Project funded by EUROPEAN UNION

BioLearn

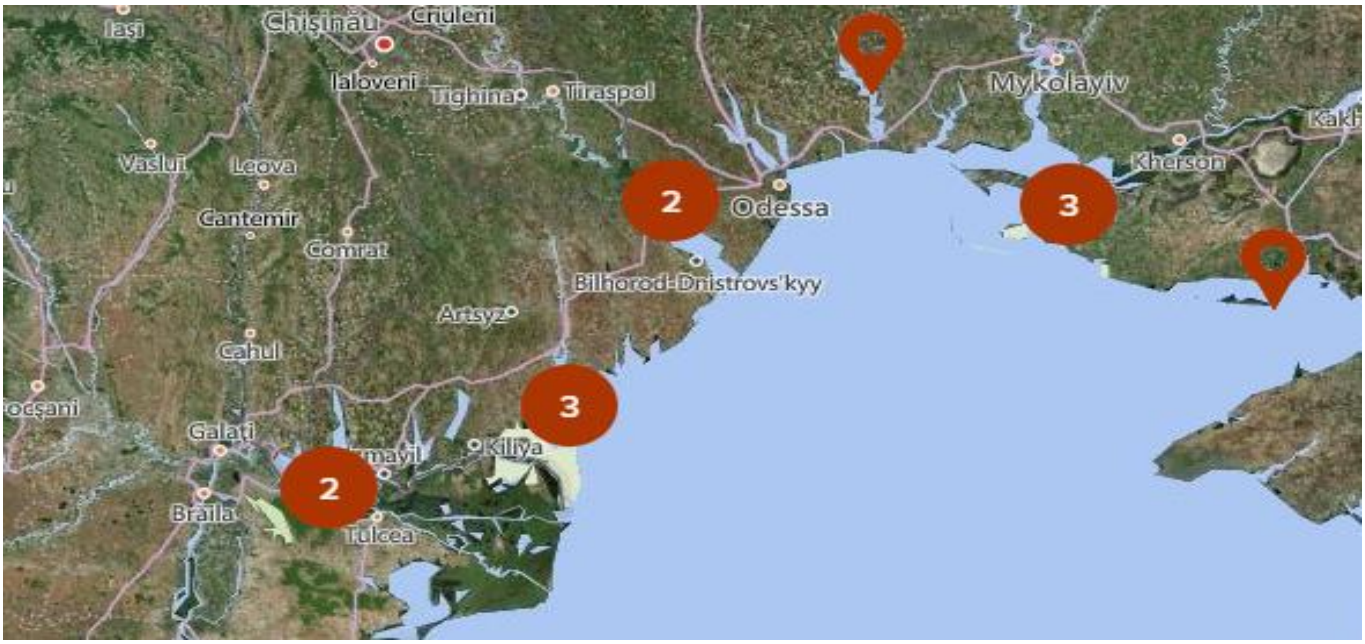
Black Sea CROSS BORDER COOPERATION

BLACK SEA COASTAL WETLANDS IN UKRAINE

Danube and Black Sea Biosphere Reserve

Waste Types and Quantities

Current State Analysis



Responsible organisation	NGO Agricola (Ukraine)
Point of contact	Volodymyr Poltorak, volodymyr.poltorak@gmail.com

Commonborders. Commonsolutions.

CROSS BORDER COOPERATION

CONTENTS

1. INTRODUCTION

Purpose of the Study

This study was prepared within the scope of the BIOLEARN project (BSB142), carried out within the framework of the EU Black Sea Basin Cross-Border Cooperation Programme.

The purpose of the study was to conduct research on the distribution, quantities and types of pollution in southern Ukrainian wetlands in order to reduce impacts and ensure the sustainability of the wetlands within the balance of protection and use in the Black Sea basin. In particular, the Danube and Black Sea Biosphere Reserves are located where two of the five biggest European rivers flow into the Black Sea. They are the most important protected areas in southern Ukraine and have "international importance", epitomised by their Biosphere Reserve status. They make significant ecological and economic contributions to their neighbouring regions.

In the first part of the study, information from literature is presented. General information about the area and previous studies in the field are provided. In the second part of the study, the results from stakeholder interviews that were conducted in order to determine the factors causing pollution in the region and the type and quantity of pollution are set out.

2. GENERAL INFORMATION ABOUT WETLANDS

At the national level, the main government body responsible for marine and river litter is the Ministry of Environment Protection and Natural Resources (MEPNR) whose activities are directed and coordinated by the Cabinet of Ministers (https://mepr.gov.ua). The Ministry governs the implementation of environment legislation including air quality, preservation of the ozone layer, restoration and protection of flora and fauna, restoration and protection of soils, restoration and protection of water resources (surface, ground, marine), and sustainable use of water and mineral resources.

However, other Ministries are also important actors for the management of marine litter. Thus, the Ministry of Infrastructure (https://mtu.gov.ua) is responsible for the prevention and elimination of pollution in seaports, prevention of pollution of inland waterways, and control of operations involving harmful substances on ships, marine installations and ports. The State Service for Marine and River Transport controls observance of the requirements of the Rules for Handling Marine Litter on vessels, marine stationary and floating facilities, and buildings. In addition, adherence to the requirements of the Rules for Handling Marine/River Litter is exercised by the Azov Marine Ecological Inspection, the Azov-Black Sea Ecological Inspection, and the Ecological Inspectorate of the Northwest Black Sea Region.

In accordance with the National Waste Management Plan, Ministries are entitled to develop and submit to the Cabinet of Ministers of Ukraine draft framework laws on waste including approval of the National List of Waste on the basis of European directives, implementation of a waste classification procedure, determining the procedure for classifying waste as hazardous, establishing an accreditation procedure for laboratories for conducting analyses necessary for the classification and characteristics of waste, etc. Local authorities work closely with the Regional State Administrations, business entities, National Academy of Sciences, State Television and Radio Broadcasting, and state ecological inspections.

At present, the first stage of implementation of the Waste Management Strategy concerns drafting legislation on waste management; waste disposal; waste combustion; waste from the extractive industries; household waste; packaging waste; waste petroleum products; decommissioned vehicles; batteries and accumulators; and waste electrical and electronic equipment among other topics. In addition, the port administrations, patrols are responsible for the implementation of all policies that target marine pollution, and with issues related to the surveillance and control of activities at the sea. There is no state body which is responsible for designing and implementing policies for alternative packaging.

The tourism sector is also interested in controlling marine litter, but sanatoriums and hospitals do not have the proper collection and disposal facilities, especially during the summer.

The monitoring of litter in the marine environment and biota is carried out by various bodies including the Institute of Marine Biology of the National Academy of Sciences of Ukraine, State Research Laboratory for the Prevention of Pollution of the Environment, Southern Scientific Research Institute of Marine Fisheries and Oceanography, Research Institute of Environmental Protection and Human Rights, and Ukrainian Scientific Centre of Ecology of Sea. These bodies provide important information and scientific insights through their research regarding the sources of litter, and the current situation and trend of impacts on the marine environment and biota.

Several NGOs (e.g. Southern Ukrainian Ecological Union, Ukrainian branch of the International Academy of Ecology and Human and Nature Safety), as well as volunteers from scientific institutes (for example UkrSCES), collect litter from the coastal areas. They also campaign for the control of marine garbage among other residents, consumers of plastic products, manufacturers, utilities, and other users.

2.1. Definition and functions of wetlands

The Ramsar Convention defines wetlands as areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres[1]. Wetland ecosystems around the world cover an estimated 1,280 million hectares; that is, they cover 33% more than the surface area of the USA and 50% more than that of Brazil. The Ramsar Convention recognises 42 types of wetland according to their geographical conditions and formation mechanisms, grouped within three main categories, namely: (1) marine and coastal wetlands (coral reefs, mangroves, sea meadows, and estuaries); (2) terrestrial wetlands (swamps, peatlands, lakes, rivers and underground water habitats); and (3) artificial wetlands (rice paddy, dams, water reservoirs and fish ponds). The Convention also identifies a range of ecosystem functions performed by wetlands (Table 1).

