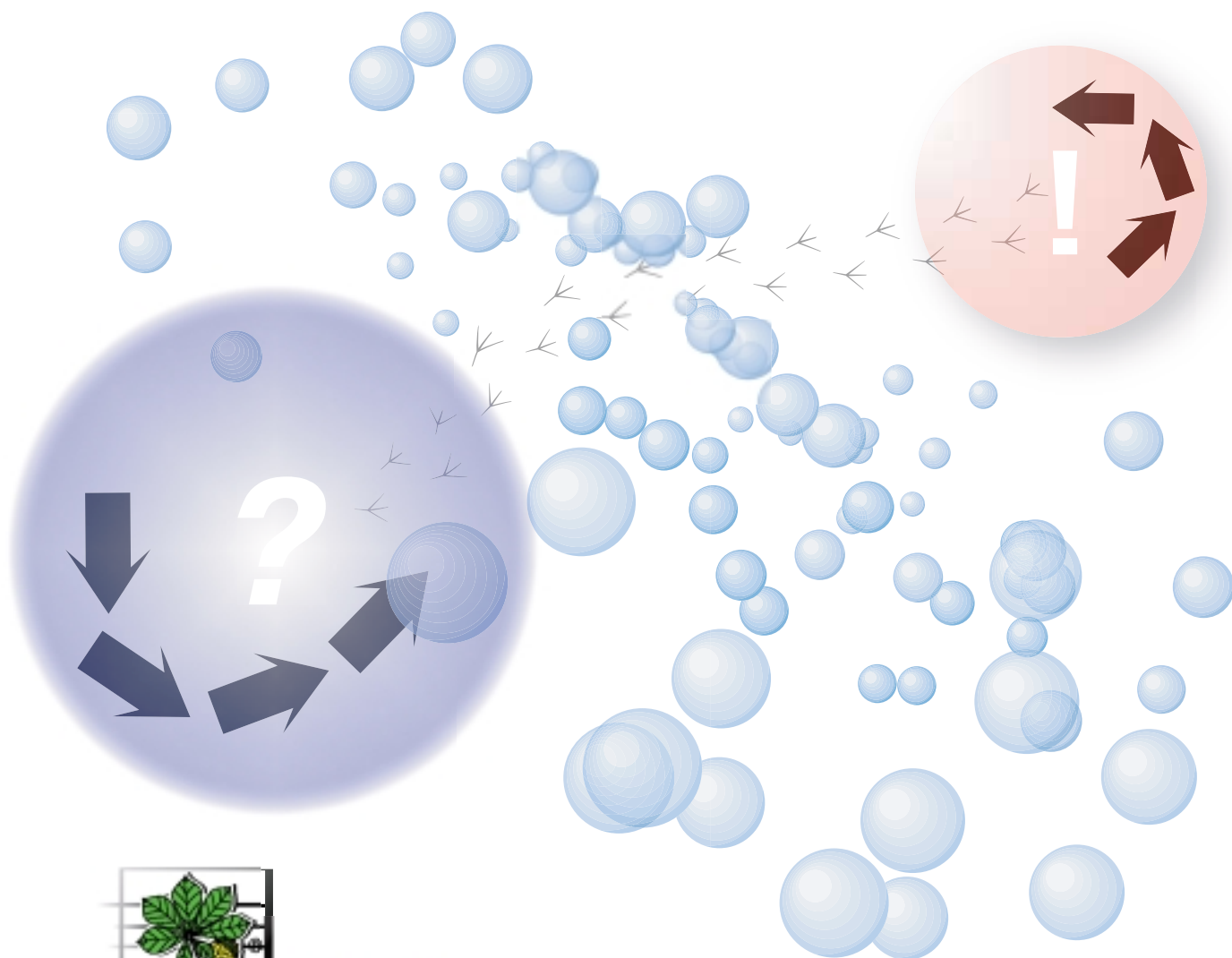


ANALYSIS ON THE POSSIBLE POSITIVE AND NEGATIVE IMPACTS ON BIODIVERSITY IN CONSEQUENCE OF WETLAND RESTORATION IN THE AREA OF KALIMOK AND BRUSHLEN MARSHES AND BELENE ISLAND, BULGARIA

/Report on Item 7 of the Terms of Reference under Project Agreement
between Green Balkans and WWF Greece, 2000/



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**ANALYSIS ON THE POSSIBLE POSITIVE AND NEGATIVE IMPACTS ON
BIODIVERSITY IN CONSEQUENCE OF WETLAND RESTORATION IN
THE AREA OF KALIMOK AND BRUSHLEN MARSHES**

*(Report on Item 7 of the Terms of Reference under Project Agreement between
Green Balkans and WWF Greece, 2000)*

1. Analysis on the possible positive and negative biodiversity impacts of wetland restoration and related activities.

Positive Impacts	Negative Impacts
Increase in the sites suitable for breeding of Danubian fish, including more rare and resource species	Growing disturbance resulting from the increased human presence (fishing and birdwatching);
Increased nutritional basis for fish-eating birds and drastic increase in the diversity of nesting birds and birds feeding during migration	
Increased diversity of habitats, and respectively increased diversity of marsh and aquatic plants	
Increase in the populations of game species	Increased poachers' interest in the area, due to the increase in the game
Recovered natural dynamics in the ecosystem; Increased potentials for hydrodynamics management	Need for additional monitoring of water levels to avoid drastic flooding of nesting colonies; Invasion of reed into part of the pastures and consequent necessity to restrict this
Increased resource species – herbs, snails, frogs	Increased disturbance and unregulated gathering
Increased nutrient trapping	
Reduced rate of eutrophication and succession of the water body due to the increased influx and outflow of water masses and the clearing of open water bodies	

2. Recommended measures to maximize biodiversity benefits and minimize adverse impacts of wetland restoration.

- **Wetland restoration design that will ensure the longest possible route for the water – a spiral network of open water bodies and canals with an area of at least 400 ha.**
- Maintenance of pastures and grasslands, prevention of their becoming overgrown with reed, shrubs, and weeds through appropriate practices (grazing, mowing).
- Providing a nutritional basis for the water-related animals through extensive fish-breeding in the fishpond basins.
- Construction of facilities to reduce damages caused by fish-eating birds, at separate vulnerable sections of the technological process in fish-breeding, e.g. storing of fish stock. Such an activity can be further used as a model for environment-sound fish-breeding in the other fishponds along the Danube.
- Reedbed management with complex methods.
- Application of agri-environment schemes and organic farming in the agricultural lands included in and adjacent to the wetland.
- Conversion of arable lands into pastures
- Growing of cultures such as rice, lucerne, and others, which have a higher ecological value and are tolerant to biodiversity, in the over-flooded agricultural lands.
- Implementation of a technical project for establishment of a mosaic pattern of habitats (artificial meandering of water, single trees and groups of trees, islands with willow groves for nesting of herons, etc.).
- Substitution of artificial forests for natural forests or forests created from local species.
- Providing a link between the ‘pits’ (the sites where the earth needed for the construction of the dikes had been extracted) with the River Danube.
- Bio-engineering activities to attract and increase the numbers of rare species (osprey, storks, terns, kestrels), for which there is a sufficient nutritional basis but a shortage in nesting sites.
- Maintenance of the population of rare, threatened, and resource fish species through the establishment of a nursery for Carp, Sterlet, and other sturgeons. Development and implementation of schemes for dispersion of fish stock so that it can grow in the wetland.
- The link between the wetland under restoration and the River Danube should be realized by means of an open passage, in order to ensure that the fish entering from the river can have a free access.
- Providing sufficient water flow to wash away sediments and ensure dynamics in the ecosystem.

**ANALYSIS ON THE POSSIBLE POSITIVE AND NEGATIVE IMPACTS ON
BIODIVERSITY IN CONSEQUENCE OF WETLAND RESTORATION ON
BELENE ISLAND, BULGARIA**

*(Report on Item 7 of the Terms of Reference under Project Agreement between
Green Balkans and WWF Greece, 2000)*

1. Analysis on the possible positive and negative biodiversity impacts of wetland restoration and related activities.

Positive Impacts	Negative Impacts
Increase in the sites suitable for breeding of Danubian fish, including more rare and resource species	Growing disturbance resulting from the increased human presence (industrial fishing)
Increased nutritional basis for fish-eating birds and drastic increase in the diversity of nesting birds and birds feeding during migration	
Increased diversity of habitats, and respectively increased diversity of marsh and aquatic plants	
Increase in the populations of game species	Increased poachers' interest in the area, due to the increase in the game
Recovered natural dynamics in the ecosystem; Increased potentials for hydrodynamics management	Need for additional monitoring of water levels to avoid drastic flooding of nesting colonies; Invasion of reed into part of the pastures and consequent necessity to restrict this
Increased resource species – herbs, snails, frogs	Increased disturbance and unregulated gathering
Increased nutrient trapping	
Reduced rate of eutrophication and succession of the water body due to the increased influx and outflow of water masses and the clearing of open water bodies	

2. Recommended measures to maximize biodiversity benefits and minimize adverse impacts of wetland restoration.

- **Wetland restoration design that will ensure the longest possible route for the water – a spiral network of open water bodies and canals with an area of at least 300 ha.**
- Maintenance of pastures and grasslands, prevention of their becoming overgrown with reed, shrubs, and weeds through appropriate practices (grazing, mowing).
- Providing a nutritional basis for the water-related animals through extensive fish-breeding in the marshes of the island. Fish stock should be stored in a place protected against fish-eating birds (suitable places in the area are the basins in Kaikusha Protected Area or the fishponds in the village of Dekov)
- Reedbed management with complex methods.
- Application of agri-environment schemes and organic farming in the agricultural lands included in and adjacent to the wetland.
- Conversion of arable lands into pastures
- Growing of cultures such as rice, lucerne, and others, which have a higher ecological value and are tolerant to biodiversity, in the over-flooded agricultural lands.
- Implementation of a technical project for establishment of a mosaic pattern of habitats (artificial meandering of water, single trees and groups of trees, islands with willow groves for nesting of herons, etc.).
- Substitution of artificial forests for natural forests or forests created from local species.
- Bio-engineering activities to attract and increase the numbers of rare species (osprey, storks, terns, kestrels), for which there will be a sufficient nutritional basis but a shortage in nesting sites.
- Maintenance of the population of rare, threatened, and resource fish species through development and implementation of schemes for dispersion of fish stock so that it can grow in the wetland.
- The link between the wetland under restoration and the River Danube should be realized by means of an open passage, in order to ensure that the fish entering from the river can have a free access.
- Providing sufficient water flow to wash away sediments and ensure dynamics in the ecosystem.