

## Information Sheet on Ramsar Wetlands

1. **Date this sheet was completed/updated:** 12 March 1997
2. **Country:** El Salvador
3. **Name of wetland:** Laguna El Jocotal
4. **Geographical coordinates:**  
13 15' North latitude  
88 16' West longitude
5. **Altitude:** 24 metres above sea level
6. **Area:** 1571 hectares. (During the dry season, the lake covers about 900 hectares according to data of the Instituto Geográfico Nacional in 1993, but expands up to 1800 hectares during the rainy season, according to estimates of the Servicio de Parques Nacionales y Vida Silvestre. For designation as a Ramsar site, it is considered to have slightly more than 1571 hectares as declared by Executive Decree No. 689 of 3 June 1996.)
7. **Overview:**  

This site is a lake supplied by underground water from the lava bed of the Chaparrastique volcano in a depression between the volcano and the Jucuarán Hills. The lake is shallow, but is filled during periods of flooding of the Río Grande de San Miguel.
8. **Wetland type:** Freshwater, lacustrine wetland; M, N, O, U
9. **Ramsar criteria:** 1a, 2a, 2d, 3b
10. **Map of site included? Please tick yes -or- no**
11. **Name and address of the compiler of this form:**

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

**13. General location:**

Laguna El Jocotal is administratively part of the municipio of El Tránsito, in the department of San Miguel, about 20 kilometres southwest of the city of San Miguel. It is located in the eastern region of El Salvador, in an inland valley bordering the Chaparrastique volcano in the north and the Jucuarán hills in the south.

**14. Physical features:**

The lake is basically a depression formed by underground water from the lava bed of the Chaparrastique volcano and is deepest in the north. The lake is on the floodplain of the Río Grande de San Miguel, which is flooded during seasons of heavy rainfall and which supplies the lake with volcanic and alluvial sediments.

There is little data available on the lake. It is known that its average depth ranges between 1.5 and 3 metres from the dry season to the period of maximum precipitation. Its shore is almost circular, especially during the dry season. During the rainy season, however, it is joined to the floodplain of the Río Grande de San Miguel. The lake has two outlets: one natural and the other artificial. The artificial outlet was created by cattle ranchers in the area. Both outlets drain toward the Río Grande de San Miguel.

**15. Hydrological values:**

The lake has soils of volcanic origin, a unique geomorphology and the water is of unique origin. There are hot springs in some parts of the lake.

The lake acts as a storage area for rain water during the winter, contributing to the maintenance of a high level of productivity. Furthermore, the lake is just 12 kilometres from the mouth of the river in the Bahía de Jiquilisco, maintaining a large diversity of fish of both freshwater and

estuarine species and playing an especially important role at the local and regional levels.

The lake system and the floodplain fulfil several functions. First, they serve as a reservoir for water. Second, they permit storage of water during the rainy season and recharge the aquifers. Third, they control flooding farther down river, functioning as a sump in periods of flooding and as a source of water in the dry season. This system is known as a "switch" system.

#### 16. Ecological features:

The lake is in an area of hot subtropical wet forest (bh-st c, according to Holdridge's classification of life zones, 1975) with an average annual temperature of 26 °C, relative humidity of 70 per cent and light and steady year-round winds blowing at a velocity of 5.8-9 kilometres per hour. Average annual sunshine is 8.5 hours per day, potential evaporation of the water surface is 2202 mm and average annual precipitation is 1750 mm.

#### 17. Noteworthy flora:

The aquatic vegetation in the lake is very diverse and includes emerged, submerged, floating and shore vegetation in addition to phytoplankton that have not yet been studied. The area of submerged vegetation is largest, forming a dense surface that covers the lake and that serves as a habitat for waterfowl. The dominant species are *Ceratophyllum demersum*, *Hidrilla verticillata* and *Najas* spp. The emerged vegetation is composed entirely of *Nymphaea ampla*, while among the floating plants *Eichornia crassipes* is the most abundant. There is also *Azolla caroliniana*, *Lemna* spp., *Pistia stratioides* and *Spirodela* spp. There is also a floating fern, *Salvinia auriculata*. The most noticeable species of shore vegetation are *Phragmites communis*, *Sagittaria lancifolia* and *Typha angustifolia*.

