

Information Sheet on Ramsar Wetlands

1. **Date this sheet was completed/updated:** 10 April 1993

2. **Country:** PANAMA

3. **Name of wetland:** San San-Pond Sak

4. **Geographical coordinates:**

9°17'39"N - 9°33'58"N
82°20'49"W - 82°34'01"W

5. **Altitude:** between 0 and 10 metres above sea level

6. **Area:** 16,413 hectares

7. **Overview:** The hydrological features of Río Changuinola and Río San San and geomorphological features (coastal plains) have created a series of canals and lagoons that define a large transitional area between the land and the coast. The tides influence a dynamic environment for the exchange of nutrients and the removal of waste, favouring the development of local fauna and flora. This area is an important habitat for marine and mangrove birds.

8. **Wetland type:**

A, B, E, F, G, H, I, J, K, L, S, U, X, 6, 9

9. **Ramsar criteria:**

10. **Map of site included? Please tick yes -or- no**

11. **Name and address of the compiler of this form:**

Programa de Humedales
IUCN for Panamá

12. **Justification of the criteria selected under point 9, on previous page:**

13. **General location:**

This wetland is located in the province of Bocas del Toro near the towns of Changuinola and Almirante.

14. **Physical features:**

The foundation is of intrusive and extrusive metamorphosed igneous rocks of volcanic material, sedimentary rocks formed by limestone, conglomerates and alluvial sediments in the lower areas as well as in the river valleys, on the shore and on the islands. This material is mainly from the Tertiary and the Quaternary.

The geomorphology is characterized by coastal plains and lowlands formed by the accumulation of sand in coastal bands. There are sand and barrier beaches (the mouth of the Río San San).

The hydrological areas are defined by the Río Changuinola (with a basin of 2,810 square kilometres and with a flow of 4,167.5 m³/sec in 1963) and the Río San San. Both rivers flow into the Caribbean.

The clay soils with slow infiltration are acidic with a low content of organic material. The following mineral content has been identified: limestone, lutite, sand, *toba* and agglomerates, quartz alkaloid lime (with andesite, quartz and hornblende), dioritic grains, quartz, gabbro, norite and monaxonic quartz.

The climate is humid tropical (using Köppen's classification) with an annual precipitation of 2,000 mm on the coastal plain subject to flooding and with a high ambient humidity the year round. The annual average temperature varies between 18°C and 34°C along the coast.

15. **Hydrological values:**

The tides are diurnal with a range of approximately 13 centimetres.

Three river basins directly influence this wetland: the Río Changuinola (a drainage basin of 2,810 square kilometres with a flow of 4,167.5 m³/sec in 1963), the Río San San and the Río Sixaola.

The San San-Boca del Drago basin fulfils the function of supplying the aquifers that provide water for human consumption in the district of Changuinola (56,000 inhabitants) as well as water for the banana plantations.

The wetland acts as a filter of sediments that supply important nutrients for the trophic chains in the wetland and on the coast. The wetland also decreases the effects of coastal erosion.

16. **Ecological features:**

A 80-square-kilometre peat bog has been reported on which only *Camnosperma panamensis* grows. The floor of the marsh is covered with *Penisetum purpureum*.

17. **Noteworthy flora:**

There are five types of vegetative associations. On the coast, the association is dominated by *Chrysobalanus icaco* and *Cocoloba uvifera* followed by *Hibiscus tiliaceus*. In the

transitional areas, there are *Cocos nucifera* and *Terminalia catapa*. In the mangrove, are found *Avicennia germinans*, *Conocarpus erectus*, *Laguncularia racemosa*, *Pelliciera rhizophorae*, *Rhizophora harrisonii* and *R. mangle*. In the Cativo association are found *Priora copaifera*, *Priora copaifera* in association with *Raphia taedigira*. In the Orey association are *Camnosperma panamensis*, and in the Cerillo-Sangrillo association are found *Pterocarpus officinalis* and *Symphonia globulifera*.

18. Noteworthy fauna:

This wetland is an important area for the conservation of 133 bird species of which 36 are threatened with extinction: *Amazona achrocephala*, *Cairina moschata*, *Dendrocygna autumnalis*, *Harpia harpyja* and *Pharomachrus mocinno*. There are fifty-five species of mammals of which 24 are threatened with extinction including: *Agouti paca*, *Hydrochaeris hydrochaeris*, *Mazama americana*, *Odocoileus virginianus*, *Trichechus manatus* and 54 species of reptiles of which 7 are threatened with extinction including: *Caiman crocodilus*, *Caretta caretta*, *Chelonia mydas*, *Dermochelys coriacea*, *Eretmochelys imbricata* and 20 species of amphibians.

