Information Sheet on Ramsar Wetlands

1. **Date this sheet was completed/updated**: October 1996

2. **Country**: MEXICO

3. **Name of wetland**: La Encrucijada

4. **Geographical coordinates**:

14°43'N - 15°40'N
92°26'W - 93°20'W

5. **Altitude**: sea level

6. **Area**: 144,868 hectares

7. **Overview**:

This is the only area in the state of Chiapas that protects the ecosystems and species of fauna and flora in the coastal wetlands. The wetland is composed of three systems of coastal lagoons and marshes surrounded by large areas of mangroves which reach 35 metres in height and are considered the tallest in Mexico. Together, they form the largest area of mangrove forest in all of the North American Pacific.

There are large areas in the reserve of swamps and floodable land with vegetation of reeds, *popales* and coastal savannas. It is also the only *zapotonal* woodland (*Pachira acuatica*) in Central America.

This is the habitat of a large variety of wildlife that is threatened or in danger of extinction such as: jaguar (*Pantera oca*), ocelot (*Felis pardalis*), *leoncillo* (*Felis yagouaroundi*), *mono araña* (*Ateles geoffroyi*), *cocodrilo de río* (*Crocodylus acutus*) and caiman (*Caiman crocodilus chiapasius*). There are also sea turtles such as: *golfina* (*Lepidochelys olivacea*), *laúd* (*Dermochelys coreacea), prieta* (*Chelonia agassizii*) and the carey (*Eretmochelys embricata*). A total of 183 species of birds have been reported among which are the *garza espátula* and *cigueñón*. In addition, it is a temporary and seasonal habitat for a large number of migratory species.

In addition to its biological resources, La Encrucijada has a high level of biological production favourable to many species of fish important on a national scale.

This area has the best conserved and most representative of the coastal ecosystems, a large diversity of fauna and flora and a need to preserve the ecology for the socioeconomic development of the region.

8. **Wetland type**:

marine, coastal and continental

9. **Ramsar criteria**:

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

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

Departamento de Areas Naturales
Instituto de Historia Natural
Tuxtla Gutiérrez (Chiapas)

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

This is the most important system of wetlands on the American Pacific coast owing to its area, structure and productivity. It has the largest mangrove grove in Central America and the tallest specimens in North America. There are large areas of reeds (*tule*) and *popal* in a good state of conservation. There are unique communities of *zapotón* (*Pachira acuatica*). The existing vegetation is the habitat of a large number of wildlife species many of which are endemic, rare, threatened or in danger of extinction. This area is the seasonal habitat of a large number and variety of migratory birds from North America. The reserve has a high productive potential given the high level of energy and nutrients as well as the high level of sustainable biomass and the wide diversity of species that live there. There is a high level of reproduction of shrimp and species of *escama* used by a large number of fishermen (thirteen fishing cooperatives). It is the habitat of 183 species of resident or migratory birds. There are nine vegetative associations of the nineteen recorded for the state of Chiapas. This is the only protected nature are including wetlands on the coast in Chiapas.

13. **General location**:

This reserve is on the Pacific coast coastal plain in the six municipalities of Acapetahua, Huixtla, Mapastepec, Mazatán, Pijijiapan and Villa Comaltitlan covering 153 kilometres of coastal highway and 120 kilometres of Pacific coast. The closest city is Tapachula with 222,405 inhabitants (INEGI, 1991).

14. **Physical features**:

This area lies on the Pacific coastal plain, forming a strip parallel to the coast 280 kilometres in length and 15 kilometres wide in the extreme northwest edge of the state of Chiapas (on the border with the state of Oaxaca) and 35 kilometres wide in the extreme southeast (on the border with Guatemala). It has a slope of 1 metre per kilometre and a small number of slight hills.

Geology: This area has surface deposits from the Quaternary and Pliocene of terrestrial, lacustrine and fluvial origin. Under these deposits, there are crystalline and metamorphic rocks from the Precambrian and part of the Palaeozoic (Müllerried, 1957).

Geomorphology: Flatlands and slopes converge in this area, creating river beds.

Soils: The following groups of soils have been identified: cambisol, feozem, fluvisol, gleysol, regosol, and solonchak.

Climate: The climate in this region is Am (w), hot and humid with abundant rain in the summer. The minimum annual precipitation is 2,500 mm and the maximum is 3,000 mm. There are between 100 and 200 days of rain per year. The temperature is above 22°C the year round.

15. **Hydrological values**:

The important river system in the reserve is formed by the Cacaluta, Cintalapa, Coapa, Coatán, Comaltitlán, Huixtla, Margaritas, Novillero, Pijijiapan, San Nicolás, Sesecapa, Urbina and Vado Ancho rivers. There are also several secondary and tertiary streams that supply the lake with fresh water and several marshes and lakes such as: Buenavista, Castaño, Chocohuital, El Campón y Chantuto, El Coco, Hueyate, La Barrita, La Bolsa, La Carreta, Las Brujas, Los Cerritos, Palmarcito, Palo Blanco, Palo Gacho, Pampa Honda, Panzacola, Pereyra, Salitral, San Fernando, Santiago and Teculapa.

The watershed of the reserve covers 572,000 hectares.

The extensive area of mangroves is very important for the stabilization of the coast. The floodplain covered with *tule* reeds and *popal* serves to capture sediment avoiding the excessive filling in of coastal lagoons and swamps. The marsh area also acts as a filter of contaminants and bacteria preventing them from reaching the lagoons and marshes.

16. **Ecological features**:

There are nine vegetative communities in the reserve.

Mangrove: The specimens in these mangroves are considered to be the tallest (up to 35 metres) in North America, and this is the most extensive area (Miranda, 1975) and the most productive and best developed mangrove on the Pacific coast of America (Flores-Verdugo, 1992). The mangrove covers 35,523 hectares of four species: *rojo* (*Rhizophora mangle*), *negro* (*Conocarpus erectus*), *blanco* (*Laguncularia racemosa*) and *madre sal* (*Avicennia germinalis*). The *mangle armarillo* (*Rhizophora harrisonii*) is also found here according to Rico-Gray.

Zapotonal: These are unique communities in Mexico where the dominant species is the *zapotón* or *zapote de agua* (*Pachira acuatica*). The *zapotonal* covers an area of 2,430 hectares. There are also associations of mangrove and *zapotón*.
Popal: This is a vegetative community where the dominant species is the *platanillo* (*Thalia genniculata*) associated with species of *Heliconia* and *Calathea*. It covers large areas of freshwater marshes. The *popal* is usually associated with reeds.

Tular: The most abundant species in this association is the *tule* (*Typha dominguensis*) in

association with *Cyperus* sp. and *Scirpus validus*. Together with the *popal*, the *tule* is considered one of the most productive ecosystems in the world (Contreras, 1988; Rico-Gray, 1981) in addition to acting as a natural filter of contaminants in the water. The *popal* and *tule* cover 33,200 hectares in the reserve.

Evergreen woodlands: This occupies small areas on islands of solid ground inside the mangrove and forms small relics on dry land. This type of vegetation is that most affected by the expansion of the agricultural frontier in the region. The most frequent species found in this community are *amate* (*Ficus glabrata*), *caobilla* (*Switenia humilis*), *castaño* (*Sterculia mexicana*), cedar (*Cedrella odorata*), *chicozapote* (*Manilkara zapota*), *guanacastle* (*Enterolobium ciclocarpum*), and royal palm (*Sabal mexicana*).

Deciduous scrub woodland: This community is located in several parts of the coastal strip with the following species: *Acacia farneciana*, *Caparys cyanophallophora*, *Croton* spp., *guamuchil* (*Pithecellobium dulce*) and mezquite (*Prosopsis juliflora*).

Coastal dune vegetation: This community is found along the coastal strip bordering the deciduous scrub woodlands with the following species: *Canavalia maritima*, *Canavalia rosae*, *Cocoloba uvifera*, *Croton punctatus*, *Distichlis spicata*, *Ipomoea pes-caprae*, *Jouvea pilosa* and *Sporobolus dominguensis*.

Floating and subaquatic vegetation: This community is found in fresh and brackish water in rivers, swamps, marshes, coastal lagoons and grasslands in the region. It is sometimes associated with *tule* and *popal*. The most common species are the *chichicaste* (*Lemna gibba*), *lirio acuático* (*Eichornia crassipes*), *ninfa* (*Nymphaea ampla*) and *oreja* (*Pistia stratoides*).

Palm groves: This community is formed exclusively of palms (*Sabal mexicana* and *Scheelea pressuii*) with ground cover of grasses. It is usually found in areas of extensive ranching subject to frequent burning and in two of the five coastal wetlands (Lagunar Carretas-Pereyra and Chantuto-Panzacola).

17. **Noteworthy flora**:

According to the preliminary survey of flora, there are 32 species of Monocotyledons and 113 species of Dicotyledons for a total of 145 species. The following are the most important species and their conservation status.