Most of the arboreal vegetation around the wetland has been cut down, but there are still isolated specimens of *pimiento* (*Phyllanthus elsiæ*), *carreto* (*Pithecellobium saman*), *ceiba* (*Ceiba pentandra*) and *papalón* (*Coccoloba carasana*).

#### 18. Noteworthy fauna:

Laguna El Jocotal is characterized primarily by its birdlife. It is the most important natural body of water in El Salvador on the migration route of wild birds. Species such as *Anas americana*, *A. clypeata*, *A. discors* and *Aythya affinis* pass during the dry season (November to March). Among the most important resident species are *Cairina moschata*, *Dendrocygna autumnalis*, *D. bicolor* and *Oxyura dominica*, which are considered endangered because of their small populations. Other common species resident in the area are *Butorides virescens*, *Fulica americana*, *Gallinula chloropus*, *Himantopus himantopus*, *Jacana spinosa*, *Podilymbus podiceps*, *Porphyryula martinica*, *Porzana carolina* and *Tachybaptus dominicus*.

There are important populations of reptiles such as *Crocodylus acutus*, an endangered species, *Boa constrictor*, *Ctenosarua similis*, *Iguana iguana* and the turtle *Kinosternum* spp. There are several important species of mammals such as the white-tailed deer (*Odocoileus virginianus*) and the coyote (*Canis latrans*) in the surrounding area.

Certain species of fish are important because of their commercial value as a source of food. The most important species because of their abundance are two introduced species: *guapote tigre* (*Chichlasoma managuense*) and tilapia (*Tilapia aurea*). Other important species are *Cichlasoma trimaculatum*, species in the Poeciliidae family and bottom fish such as *Dormitator latifrons*.

#### **19. Social and cultural values:**

Among the social values, the most important is the maintenance of economic activities at the lake and in the surrounding areas. The local population not only lives from fishing but also has developed a culture based on the use of the lake's plant and animal resources. Floating plants are used as forage, fertilizer and ornamental plants sold for holidays. Emergent plants are important for the construction and manufacture of utilitarian handicrafts. Wildlife is a source of protein from the use of fish and the management of the populations of nesting ducks in the area.

There are traditions and customs related to the religion and oral tradition of the area. Among the religious activities is a procession of the local inhabitants in honour of the Virgen de la Paz, patron saint of the town of San Miguel. A small statue has been constructed in her honour on the slopes of the Chaparrastique volcano. This traditional procession is held on 26 November and other times in periods of drought as a testament of faith and a prayer for rain for the harvests. The most important oral traditions are the legends and traditions of Sigünaba, Cipitio, Cadejo and others, which are common throughout El Salvador and whose origin probably goes back to pre-Columbian times.

#### **20. Land tenure/ownership of:**

At the site: Continental bodies of water are defined in the Constitution as public property. The land around the lake is mostly private property, except a small strip in the north, which is occupied by the settlements of El Borbollón and La Curruncha on lava flows of the Chaparrastique and San Miguel volcanos. Because this land is public property, most of the settlers on the shore lack title to the land.

In the surrounding area: Most of the land around the lake is private property in the hands of large land owners, used for ranching and agriculture. Part of it is government property.

#### **21. Current land use:**

At the site: The main human activities are small-scale fishing by about 170 fishermen (survey of 1990), who fish with lines, nets, harpoons and mainly throw nets. Most household activities take place on the shores of the lake: the drawing of water, disposal of waste, the washing of clothes and bathing. Resources from the lake are used for construction (reeds) and for the manufacture of utensils and handicrafts (*Typha* spp.). Aquatic floating plants are frequently used for feeding cattle during the dry season.

In the surrounding area: The main land use in the area surrounding the lake is agriculture, mainly the growing of maize, sugar cane and watermelon. Cattle ranching is the main land use near the lake, especially on the northeastern shore.

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

At the site: Attempts were made to dry the lake in order to create land for agriculture and livestock raising by digging an artificial drainage canal towards the Río Grande de San Miguel. This project was blocked by the local inhabitants who appealed to the Servicio de Parques Nacionales y Vida Silvestre to take action.

In the surrounding area: The main disturbance in the surrounding area is deforestation, which has altered the environment. The volume of water in the streams has been reduced and sedimentation has increased. The use of pesticides on crops are a potential problem for the environment and for the food safety of the local inhabitants.

**23. Conservation measures taken:**

In 1976, the Servicio de Parques Nacionales y Vida Silvestre recognised the importance of the lake because of the associated fauna and flora and because of its importance for the communities in the area. Conservation was begun with the hiring of park wardens chosen from the local community. The number of wardens has varied, but at one time there were eight park wardens. At the present time, there is a director, an administrator and seven park wardens (three paid by the government and four paid by an NGO).

Important projects have been to create a surveillance system of wildlife and forests in order to prevent hunting and the cutting of trees in the nearby area. Wildlife has been managed through the use of nesting boxes for the black-bellied whistling-duck (*pishishe*) (*Dendrocygna autumnalis*). The programme uses an average of 150 boxes and has used a total of 450 boxes since the beginning of the project. As a result of this project, the duck population has increased from 500 to 15,000 birds. Since 1992, approximately 48,000 eggs have been sold or consumed by the local inhabitants. There are voluntary programmes for the building of latrines and fuel-efficient stoves and other improvements of infrastructure.

In 1992, the Secretaria Ejecutiva del Medio Ambiente, with the support of the local community, the Asociación Amigos del Arbol and the Comite Sindical Pro-Derechos Humanos y Medio Ambiente, carried out a project for the construction of dikes to control the water level in the lake in order to avoid the drainage produced by the opening of an artificial channel by ranchers in the area. The dikes are maintained by the communities, NGOs and the government.

In 1995, the area of the lake was marked by the Servicio de Parques Nacionales y Vida Silvestre and the Secretaria Ejecutiva del Medio Ambiente with the support of IUCN and the Instituto Geográfico Nacional. This led to the declaration on 3 June 1996 of the lake as a protected area by Executive Decree No. 689 (see annex).

**24. Conservation measures proposed but not yet implemented:**

It is proposed to forest parts of the area surrounding the lake, especially areas of deforested pasture. This could increase the nesting habitat for wild ducks and even serve as an area for new nesting boxes in the future.

The government intends to acquire areas for incorporation in the natural ecosystem and to incorporate private land for the management of resources through projects.

**25. Current scientific research and facilities:**

The only research project under way is on the sustainable use and conservation of the population of the black-bellied whistling-duck (*pishishe*) because of the special commercial interest. The Servicio de Parques Nacionales y Vida Silvestre maintains a small building, two canoes and approximately 150 nesting boxes. The project is run by three park wardens and the local communities.

**26. Current conservation education:**

A small office of the Servicio de Parques Nacionales y Vida Silvestre maintains a register of visitors to the area, although it is not yet a visitors' centre. There is currently no infrastructure or programme for environmental education, although there are plans to build an office with the help of NGOs that will serve as a research centre. The only exception is a programme for building latrines and *loreña* stoves, carried out by the local community with the support of the Ministerio de Salud Pública and the Fondo de Inversión Social (FIS). Park wardens give occasional talks to visitors and act as guides.

**27. Current recreation and tourism:**

There are no programmes.

**28. Jurisdiction:**

Laguna El Jocotal is in southeastern El Salvador, in the municipio de El Tránsito, department of San Miguel, about 20 kilometres southeast of the city of San Miguel.

The Ministerio de Agricultura y Ganadería, through the Servicio de Parques Nacionales y Vida Silvestre, has been managing the area since 1976, providing park wardens in the area included in the Sistema de Areas Protegidas. The Servicio de Parques Nacionales y Vida Silvestre has been the administrative agency for the area.

**29. Management authority:**

The management authority is the Ministerio de Agricultura y Ganadería through the Dirección General de Recursos Naturales Renovables and the Servicio de Parques Nacionales y Vida Silvestre

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**30. Bibliographical references:**