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Information Sheet on Ramsar Wetlands

1. Date this sheet was completed/updated: 30 April 2001

2. Country: Bolivia

3. Name of wetland: Palmar de las Islas and Salinas de San José

4. Geographical coordinates:

Palmar de las Islas
19° 25' South latitude
60° 32' West longitude

Salinas de San José
19° 06' South latitude
60° 55' West longitude

5. Altitude: 300 metres

6. Area: 856,754 hectares

7. Overview:

The saline and non-saline palm groves of *Copernicia alba* of Palmar de las Islas and Salinas de San José are excellent examples of the exceptional wetlands in the Chaco biogeographic region. The woodlands of the Salinas de San José system are in an almost pristine state, and the system of small lakes and former riverbeds provide water and salts for very dense populations of wildlife.

8. Wetland type:

Continental: N, Sp, Ss, Ts, Xf

Types of wetlands by decreasing order of importance: Xf, N, Ss, Sp, Ts

9. Ramsar criteria: 1, 2, 4

Criteria that best characterize the site: 1

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:

Criterion 1: A wetland should be considered internationally important if it contains a representative, rare or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region.

The saline and non-saline palm groves in Palmar de las Islas and Salinas de San José are excellent examples of characteristic and exclusive wetlands of the Chaco biogeographic region. The flooded woodlands of Salinas de San José are in an almost pristine state, and the system of small lakes and former riverbeds provide water and salts for very dense populations of wildlife.

Criterion 2: A wetland should be considered internationally important if it supports vulnerable, endangered or critically endangered species or threatened ecological communities.

Current knowledge about the fauna of Palmar de las Islas and Salinas de San José is still very sketchy. Nonetheless, it is recognized that the area sustains large populations of several large mammals (Navarro et al., 1998) and, as a result, researchers of the Wildlife Conservation Society and the Capitanía del Alto y Bajo Izozog (WCS/CABI) are studying the population and ecology of several large mammals in the area. Large populations of the following species of mammals and reptiles considered endangered by IUCN (2000) are known in the wetland and the surrounding area:

Giant armadillo (*pejichi*) (*Priodontes maximus*) - The biology of this species included in category EN (endangered) by IUCN (2000) is very poorly known. Nonetheless, it is considered common in the area (WCS/CABI, unpublished data). Researchers with WCS are studying its ecology and link with the water areas of Palmar de las Islas and Salinas de San José.

Chacoan peccary (*chancho solitario*) (*Catagonus wagneri*) - This species is included in the category EN (endangered) by IUCN (2000). Parker et al. (1993) state that all the remaining populations of this species are important because of the current high danger of extinction (Taber, 1991 in Parker et al., 1993). It is common in the area of Salinas de San José and is closely linked to the wetlands during the dry season (WCS/CABI, unpublished data).

Jaguar (*Panthera onca*) - This species is included in the category LR (at low risk) on the list of endangered species of IUCN (2000). During the 1970s, there was a commercial hunting camp in the area of Palmar de las Islas and Salinas de San José from which large numbers of jaguar skins were taken out (WCS/CABI, unpublished data). Nonetheless, the current population of this species in the area is still impressive, probably because of the link with large

groups of white-lipped peccary (*chancho tropero*) (*Tayassu pecari*) and other herbivores in the wetlands.

Brazilian tapir (*Tapirus terrestris*) - This species is listed on category LR (at low risk) in the IUCN list of endangered species (2000), and Emmons (1990) states that the species is vulnerable because of hunting, having disappeared from several areas of its range. Given the link of this species to bodies of water and mud *collpas*, it is quite probable that during the dry season, Palmar de las Islas and Salinas de San José are very important for local populations of tapirs.

Water turtle (*Platemys macrocephala*) - This species is listed by IUCN (2000) as LR (at low risk). The species is abundant in Palmar de las Islas, which is considered an important enclave for this turtle (Navarro et al., 1998).

