

# Protocoale bio-culturale pentru conservarea speciilor agricole și silvice periclitare din Delta Dunării

Bio-cultural Protocols for Preservation of Endangered Agro-silvicultural Species in the Danube Delta

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## Rezumat

*Delta Dunării este singura deltă din lume declarată în întregime rezervație a biosferei. Aceasta acoperă suprafața de 2.681 km<sup>2</sup> ale unora dintre cele mai diverse ecosisteme din Europa. Satele Letea și Caraorman sunt printre comunitățile multietnice din cadrul Rezervației Biosferei Delta Dunării care luptă pentru conservarea patrimoniului lor cultural. Comunitățile locale se bazează foarte mult pe creșterea animalelor, în timp ce turismul reprezintă o sursă tot mai importantă de venit pentru ele. Astfel, pășunatul necontrolat și activitățile de turism (ex. drumețiile) reprezintă două amenințări majore asupra biodiversității locale.*

*Pădurile de stejari seculari (Quercus sp.) Letea și Caraorman, situate în apropierea celor două sate cu același nume, sunt printre primele arii protejate declarate din România (din 1938) și sunt unice pentru o serie de motive, cum ar fi populațiile vechi și izolate de stejar ce cresc pe dune de nisip amestecate cu alte specii de arbori și liane rare (ex. Periploca graeca). Sura de stepă este o rasă românească de vacă indigenă găsită în Delta Dunării, considerată în prezent pe cale de dispariție, ca fiind una dintre cele mai importante populații încă existente în alte zone îndepărtate. Scopul acestei lucrări este de a promova protocoalele Bio-Culturale pentru sustenabilitatea eco-economică a Deltei Dunării, prin revitalizarea patrimoniului natural și cultural, precum și prin conservarea biodiversității sale agro-silvice, folosind abordarea ecosistemică și participarea publică GIS. Aspectele fundamentale ale protocoalelor Bio-culturale sunt de a evalua populația de Sură de stepă și influența pășunatului asupra ecosistemelor forestiere din Delta Dunării (cu accent pe pădurile Letea și Caraorman), precum și de a promova tradiția locală și patrimoniul cultural.*

**Cuvinte cheie:** arii protejate, specii amenințate, abordare ecosistemică, participare publică

## Introduction

The rural communities of the Danube Delta are composed mainly of Romanian, Ukrainian and Russian ethnics, which struggle to preserve their culture and traditional way of life (based on fishing and agriculture), when confronted with social disparities, lack of access to information and education. Letea and Caraorman villages are of particular interest given that tourism has become an important source of income for the inhabitants, translating into increased anthropic pressure on the neighbouring forest ecosystems

(GÂŞTESCU, 2009). The Letea and Caraorman mixed oak forests are unique in the national flora (located on sand dunes) and are of great importance due to their rich biodiversity (TEODORESCU & COGĂLNICEANU, 2002).

While some of the trees and shrubs found there are commonplace elsewhere in Romania, the grey oak associations at Letea and Caraorman are considered relicts. The rare Greek liana (*Periploca graeca*) and orchids are among the species found mainly within these forests (GÂŞTESCU, 2009).

Among the endangered species present in the Danube Delta is the Grey Steppe cattle breed. This primitive breed deriving from *Bostaurus primigenius* adapted over time to harsh climatic conditions of Dobrogea steppe that occupied almost the entire surface of the country except the Carpathian region. Being a representative breed for Romania, the possible extinction of the Grey Steppe will mean losing its great adaptability, natural resistance to disease (not affected by “mad cow disease”) and weather conditions and also high quality products (milk, meat) (CREANGĂ *et alii*, 2011).



Fig. 1. Danube Delta Biosphere Reserve (Letea and Caraorman forests highlighted in yellow) (Source: *ddbra.ro*)

Fig. 1. Rezervația Biosferei Delta Dunării (Pădurile Letea și Caraorman marcate cu galben) (Sursa: *ddbra.ro*)

Bio-Cultural Protocols (BCP) established at village level, and also between the villages, represents a sustainable way to integrate the natural heritage (Letea and Caraorman forests, local biodiversity) and cultural heritage (e.g. archaeological sites at Caraorman, folklore and traditional way of life) in a sustainable development framework, based on the principles of the Ecosystem Approach. An important aspect of the BCP is that all proposed solutions are discussed with Danube Delta Biosphere Reserve Administration (DDBRA), local community, stakeholders and NGO's, as part of a Public Participation GIS.

### Material and Methods

Letea and Caraorman villages are two multiethnic fishing based communities located in the middle of the Danube Delta Biosphere Reserve, separated by the Sulina branch of the Danube (Fig. 1.). The mixed oak forests are situated in the immediate vicinity of the villages (< 5 km).

The native oaks (*Quercus* sp., Fig. 2), pyramidal orchid (*Anacamptis pyramidalis*, Fig. 3) and lesser butterfly orchid (*Platanthera bifolia*, Fig. 4) are among the vulnerable species found in the Letea and Caraorman forests, that are threatened especially by uncontrolled grazing of abandoned horses and domestic livestock and also by tourist activities (e.g. taken by hikers). In this respect a more efficient protection of areas with high densities of endangered species is mandatory.



Fig. 2. *Quercus* sp. seedling  
(Source: britannica.com)



Fig. 3. *Anacamptis pyramidalis*  
(Source: Wikimedia.org)



Fig. 4. *Platanthera bifolia*  
(Source: biopix.com)

The Grey Steppe (Fig. 5) has been neglected by local breeders, but still is an important part of the natural and cultural heritage of the Danube Delta. With less than 200 individuals left in Romania from which ca. 50 in the villages of Danube Delta (CREANGĂ *et alii*, 2013), this native breed needs immediate conservation measures (e.g. genetic bank).



Fig. 5. European Grey steppe breeds (Source: krankykids.com)  
 Fig. 5. Rase de sure de stepă europene (Sursa: krankykids.com)

BCP is a protocol that is developed after a community undertakes a consultative process to outline their core cultural and spiritual values and customary laws relating to their traditional knowledge and resources, based on which they provide clear terms and conditions regulating access to their knowledge and resources (ABRELL *et alii*, 2009).

The main principles integrated in the BCP for preservation of endangered agro-silvicultural species in the Danube Delta are those of *Ecosystem Approach* (AP) and *Public Participation GIS*.

Ecosystem approach (under *Convention on Biological Diversity*) is a framework for planning and decision-making that bridges the barriers between economic, social and environmental considerations. This framework for action links biological, social and economic information and aims to a socially acceptable balance between nature conservation priorities, resource use and the sharing of benefits. When applying the principles of the EA, the following aspects are proposed as operational guidance within the Bio-cultural Protocol (SMITH & MALTBY, 2003):

- focus on the functional relationship and processes within ecosystems;
- enhance benefit sharing;
- use adaptive management practices;
- carry out management actions at the scale appropriate for the issue being addressed, with decentralisation to lowest level, as appropriate;
- ensure inter-sectorial cooperation.

Public Participation may be defined as the involvement of individuals and groups that are positively or negatively affected by a proposed intervention (e.g., a project, a program, a plan, a policy) subject to a decision-making process or are interested in it. For improving the outcomes of public participation, all actors should actively promote (ANDRÉ *et alii*, 2006):

- access to useful and relevant information for the public;
- high-level involvement and participation in decision making;
- creative ways to involve people;
- access to justice and equity.

Public Participation GIS describes the process of using GIS technologies to produce local knowledge with the goal of including an empowering marginalized populations. PPGIS research can be grouped into four general knowledge domains (BROWN, 2012):

- the development, efficacy, and measurement of spatial attributes for data collection, including landscape values, special places, development preferences, activities, experiences, perceived environmental impacts, and ecosystem services;
- data collection and participatory methods including mail-based GIS surveys, facilitated workshops, internet applications, and mixed modes of collection;
- data analysis and interpretation including general spatial analysis methods and the development of new social landscape metrics;
- data integration and use in institutional decision-support systems.

## Results and Discussion

The reasons for the slow adoption of PPGIS are not technological per se and may be described as follows:

1. *the lack of familiarity* with PPGIS as a new research;
2. *concerns with the accuracy* and validity of lay knowledge in environmental decision processes (expert knowledge divide);
3. *lack of government commitment* to public participation and consultation in general (governance/authority question);
4. *lack of standardized* methods and models for integrating PPGIS data into decision processes which are also non-standardized (BROWN, 2012).

Level of public participation in Romania can be classified as “legal” and “non-formal”, with measuring unit being the “intensity” of public participation. This process is still in an incipient stage in Romania mainly due to general mistrust of the citizens and NGO’s in state authorities. Another reason is the passive-reactive attitude of the citizens that wait for the authorities to take the initiative (PREDA *et alii*, 2008).

### Benefits of developing and implementing a BCP in the study areas:

*Good governance.* The Danube Delta Biosphere Reserve Administration, National Forest Administration and Ministry of Culture promote sustainable development; therefore the BCP outcomes could provide the tools to address this goal, by improving the effectiveness of protected areas management and social dialog.

By implementing PP GIS via partnerships developed between individuals, communities, NGO's, academic institutions, religious institutions, governments and the private sector, the BCP will enable public access to cultural, economic or other data generated by governments, private sector organizations and academic institutions.

*Sustainability.* Implementing the Ecosystem Approach and PPGIS within the BCP will help promote sustainable practices for agriculture and tourism that will reduce the impact of human related activities on local biodiversity. BCP would help the two local communities to increase their financial income by identifying and promoting alternative economic activities (e.g. traditional art) and help conserve and revitalize local natural and cultural heritage.

A recent study (VĂIDIANU *et alii*, 2014) demonstrates that culture and the arts are pivotal in the development of Danube Delta's economy and in increasing community resilience, leading to community well-being and sustainability. Local vendors, artisans, craftspeople, hoteliers are kept busy (and make a large portion of their annual income) during annual art festivals.

*Social, economic and cultural benefits.* Through *benefit sharing* and *incentives* as tools of the Ecosystem Approach, local stakeholders (e.g. tourist operator) will be encouraged to sustain those who ensure/enhance ecosystem services. For example a tourist operator could encourage local fishermen to use traditional methods (instead of using electric current fishing), thus preserve the endangered fish populations and contribute to long-term benefit of the entire community.

The need for wider socio-economic priorities such as medical facilities, transport links and schools, should be addressed before the two communities in order to increase their willingness to be actively involved in the project's Ecosystem Approach. Furthermore, once the BCP mechanisms are established it will deliver the benefits directly to those responsible for the maintenance and management of the ecosystem services.

## **Conclusions**

### Cultural heritage preservation

One of the main aspects of BCP is to activate the synergies between information – cooperation – innovations, considering that it is group process instead of an individual one. The BCP encourage the local communities of

Letea and Caraorman to explore new ways to become/remain competitive, capitalize on their cultural heritage assets (traditions, craftsmanship, folklore) and overcome the difficulties of aging population, low levels of service quality or unemployment.

#### Natural heritage preservation

An inventory of the Letea and Caraorman Forest areas where the endangered plant and animal species are present must be done and measures taken to reduce the impact of grazing and tourism (e.g. modifying hiking routes, identifying grazing areas outside the forests).

#### Enhancing public participation

There is still a lack of dialog among citizens and authorities. In this respect the involvement of the public in decision making is still at consulting or opinion gathering level; with some exceptions when NGO's actually assist local authorities.

Public administrators should take notice of the general lack of trust towards them, and make efforts towards addressing this issue (e.g. by promoting social dialog).

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