Table 1. Ecosystem functions of wetlands

Ecosystem function	Mechanisms
Human life support	Drinking water supply
Balancing the hydrological regime and ensuring water quality	Regulating groundwater discharge Recharging aquifers Preventing saltwater intrusion Nutrient recycling
Ameliorating climatic change impacts	Flood control Carbon sequestration in aquatic vegetation
Maintaining biodiversity	Providing wildlife habitats
Providing economic benefits	Water supply for farming Fisheries Water sports Reed biomass production Navigation

2.2. National wetland management policies

The Ramsar Convention entered into force in Ukraine on 1 December 1991. Ukraine currently has 50 sites designated as Wetlands of International Importance (Ramsar Sites), with a total surface area of 802,604 hectares. The convention also underpins the National Wetland Policy which is

[1] Ramsar Convention on Wetlands of International Importance https://www.ramsar.org/

based on the Laws of Ukraine 'On Environmental Protection' (1991), 'On Protected Areas Network of Ukraine' (1992), 'On the Red Data Book of Ukraine' (2002), 'On Flora' (1999), 'On Fauna' (1993), 'On Ukraine's Ecological Network' (2004), 'On Fisheries, Industrial Fishing and Protection of Aquatic Bioresources' (2011), as well as the Water Resources Code of Ukraine (1995)[2] and the Land Resources Code of Ukraine (2002).

The Concept for Conservation of Ukraine's Biological Diversity was approved by the Resolution of the Cabinet Ministers of Ukraine #439 dated May 12, 1997. The Concept on Environmental Protection and Rehabilitation of the Azov and the Black Seas was adopted by the Resolution of the Cabinet of Ministers of Ukraine on 10 July 1998 (#1057) and the State Programme on Environmental Protection and Rehabilitation of the Sea of Azov and the Black Sea was approved by the Parliament of Ukraine in 2001. The Resolution of the Cabinet of Ministers of Ukraine 'On Procedure for Receiving of the Status of Wetlands of International Importance' was adopted on 29 August 2002, #1287. The State Programme of Ukraine's National Ecological Network Development for Years 2000-2015 was adopted by the Parliament of Ukraine in 2000. The National Wetlands Conservation Strategy and National Action Plan for Wetlands Conservation were adopted by the decision of the State Agency for Protected Areas of Ukraine and recommended for implementation by wetland stakeholders of Ukraine.

2.3. Causes of wetland damage

Although wetlands have many functions and contribute to the region in which they are located, they are suffering an accelerated degradation tendency due to intensive irrigation practices, groundwater abstraction and drainage. The problems experienced in wetlands in Ukraine and the world in general can be listed as follows:

- Drainage for agricultural or settlement purposes
- Water quality deterioration: wetlands are generally formed at the deepest or lowest point of the basin where they are located so almost all of the drainage water coming out of the agricultural lands, residential areas and industrial facilities in the basin eventually reach the wetlands; the lack of the treatment facilities in both residential areas and industrial facilities or improper operation of the treatment facilities constitute the biggest sources of pollution in wetland ecosystems.
- Habitat destruction and loss of biological diversity in wetlands
- Administrative problems in wetlands
- Lack of awareness of the people living around the wetlands and non-public participation in wetland management

[2] According to Article 87 of the Water Code, water protection zones are established in order to create a favorable regime for water bodies, to prevent their pollution, clogging and exhaustion, destruction of near-water plants and animals, as well as to reduce fluctuations in flow along rivers, seas and around lakes, reservoirs and other water bodies. Accordingly, a water protection zone is a protected area of economic activity where the use of persistent and potent pesticides, cemeteries, cattle burial pits, landfills, sewerage filtering fields, and discharge of untreated wastewater are prohibited.

2.4. Emerald Network of coastal wetland sites in Ukraine

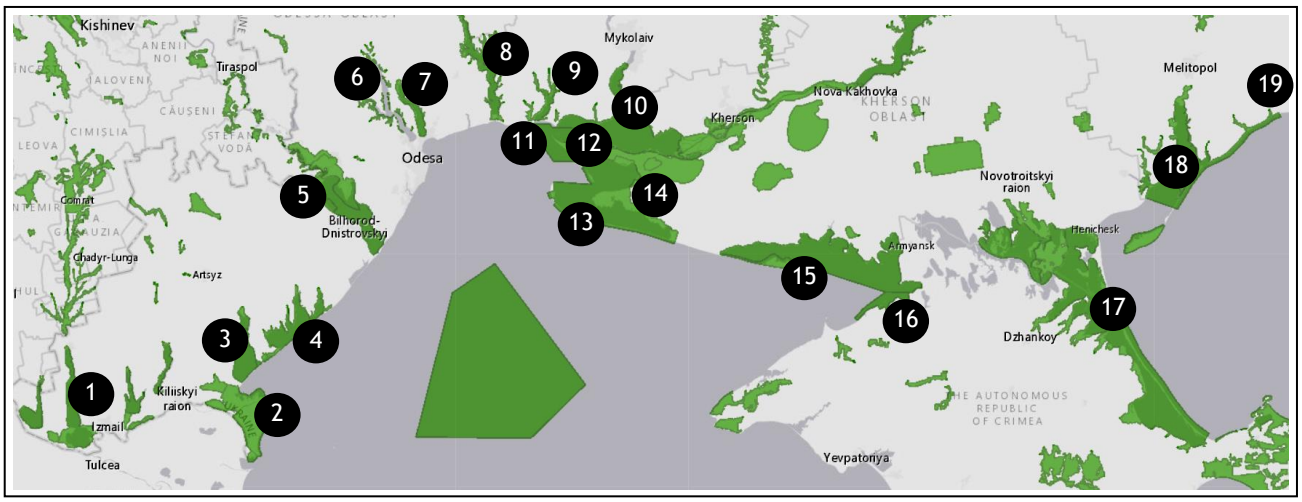
The environment of Black Sea coastal wetlands is an important area that needs to be protected as well as being an important ecological area in Ukraine. It is an ecologically sensitive area, is under threat especially due to paddy farming practices, fishing, hunter activities, and anthropogenic pressures.

In 2019, all Ramsar-listed and other wetlands of high natural importance were designated as Emerald Network sites (Figure1) under the Bern Convention[3] to which Ukraine is a party. They have been registered in the State Land Cadastre and therefore protected in accordance with the requirements established by the Law of Ukraine "On the Nature Reserve Fund of Ukraine". In addition, under the EU-Ukraine Association Agreement (2014), Ukraine must harmonise its protected area system and management with the EU Birds and Habitats Directives, with Emerald Network sites having a status analogous with the Natura 2000 network in the EU.

There are 19 Emerald Network sites covering the Ukrainian Black Sea coast, southern rivers and lakes with a combined area of 985,209 ha. Of these, 11 sites are fully or partly included in the Ramsar list of wetlands of international importance.

Figure 1: Emerald Network sites of Ukrainian Black Sea coast, southern rivers and lakes

Source: https://emerald.eea.europa.eu/



[3] https://www.coe.int/en/web/bern-convention/emerald-network

Table 2: List of coastal Emerald Network sites of Ukrainian Black Sea coast, southern rivers and lakes

No.	Name and brief description	Area (ha)	Region(s)	Ramsar List
1.	**Systema Dunaiskykh Ozer** The site includes one marsh area and 5 lakes, two of them are Ramsar sites. The site is important for breeding birds (above 30,000 pairs), moulting, migrating and wintering birds (max. 40,000 individuals). There are 57 bird species listed as threatened in Ukraine.	52,807	Odesa	✓ part
2.	**Danube Biosphere Reserve** An area of river channels, wetlands, islands and sea shore that supports many threatened and/or endemic species of global importance for biodiversity. 18 plant species are listed in the Red Data Book of Ukraine, and 10 plant and 40 animal species are included in the European Red List.	50,213	Odesa	✓
3.	**Sasyk Lyman** Lake Sasyk is a reservoir that was constructed in 1978 on the site of a partly enclosed natural lagoon on a Pliocene-Quaternary terrace. The site serves as a breeding and migratory stopover site for thousands of wetland birds, with seasonal concentrations of up to 100,000 individuals. Large numbers of the threatened species *Pelecanus onocrotalus* and *Branta ruficollis* occur at the site.	18,984	Odesa	✓
4.	**Tuzlovski Lymany National Nature Park** The site consists of semi-enclosed shallow brackish lagoons fed by small rivers adjacent to the Black Sea, with peninsulas and islands, sandy spits and shell bars. Over 1,000 pairs of waterbirds nest at the site, including nationally and internationally threatened species. The site supports internationally important numbers of *Branta ruficollis* and is an important staging, breeding and wintering area for numerous species of waterbirds. Several species of plants listed in the Red Data Book of Ukraine are present.	27,778	Odesa	✓
5.	**Lower Dniester National Nature Park** This site includes the Dniester River delta, streams, floodplain lakes, and the Dniester Liman. Vegetation consists of floating vegetation, reed thickets, and floodplain forest supporting various nationally threatened plant species. An important area for waterbirds in all seasons with internationally important numbers of *Egretta alba* and *Plegadis falcinellus* breeding, and over 50,000 birds wintering here.	21,369	Odesa	✓ part
6.	**Svitlogirsk-Altestove creeks** Steppic creeks within the site are important habitats for reptiles listed in the Red Book of Ukraine. Being situated near the estuary, this site is an important place for birds' nesting and migration. Also it represents quite well preserved steppic biotopes with low level of anthropogenic transformation.	2,696	Odesa	
7.	**Kuyalnytskyi Lyman** A shallow, brackish to hypersaline waterbody connected to the sea by a canal. It has significant areas of halophytic vegetation with several plant species listed in the Red Book of Ukraine.	8,439	Odesa	
8.	**Tyligulskyi Lyman** One of the most natural limans on the northwest coast of the Black Sea, the site includes accumulative islands, salt meadows, and sandy peninsulas. Vegetation consists of various species of hydrophilic plants and reedbeds and includes several endemic species. The site supports up to 10,000 wintering, nesting, and migrating waterbirds, several	23,243	Odesa / Mykolayiv	✓