Criterion 4: A wetland should be considered internationally important if it supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions.

Because these are the only wetlands in a large region of dry forests, these wetlands represent the obligatory enclave for many species during critical stages of their life cycle, such as the breeding of many species of amphibians (for example *Phyllomedusa hypochondrialis azurea* and *Scinax nasica*) and reptiles (for example *Platemys macrocephala*). This complex of wetlands plays a very important seasonal role for the large populations of large mammals that live in the area. Large mammals have been observed in the Chaco woodlands concentrated around bodies of water during the dry season (WCS/CABI, unpublished data). In the case of Palmar de las Islas and Salinas de San José, these species include *Catagonus wagneri*, *Mazama americana*, *M. gouazoupira*, *Tapirus terrestris*, *Tayassu pecari* and *T. tajacu* (Navarro et al., 1998; WCS/CABI, unpublished data). As a result, large populations of their predators (for example *Panthera onca* and *Puma concolor*) are also found in these wetlands.

In addition, it is quite probable that Palmar de las Islas plays an important role for waterfowl. The only data available is from a survey carried out by WCS/CABI in February 1998 for the Neotropical Census of Aquatic Birds (unpublished data). It should be pointed out that in February, the water in the region is high and the aquatic birds, which in the dry season are concentrated in a few permanent wetlands in the Chaco, are spread throughout the seasonal wetlands in the region. As a consequence, it is probable that that survey reported only a small portion of the aquatic birds that use the wetland during the year. Nonetheless, in a survey of less than 75 per cent of the site, about a thousand aquatic birds were counted in 34 species of which 30 species are considered indicators of the values, productivity or diversity of wetlands by the Ramsar Convention (Davis et al., 1996).

13. General location:

The Palmar de las Islas and Salinas de San José system of wetlands is located in the extreme southeastern part of the Cordillera province of the department of Santa Cruz. Palmar de las Islas is on the border with Paraguay, and a large part of the wetland is

in Paraguay. The closest Bolivian city is San José de Chiquitos (municipio of San José, province of Chiquitos, department of Santa Cruz), which is located 200 kilometres north of the proposed Ramsar site and has a population of approximately 10,000 inhabitants (PRIME et al., 2000).

14. Physical features:

Palmar de las Islas and Salinas de San José are formed by systems of endorheic or semi-endorheic former riverbeds situated on xeric alluvial plains in the Gran Chaco. This little known complex of saline and non-saline wetlands is located on the border with Paraguay. Included in the proposed site is Cerro San Miguel, the northern limit of these wetlands. East of Cerro San Miguel, former north-south riverbeds are linked to the lakes of Palmar de las Islas (Navarro and Fuentes, 1999). The climate in the area is hot tropical and semiarid with a marked season of drought and precipitation between 500 and 700 mm per year. Average annual temperature is between 24° and 25° C.

15. Hydrological values:

Very little is known about the hydrology of this system of saline and non-saline palm groves. It is expected that there are subterranean connections between the freshwater bodies of Palmar de las Islas and Salinas de San José (WCS/CABI, unpublished data).

16. Ecological features:

The following flooded plant communities are associated with the wetlands:

Relic cerrado: This is found at the top of Cerro San Miguel in the physiological variant of *campo rupestre*, with species characteristic of the cerrado, such as *Arrabidaea brachypoda*, *Bredemeyera brevifolia*, *Brosimum gaudichaudii*, *Cybistax antisiphylitica*, *Lafoensia pacari*, *Luehea candicans* and *Vernonia robusta*. Also found here is *Mimosa craspedisetosa*, an endemic species described based on specimens gathered at this place. On lithosoils, there are several herbaceous or sub-shrub communities pioneers where *Anemia* sp., *Baccharis trinervis*, *Epistemium parvifolium*, *Hybanthus* sp., *Lippia lupulina*, *Mandevilla* spp. and *Stylosanthes* sp. are common.

