

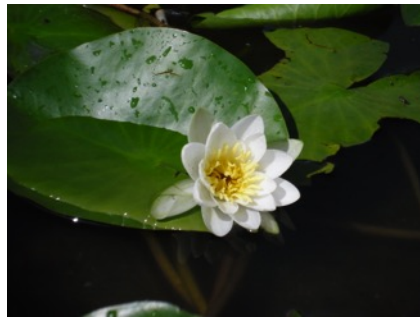


ECOPOTENTIAL4SCHOOLS RESEARCH PROJECT

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School	SCOALA GIMNAZIALA NR. 56
Team	ECO-TEAM 56
Date	April 2017-April 2018
Location	DANUBE DELTA BIOSPHERE
Experiment title	INVASIVE ORGANISMS IN DANUBE DELTA BIOSPHERE RESERVE

Delivery date: 30th of April 2018

IS ANY INVASIVE ORGANISM IN THE DANUBE DELTA BIOSPHERE RESERVE ?



Wellcome to the Danube Delta !

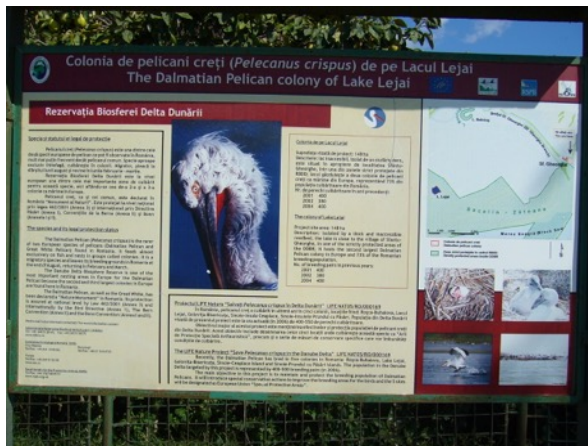
- Biosphere reserves are areas comprising terrestrial, marine and coastal ecosystems. The Danube Delta Biosphere Reserve is a labyrinth of water and land shared between Romania and Ukraine. It is made up of countless lakes, channels and islands at the end of a 2,860 km-long river.
- **Designation date:** 1998
Administrative authorities: Danube Delta Biosphere Reserve Authority
Surface area (terrestrial and marine): 732,219.96 ha

Location

Latitude: 44°21'04"N – 45°33'56"N

Longitude: 28°10'33"E – 29°48'34"E

Midpoint: 44°57'40"N – 28°59'02"E



About people

- The Danube Delta is home to a rich mix of Bulgarian, Gagauz, Lipovan, Moldavan, Russian, Turkish and Ukrainian people, scattered around the delta in small villages. The local population generally engages in traditional occupations such as fishing, agriculture, animal husbandry, reed harvesting and tourism. Fishing is the predominant and oldest occupation.



Ecological Characteristics

The Danube Delta is the Europe's largest wetland and reed bed. The delta has wet soils temporarily covered with water, with plants adapted to living in wet conditions. The freshwater ecosystems give the reserve a rich biodiversity: 312 bird species can be found including the glossy ibis (*Plegadis falcinellus*), the purple heron (*Ardea purpurea*), the white-tailed eagle (*Haliaeetus albicilla*) and the largest population of great white pelicans (*Pelecanus onocrotalus*) in Europe.



Fish species include the starlet (*Acipenser ruthenus*) – a small sturgeon. Other animals living in the Danube Delta include the meadow viper (*Vipera ursinii*), the European mink (*Mustela lutreola*), and the common bottlenose dolphin (*Tursiops truncatus*).

ABOUT INVASIVE SPECIES

The anthropic activity determines the expansion or reduction of the habitats of plant species. The commercial exchanges of seeds and the acclimatization ability of the segetal species to various pedoclimatic conditions, may determine the exceeding of adventive species level and move towards species with a wider habitat, often cosmopolite species. *Invasive species*- UN considers the phenomenon of biologic invasion as one of the major causes of biodiversity regression, among pollution, destroying the habitats, overexploitation and climatic changes. Alien species affect local biodiversity, the diversity of the ecosystems and human health. According to the Convention above Biological Diversity, an alien species is a species or subspecies introduced outside its natural area (past or present), which can survive and reproduce. The studies of invasive species at European level are performed by some local organizations such as: NOBANIS (North European and Baltic Network on Invasive Alien Species) (<http://www.nobanis.org/>).

Methods used in research :

- I. The issuance of the hypothesis
- II. The preparatory stage – study of the existing bibliographic material
- III. The research stage – conducting field trips and data collection
- IV. The stage of the analysis and interpretation of the data collected
- V. Conclusions

The research of ECO-TEAM 56

I. **Hypothesis** –In Danube Delta 's flora and fauna there are not found any invasive species

Purpose - The identification of the invasive species in Danube Delta

II. During the preparatory stage we delineated the research field using maps;

We analysed the bibliography of the natural environment of the studied area (relief, substrate, hydrographic network, land etc.). We prepared the materials needed for the investigation. The study of the bibliographic material (literature of the speciality, specialized sites) was extremely helpful to prepare a list of invasive plants and animals.



- **III. The research stage**

- We've done some circulations on the ground in order to collect the dates, completed with activities in the laboratory. The circulations on the ground were done during the period between April 2017 and April 2018, with the purpose of determinating some spieces of encroaching plants in the area. To make the riffle, some circulations on the ground around the Danube Delta.
- Stuff used in the researchThe eye-glass for hand and the binocular eye-glass of 7x; 10x; 20x, polttingpaper, deplantator, scissors, bistoury used to gather the plants, plastic bags and paper used to transport the plants, a folder and absorbent paper or filter paper, a note-book with the observations on the ground, ticketer for the ground, sheets from a herbarium, journalism, some cameras (saved images in jpg).

The steps of the development of the research

a. The circulation on the ground

- The observation on the ground were done during different periods of the year, to be startled more moments of the evolution. The students who were have received responsibilities. On the ground we've done microscopic observations and we've identified the species. The gathered plants were used to make herbariums. We've tried to avoid the massive gatherings and we've taken some photos. We've written the characteristics of the biotope, we've taken photographs, we've collected and conserved the species in order to check them in detail in the laboratory.



Protected birds



Egretta garzetta



Pelecanus onocrotalus



Ardea cinerea



Rare species



Echinochloa crus-galli



Frankenia hirsuta



Trapa natans



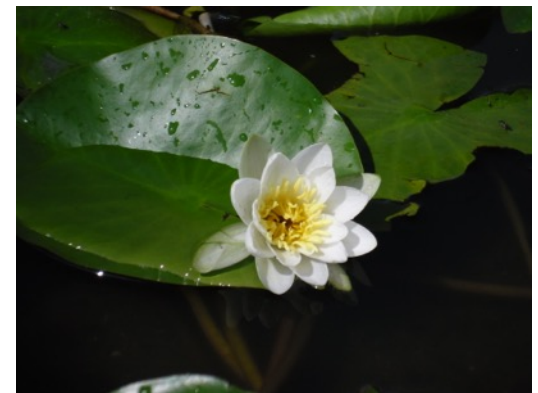
Trapa natans



Convolvulus persicus



Valisneria spiralis



Nimphaea alba

Invasive species in Danube Delta

- The most common species of alien plants in Europe are, in decreasing order of frequency, the following: *Conyza canadensis*, *Datura stramonium*, *Amaranthus retroflexus*, *Xanthium strumarium*, *Robinia pseudoacacia*, *Galinsoga quadriradiata*, *Veronica persica*, *Ailanthus altissima*, *Amaranthus albus*, *Fallopia japonica*, *Amaranthus blitoides*, *Acer negundo*, *Elodea canadensis* etc. Some of the adventive plant species in Europe are included on the black list of the most aggressive 100 species worldwide (*Robinia pseudoacacia*, *Ailanthus altissima*, *Fallopia japonica*, *Ambrosia artemisiifolia*).
- To the floristic inventory drawn up in D.Delta belong a number of antropofile plant species. Adventive Romanian flora or exotic and recently introduced, which have as the common characteristic a high degree of invasiveness. This feature is why they are included in blacklists drawn up at European, worldwide and local level.

Invasive species



Datura innoxia



Xanthium spinosum



Xanthium strumarium



Nymphoides peltata



Oenothera biennis=*Gaura biennis*



The Black List

- IV. Results

- **The Black List of Romania** (Anastasius & Negrean , 2005) includes 36 taxons in witch are included some of the species we identified: *Acer negundo*, *Ailanthus altissima*, *Amaranthus retroflexus*, *Ambrosia artemisiifolia*, *Amorpha fruticosa*, *Conyza canadensis*, *Erigeron annuus*, *Galinsoga parviflora*, *Iva xanthiifolia*, *Morus alba*,. *Parthenocissus inserta*, *Phytolacca americana* L., *Robinia pseudoacacia*, *Xanthium strumarium* L.. Out of the 14 species found in Romania's Black List , 11 species are archeofite (first weed that entered our country before the year 1500): *Portulaca oleraceae*, other 3 species (*Acer negundo*, *Ailanthus altissima*, *Amorpha fruticosa*) are neophytes, newly arrived species original from other continents, brought in Romania after 1500 according to the classification of Pyšek et al., 2002. Neophytes were introduced for ornamental purposes (*Ailanthus altissima*), or for fixing degraded soil (*Amorpha fruticosa*), while others have been introduced accidentally (Anastasius & Negrean, 2005). These adventive invasive plants such as *Ailanthus altissima* , *Erigeron annuus*, are present in all types of habitats, others can only be found in seminatural habitats (*Amorpha fruticosa*) and others belong to seminatural and artificial habitats(*Amaranthus retroflexus*). Some of the adventive plant species identified in the territory are included in the black list of the most aggressive 100 species worldwide (*Robinia pseudoacacia*, *Ailanthus altissima*, *Ambrosia artemisiifolia*).

Conclusions

- The initial hypothesis was deseagred on the field were finded 14 invasive species of plants which can finded in the Black List of Europe and 3 species that we can fiind on the Black List of the most 100 species in the world.

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- <http://www.issg.org/>

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