Nicaragua 6NI008

Site: Sistema Lagunar de Tisma		**Designation date:** 8/11/2001
Coordinates: 12°04'N 085°56'W	**Elevation:** 33 m	**Area:** 16,850 ha

Location: The site lies 3 km to the northeast of the town of Tisma, close to the west coast of Nicaragua, north of Managua.

Criteria: 1, 3, 4, 5, 7

Importance: This wetland plays a significant hydrological, biological and ecological role in the natural functioning of Lake Managua and Lake Nicaragua and other lacustrine systems in the area. The site is of special value for several endemic species of flora and fauna, and supports significant numbers of certain groups of waterbirds including some that nest and breed there. Birds present in large numbers are *Dendrocygna autumnalis* and *Anas discors* (up to 22,000). The endemic *Cassidix* (=*Quiscalus*) *nicaraguensis* also occurs, as does the important *Phalacrocorax olivaceus*. The wetland supports significant numbers of indigenous fish in different stages of their life cycle. A fish of scientific value is *Lepisosteus tropicus*, which is considered a living fossil.

Wetland Types: O, Ts, Tp, M, Xf (listed in descending order of dominance)
The Tisma System is a wetland of lacustrine origin that includes Lake Tisma, Playuela de Tisma, Laguna Amapa, Estero de Panaloya, part of the Río Tipitapa and marsh areas.

Biological/Ecological notes: Among the aquatic flora in Tisma, there is *Typha latifolia*, *Dalbergia retusa*, *Parkinsonia aculeata* and *Scirpus lacustrus*. They play an important socio-economic, cultural and ecological role in the wetland. Vegetation of the permanent water bodies include the native *Pistia stratiotes* and *Eichhornia crassipes* (in other regions of the world these are invasive aquatic weeds). Floodplain vegetation includes *Caesalpinia coriaria*, *Coccoloba caracasana*, *Guazuma ulmifolia*, *Ceiba pentandra* and *Senna atomaria*. *Gliricidia sepium* is found from the dry forest up to the tropical wetland and is being used for fences, firewood and as forage. Indigenous tree species include *Dalbergia retusa*, *Cedrela odorata*, *Pithecellobium saman* and *Calycophyllum candidissimum*. The diverse wetland fauna includes fish, molluscs, crustaceans, turtles and other species. Fish of economic value are *Cichlasoma managuense* and *Tilapia* sp. Migrating bird species include *Nycticorax nycticorax*. Other bird species found in the area include *Himantopus mexicanus*, *Bubulcus ibis*, *Casmerodius albus* and *Eudocimus albus*.

Hydrological/Physical notes: The Tisma Lake System is located in the Nicaraguan depression and consists of lacustrine alluvial plains. There are two volcanic soil types in the area. One consists of alluvium deposited in layers of volcanic ash, basalt and lava, leached of topsoil. These soils are well drained, open textured clay and silt with a slight slope. The second type are extremely poorly drained soils, grey to very dark clay, derived from lacustrine deposits. The system is special because in rainy periods it captures large amounts of water that flow from the upper part of the basin. It therefore functions as a natural reservoir, and plays an important role in recharging the soils with very poor drainage through slow filtration. The system also helps to prevent flooding and contributes to the biodegradation of pollutants deriving from agriculture chemicals, and from sediments and pollutants from the city of Masaya.

Human Uses: Currently, most of the land and wetlands are in private hands. Part of the wetland falls under the jurisdiction of the municipality of Tisma, the rest of the wetland falls under the jurisdiction of the municipality of Granada. Main human activities are commercial and subsistence fishing. Plant fibers are also extracted for handicrafts by local people. In the surrounding area, there is livestock raising (cattle) and agriculture (watermelon, tomato, sorghum, maize and rice). The nearby town of Tisma has approximately 4,450 inhabitants.

Conservation Measures: The only protected area is the Lake Tisma Nature Reserve, the rest of the wetland (Playuela de Tisma, Laguna Amapa and Estero de Panaloya) has no legal protection. Management guidelines for the whole Tisma Lake System have been

drafted. Several protection measures have been proposed at the municipal level and at the national level in order to protect the existing natural resources.
Adverse Factors: Historically and currently, human activities have concentrated on forest extraction, fishing, hunting of wildlife and extraction of plant fiber. The original broadleaf forest and pastures have started to disappear through uncontrolled extraction of forest resources (firewood and timber) and through encroachment of agriculture and livestock raising. Projects for expanding monocultures, (mainly rice) directly affect the wetlands through the extraction of large quantities of water, and through the use of chemicals.
Site Management: Ministerio del Ambiente y Recursos Naturales y del Ambiente (MARENA), Direction General de Areas Protegidas (DGAP), Lic. Mauricio Fonseca DGAP-MARENA, Direction: Kilometre 12½, Carretera Norte, Managua, Nicaragua. Tel: +505-263-3617/19.
Based on the 2000 Ramsar Information Sheet. Please see “Site Description” in the Introduction for more details about the structure and content of Directory descriptions.