Saxicole vegetation: On the rocky walls of the Cerro San Miguel are found *Deuterocohnia longipetala* and *Gymnocalycium* sp. nov.

Well or fairly-well drained forests:

Transitional Chiquitano forest: This develops on rocky or sandy substrata and is characterized by *Anadenanthera colubrine*, *Astronium urundeuva*, *Athyana weinmaniifolia* and *Gochnatia palosanto*.

Transitional Chaco forest: Together with the poorly drained Chaco forest, this forms a matrix among which former riverbeds and small lakes are scattered.

Fairly well drained xeric Chaco forests: The community present in this part is characterized by *Aspidosperma quebracho-blanco*, *Browningia caineana* and *Bulnesia bonariensis*.

Hydrophilous Chaco forests:

Poorly drained Chaco forests: Developed on vertisol clay soils, this community is characterized by the Chaco saó palm (*Trithrinax schizophylla*).

Seasonally flooded palm forests: There are two communities in this area:

Seasonally flooded saline palm groves: This community occupies the edges of the large salt ponds and is in very good conservation status. It is characterized by *Copernicia alba*, *Lycium* spp., *Maytenus vitis-idaea* and *Prosopis ruscifolia* and other species specific to the salt ponds, such as *Atriplex* sp. and *Lophocarpinia aculeatifolia*.

Seasonally flooded non-saline palm groves: These are found at the dam on Laguna Palmar de las Islas and are characterized by *Celtis spinosa*, *Copernicia alba*, *Prosopis ruscifolia* and *P. vinalillo*. This is almost the only enclave where this association is found in Bolivia. This community has been degraded by livestock.

Herbaceous and sub-shrub aquatic vegetation: The saline lakes lack herbaceous aquatic vegetation, while in Laguna Palmar de las Islas there are the following two communities:

Reeds (*cañuelar*): Seasonally flooded and composed almost entirely of the grass *Paspalidium geminatum*. It was possibly introduced and maintained by the grazing of livestock. It is good forage.

Helophyte nitrophilous matorral: Formed by the sub-shrub *Sesbania exasperata* in a small area near the livestock activity and subject to strong nitrification by cattle. It is of poor value as forage.

17. Noteworthy flora:

The most important communities and species of plants at the proposed site are:

The saline palm groves of *Copernicia alba*, typical of the Chaco biogeographic region because of their excellent conservation status;

The poorly drained forests of saó (*Trithrinax schizophylla*) with an excellent conservation status;

Arachis cardenasii, a rare species found on the sandy beaches of the former riverbeds;

Frailea sp., an endemic cactus of the Bolivia-Paraguay Chaco;

Gymnocalycium sp., very probably a new species endemic to the Cerro San Miguel;

Mimosa craspedisetosa, a sub-shrub endemic to the relic cerrado of the Cerro San Miguel;

Schinopsis cornuta, a tree growing in areas of sand and hills, endemic to the Bolivia-Paraguay Chaco.

18. Noteworthy fauna:

As stated above, the system of wetlands of Palmar de las Islas and Salinas de San José is important for the fauna found there. The herpetofauna in the area of Palmar de las Islas is composed of 17 species (Navarro et al., 1998). There are eight species of frogs, three species of snakes, four species of lizards and two species of turtles. The amphibians are represented by one order (Anura) and, in order of number of species, there are three families: Leptodactylidae with four species and Hylidae and Bufonidae with two species each. The reptiles are represented by two orders (Testudinata and Squamata) and six families, including Testudinidae (one species), Chelidae (one species), Scincidae (one species), Teiidae (three species), Colubridae (two species) and Viperidae (one species). Among these species, several are used by the local inhabitants in the area, such as the *Tupinambis merianae* and *T. rufescens* and the turtle *Chelonoidis carbonaria*.