Tabebuia rosea	threatened
Conocarpus erectus	special protection
Laguncularia racemosa	special protection
Rizophora mangle	special protection
Avicennia germinans	special protection

The mangroves are considered to be the most productive and the best developed on the Pacific coast. They hare the tallest specimens (35 metres) and the largest mangrove grove in North America. There are four species of mangrove. In the *zapotonal* are found the only populations in Mexico of zapotón (*Pachira acuatica*).

18. **Noteworthy fauna**:

According to the preliminary survey of fauna in this wetland, there are 4 species of amphibians, 24 species of reptiles, 158 species of birds (of which 52 are migratory) and 39 species of mammals. The following list gives the main species and their conservation status.

**** [two pages of animal species]

19. **Social and cultural values**:

The use of the fauna and flora in the reserve is primarily for subsistence. Edible plants such as *chicozapote* are gathered. Deer, armadillo, *tortuga casquito*, shrimp and *tecazonte* are hunted for food. Many species of mangrove are used in the construction industry and for firewood. Several species of wild plants are used for medicinal purposes.

There is also trade in turtles, eggs, iguanas and pets such as the *mono araña* and the badger (*tejón*). The unfavourable economic situation has led to increased trade (hence an increase in the illegal gathering of fauna and flora) without taking into account the damage caused. The main species affected are the *tortuga casquito*, green iguana and sea turtles from the gathering of eggs.

Fisheries: In these wetlands, the most important fishing activity is the capture and sale of four commercial species of shrimp and five species of *escama*. There are thirteen fishing cooperatives in the reserve.

Archaeology: Archaeological remains have been found in the reserve of hunter-gathers called *conchales* in Chantuto, Las Garzas, El Pajón, Teculapa and Tlacuachero in the municipalities of Acapetahua and Mapastepec. These remains are about 5,500 years old and are considered the oldest archaeological findings in the state of Chiapas. Pre-Hispanic mounds and platforms have been found at Acapetahua, La Palma, Las Lomas, Lomas Juana, Rancho Alegre and Tepaltenco in the municipalities of Acacoyahua and Acapetahua that date from the late pre-classic and late post-classic periods.

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

At the site, the core area is government property and the buffer zone is either owned by the local government, the local community or private persons. In the surrounding area, the land is of mixed ownership.

21. **Current land use**:

At the site, there is fishing for shrimp, *escama* and saltwater fish; slash-and-burn agriculture of maize and beans; extensive cattle ranching; trade in parrots, the hunting of small mammals, iguanas and freshwater turtles for local consumption and trade; the gathering of sea turtle eggs for trade; the use of nets for fishing; and the cutting of trees.

In the surrounding area and the water basin, there is commercial agriculture on the coastal

plain of plantain, mango, watermelon, hot peppers, papaya, sugar cane, tobacco, cacao, soy bean and *marañon*. Slash and burn agriculture is used to grow maize and beans on the coastal plain and the slopes of the Sierra Madre de Chiapas. There is also extensive cattle ranching, the construction of irrigation dams and roads and the channelling of rivers in the surrounding area.

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

At the site, sedimentation of coastal lakes and marshes is caused by an increase in the transport of sediment resulting from a loss of soil in the watershed, from the poorly planned dredging and from a decrease in the flow of water. Over-fishing and a disregard for bans on gathering species of shrimp and *escama* have led to a decrease in natural populations. Any increase in shrimp farms in the reserve might severely affect mangroves and reeds in the long run and decrease populations of mammals, freshwater and sea turtles, iguanas, crocodiles and birds. The expansion of the agricultural frontier will cause the drainage of many areas of reeds and *popal* and threaten hunting and trade.

In the surrounding area, contamination by chemicals used on the commercial farms on the coastal plain is a threat. There have been changes in the natural patterns of fresh and salt water flow caused by irrigation dams, the diverting of rivers, the opening of canals and the construction of roads. Many of these projects were carried out under the Plan Hidráulico de la Costa de Chiapas by the National Water Commission with financing from the World Bank. There are conflicts over land tenure and fishing concessions. Soil has been lost in the watershed owing to deforestation and slash-and-burn agriculture on the slopes. Roads have been constructed without environmental impact mitigation. Urban areas discharge raw sewage into the rivers that empty into the wetlands causing contamination.

23. **Conservation measures taken**:

In 1972, the state government designated this area as a reserve of mangrove-zapotón vegetation with an area of 2,5000 hectares. Since 1991, management programmes and environmental education for the local community have been carried out. Several studies have been made on land tenure, the status of sea turtles, socioeconomic conditions and basic surveys of natural resources, aerial censuses of waterfowl, vegetation, soil use, sedimentation in coastal lagoons, a feasibility study on the raising of *pejelagarto* (*Lepisosteus tropicus*) and environmental impact studies on the effects of creating infrastructure. Protection and monitoring programmes have concentrated on the core areas of the reserve. Annual operational plans have been prepared for the management and conservation of the reserve. A workshop has been held to analyze threats to the reserve. In the field of sustainable community development, an effort has been made to enlist the support and active participation of the local communities in conservation applying alternative sustainable approaches to the use of natural resources such as small-scale rehabilitation of the wetlands, good soil conservation practices (the growing of ground cover) and low-technology shrimp farms.

In June 1995, the government designated this area of 144,868 hectares as the La Encrucijada biosphere reserve.

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

A strategic long-term plan is being prepared that includes a plan for financing. A pilot plan for the integrated management of the basin is being prepared, and monitoring focuses on the threats to the reserve and on the reserve's biodiversity. Fishing resources have been studied and a training programme prepared for staff working in the reserve. In addition, conservation policy is being formulated at the local and state levels, and a pilot project for raising *iguana de rivera* (*Iguana iguana rhinolopha*) in semicaptivity is being set up. Studies have been made of the ecology of freshwater crocodile and turtle populations.

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

The reserve has been managed since 1990 using four management programmes under the direction of the reserve's field coordinator and two programme directors in coordination with the head of the Department of Nature Areas of the Instituto de Historia Natural with the support of staff from the central offices.

Operational programme and surveillance: There are water and land patrols to detect illicit activities and changes in land use, to provide information about regulations for inhabitants living in the reserve, to post signs indicating the reserve's boundaries and core areas, to survey fauna in the reserve and to provide maintenance of equipment and logistic support for research. The reserve's five guards are directly supervised by the reserve's coordinator.

Research and monitoring programme: Research is carried out on the environmental impact caused by the water management plan. The quality of water in the lakes is monitored and the basins are studied using published information and field work in the watersheds as the basis for proposing an integrated management plan. There are also surveys to study the various types of vegetation in the reserve. These studies are made by the programme director in coordination with the guards and the environmental promoters.

Planning programme: This programme plans long-term strategic activities for the conservation and management of the La Encrucijada and prepares a long-term financial plan to identify potential sources of financing for conservation projects and the management of the reserve.

The reserve has the following equipment and infrastructure: two operational bases in the reserve; a regional office in the municipality of Acapetahua; a pickup, one three-wheeled vehicle and three four-wheeled vehicles; three outboard-motor boats; radiocommunications; two computers and a printer; a slide projector, a video recorder and one television set.

In addition to support from the headquarters of the Department of Nature Areas, the department head and the head of the office for ecological conservation participate in activities in the capital and the reserve.

26. **Current conservation education**:

Programmes are organized for local inhabitants in environmental education. Teaching

materials using pamphlets, posters and audiovisual material are prepared. A campaign is being carried out on the importance of wetlands using radio programmes and local newspapers.

A development programme promotes the sustainable use of natural resources and sound agricultural practices. There is a pilot programme for raising *pejelagartos* in rustic pens. A pilot project is planned for raising iguanas in semicaptivity. Two other projects, a shrimp farm and the rehabilitation of some of the wetlands, are planned.

27. **Current recreation and tourism**:

There are five important beaches within the reserve that attract tourists: Barra San José (Huixtla), Barra San Simón (Mazatán), Barra Zacapulco (Acapetahua), Chocohuital (Pijijiapan) and Zapotal.

Visits of school children are organized by the administration in order to provide information on vegetation and ecosystems and to observe wildlife as a complement to the theoretical content of their school programmes. Other visitors to the reserve come from the interior or abroad to observe vegetation.

A programme of ecotourism exists that is coordinated by an organization of rural inhabitants (ISMAM) associated with a fishing cooperative in the buffer area around the reserve. Results have not yet been studied because the programme is just beginning.

28. **Jurisdiction**:

Instituto Nacional de Ecología
Secretaría del Medio Ambiente,
Recursos Naturales y Pesca

29. **Management authority**:

Instituto de Historia Natural
Gobierno del Estado de Chiapas

Dirección General de Vida Silvestre (INE-SEMARNAP)

Secretaría de Medio Ambiente, Recursos Naturales y Pesca

Secretaría de Ecología, Recursos Naturales y Pesca

Instituto Nacional de Ecología

30. **Bibliographical references**: