

bilitation was implemented in Zám-puszta. It was the next step of a long lasting programme aiming at the restoration of all wetland types of the previously varied water related



Cranes

habitats of the Hortobágy. The projects are expected to result in the increase of the biological diversity of the marshes and in the restoration of the natural landscape structure.

As marshes (Kenderátó, Halas) of Zám-puszta gradually dried out, not only the extension of water related habitats and their biological diversity had reduced, but the sensitive interaction between the wet and dry habitats became also destroyed, which is the main source of natural diversity of the region. After the marshes have dried out, among others all Grebe species left the area, the mixed Heron colony with Purple Herons and Great



Ferruginous Duck

Photo: György Kovács

Photo: Dr. Gábor Kovács

White Egrets had disappeared, not any Tern species bred here in dry years. Maps from the early 1900ies indicate the Halas-marsh, which today has not any open water surface, as “Halas-lake” with permanent water. There was not any marsh with open water surface on the area before the restoration, all were dominated by dense vegetation.



Glasswort

permanent alkaline marshes of Zám-puszta is protected by the Ramsar Convention as wetland of international importance.

The largest and deepest permanent marsh is the “Halas-fenék”, ancient river bed, which is contiguous to the “Kenderátó-ér” forming a 10 km long, 300 hectares large marsh system. Naturally this system was inundated by large floods and it probably dried out only in dry periods in every 8-10th years. Therefore, its nature conservation management is based on the simulation of the original pattern of water movements before the river regulations.



Purple Heron

Photo: Dr. Gábor Kovács

Photo: Dr. Gábor Kovács



Alkaline lake reconstruction

This was the aim of the restoration of the marshes carried out in 1998—99, when the water supply system was created. The filling canal connects the marshes through the Western Main Canal with River Tisza, which gives the possibility to inundate the area imitating the natural floods. Simulating the natural late-winter —

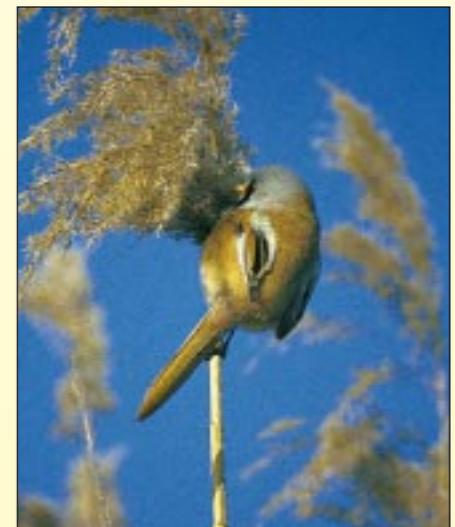


Great White Egret

Photo: Dr. Gábor Kovács

early-spring floods, the marsh system is filled with water once a year, after the first snow melting. Water demand varies from 450,000 m<sup>3</sup> to 1.5 million m<sup>3</sup>, depending on precipitation. In years of extreme drought a second inundation may be necessary in late summer. It is part of the nature conservation management of the area to let the marsh dry out occasionally, according to the natural water regime.

Photo: Dr. Gábor Kovács



Bearded Tit

Photo: Dr. Gábor Kovács

Since the marshes stayed dry permanently, some bird species (ducks, rails, terns) became occasional breeder on the area. The water supply offers again suitable breeding habitat to them, and probably those species disappeared from the area (like Grey-leg Goose, herons) will re-colonise it. In order to restore the lost open water habitat type, an alkaline lake with bare shoreline was excavated as part of the project. Many species nesting previously on the open water patches of the marsh can occupy this habitat, also some waders. The restoration ensures more favourable conditions not only for the breeding birds, but the marshes and wet meadows are also important feeding grounds. Zám is one of the most important bird migration area in the Hortobágy.

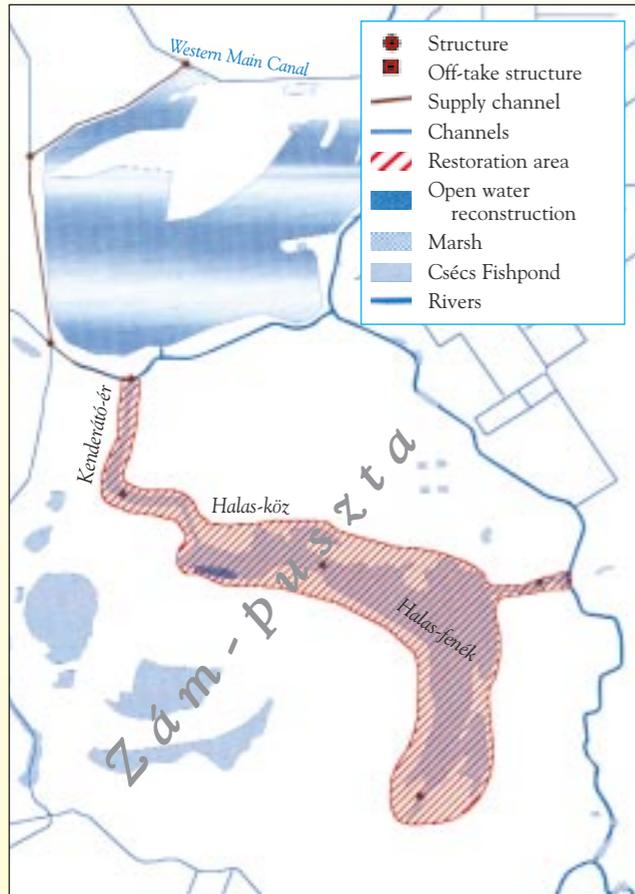


Soil deposit as dirt-road reconstruction

Photo: István Kádosi

In spring, but especially late summer huge flocks of waders (Lapwing, Black-tailed Godwit, Ruff and others) occupy the area. The open water is important roosting and feeding place. In the last years, Cranes are over-nighting in the marshes in autumn in in-

## Wetland restoration project, Zám-pusztá



White-winged Black Tern

Background photo: Black-tailed Godwits – Photo: Dr. Gábor Kovács

Photo: Dr. Gábor Kovács

creasing numbers. Flooded meadows, tussocks have high importance for Geese migration. The shoreline of the Halas-marsh was a so called “grazing-lake” even in the nearest past. This habitat type with bare shoreline was very typical for the Great Hungarian



Bittern

Plane, but it has completely disappeared. The reconstructed alkaline lake serves not only for increasing habitat and species diversity of the marsh, but also for restoring and preserving this special wetland type. Cattle are trampling the shore, maintaining the bare shoreline continuously.

*The wetland restoration project in Zám-pusztá has been carried out with support from the Dutch Ministry of Agriculture, Nature Conservation and Fisheries and Dutch Ministry of Foreign Affairs (Matra Fund/Programme International Nature Management). Project organiser and administrator: Wetlands International – Africa, Europe, Middle East, P.O. Box 7002, 6700 CA Wageningen, The Netherlands.*

Editor: István Gyamathy director  
(Director of the Hortobágy National Park)  
Text: Szilvia Góri

On the front-page: Zám-pusztá – Photo: Dr. Gábor Kovács

Photo: Gergely Kovács

ORCIUS



## Wetland restoration in Zám-pusztá — Hortobágy National Park —



River regulations, drainage, introduction of land use practices (rice-field systems, irrigated grasslands) which did not suit local conditions of the Hortobágy region resulted in the fragmentation and reduction of the extension of wetlands. Their wildlife had gradually trans-



Zám — Halas-köz

formed and deteriorated. Alkaline marshes have almost completely disappeared from most part of Europe, therefore their remains are of outstanding nature conservation values.

Hortobágy National Park Directorate has started to restore wetlands in the 1970ies. After creating water supply systems for the Kunkápolnás Marsh (1976) and the Egyek—Pusztakócs Marshes (1996—97), wetland reha-



Greylag Goose

Photo: István Káposzi

Photo: Dr. Gábor Kovács