No.	Name and brief description	Area (ha)	Region(s)	Ramsar List
	species of which are nationally or internationally threatened.			
9.	**Berezanskyi** A shallow, brackish waterbody and estuary to the Black Sea. It has significant areas of halophytic vegetation with several many species listed in the European Red List: Birds = 43; Fishes = 4; Invertebrates =2.	8,827	Mykolayiv	
10.	**Dniprovsko-Buzkyi Lyman** The site supports high diversity of bird species and represents an important area for significant numbers of migratory birds. The site is a part of Dnipro River Ecological Corridor, one of three main migration routes in Ukraine.	71,276	Kherson / Mykolayiv	✓
11.	**Biloberezhzhia Sviatoslava National Nature Park** An area of the Dnipro delta with coastal and freshwater wetlands, extensive dune systems, steppes and woodlands. It supports a great range of both endemic and threatened species of plants and animals.	35,242	Mykolayiv	
12.	**Kinburnska Kosa** An area of the Dnipro delta with coastal and freshwater wetlands, extensive dune systems, and sandy steppes. It is important for breeding and migratory birds as well as endemic and threatened species of plants.	46,588	Kherson	
13.	**Zatoky** The site comprises a large area of shallow marine water and shoreline with halophytic vegetation that support a large number of seabird colonies and migratory waterbirds. Species listed in the European Red List are: Birds = 7; Fishes = 4; Invertebrates =1; Mammals = 2.	105,086	Kherson	
14.	**Black Sea Biosphere Reserve** This site is the largest nature reserve in Ukraine, possessing a wide range of coastal habitats - lagoons, brackish lakes, sandy steppe and salt marsh. It supports a It supports a great range of both endemic and threatened species of plants and animals.	115,873	Kherson / Mykolayiv	✓
15.	**"Swan Islands" Reserve** This marine stretch of northwest Crimea holds a large breeding colony of Cygnus olor, and provides important shallow offshore feeding grounds for seabirds.	9,826	Crimea	
16.	**Azovo-Syvaskyi National Nature Park, Chonharskyi, Eastern Syvash** The Syvash complex is a vast area, the largest of its kind in Europe, comprising shallow, saltwater bays with an indented, rocky shorelines and numerous spits and islets, as well as a large number of saline lowlands and peninsulas. It is of global importance as a migration, wintering and breeding area for waterbirds, supporting tens of millions of individuals.	261,401	Crimea	✓
17.	**Pryazovskyi National Nature Park** A coastal wetland important for its steppic grasslands and shallow waters supporting over 110 species of threatened European species.	77,900	Zaporizhya	
18.	**Obytichna Kosa ta Zatoka** A sandy spit and adjacent coastal wetlands important for endemic plants and as a feeding area for *Phocoena phocoena*.	25,462	Zaporizhya	✓
19.	**Meotyda** An area of sandy spits and coastal wetlands important for its steppic grasslands and shallow waters supporting 106 species of threatened European species and important migration and breeding area for gulls, terns and waders.	22,199	Donets'k	✓
	Total area	**985,209**		

3. POLLUTION AND ECOSYSTEM THREATS

3.1. Pollution Sources

As a result of literature research and field studies conducted on pollution sources and types in the Danube and Dnieper deltas, the factors that may have an impact on the wetlands can be listed as follows:

- Agricultural activities
- Tourism/Recreational Activities
- Eutrophication
- Pollution from local settlements
- Industrial pollution
- Marine litter

3.1.1. Pollution caused by agricultural activities

Rice production systems are located near Kilia in the Danube delta, and along the coast from Skadovsk to the border with the Autonomous Republic of Crimea on the coastal floodplain terrace of the Lower Dnieper. These lands were practically unproductive for growing crops due to their high level of salinisation until chemical ameliorants in combination with other measures brought them into use during the Soviet period. There area is dominated by specialised rice farms with a large share of rice crop rotations in the total arable land.

Research studies from the 1990s showed that stopping rice cultivation in this region would lead to secondary salinisation of rice paddies, and waterlogging from lack of drainage. Therefore, it was necessary to take into account the economic and social problems for farms when changing their activity, taking into account the requirements for ensuring ecological balance in region, as well as the intentions of the heads of district state administrations and farms; that is, the issues of coordination with producers were raised. The concept of rice production development was the following:

1. The use of rice systems. Given the soil and hydrological conditions of rice lands, features of Dzharylgachskiy Bay, and concentration of health spas, to completely stop rice growing in the region from Lazurne to Skadovsk and part of rice systems near Kilia.

2. Use of rice crop rotations and cultivation technologies. Considering the future reorientation in the Kherson and Odesa regions for the production of baby food along the Black Sea coast, most rice farms should switch to herbicide-free rice cultivation technology. For effective use of rice systems in this regard, the structure of sown areas in crop rotations should be: - rice sowing area - 30-35%; - perennial grasses - 40-45%; - reclamation fields - 20-30%. This will make it possible to allocate 11,658 hectares of crop rotation area, in which 3,300 hectares will be set aside for sowing rice. With strict adherence to technology, this will ensure the production of 2.5-3 tons of

raw rice per hectare, in general, up to 10 thousand tons, which will be used for product development for baby food.

3. Introduction of pesticide-free technology on a large area needs to address a number of organisational and technological issues, but one of the most important is to provide seed rice to farms that are resistant to diseases and can compete with weeds.

Rice production in Ukraine is costly and rice farms are generally unprofitable. So rice production has a low overall pollution level in Ukraine, but the impacts on wetlands can be summarised as follows:

- Burning the rice stubble after the harvest
- Using chemical fertilisers during the growing season and mixing of these fertilisers with groundwater and discharge water
- Pesticide spraying
- Return of untreated irrigation water to the open waters

3.1.2. Pollution caused by tourism / recreation

Coastal wetlands have a rich and attractive variety of habitats that results in too many visitors going to them during the year. This situation creates pollution, especially from litter, food waste and faecal matter, that can be seen for example at Prymorske (Odesa oblast, Kilia rayon) and Zalizny Port (Kherson oblast).

A field study was conducted in order to determine the amount and types of pollution caused by daily visitors and recreational activities around wetlands of the Danube and Black Sea Biosphere Reserves. Within the scope of the field study, 4 sample areas were selected: two in Vylkove (1,2), one in Prymorske (3) and one in Zalizny port (4).

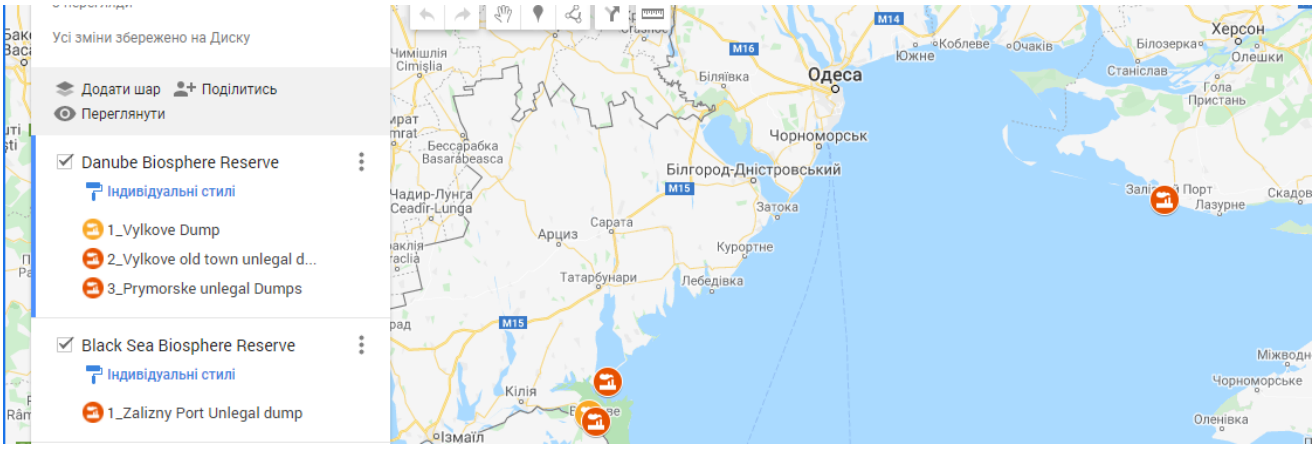


Figure 2: Field of study

Source: google map

Table 3 Waste left by visitors in the Black Sea coastal wetlands in Ukraine

Location	Waste Type
1	food packaging waste, cigarette litter, wet wipe waste, nut waste, plastic waste, diapers
2	food packaging waste, cigarette litter, wet wipe waste, plastic waste, construction waste, diapers
3	food packaging waste, barbeque waste, plastic covers
4	glass bottles, cigarette litter, wet wipe waste, construction waste, barbeque waste

Figure 3. Illeagal dump in Zalizny port (Kherson oblast)

As a result of the research plastic waste and food packaging were found to be the main types followed by plastic covers, nut shells, and broken glass bottles. These wastes were concentrated around the households and at the locations that are used for recreation.

3.1.3. Eutrophication

Eutrophication, also known as secondary pollution, is a phenomenon whereby wastewater with a high concentration of phosphates and nitrates from agricultural, domestic and industrial sources increase the nutrient levels in water bodies. These high levels of nutrients cause excessive algae growth that can shade out native water plants and deprive the water of oxygen leading to fish kills. The lower Danube lakes and Dnieper delta wetland systems are particularly vulnerable to eutrophication since they are shallow and receive large nutrient inputs from the river during the flood periods, as well as soil eroded from the surrounding agricultural land.

3.1.4. Pollution caused by local communities

Changes in consumption patterns in the last three decades have led to an unprecedented increase in the amount of household waste, which in turn has led to the emergence of tens of thousands of unauthorised landfills. In the past, landfills served only cities and industry. Now, near every one of the 60,000 settlements of Ukraine there are from one to dozens of open landfills: almost all of them are unauthorised and few, if any, have recycling facilities. Many are also used for construction waste and other hazardous materials. Having nowhere to put their waste, people dump it in forests, ravines, water courses and road verges. In more exposed areas, like the steppe zone, a lot of this litter is blown across the landscape.

Landfills are often set on fire to reduce waste, becoming a serious source of both air and water pollution. The products of decay and decomposition leach into the soil and groundwater, which is a source of water supply for many residents. The rotting temperature is sometimes so high that it often leads to spontaneous ignition, so that an incredible amount of harmful substances is released into the air (the decomposition of a plastic bags alone releases more than 70 different harmful chemicals into the air). In addition, such landfills are a breeding ground for insects and rodents, which are pathogens and vectors of various infectious diseases such as leptospirosis, rabies, encephalitis, plague and others.

The study identified several dozen landfills that threaten the environmental safety of the wetlands, as shown on the map below.

Close to the Black Sea Biosphere Reserve are situated 13 dumps:

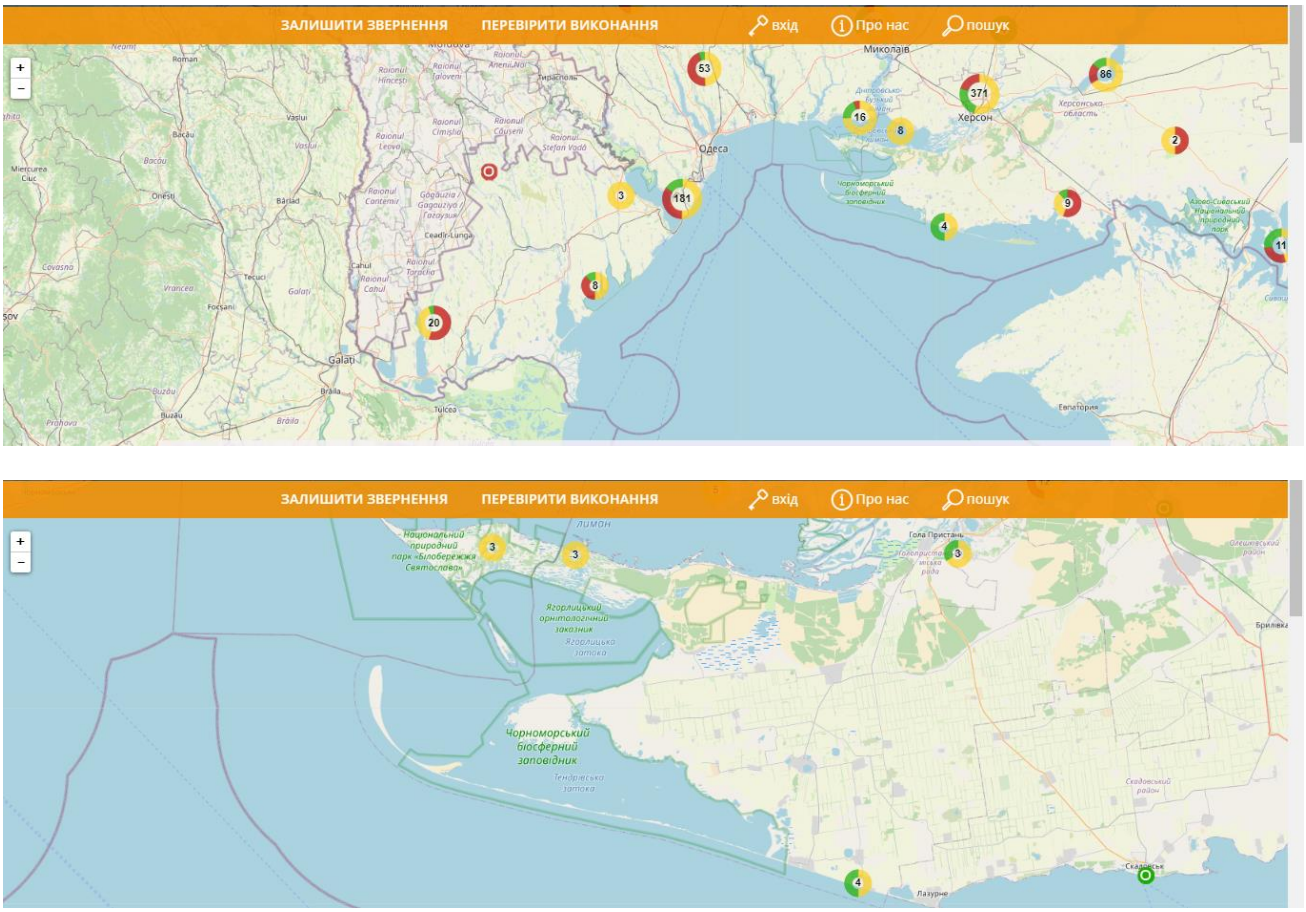


Figure 4. Map and photo of illegal dumps

3.1.5. Industrial Pollution

Industrial activity in south Ukraine plays a significant role in the national economy. However industry is one of the main sources of air and water pollution. In Odesa region, there are 615 enterprises that can or do have significant harmful effects on air and human health. Of these, 20 enterprises mainly in the oil, energy and cement sectors have the greatest impact. Nevertheless, as a result of pollution control measures in recent years, the level of pollutants such as nitrogen dioxide, nitrous oxide, sulphur dioxide, phenol, soot and dust have declined somewhat.

3.2. Evaluation of Pollution Analysis Survey

Representatives of stakeholder organisations listed in the Annex were interviewed. Due to the COVID 19 restrictions of 2020, it was not possible to hold a meeting in person, so on 30 September a meeting was held online. The questionnaire was posted in a Google survey and was completed by 30 people covering those aged 18-35 (10%), 36-50 (30%), 51-65 (30%), and over 65 (30%). Most respondents had completed higher education (70%), 10% secondary education and 20% had degrees.

Visiting wetlands in the Danube region was quite frequent, almost every day for many residents, while half of the respondents visited the wetlands at least once a week. Most of the respondents got aesthetic pleasure from the wetlands (picnics / excursion) and satisfied their cognitive needs (research, bird watching).

The second part of the questions concerned the pollution of the territory. Contamination from animals proved difficult to identify and was almost absent from the answers. Similarly, industrial pollution was almost invisible. Instead, agriculture was perceived to cause the highest level of damage in the regions of active reclamation and irrigation. Tourists and local people were also seen to impact wetlands, creating spontaneous dumps in places of visitation, fishing and recreation.

First of all, visible waste was identified - plastic, recyclable (glass, paper) and other waste from tourist visits. Heavy metals and chemicals have been recorded by scientists in Biosphere Reserves in running water (Danube, Dnieper), and their impact on wetlands is estimated to be moderate.

To reduce the negative impact of waste on the wetland environment, respondents considered it necessary to intensify cooperation with NGOs (60% consider it insufficient).

Meanwhile, the level of environmental awareness among the citizens of the region is generally assessed as very low - more than half of the respondents noted that locals and tourists are completely oblivious to the issue. Only a quarter of respondents consider the level to be neutral, and one in ten respondents noted a "Conscious Level". All respondents acknowledged that public awareness is important for the conservation of wetlands along the Black Sea in Ukraine.

More than half (60%) of respondents plan to contribute to the activities of the BioLearn project, aimed at raising environmental awareness with recommendations, sharing research, participating in actions and public campaigns.

3.3. Marine litter and wetlands environment

The north-western part of the Black Sea is a relatively shallow shelf and low-lying coast where most of the sea's biological activity takes place and is recognised as a global hot spot for biodiversity by the Worldwide Fund for Nature. However, because of the large rivers (Danube, Dnipro, Dniester and Yuzhny Bug) that enter this area from huge internal drainage basins, it also receives the highest loads of organic and inorganic chemicals, solid substances and sediments in Europe. Moreover, Ukraine has 18 maritime trading ports, three fishing ports and a large number of different passenger terminals – the largest number of seaports among all the countries of the Black Sea-Azov basin. The length of the Black Sea coastline within Ukraine is 1,540 km, along which there are at least 13 resorts.

In view of this, all sources of anthropogenic pollution of the Black Sea coastal wetlands can be roughly divided into five generalised types: (i) industrial enterprises, transport; (ii) municipal services and outfalls; (iii) recreational centres; (iv) agricultural land; and (v) ports and port facilities, vessels, and military bases. The coastal zone of the northwest shelf is highly developed and industrialised. Accidents on outdated sewers and pumping stations create additional sources of pollution. Industrial enterprises, located in the zone of direct influence on the water, release the largest number of pollutants into the marine environment.

Marine litter is considered to be any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment. Marine litter consists of items that have been made or used by people and deliberately discarded into the sea or rivers or on beaches; brought indirectly to the sea with rivers, sewage, storm water or winds;

accidentally lost, including material lost at sea in bad weather (fishing gear, cargo); or deliberately left by people on beaches and shores.

In order to implement measures to combat marine litter pollution effectively, we need to have reliable information on where the litter recorded in a given area is coming from (sources, means of release and geographical origin) and how it is getting into the marine environment and the site where it is recorded (pathways and transport mechanisms). Some items can have a number of potential sources and pathways of entry as well as geographic origins.

The main sea-based sources of marine litter are: merchant shipping, ferries and cruise liners; fishing vessels; military fleets and research vessels; pleasure craft; offshore oil and gas platforms; and aquaculture installations.

Land-based sources of marine litter originate from coastal or inland areas including beaches, piers, harbours, marinas, docks and riverbanks. Municipal landfills (waste dumps) located on the coast, water bodies such as rivers, lakes and ponds that are used as illegal dump sites, riverine transport of waste from landfills and other inland sources, discharges of untreated municipal sewage and storm water, industrial facilities, medical waste, and coastal tourism involving recreational visitors and beach-goers, are the primary sources of land-based marine litter. Natural storm-related events can all create large amounts of materials that are washed from coastal areas that can end in the marine environment. High winds, large waves and storm surges produced by these natural events cause land-based items to be introduced into the marine environment.

Major sources of microplastics include fragmentation of larger items in the environment, release of abrasive additives from cosmetic and other products, release of fibres from the washing of textiles and the spillage of pre-production pellets or powders that are in transit or process prior to being made into everyday plastic items. In addition to microplastics it has recently been suggested that there may also be substantial inputs of other synthetic particles, for example as a consequence of tyre wear on roads.

Being able to distinguish between the waste that is generated locally, regionally and globally, is important when deciding on appropriate measures to prevent marine litter in a certain area.

The impacts of marine debris on biodiversity can be considered under four broad headings:

1) Ingestion and entanglement

2) Provision of new habitat

3) Dispersal via rafting, including transport of invasive species

4) Ecosystem level effects.

Microplastic fibres pose a significant risk to planktonic species such *Ceriodaphnia dubia* which exhibits reduced reproductive output observed as microplastic concentrations increase. At the same time, plankton are near the base of the food chain and the microplastics they contain can be concentrated up through the trophic levels (and finally, of course, into humans).

Smoked cigarette filters are the predominant coastal litter item; they present a source of bioplastic microfibres (cellulose acetate) and harmful toxicants to marine environments. A study of the impacts of smoked cigarette filter toxicants and microfibres on the polychaete worm *Hediste diversicolor*, a widespread inhabitant of coastal sediments, illustrated the vulnerability of organisms in the water column to such debris and associated toxicants.

Eight aquaculture-related non-native, invasive species have been found attached to anthropogenic litter items mostly related to aquaculture. These species are well-adapted to rafting on artificial surfaces and have a high potential to disperse via this vector, thereby threatening the marine biodiversity and the food web.

4. CONCLUSION

The legislation of Ukraine on waste is only now being formed in the context of the implementation of obligations under the Association Agreement with the European Union.

The initial assessment of the wetlands/marine litter distribution spatial data within the Black Sea region revealed essential gaps in this field of knowledge. The lack of observation and surveys due to the novelty of this research on the regional level is the main reason for these gaps.

There is a lack of sufficient information on the overall assessment of the current situation as regards to litter and its impact. There are no quantified data on the impact of litter on marine biota. Generating estimates of catch rates and spatial/temporal patterns for entanglement are not yet possible due to the lack of quantitative information regionally. In addition, micro-plastics are a relatively new and poorly investigated topic in terms of their impacts on biota. It is difficult to estimate when the issues will be addressed as there are no scheduled surveys in the monitoring protocols. Issues of insufficient data could be encountered by funding research programmes focusing on the impacts of litter on marine life.

A ban on the dumping of untreated household waste is planned for Ukraine. At the same time, Ukrainians are obliged to sort the rubbish according to the Law of Ukraine "On Waste", to which the relevant amendments were made in 2012.

Thus, according to the document, large-sized, repairable and hazardous wastes in households should be collected separately from other types. The fine for violations for individuals will be from 340 to 1360 UAH, for legal entities from 850 to 1700 UAH. In addition, according to the document, hazardous waste should be separated during the assembly or sorting stage and transferred to specialised enterprises that have received licenses for the conduct of operations in the field of hazardous waste management. The law also requires that garbage is transported in specially equipped vehicles. The provision of waste management services will the subject of tenders issued by the local authorities on a competitive basis.

Burning of garbage is allowed only at specially designated enterprises or objects and only for the purpose of obtaining thermal and / or electric energy. Also, the law prohibits the design, construction and operation of landfills for household waste without the provision of groundwater protection systems, as well as the extraction and disposal of biogas and filtrate.

The most danger for ecosystems is posed by plastic waste, especially near settlements. Tourists and locals are responsible for that kind of waste, so public activities should be directed towards them.

REFERENCES

Атлас довкілля Одеської області. – Одеса, 2020. – 72 с.

Анотована структура Морської Стратегії України винесено на громадське обговорення. Веб-сайт Міністерства екології та природних ресурсів України. URL: https://menr.gov.ua/news/31381.html

Балюк С. А., Медведєв В. В., Воротинцева Л. І., Шимель В.В. Сучасні проблеми деградації ґрунтів і заходи щодо досягнення нейтрального її рівня. Вісник аграрної науки. серпень 2017. С. 5. URL: http://agrovisnyk.com/pdf/ua_2017_08_01.pdf

Веб-сайт Державного агентства України з управління зоною відчуження. URL: http://dazv.gov.ua/

Веб-сайт Української кліматичної мережі. URL: http://climategroup.org.ua/

Водна стратегія України на період до 2025 року (наукові основи) / за науковою редакцією М. І. Ромащенка, М. А. Хвесика, Ю. О. Михайлова. К., 2015. 46с. URL: http://iwpim.com.ua/wp-content/uploads/2015/10/11_03_2015.pdf

Водний кодекс України від 06.06.1995 р. № 213/95-ВР. URL: https://zakon.rada.gov.ua/laws/show/213/95-%D0%B2%D1%80?find=1&text=%F2%E2%E0%F0%E8%ED#w112

Впровадження в Україні європейської ієрархії управління побутовими відходами (11.12.2018). Веб-сайт Міністерства регіонального розвитку, будівництва та житловокомунального господарства України. URL: http://www.minregion.gov.ua/napryamkidiyalnosti/zhkh/terretory/vprovadzhennya-v-ukrayini-yevropeyskoyi-iyerarhiyi-upravlinnya-pobutovimi-vidhodami/

Впровадження роздільного збирання твердих побутових відходів (ТПВ) станом на 01.10.2018. Веб-сайт Міністерства регіонального розвитку, будівництва та житловокомунального господарства України. URL: http://www.minregion.gov.ua/wp-content/uploads/2018/11/Dodatok1.pdf

Екологічні паспорти регіонів за 2017 рік. Веб-сайт Міністерства екології та природних ресурсів України. URL: https://menr.gov.ua/news/32629.html

Єдиний реєстр Оцінки впливу на довкілля. Міністерство екології та природних ресурсів України. URL: http://eia.menr.gov.ua/search

Загальнодержавна програма охорони та відтворення довкілля Азовського та Чорного морів, затверджена Законом України від 22.03.2001 р. № 2333-III. Офіційний вісник України. 2001. № 17. Ст. 717. 20) Закон України «Про відходи» від 05.03.1998 р. № 187/98-ВР. URL: https://zakon.rada.gov.ua/laws/show/187/98-%D0%B2%D1%80

Закон України «Про пестициди і агрохімікати» від 02.03.1995 р. № 86/95-ВР. URL: https://zakon.rada.gov.ua/laws/show/86/95-%D0%B2%D1%80

Закон України «Про природно-заповідний фонд України» від 16.06.1992 р. № 2456-XII. URL: https://zakon.rada.gov.ua/laws/show/2456-12

Інтерактивна карта «Ukraine Sea Change Map». Центр екологічних ініціатив «Екодія». URL: http://ecoaction.org.ua/projects/sealevel/index.html

Концепція охорони та відтворення навколишнього природного середовища Азовського і Чорного морів, затверджена постановою Кабінету Міністрів України від 10.07.1998 р. № 1057. Офіційний вісник України. 1998. № 28. Ст. 1055.

Національна стратегія управління відходами в Україні до 2030 року, схвалена розпорядженням Кабінету Міністрів України від 08.11.2017 р. № 820-р. URL: https://zakon.rada.gov.ua/laws/show/820-2017-%D1%80

Національний план управління відходами до 2030 року, затверджений розпорядженням Кабінету Міністрів України від 20.02.2019 р. № 117-р. URL: https://zakon.rada.gov.ua/laws/show/117-2019-%D1%80

Управління відходами. Веб-сайт Міністерства екології та природних ресурсів України. URL: https://menr.gov.ua/timeline/Vidhodi-ta-nebezpechni-rechovini.html

Екологія водно-болотних угідь і торфовищ (збірник наукових статей) // Головний редактор В.В. Коніщук. – Київ: ДІА, 2013. – 300 с.

ANNEXES

Annex 1. Stakeholder List

GENERAL

1. Secretary of Cabinet of Ministers of Ukraine
2. Ministry for Ecology and Natural Resources of Ukraine
3. Institute of Marine Biology of the National Academy of Science
4. Ukrainian Scientific Centre for Ecology of the Sea
5. National Ecocentre – Southern branch
6. Southern Ukrainian Ecological Union

SPECIFIC FOR DANUBE BIOSHERE RESERVE

7. Danube Biosphere Reserve
8. Odesa Oblast Administration
9. Odesa Oblast Council
10. Danube Biosphere Reserve
11. Vylkove Gromada
12. Odesa Mechnikov University
13. Odesa Fishery
14. State Ecological Inspection in Odessa Oblast
15. Danube Regional Water Resources Office
16. Basin Directorate of Water Resources of the Black Sea and the Lower Danube Rivers (BWRM of the Black Sea and the Lower Danube)

SPECIFIC FOR BLACK SEA BIOSPHERE RESERVE

17. Black sea biosphere reserve
18. Kherson Oblast Administration
19. Kherson Oblast Council
20. Black Sea Biosphere Reserve
21. Hola Prystan Gromada
22. Kherson University
23. Kherson Fishery
24. Kherson Ecological Inspection
25. Basin Department of Water Resources of the Lower Dnipro River Basin

Annex 2. Survey questions

1. Please select your age group:

▫ 18-35 ▫ 36-50 ▫ 51-65 ▫ 65 over

2. Educational Background: ▫ Secondary Education ▫ Undergraduate ▫ Postgraduate ▫ Doctorate ▫ Other:

3. How do you benefit from the target area wetlands?

▫ Fishing ▫ Birdwatching ▫ Picnic / Excursion ▫ Biological research ▫ Other:

4. How often do you visit wetlands?

▫ More than once a week ▫ Once a week ▫ Once a month ▫ Once a year ▫ Other:

5. What are the sources of pollution you have identified in wetlands and its vicinity?

▫ Animal Pollution ▫ Agricultural Pollution ▫ Pollution of wastes from excursionists ▫ Industrial Pollution ▫ Other:

4. What are the types of pollution you have identified in wetlands and its vicinity?

▫ Heavy metals / chemicals in water ▫ Plastic wastes ▫ Recyclable wastes such as glass, paper etc. ▫ Agricultural wastes ▫ Wastes from fishing and hunting ▫ Wastes from daily visits ▫ Other:

7. What steps are you suggesting to be taken to reduce pollution?

8. Do you think that the cooperation of public and non-governmental organisations operating in our region regarding the environment is sufficient?

▫ Yes ▫ No ▫ Other:

9. What do you think is the level of environmental awareness among the citizens in our region in general?

▫ Very conscious ▫ Conscious ▫ Neither conscious nor unconscious ▫ Unconscious ▫ Completely unconscious

10. Public awareness is important in conservation of wetlands along the Black

1. Будь ласка, виберіть свою вікову групу:

□ 18-35 □ 36-50 □ 51-65 □ 65 понад

2. Освіта: □ Середня освіта □ Бакалаврат □ Аспірантура □ Докторантура □ Інше:

3. Яку користь ви отримуєте від заболочених територій цільового району?

□ Риболовля □ Спостереження за птахами □ Пікнік / екскурсія □ Біологічні дослідження □ Інше:

4. Як часто ви відвідуєте водно-болотні угіддя?

□ Більше одного разу на тиждень □ Раз на тиждень □ Раз на місяць □ Раз на рік □ Інше:

5. Які джерела забруднення Ви визначили у водно-болотних угіддях та їх околицях?

□ Забруднення тварин □ Забруднення сільського господарства □ Забруднення відходами екскурсантів □ Промислове забруднення □ Інше:

6. Які типи забруднення ви визначили у водно-болотних угіддях та їх околицях?

□ Важкі метали / хімікати у воді □ Пластикові відходи □ Відходи, що переробляються, такі як скло, папір тощо □ Сільськогосподарські відходи □ Відходи від риболовлі та полювання □ Відходи від щоденних відвідувань □ Інше:

5. Які кроки ви пропонуєте зробити для зменшення забруднення?

8. Чи вважаєте Ви достатнім співробітництво громадських та неурядових організацій, що діють у нашому регіоні, щодо навколишнього середовища?

Так □ Ні □ Інше:

9. Яким, на вашу думку, є рівень

sea cost in Ukraine.

▫ I agree ▫ I disagree ▫ Other:

11. Do you plan to contribute to BioLearn project activities aiming at gaining environmental awareness?

▫ Yes ▫ No ▫ Other:

екологічної обізнаності серед громадян нашого регіону загалом?

□ Дуже свідомий □ Свідомий □ Ні свідомий, ні несвідомий □ Несвідомий □ Повністю несвідомий

10. Поінформованість громадськості є важливою для збереження водно-болотних угідь уздовж Чорного моря в Україні.

□ Я згоден □ Я не погоджуюсь □ Інше:

11. Чи плануєте Ви робити внесок у діяльність проекту BioLearn, спрямовану на підвищення екологічної свідомості?

□ Так □ Ні □ Інше:

Annex 3. List of waste utilisation and disposal operations

APPROVED
Order of the State Statistics
Service of Ukraine
January 23, 2015, No. 24

Operation code	The name of the operation
Recycling operations	
R1	Use in the form of fuel (except for direct burning) or otherwise for energy
R2	Utilisation / regeneration of solvents
R3	Recycling / Disposal of Organic Substances Not Applicable as Solvents [1]
R3 A	Composting of organic waste
R3 B	Fermentation of organic waste
R3 C	Processing paper and cardboard
R4	Recycling / utilisation of metals and their compounds
R5	Recycling / utilisation of other inorganic materials [2]
R6	Regeneration of acids and bases
R7	Recovery of components used to reduce contamination
R8	Recovery of components of catalysts
R9	Re-distillation of used petroleum products or other reuse of them
R10	Soil treatment, which has a positive effect on agriculture or improves the ecological situation
R11	Use of waste derived from operations under the codes R1 - R10
R12	Waste sharing for operations under the codes R1 - R11
R12 A	Sorting waste
R12 B	Mechanical and biological recycling of waste at IBP plants

R12 C	Disassembly of inappropriate vehicles
R12 K	Collection and pre-treatment of scrap metal and waste containing metals
Removal operations	
Deletion in specially designated places or objects (by burial)	
D1	Burial in the earth or dumping (landing) on land (landfill, etc.)
D5	Reset on specially equipped landfills (at landfills)
D12	Burial (special containers in the mine, etc.)
Removal by burning or other types of disposal, disinfection	
D2	Soil treatment (land) (biological decomposition of liquid or muddy waste in the soil)
D3	Pumping to depth (input of waste by pumping into wells, salt mines or natural reservoirs, etc.)
D4	Reset in superficial (usually artificial) reservoirs (placement of liquid or sludgy waste in pits, ponds, reservoirs, drainage basins, etc.)
D6	Reset in reservoirs except seas / oceans
D7	Resettlement to the sea / oceans, including burial (dumping) at the seabed
D8	Biological treatment not specified elsewhere in this Annex, resulting in the formation of end compounds or mixtures, which are then removed by any of the operations D1 to D10
D9	Physical and chemical processing, not specified elsewhere in this Annex, resulting in the formation of end compounds or mixtures, which are then removed by any of the operations D1 to D10 (evaporation, drying, neutralisation, calcining, deposition, etc.)
D10	Burning on land

Annex 4. Legislation in the field of Eco-systems protection from Pollution

Ukraine due to European integration has to align, adopt and implement all the EU Directives and Regulations to their national legislations, of which the most important related to marine litter.

- WATER CODE OF UKRAINE (ВОДНИЙ КОДЕКС УКРАЇНИ) 1995
  - ✓ Article 89. Limitation of economic activity in coastal stripes along rivers, around reservoirs and on islands. The following are prohibited in coastal stripes along rivers, around reservoirs and on islands: landfill, garbage storage, liquid and solid waste storage facilities, cemeteries, cattle mounds, filtration fields, etc.
  - ✓ Article 99. Prohibition of dumping of waste and garbage in water. The dumping of industrial, domestic, radioactive and other types of waste and garbage in the water is prohibited.
  - ✓ Article 100. Protection of the surface of catchment and ice cover of reservoirs, watercourses, as well as seas, their bays and estuaries. It is prohibited for enterprises, institutions, organisations and citizens to pollute, clog surface of catchment, ice cover of reservoirs, watercourses, as well as seas, their bays and estuaries with industrial, domestic and other wastes, garbage, oil, chemical and other pollutants.

- Code of Merchant Shipping of Ukraine (Кодекс торговельного мореплавства України) 1995
  - ✓ Article 305. Exemption from liability. The owner of the vessel is not liable for damage from pollution if it proves that this damage occurred as a result of: accidental dismissal of fossil fuels or waste as a result of their failure to accept their port in due time after the timely lodging by the vessel of the relevant application.

- On Approval of the Rules for the Protection of Inland Marine and Territory Sea from Pollution and Pollution (Про затвердження Правил охорони внутрішніх морських вод і територіального моря від забруднення та засмічення) 1996
  - ✓ 7. Contaminants, including those containing water, and garbage, must be accumulated on vessels in special containers.
  - ✓ 8. During the stay in inland sea waters and the territorial sea of Ukraine, vessels may, in accordance with the established procedure, deliver the pollutants, including the water containing them, and garbage, only to collecting vessels, floating reception facilities, and during the stay of the vessel in the port - on the shore reception facilities. Transactions with polluting substances, including those containing them, and garbage that are carried out on ships and collectors, are subject to mandatory registration in ship documents.
  - ✓ 9. In the event of any discharges from ships into internal sea waters and the territorial sea of Ukraine of pollutants, including those containing them, and garbage, or their losses, as well as in the event of the threat of such a reset or loss of the master of the vessel's obligations To immediately notify the captain of the nearest seaport, take measures to maximise reduction of dumping or loss and to eliminate pollution.

- ✓ 14. The placement of waste and garbage by coastal objects into inland seawater and the territorial sea of Ukraine is prohibited.
- ✓ 15. In the case of carrying out works related to the construction of hydraulic structures, deepening of the bottom for navigation, mining, laying cables, pipelines, other communications, as well as conducting drilling and exploration, measures should be provided for the prevention of pollution of inland sea waters and the territorial sea by sewage, polluting substances, including radioactive, waste and garbage.
- ✓ 17. Temporary accumulation and storage of waste and garbage at the port territory is possible only in the presence of specially designated and equipped places and in case of their subsequent disposal and disposal. In this case, household waste and garbage taken from vessels must be disposed of in ports.
- ✓ 23. Seaports, ship repair yards provide: reception from garbage and waste ships with their placement at waste treatment facilities;
- ✓ 26. All operations with pollutants, their containing waters and garbage that are carried out at receiving wastewater treatment facilities and waste management facilities in ports, at ship repair and shipbuilding plants, are subject to mandatory registration in the established manner.

- The Law of Ukraine on Waste (Закон України Про відходи) 1998 with
  - ✓ Article 33. Requirements for storage and disposal of waste. The unauthorised dumping and disposal of waste, including domestic ones, in the underground horizons, on the territory of cities and other settlements, in the territories of the nature reserve fund, on the lands of nature protection, recreation, recreation and historical and cultural purposes, within the limits of water protection zones and zones is prohibited. sanitary protection of water objects, in other places, which may pose a danger to the environment and human health. The burial of waste in the bowels is permitted in exceptional cases on the basis of special researches, observing the standards, norms and rules provided by the legislation of Ukraine.

- On approval of the Rules of registration of operations with harmful substances on ships, marine installations and in ports of Ukraine (Про затвердження Правил реєстрації операцій зі шкідливими речовинами на суднах, морських установках і в портах України) 2001
  - ✓ Garbage - means all types of food, household and operational waste (except fresh fish and its residues) formed during the normal operation of the vessel and subject to permanent or periodic seizure, except for substances whose definition or list is given in Annex V to MARPOL 73 / 78 and other annexes to MARPOL 73/78.
  - ✓ 6. Registration of operations with garbage
  - ✓ 6.1. Registration is performed during garbage operations on vessels flying the flag of Ukraine, as well as on sea stationary and floating installations in case of stay in sea waters under the jurisdiction of Ukraine. Disposal of any garbage, except food waste, in special areas is prohibited. Only garbage that is thrown into the sea should be classified. For garbage of all categories, except category 1, dropped to reception facilities, only the total estimated quantity should be indicated.

- ✓ 6.2. For each vessel with a gross tonnage of 400 register ton and more and each vessel intended for the carriage of 15 persons or more who operate flights to ports or sea terminals under the jurisdiction of other countries, as well as on each stationary and floating platform that engaged in exploration and development of seabed mineral resources, in accordance with Resolution IMO MEPC.65 (37), garbage operations must be registered in the logbook for garbage operations, the form of which is given in Annex 4 to these Regulations.
- ✓ 6.3. On ships intended for the carriage of 15 persons or more, carrying out flights of less than one hour, garbage operations shall be recorded in the logbook.
- ✓ 6.4. On ships, stationary and floating platforms not covered by the requirements of paragraph 6.2 of these Rules, garbage operations are also recorded in the logbook.
- ✓ 6.5. Registration of operations with the following categories of garbage is required: - plastic; - Separating, siding or packing materials having buoyancy; - chopped paper products, rags, glass, metal, bottles, crockery and others; - food waste; - Ashes from incinerators.
- ✓ 6.6. Such operations with garbage are subject to registration, in each case, the following shall be indicated:
- ✓ a) dumping of garbage into the sea: - date and time of dumping; - vessel location (latitude and longitude); - category of dropped rubbish; - Approximate amount of waste garbage in each category in cubic meter. m; - signature of the commander in charge of the operation;
- ✓ b) delivery of garbage to reception facilities or other vessels in ports: - date and time of delivery; - the port or building, or the name of the vessel that took the debris; - the category of rubbish; - Estimated amount of garbage for each category in cubic meter. m; - signature of the commander in charge of the operation;
- ✓ c) garbage incineration: - date and time of start and end of operation; - vessel location (latitude and longitude); - Approximate amount of burned garbage per cubic meter. m; - signature of the commander in charge of the operation;
- ✓ d) Emergency or other extraordinary garbage disposal: - Event time; - port or vessel location during the event; - approximate quantity and category of discarded rubbish; - circumstances of seizure, discharge or loss, their causes and other general considerations.
- ✓ 6.7. The captain must obtain from the operator of port reception facilities or from the captain of the receiving vessel, a receipt or a certificate indicating the approximate amount of overloaded garbage. Receipts or certificates must be kept on board the vessel together with the logging of garbage collection for two years.
- ✓ 6.8. Operations on garbage accumulation on specialised ships during the performance of their work on a direct functional purpose (oil collectors during clearing of the water area of the port and the liquidation of the floating, filling stations, etc.) are recorded in the logbook. It is noted that the amount of rubbish is indicated by ship measurements. When handing over collected garbage, the ship's administration must receive a receipt or certificate in accordance with paragraph 1.14 of these Rules.

- On Approval of the Regulations on the System of Safety Management of Shipping on Sea and River Transport (Про затвердження Положення про систему управління безпекою судноплавства на морському і річковому транспорті) 2003
  - ✓ 2.1. The administration of the base should ensure the proper condition of the base, territory and water area, including: the presence of a special site (places) with containers for dry garbage and waste oil products

- On Approval of Safety Rules for Port Workers and Service Auxiliary Fisheries Fleet Operators (Про затвердження Правил безпеки для працівників суден портового і службово-допоміжного флоту рибного господарства) 2007
  - ✓ 7.8. Work on the elimination of pollution of the sea and port waters
  - ✓ 7.8.1. Mooring of vessels to the garbage collector

- On Approval of the Rules for Prevention of Pollution from Inland Waterways of Ukraine (Про затвердження Правил запобігання забрудненню із суден внутрішніх водних шляхів України) 2007
  - ✓ 4.1. Vessels and all other vessels (hereinafter - ships) operated on the VVSHU shall be equipped with systems and tanks for the collection and storage of oil and sewage as well as replaceable containers for garbage.
  - ✓ 4.2. At VVSHU, discharges from oil vessels, hazardous substances, cargo residues, garbage, polluted and regulated water are not allowed. An exception is an isolated water ballast
  - ✓ 4.8.Operations with sewage and debris are recorded in the machine journal, and on ships where it is not kept - in the ship or dispatching magazine.
  - ✓ 7.5 The technological schemes in the port for the collection of harmful substances from the vessels, oil sludge, waste oils, cargo residues, sludge, sewage and garbage in the port shall ensure operational efficiency and prevent effective implementation ship cruises.
  - ✓ 7.6. Any crew member, regardless of the type of activity, notices on floating oil spills or garbage in the adjoining area, shall notify the watch boss. In the event of the presence of oil spills and garbage near the vessel, the dispatching service of the port is immediately informed of the transfer to the relevant institutions and institutions of the state sanitary and epidemiological service on water transport and the navigational authorities, and the entry in the logbook is made.

  XII. Prevention of contamination of inland waterways with garbage
  - ✓ 12.1. For the collection of garbage on ships, exchange containers are provided in accordance with Annex 5. In exchange containers there must be distinguishing signs that determine which type of garbage they are intended to (household waste, food waste, plastics, etc.). It is not allowed to mix food waste with household waste.
  - ✓ 12.2. Interchangeable containers for garbage collection must be painted with anticorrosion paints, tight closure mats, be suitable for transportation and unloading, cleaning and disinfection. 12.3. In order to avoid spoilage of garbage, during the loading of containers with food and household waste, regular use of antiseptic and deodorant substances.
  - ✓ 12.4 In the presence of a shredder of food waste and debris on a vessel, it is used for milling and mass preparation for combustion in a ship incinerator.

- ✓ 12.5 Vessels equipped with garbage incinerators must have documents certifying compliance with their established standards. Incineration of garbage in the incinerator is recorded in the logbook indicating the time, place of operation, characteristics and amount of waste that is being destroyed.
- ✓ 12.6. On ships that are not equipped with garbage processing and incinerators, garbage exchange bins shall be emptied only at coastal or floating treatment plants, on ships for integrated waste treatment, ship-collectors or elsewhere authorised by the relevant institutions and institutions of the State Sanitary and Epidemiological Service on water transport and agreed with relevant environmental protection authorities and authorities and port authorities.
- ✓ 12.7. Exchange containers for the collection and storage of garbage after each emptying are washed and disinfected at specialist stations by the forces and means of the port.
- ✓ 12.8 The provision of garbage to a ship-collector, a ship of integrated fleet maintenance or special forces is recorded in the magazine.

- On approval "Methods of calculating the amount of damages caused by the state as a result of violation of legislation on the protection and rational use of water resources" (Про затвердження "Методики розрахунку розмірів відшкодування збитків, заподіяних державі внаслідок порушення законодавства про охорону та раціональне використання водних ресурсів") 2009
  - ✓ Calculation of the amount of compensation for damage caused to water bodies due to contamination by floating waste or debris

- On approval of the Safety Rules during the execution of exploration and development of oil and gas fields in the Black Sea and the Sea of Azov (Про затвердження Правил безпеки під час виконання робіт з розвідування та розроблення родовищ нафти і газу в акваторіях Чорного та Азовського морів) 2012
  - ✓ 1.11. Solid waste incineration at MNGO is allowed in special ovens equipped with insinuators (garbage canning plant (reduction in mass and volume)).

- PROCEDURE for providing services for the prevention and elimination of pollution of pollutants in the seaports of Ukraine (ПОРЯДОК надання послуг із забезпечення запобігання і ліквідації розливу забруднюючих речовин у морських портах України) 2013
  - ✓ Provision of services for the prevention and elimination of pollution of pollutants in the water area and in the port area is organised by the Administration. acceptance from garbage and waste ships with direct transfer to their specialised enterprises for further handling of them (including placement of them at waste treatment facilities) in accordance with the current legislation of Ukraine;
  - ✓ Business entities conducting overloading of goods containing hazardous chemical and loose materials should avoid contamination or contamination of the water area and the sea port territory, collect and transfer under contracts for further safe handling (including placement) all types of waste and contaminated water generated as a result of their activities

- Draft Law of Ukraine on Waste (Проект Закону України про відходи) 2016
  - ✓ "packaging waste" means any packaging which corresponds to the term "waste" as defined

- On Approval of Rules for the Development of Oil and Gas Fields (Про затвердження Правил розробки нафтових і газових родовищ) 2017
  - ✓ In order to prevent pollution of the marine environment during drilling of wells in the waters of the seas, their design should provide for the overlapping of the entire water column with water-insulating column.
  - ✓ The spilled rock (sludge), spent washing liquid, garbage of sea platforms should be taken offshore and buried in special sludges and landfills, and drilling wastewater - to be pumped into the underground horizons through absorption wells.
  - ✓ 59. Solid waste (sand, rock), garbage from offshore platforms are taken offshore and disposed of in specially designated areas.

Joint Operational Programme Blac Sea Basin 2014-2020

Editor: PP3-NGO Agricola

Date of publishing: September 2020

Joint Operatoinal Programme Black Sea Basin 2014-2020 is co financed by the European Union through the European NEighbourhood Instrument and by the participating countries: Armenia, Bulgaria, Georgia, Greece, Republic of Moldova, Romania, Turkey and Ukraine.

This publication has been produced with the financial assistance of the European Union. The contents of this publication are the sole responsibility of NGO Agricola and can in no way be taken to reflect the views of the European Union.

Спільна оперативна програма Басейн Чорного моря 2014-2020

Редактор: Партнер 3-ГО Агрікола

Дата публікації: вересень 2020 р

Спільна оперативна програма Чорноморський басейн 2014-2020 фінансується Європейським Союзом за допомогою Європейського інструменту сусідства та країнами-учасницями: Вірменією, Болгарією, Грузією, Грецією, Республікою Молдова, Румунією, Туреччиною та Україною.

Ця публікація видана за фінансової допомоги Європейського Союзу. Зміст цієї публікації є виключною відповідальністю Громадської організації Агрікола, і жодним чином не може представляти погляди Європейського Союзу.

Громадська Організація «Агрікола»

Рені, вул. 3-го Гвардійського полку, 13

Agricola.ua@gmail.com

+380682014177