The most important species of birds at the site are aquatic birds, of which 34 species have been recorded (Jesús Guerro, Censo Neotropical de Aves Acuáticas, unpublished information). These include several ducks, for example *Anas bahamensis*, *Cairina moschata*, *Dendrocygna autumnalis*, *D. bicolor*, *D. viduata*, *Netta peposaca* and *Sarkidiornis melanotos*. *Callonetta leucophrys* is a rare species whose distribution is restricted to the Chaco and the Pampas (Parker et al., 1993). As for the mammals, the proposed site has diverse and abundant large fauna. There are healthy populations of three species of South American wild pigs: the Chacoan peccary (*chancho solitario*) (*Catagonus wagneri*), *taitetú* (*Tayassu tajacu*) and the white-lipped peccary (*chancho tropero*) (*Tayassu pecari*) whose large groups in the area are impressive, with up to 200 specimens (WCS/CABI, unpublished data).

19. Social and cultural values:

The system in which this site is located (Sistema de Paisaje del Chaco Transicional Chiquitano) has traditionally been used almost exclusively, both in Bolivia and Paraguay, by the Ayoréode indigenous community (Zamuco linguistic group), exploiting resources as nomads with hunting, gathering and rudimentary itinerant subsistence agriculture (*sensu* Navarro et al., 1998). The impact of these groups on the ecosystem has been minimal, and their integration into the landscape has been total. There are many traces of the continual presence of an un-contacted Ayoréode group in the area (WCS/CABI, unpublished information).

20. Land tenure/ownership of:

Salinas de San José is located in an uninhabited area of the Kaa-lyá del Gran Chaco National Park, while Palmar de las Islas is in the Kaa-lyá of the Gran Chaco Integrated Management Nature Area (ANMI), which forms part of a livestock exploitation with legal title.

21. Current land use:

There are no human inhabitants in the area of Salinas de San José (except the seasonal presence of an un-contacted Ayoréode group). However, Palmar de las Islas forms part of a cattle ranch, and the lagoon is used as a source of water for cattle.

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

There are no human inhabitants at Salinas de San José. As a result, there are no adverse made-made influences at the site. However, Palmar de las Islas is occupied by a cattle ranch. At the present time, the palm groves have been almost completely replaced by secondary forest for the extraction of palms for posts, overgrazing and the continued use of fire in the dry season to produce fresh pasture for cattle. The cattle use part of the wetland as a source of water and are constantly trampling the pasture and filling the water with droppings. There is also subsistence hunting by workers on the ranch of several species of mammals that enter the wetland.

23. Conservation measures taken:

Salinas de San José is completely within an uninhabited area of the Kaa-lyá del Gran Chaco National Park. Although Palmar de las Islas is within the Kaa-lyá ANMI, no conservation measures have been implemented, and it has been heavily impacted by cattle that occupy the area.

24. Conservation measures proposed but not yet implemented:

Palmar de las Islas is classified as an area for ecological recovery in the management plan for the Kaa-lyá del Gran Chaco National Park and ANMI, and it is hoped to make the existing cattle exploitation sustainable at the site.

25. Current scientific research and facilities:

WCI/CABI is currently establishing a research station at Puesto Ravelo (a Bolivian military outpost on the border with Paraguay), which is near the proposed site, in order to study the biodiversity of Palmar de las Islas and Salinas de San José. One of the first studies being carried out is a study of the high concentrations of small mammals in the area.

26. Current conservation education:

There are no educational programmes at the site, where very few people live.

27. Current recreation and tourism:

There are still no tourist or recreational activities at the proposed site, which is relatively inaccessible.

28. Jurisdiction:

Government of Bolivia
Prefecture of the department of Santa Cruz
Sub-prefecture of Cordillera province
Local government of Charagua

29. Management authority:

The local institution responsible for management of the site is the Capitanía del Alto y Bajo Izozog (CABI). However, the Servicio Nacional de Areas Protegidas of the government of Bolivia is responsible for the management of the national park and Kaa-lya del Gran Chaco ANMI, which includes the site in its area in Bolivia.

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30. References: