

Case Study 2: Senegal

Djoudj National Bird Park

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Wetlands in West Africa

Djoudj National Bird Park is an area of 16,000ha adjacent to the Diawling National Park in Mauritania along the Senegal River. Created in 1971, the park was declared a Ramsar site in 1980 and a UNESCO World Heritage site in 1981.

Djoudj is part of a network of wetlands in West Africa south of the Sahara. The different sites (Banc d'Arguin National Park and Diawling National Park in Mauritania; and Djoudj National Park, Trois Marigots, Ndiael, Marigot of Rosso, the Gueumbeul Reserve, the Langue de Barbarie in Senegal) are interconnected by the erratic movements of their migratory birds. This western network of wetlands is ecologically connected to the Inner Niger Delta. For example, the Lesser Flamingo, *Phoenicopterus minor*, is typically seen in the Senegal Delta at the beginning of the migratory period (November-January) and in the Inner Niger Delta when the climatic and related food conditions change at the end of their migratory period (February-March). This is the reason why the conservation and management of this network should be undertaken from a global perspective rather than in isolation.

The Djoudj National Bird Park plays a significant role in this network with regard to its biological and socio-economic importance. Djoudj is at the heart of the Senegal River Delta and as such is influenced by the Diama dam and the promotion of rice agriculture in the Senegal River Delta. Therefore, its environmental monitoring will be useful for this network of wetlands in West Africa.

Biological Importance of Djoudj

The park is one of the main habitats for migratory birds in West Africa. It hosts about three million birds per year composed of 366 different species including such species as Garganey *Anas querquedula*, Shoveler *Anas clypeata*, Pintail *Anas acuta*, Black-tailed Godwit *Limosa limosa*, Greater and Lesser Flamingo *Phoenicopterus ruber* and *P. minor*, Great White Pelican *Pelecanus onocrotalus*, and Avocet *Recurvirostra avosetta*. It is an important breeding site for Great White Pelican, Purple Heron *Ardea purpurea*; Egyptian Goose *Alopochen aegyptiacus*; and White-faced Tree Duck *Dendrocygna viduata* as well as many other species.

Great White Pelicans at Djoudj National Bird Park (Photo: Seydina Issa Sylla)



Djoudj is a scientific laboratory for numerous researchers around the world,

particularly for the study of migration and ringing. There have been about 56,000 to 70,000 birds ringed in two years.

There are 30 plant species of which *Acacia nilotica* represents an important nesting site for some species such as Great White Egret *Egretta alba*, Yellow-billed Egret *Mesophoyx intermedia*, Little Egret *Egretta garzetta*, Green-backed Heron *Butorides striatus*, Wood Ibis *Mycteria ibis*, Pink-backed Pelican *Pelecanus rufescens*, White-breasted Cormorant *Phalacrocorax lucidus*, and African Darter *Anhinga rufa*. The presence of these birds indicates a great biodiversity in fish species in the Djoudj; about 60 species have been recorded in the park. The most delicate issue is the availability of food for Great White Pelicans (13,000 pairs), cormorants, and darters. For example, we know a pelican eats about 700 - 800g of fish per day.

Socio-economic Values

About 3,000 people live around the park and many of them make use of the park's natural resources. Thus, during the long dry season herds of cows are often seen in the park where their owners have taken them to graze on the park's resources. Fishing is an important source of food and an additional source of income for villagers, and fishermen are frequently found in the Djoudj sluices. Women of the area collect different plant species such as *Nymphaea* sp. for food, *Salvadora persica* for traditional medicine, the sedge *Cyperus articulatus* and the bulrush *Typha australis* for commercial mat production, and firewood. Many activities such as fishing, grazing, gathering of forest products such as firewood, have been made illegal by the park administration in order to eliminate competition between wildlife and people. In spite of this ban, these activities, which are of socio-economic importance to the local people, do persist and have a significant impact on the park's natural resources.

The impact of tourism is not significant in the Djoudj. The park hosts an average of 3,000 tourists per year during the bird season from November through April. Hunting by both tourists and villagers is tightly regulated and warthogs and ducks are the most common game species around the Djoudj.

Major Threats to Ecosystem Integrity

The major threats facing the park are related to changes in habitat due to the construction of the dikes and dams for the promotion of rice agriculture on the Senegal River valley. These human activities have brought about changes in the quality of the water (fresh water) and therefore the biological diversity of the ecosystem. For example, the tree *Acacia nilotica* is endangered year-round by the presence of freshwater. Moreover, the development of two aquatic plants, the bulrush and Water Lettuce *Pistia stratiotes*, is due to changes in water quality as the brackish water becomes fresher and stays longer in the park.

The construction of dikes for agricultural production has ecological consequences compounded by the fact that fertilizers and pesticides are frequently used to improve yields and control pests damaging rice fields. It is believed that the use of these chemical products is also negatively affecting the Djoudj ecosystem. Because of the country's official policy of rice production for national food security and the building of the Diama dam, there is considerable land tenure pressure in the Senegal River Basin including regular encroachments of agricultural rice fields into the buffer zone of the park.

Djoudj is like an oasis in the Senegal River Delta. Because the area is experiencing desertification, there has been an immediate effect on the ecosystem as sand dunes advance from the northeast and south along the river. The Grand Lac of Djoudj has slowly filled with sand over the years causing it to dry up quickly in any given year. This has a negative impact on the length of stay of ducks, flamingos, and spoonbills.

With the construction of the Diama dam to protect the delta, the closing of the Manantali dam for regulating river flow and creation of the reservoir, and other dike constructions or improvements, Djoudj is undergoing profound environmental changes affecting its biodiversity. The area is also facing unprecedented socio-economic changes accelerated by the geopolitical situation of the region and the implementation of structural adjustment programmes. The newly designed Djoudj management plan is aimed at addressing these complex issues as Djoudj is an important wetland in the West African network.
