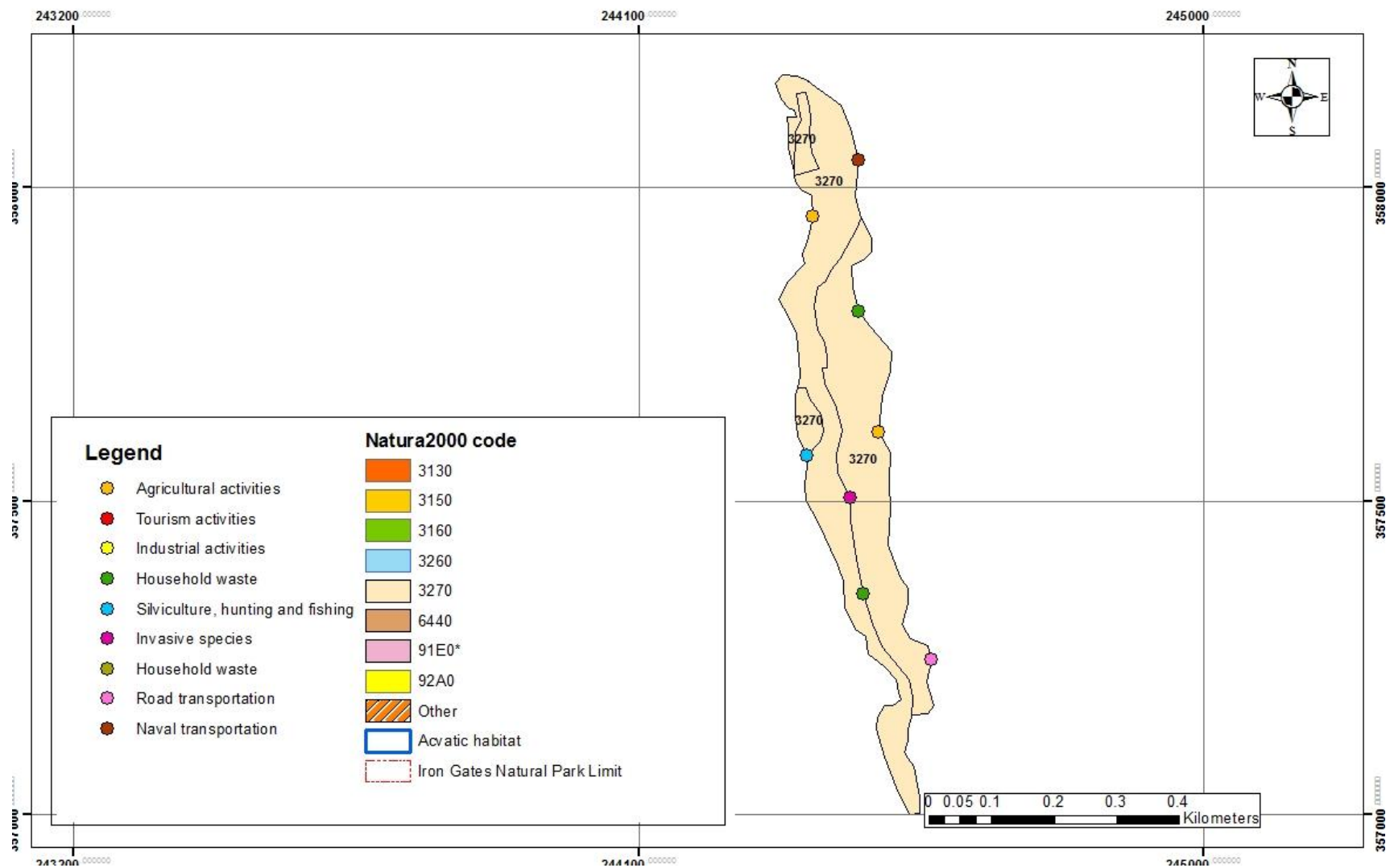
Threats for Eselnita Bay wetland habitats



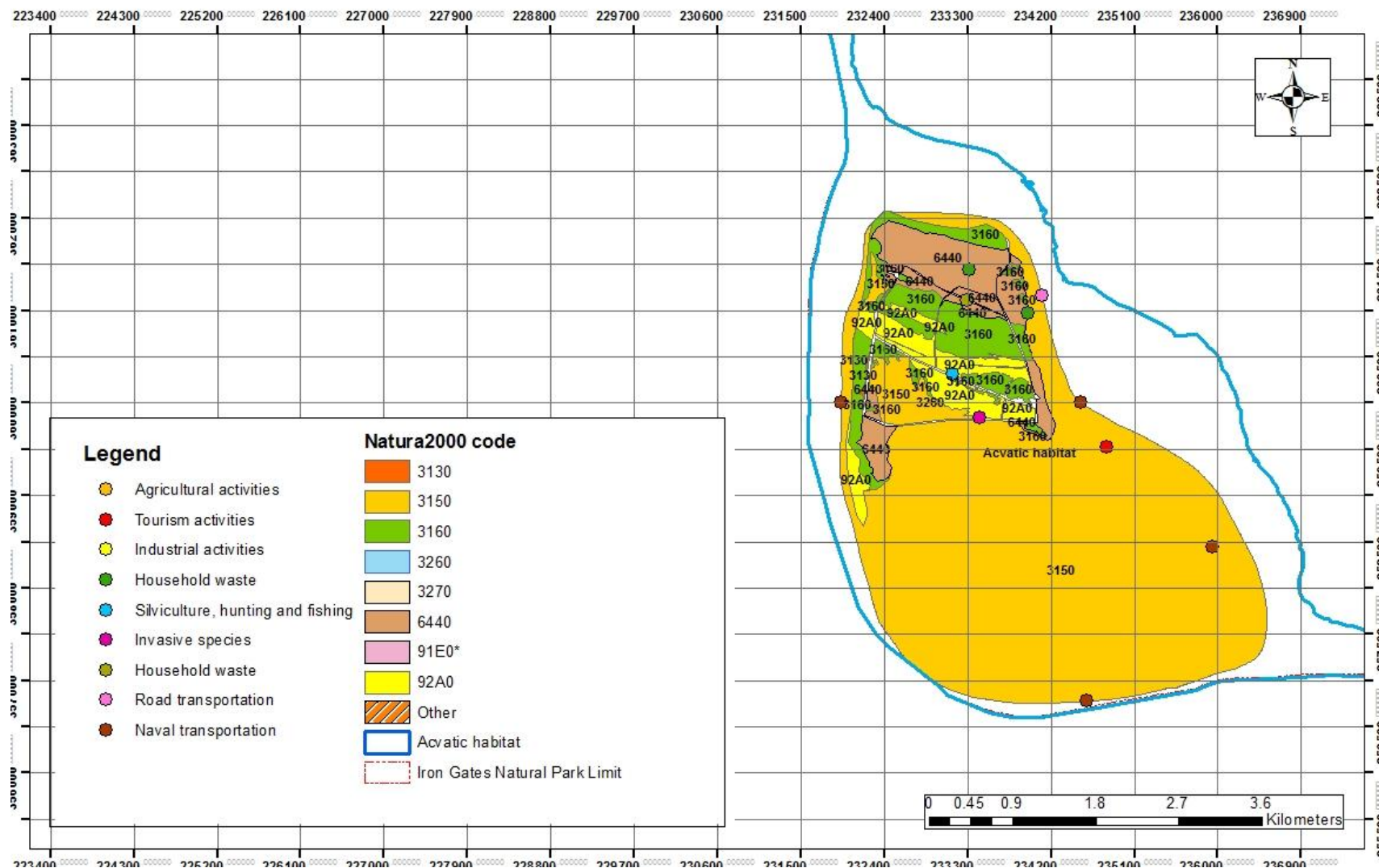
Threats for Gornea-Sichevita wetland habitats



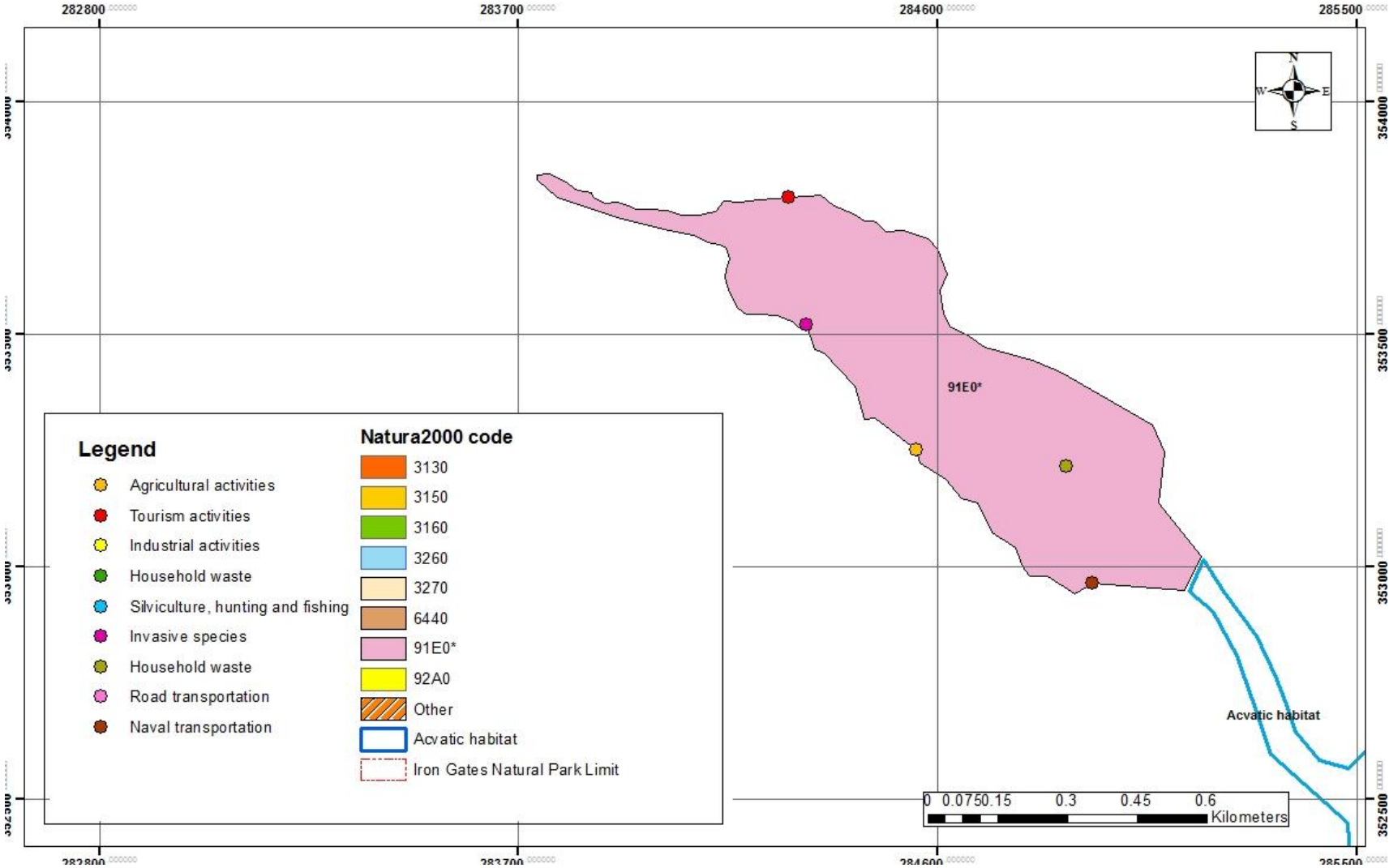
Threats for Liborajdea wetland habitats



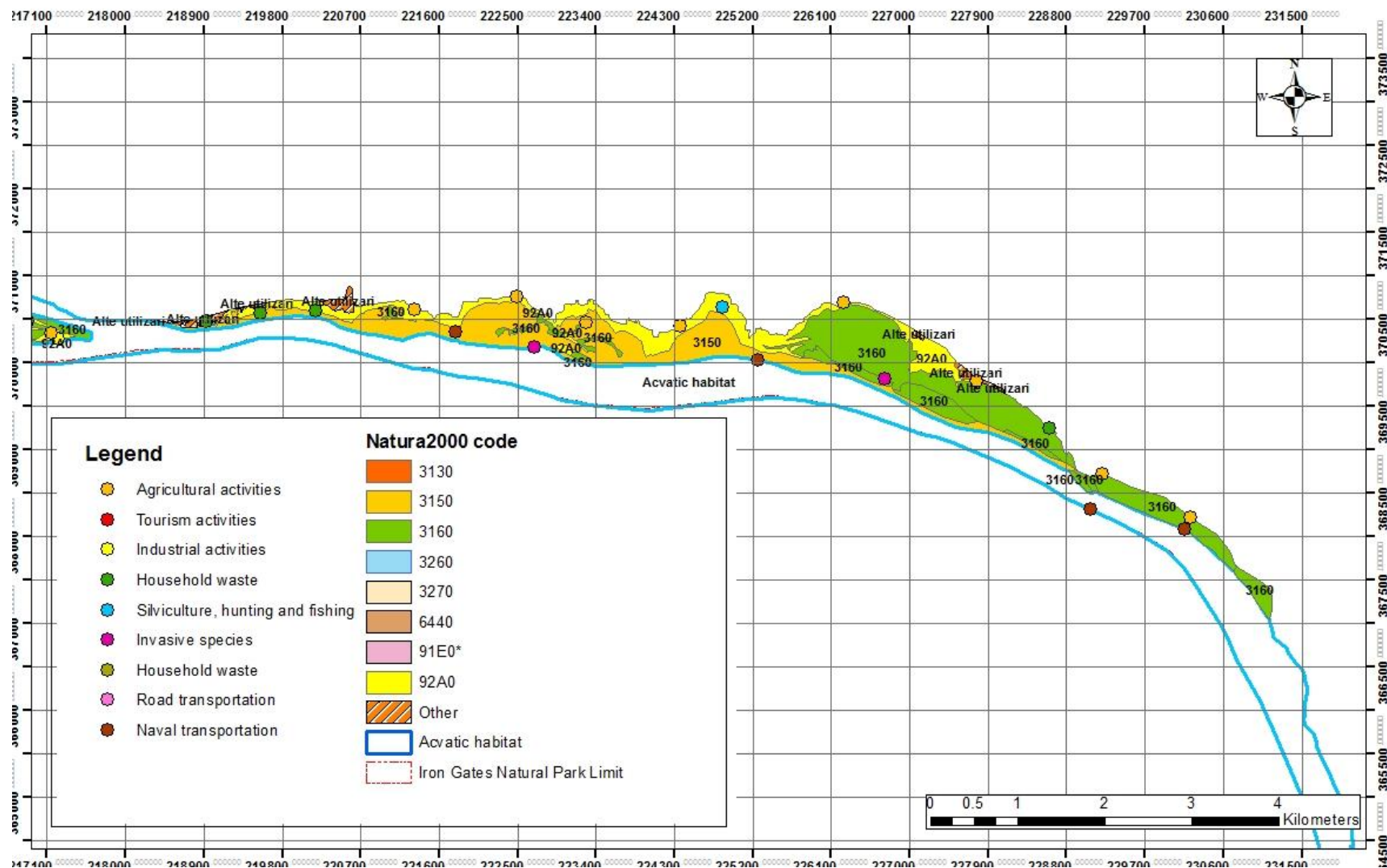
Threats for Moldova Veche wetland habitats



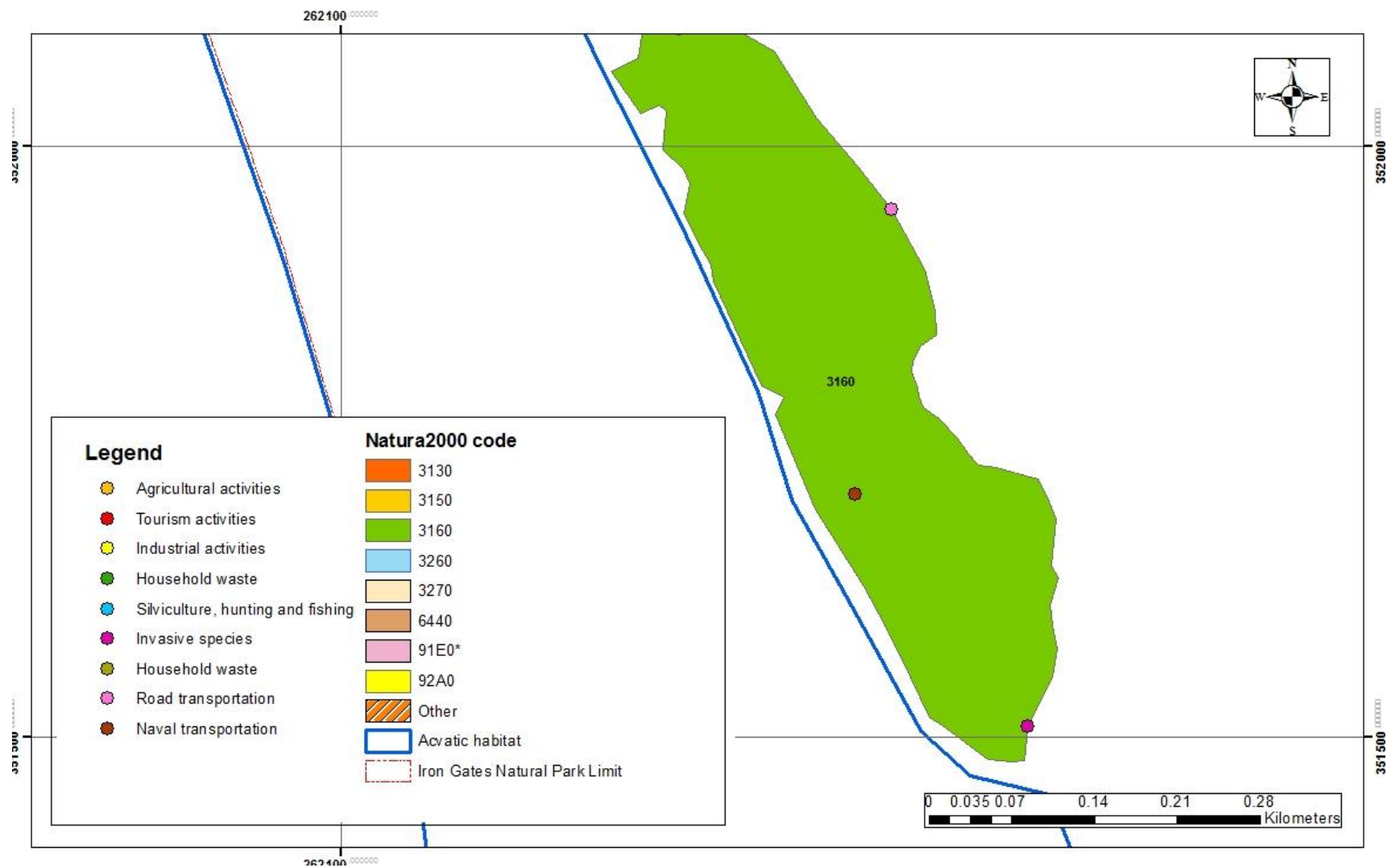
Threats for Mraconia Bay wetland habitats



Threats for Divici - Pojejena wetland habitats



Threats for Sirinia wetland habitats



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