19. Social and cultural values:

Agriculture land within the wetland is used for subsistence ranching, agriculture and the fattening of pigs. Traditional slash and burn techniques are used followed by the introduction of livestock or the planting of agricultural products. No mechanized agricultural machinery is used. The available tourist resources are the beaches, the rivers, fisheries, bird watching and the landscape.

20. Land tenure/ownership of:

There is no information available on land tenure within the wetland. The surrounding area is government land where banana growers have been given concessions.

21. Current land use:

Pressure on the land comes from an increase in the area used for ranching, subsistence agriculture and the fattening of pigs. There is excessive hunting of small mammals and birds, many of which are threatened with extinction. There is also over exploitation of fish, shrimp and sea turtles. Trees are cut for firewood and the construction of boats and houses.

Within the wetland, the major problems are: a) an increase in the area used for ranching, subsistence agriculture and the fattening of pigs; b) the pressure of hunting on small mammals and birds, many of which are threatened with extinction; the obvious small-scale over-exploitation of fish and lobsters and the illegal killing of marine turtles; c) the exploitation of trees for the construction of boats, houses and for firewood.

In the surrounding area, about 5,000 hectares of banana plantations border the wetland. At the beginning of this century, the flow of the Río San San was redirected in order to increase the area available for banana plantations, changing the hydrological characteristics of the river. Another problem is the increase in the cutting of tree cover in the middle course of the Changuinola and San San river basins.

22. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land use and development projects:

The construction of hydroelectric dams in the upper basins of the Changuinola and Teribe rivers, the site of the greatest hydroelectric potential in the country, poses a threat to the ecology of this area. Possible dam sites include the detour of the water in the Changuinola river to the Bahía de Almirante of about 115 mⁿ/sec. There are proposals to detour the Río Teribe to the Río San San adding a flow of 39 mⁿ/sec.

There are proposals to use a peat bog (82 square kilometres, approximately 8 metres thick) whose dry weight is estimated to be 72 million metric tons (IRHE, 1987) between Almirante and Boca del Drago for the local production of electricity.

Another possible threat is the expansion of the banana plantations that contaminate the Changuinola, Negro and San San rivers.

23. Conservation measures taken:

This area is not part of the present Sistema Nacional de Areas Protegidas de Panamá. Recent studies (Castillo, 1990; Caribaro, 1991) propose creating a wildlife reserve in this area. The INRENARE proposes managing this area using the concept of wise and sustained use.

24. Conservation measures proposed but not yet implemented:

A study (Castillo, 1990) has been prepared proposing criteria for creating different zones within the wetland and providing data for the preparation of a management plan for the use of resources. No official proposal has yet been made to INRENARE. The results of another study (CARIBARO, 1991) were submitted to INRENARE on the management of San San in which the Castillo's (1990) main conclusions are confirmed. Nonetheless, the proposal has not yet been approved by INRENARE. In a study already published (Mou et al., 1990) and in recommendations made by a group of specialists, the conservation of this wetland is highly recommended. More recently in 1993, INRENARE and CARIBARO and the IUCN Wetlands Programme for Panamá prepared a proposal for the management of the area's resources and the regulation of its use.

25. Current scientific research and facilities:

There have been three areas of study: conservation and management (Castillo, 1990; Vásquez, 1991; Tejada, 1992); wildlife conservation (Mou et al., 1991); socio-economic studies (Stephens, 1987; Hernández y Díaz, 1987).

At the present time, there are no research facilities in the wetland.

26. Current conservation education:

The Smithsonian Tropical Research Institute together with the INRENARE and the Ministry of Education have prepared a project for environmental education in the area. This wetland offers an enormous potential for training in the management and use of resources in the

framework of sustainable development.

27. Current recreation and tourism:

At the present time, there are no tourist activities in this wetland. There has been some tourist development in the province of Bocas del Toro concentrated in the Parque Nacional Marino Isla Bastimento and will move in a short time to this wetland. At the present time there is no infrastructure for tourism in the wetland.

28. Jurisdiction:

Instituto Nacional de Recursos Naturales Renovables (INRENARE)

29. Management authority:

Instituto Nacional de Recursos Naturales Renovables (INRENARE)

30. Bibliographical references: