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Information Sheet on Ramsar Wetlands

1. Date this sheet was completed/updated: 17 September 2002

2. Country: Cuba

3. Name of wetland: Río Máximo-Cagüe Wetland

4. Geographical coordinates:

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21° 36′ 41″ – 21° 49′ 37″ North latitude
77° 20′ 08″ – 77° 33′ 09″ West longitude
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5. Altitude: Between 5 metres and minus 4 metres above or below sea level

6. Area: 22,000 hectares, of which 13,000 are marine and 9,000 terrestrial

7. Overview:

This is a very fragile ecological area, formed by a coastal marine ecosystem submitted to a process of salinization and made up of many islets located in shallow water at the mouth of the Máximo and Cagüey rivers, northeast of the provincial capital of Camague. It is the most important nesting site of the American flamingo (Phoenicopterus ruber ruber) in the Caribbean and includes the trophic sites for feeding and resting of this population. It is also a refuge for many migratory birds from North, Central and South America. The largest population of crocodile has been reported on the northern coast of Cuba. It has a significant population of the American manatee (*Trichechus manatus manatus*), an endangered aquatic mammal. The soil, together with the material supplied by dead vegetation, provide unique possibilities for the flamingo for building its nests. These extreme ecological conditions have promoted an increase of the flamingo population. It is, furthermore, a refuge for aquatic birds with sites of endemic endangered and charismatic species of ecological importance to the Caribbean. This wetland is a resting site for many migratory birds. Polymorphism and polychromy are found in this area in a diversity and abundance of birds, because it is a corridor for migratory birds and because marine birds and terrestrial communities interact here. The Caguey outlet is the most important site because of its flora, where 91.7 per cent of the species in the protected area and 77.7 per cent of endemic species are represented. The existence of the jata de los murciélagos (Copernicia vespertilionum and Trichillia pungens), species classified as rare, has been reported.

8. Wetland type: Marine-coastal: A, H, G, F, I, B and J

9. Ramsar criteria: 1, 3, 4, 5 and 6

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: The northern coast of the province is protected by the Sabana-Camagüey Archipelago (Jardines del Rey), which extends from the extreme eastern part of the province of Camagüey to the Hicacos Peninsula in the province of Matanzas. The Máximo-Cagüey wetland is a good example of a well-preserved natural wetland, characteristic of the coastal region of the northern part of the province of Camagüey. It is an ecologically fragile area forming a coastal marine ecosystem submitted to a process of salinization, formed by many islets located in shallow water at the mouth of the Máximo and Cagüey rivers.

Criterion 3: There are nine plant formations in this wetland, among them 132 species of higher plants (22 endemic and 2 regional), and 36 bird species (13 endemic and two endemic genera). Lists of plant formations and species are provided in the annex.

Criterion 4: This wetland is the most important nesting site in Cuba and the Caribbean of American flamingo (*Phoenicopterus ruber ruber*).

Criterion 5: This wetland sustains a population of aquatic birds of more than 20,000 specimens. For just the American flamingo, up to 100,000 specimens have been reported during the breeding season.

Criterion 6: This wetland seasonally provides feeding and protection for more than 120,000 specimens of American flamingo, which is more than one per cent of the population of this species, as well as another large group of marine birds.

13. General location:

This wetland is located on the northern slope of the eastern part of Cuba, province of Camagüey, approximately 55 kilometres in a straight line northeast of the city of Camagüey, capital of that province, between the mouths of the Máximo and Cagüey rivers in the municipio of Sierra de Cubitas. It extends to the southern coast of the island of Sabinal, located approximately four kilometres to the north. The closest population is the town of La Gloria with 1000–2000 inhabitants, less than three kilometres away (Instituto de Geografía, 1989).

14. Physical features:

Geology: The most representative area of the wetland and closest to the sea corresponds to the Holocene and is formed by clays, sands, gravel and peat. The higher area belongs to the Upper Miocene and is formed by clays and limestone.

Geomorphology: This wetland is on a marine plain, characterized by marsh areas of low terraces with karst marshes covered with thick clay deposits, limestone and peat, and fluvial-marine parts often characterized by marsh areas. This wetland is of natural origin.

Hydrology: This area is characterized by the dominance of chlorinated bicarbonated sodium limestone and magnesium soda underground water, with more than 3 grams/litre of minerals. This aquifer is formed by rocks with volumes of less than 0.5 litres/second/metre at an average depth of less than 5 metres. Annual average runoff from the area is 300–350 millimetres, and the coefficient of variation in fluvial runoff is between 0.6 and 0.7.

Soil: The predominant soils in the area are mineralized hydromorphic marshes and dark, plastic, gleyed, grey vertisols dominate in the surrounding area.

Basins: This wetland is located in the extreme lower part of the basin of the Máximo River. This basin has an area of 22,000 hectares.

Climate: The following climate was recorded for the area (data until 1989):

Average annual precipitation (millimetres)		800–1000
Precipitation in the rainy season	(May-October)	640-860
(millimetres)		
Average number of days of rain		50–80
Average annual evaporation (in millimetres)		2200–2300
Air temperature (degrees)		
annual		25–28
January		23–26
July		27–30
Average wind velocity (metres/second)		4.4-5.3

15. Hydrological values:

This wetland plays an important hydrological role in the prevention of coastal erosion, serves as an ecotone between the marine and land phases and contributes to maintenance of the food chains.

16. Ecological features:

Evergreen mangroves: This formation has the following variations:

- Monodominant mangrove of Rhizophora mangle with a height of three to twelve metres:
- Mixed mangrove of Avicennia germinans and Rhizophora mangle that can reach 10 to 12 metres in height. This has the best conservation status at the mouth of the Máximo River;
- Mixed mangrove of Avicennia germinans, Laguncularia racemosa and Rhizophora mangle and Conocarpus erectus occupying higher ground.

Evergreen forest of *Bucida* spp. and *Conocarpus erectus*: This area has the best conservation status and is best represented in the centre of Cayo Sifonte. It is associated with mangroves in other areas.

Microphilous evergreen forest: This is located on the coastal limestone, mainly in El Brazo. Among the emergent species are *Bucida buceras, Hippomane mancinella* and *Metopium brownei* with 12 and 15 metres in height. In the arboreal stratum, the dominant species are *Annona glabra, Bourreria divaricata* and *Colubrina arborescens*. Among the shrubs, the most characteristic species are *Caesalpinia bahamensis, Crescentia cujete* and *Erythrina grisebachii*. They are represented by several succulents, including *Harrisia eriophora, Opuntia stricta* and *Selenicereus gryiflorus*. The sparse herbaceous stratum is formed by *Lasiacis divaricata, Leersia monyra, Olyra latifolia* and *Trichachne insularis* and by plants in the upper strata. The number of species of lianas is limited. They include *Echites umbellata, Mesechites rosea* and *Philodendron krebsii*. There are also species of ferns such as *Campyloneuron phyllitidis* and *Nephrolepis biserrata*.

Evergreen swamp forest: This is found in the Cagüey outlet, which occupies a large area. The largest family represented is Arecaceae. The arboreal stratum dominates the shrubs, while the herbaceous stratum is sparsely represented, formed basically by plants of higher species.

Gallery forest: This is found in several parts of Río Máximo. The arboreal stratum is 20 metres in height, with the main species of *Ceiba pentyra, Cordia gerascanthus Enallgama latifolia, Metopium brownei, Roystoneae regia, Tabebuia angustata* and *Yira inermis.*

Semi-deciduous mesophile forest: This is found on the western bank of Río Máximo and in part of Cagüey. Among the emergent trees are *Albizia saman, Ceiba pentyra, Roystonea regia* and *Sabal parviflora*, which can reach up to 30 metres in height. The canopy of the arboreal stratum is irregular, with heights of 10 to 12 metres with *Amyris balsamifera, Bursera simaruba, Guazuma ulmifolia* and *Oxyra lanceolata*, among others. The arboreal stratum is made up of mainly *Ateramnus lucidus, Erythroxylum havanense* and *Zanthoxylum elephantiasis*. Herbaceous areas are

rare and are limited to clearings in the forest, where *Achyranthes aspera* and *Dicliptera assurgens* are abundant. Among the lianas are found *Anguria pedata, Ipomoea tiliacea, Passiflora foetida* var. *quinqueloba* and *Philodendron krebsii.* Epiphytes are poorly represented, but include specimens of *Tillysia fasciculata* and *T. polystachya* var. *usneoides.*

Semi-deciduous microphile forest: This is found mainly on one side of Río Máximo and a large part of San Severino. Among the emergent trees are *Calophyllum antillanum*, *Ficus aurea*, *F. combsii* and *Sabal parviflora*, which reach up to 20 metres in height. In the canopy, there are abundant *Bucida buceras*, *Bursera simaruba*, *Coccoloba diversifolia* and *C. praecox*, with a height of between 12 and 18 metres. Characteristic in the shrub stratum are *Belairia mucronata*, *Brya ebenus*, *Calopogonium coeruleum* and *Ryia aculeata*, while in the herbaceous stratum are found *Panicum zizanioides*, *Tournefortia bicolor*, *Selenicereus gryiflorus* and *Sporobolus pyramidatus*. The variety of lianas and epiphytes coincide with the species described for the semi-deciduous mesophile forest.

Herbaceous communities:

- Halophyte vegetation with elements of occasional mangrove: These characterize the plants of the areas of brackish marshes, tolerant of salinity and high temperatures, including *Batis maritima*, *Hygrophila brasiliensis*, *Sesuvium microphyllum* and *S. portulacastrum*. These communities usually establish in seasonally flooded areas by the sea, often associated with elements of the mangrove, such as *Avicennia germinans* and *Laguncularia* racemosa.
- Marsh grassland: This is located in a portion near the beach of La Resbalosa in seasonally flooded areas. Among the species found there are Cladium sp., Cyperus planifolius, Eleocharis sp. and Panicum sp.

Secondary vegetation:

- Semi-deciduous forest: This occupies primarily a nearby portion on the eastern bank of the Río Máximo. This is an affectation of the mesophile semideciduous forest.
- *Matorral:* This occupies primarily a nearby portion on the western side of Río Máximo, where the semi-deciduous forest has been very affected by grazing.
- Sabana antrópica: This is found mainly in the area called Marina where there
 is abundant Acacia farnesiana, Dichrostachys cinerea and many herbaceous
 species. Also on the savannah of the Uvillal, very dense herbaceous
 vegetation with shrub forest species, such as Belairia mucronata and
 Caesalpinia bahamensis, dominates.

17. Noteworthy flora:

Among the species of flora are 119 species of higher plants, of which 22 are endemic and 2 of them local: *Copernicia cowellii* (Arecaceae) and *Ginoria arborea* (Lythraceae) (see annex).

18. Outstanding fauna

The community of birds is the outstanding feature of the fauna in this wetland. As pointed out earlier, 23 species are endemic and of them, two correspond to two endemic genera: *Priotelus temnurus* and *Xiphidiopicus percussus percussus*. Several of these species are endangered: *Amazona leucocephala leucocephala* and *Falco sparverious*.

19. Social and cultural values:

There are plans for public-use activities that at the time of the preparation of this document were in the drafting stage. It is hoped that they will include trails and boat rides, two bird observation towers, a visitor's centre and an educational room. From the historical-cultural point of view, there is evidence in the area of pre-Colombian and colonial sites that have still not been studied.

20. Land tenure/ownership of:

Land in the wetland and the surrounding areas is held entirely by the Cuban government, although title to the land is in the name of the Ministry for Agriculture, represented by the Empresa Nacional for Preservation of Fauna and Flora.

21. Current land use:

Land in the wetland is used for conservation and protection of nature. In the surrounding area, there are areas used for growing sugarcane, while in the watershed use is shared between very extensive grazing, given the poor pastures, the growing of vegetables and minor fruits and the growing of citrus fruits.

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

The main adverse factors affecting the ecology of the wetland are related to human activity in the watershed, such as diversion of water that has caused a decrease in supply. There are also problems regarding water quality as a result of the dumping of waste by a fish farm and because of the influence of the growing of sugarcane and other types of crops on land near the wetland. There are already two projects to decrease the impact of the fish farm. Land that was formerly used for growing sugarcane and grazing is beginning to be incorporated into the protected area. Work is going on to recover them for conservation.

23. Conservation measures taken:

By Agreement 4262 of the Executive Committee of the Council of Ministers, this wetland was declared a wildlife refuge, using IUCN criteria, which guarantees one form or another of conservation of the site and sustainable use of the biotic resources. In 1994, a management plan was adopted for the protected area, which was updated this year. That plan includes several programmes and a package of conservation measures; for example monitoring, study and management of the American flamingo or repopulation with forest species of areas that were historically

used for grazing and growing sugarcane. As already explained, two projects for decreasing the impact caused by the fish farm through adequate waste management are being implemented.

24. Conservation measures proposed but not yet implemented:

The area has a well-designed programme for protection of the wetland based on control of access by sea and land, which includes construction of control posts on access roads using local roads, control of inaccessible areas by land using regular inspection visits by sea, preparation of personal, but it has been impossible to implement them for lack of resources, mainly boats and radio communication equipment.

25. Current scientific research and facilities:

The area has three facilities: an administrative and biological unit at the mouth of Río Máximo, a control unit at the mouth of Río Cagüey and a quarantine centre on the border of the protected area. The main research being carried out is oriented towards management and conservation of species. There are programmes for the management of communities of aquatic and terrestrial birds for species such as the American flamingo, manatee and American crocodile.

26. Current conservation education:

Considerable work is occurring in environmental education with the inhabitants of the small town of Mola, located near the wetland. The inhabitants participate by age groups in several activities oriented by specialists working in the area; for example the youth work with the selection and capture of weak flamingos that will be later ranched and sold. In the primary schools in the towns surrounding wetland, there is an attempt to motivate the participation of children in nature conservation in the area, and women work to sew clothes and make utensils that are used in the area. Older people take care of a nursery where plants are grown that are planted in fertilized farming land, while a programme concentrates on workers in the area of the reserve and with those that use the land in the surrounding areas. Conferences, videos, debates, contests and activities of several artistic and cultural manifestations is part of the daily life in the surrounding areas.

27. Current recreation y tourism:

Until now, these types of activities have not been organized, although they are planned through implementation of a public use programme that is now being prepared, providing for several trails and boat rides, two bird observation towers, a visitors' centre and an educational hall.

28. Jurisdiction:

This wetland is located in the municipio of Sierra de Cubitas in the province of Camagüey. The Empresa Provincial para la Protection de la Flora y la Fauna of the Ministry for Agriculture is responsible for the land.

29. Management authority:

Empresa Nacional para la protection de la Flora y la Fauna (ENPFF) Ministerio de la Agricultura Lic. José Morales Leal

Lic. José Morales Leal Administrador del área Calle Central 50, esquina 7 y 8 Reparto Amalia Simoni CP 70400, Camagüey

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30. References:

Annex I

Flora of Máximo-Caguey

Species	Common name
Acacia farnesiana	Aroma amarilla
Acacia maschalocephala	Tocino
Adelia ricinella	Jía blanca
Alibertia edulis	Pitajoni
Alternanthera crassifolia	
Annona glabra	Bagá
Ateleia gummifera var. cubensis	
Atkinsia cubensis	Majagua de Cuba
Baccharis halimifolia var. angustior	Espanta mosquitos
Bastardia viscose	
Bumelia celastrina	
Bandttneria microphandla	
Caesalpinia bahamensis	Brasilete
Caesalpinia vesicaria	Brasil
Calophandllum antillanum	Ocuje
Calandptranthes chandtraculia	
Calandptranthes sandzandgium	
Capparis candnophallophora	Mostacilla
Capparis flexuosa	
Capraria biflora	
Carpodiptera cubensis	
Casearia aculeate	Jia brava
Cassine cubensis	
Catesbaea spinosa	Huevo de gallo
Chamissoa altissima	Guaninique
Chiococca alba	Bejuco de verraco
Coccoloba praecox	
Commiphora glauca	Almaciguillo
Copernicia cowelli	
Cordia collococca	Ateje, Ateje hembra

Varía, Varía prieta
Hierba de la sangre
Maromera
- Maromora
Adormidera
Ebano carbonero
Ebano blanco
Curamagüey blanco
Cañuela hembra
Jibá
Nabaco
Yaba
Barrehorno
Guásima
Guaandabillo
Jaguilla de monte, Hueso
,
Alacrancillo de playa
Majagua azúl
, ,
Lobelia
Guamá hediondo
Guamá
Carne de vaca
Malva colorada
Rosa de sabana
Piñipiñi
Yaya
-
Abey macho
Macusey macho
Perejil de costa
•
Uña de gato
Mariandrea, Zarcilla

Polandgala penaea		
Portulaca umbraticola		
Psiguria pedata	Pepino cimarrón	
Psandchotria clementis	T epino cimanon	
Psandchotria horizontalis		
Randia spinifex	Espuela de caballero	
Rivina humilis	L'appuela de Caballero	
Salicornia perennis	Vorbo do vidrio	
Sapindus saponaria	Yerba de vidrio	
•		
Securidaca virgata	Ditabaya	
Selenicereus boeckmannii	Pitahaya	
Serjania atrolineata		
Serjania diversifolia		
Serjania subdentata	Mandalane de de	
Sesuvium portulacastrum	Verdolaga de playa	
Sida rhombifolia	Malva de cochino	
Smilax havanensis		
Sparganophorus sparganophora		
Spilanthes urens		
Stigmaphandllon diversifolium		
Stigmaphandllon microphandllum		
Suaeda linearis	Sosa	
Tabebuia angustata	Roble blanco	
Tabebuia trachandcarpa	Rompe ropa	
Tillandsia balbisiana		
Tillandsia fasciculata		
Tillandsia pruinosa		
Tillandsia recurvata		
Tillandsia setacea		
Tillandsia usneoides	Guajaca	
Tillandsia valenzuelana	•	
Tolumnia leiboldii		
Tournefortia bicolor	Nigua,Cayaya macho	
Tournefortia hirsutissima	Nigua,Cayaya hembra	
Trichilia havanensis		
Trophis racemosa		
Zanthoxandlum elephantiasis		
Zanthoxandlum fagara		
Zornia reticulata		
Zuelania guidonia	Guaguasí	
galaonia	Jaagaao:	

Endangered Species

Species	Endemic	Category of threat	
Alternanthera crassifolia	yes	Endangered	
Bandttneria microphandlla	no	Endangered	

Fauna of Máximo-Cagüey

Species	Common name	Endemic Endangered
Fish		
Mugil trichodon	Lisa	no
Mugil curema	Lisa	no
Mugil liza	Lisa	no
Lutjanus candanopterus	Pargo	no
Lutjanus griseus	Pargo	no
Lutjanus analis	Pargo	no
Cichlasoma tetracantha	Biajaca	yes
Gambusia sp.	Guajacón	no
Amphibians		
Osteopilus septentrionalis	Rana platanera	no
Bufo sp.	Toad	yes
Reptiles		
Crocodandlus acutus	American crocodile	no X
Epicatres Angulifer	Maja de Santamaria	yes X
Birds		
Ajaia ajaja	Sevilla	no
Amazona leucocephala leucocephala	Cotorra	yes X
Anas discors	Pato de Florida	no
Anhinga anhinga leucogaster	Marbella	no
Ardea herodias ssp.	Gracilote	no
Bubulcus ibis ibis	Garcita bueyera	no
Buteo jamaicensis	Gavilán	no
Butorides striatus ssp.	Aguaitacaimán	no
Butorides virescens	Aguaitacaimán	No
Casmerodius albus	Garzón	no
Catharacta skua	Gran skua	no
Cathartes aura aura	Aura tiñosa	no
Charadrius vociferus ssp.	Zarapico sabanero	no
Charadrius wilsonia wilsonia	Títere playero	no
Chlorostilbon ricordii ricordii	Zunzún	yes
Colinus virginianus cubanensis	Codorniz	yes
Columba leucocephala	Torcaza cabeciblanca	no
Columbina passerina aflavida	Tojosa	no
Contopus caribaeus caribaeus	Bobito chico	yes
Crotophaga ani	Judio	no
Dendroica palmarum palmarum	Bijirita común	no
Dives atroviolaceus	Totí	yes
Egretta caerulea	Garza azul	no
Egretta tricolor ruficollis	Garza de vientre blanco	no
Falco peregrinus	Halcón de patos	no
Falco sparverius sparveriodes	Cernícalo	yes
Falco sparverius sparveriodes	Cernícalo	yes
Fregata magnificens	Rabihorcado	no

Gandmnoglaux lawrencii	Sijú	yes
Himantopus mexicanus	Cachiporra	no
Icterus dominicensis melanopsis	Solibio	yes
Melanerpes superciliaris superciliaris	Carpintero jabado	yes
Mimus polandglottos orpheus	Sinsonte	no
Mniotilta varia	Bijirita trepadora	no
Passerina candanea	Azulejo	no
Pelecanus occidentalis ssp.	Alcatraz	no
Phalacrocorax auritus ssp.	Corúa de mar	no
Phalacrocorax brazilianus	Corúa de agua dulce	no
Phoenicopterus rubber	Flamingo	no X
Polandborus plancus audubonii	Caraira	no
Priotelus temnurus ssp.	Tocororo	yes
Quiscalus niger caribaeus	Chichinguaco	yes
Quiscalus niger gundlachi	Chichinguaco	yes
Recurvirostra americana	Avoceta	no
Saurothera merlini merlini	Arriero, Guacaica	yes
Setophaga ruticilla ssp.	Candelita	no
Sturnella magna hippocrepis	Sabanero	yes
Teretistris fornsi	Pechero	yes
Tiaris canora	Tomeguín del Pinar	yes
Tiaris olivacea olivacea	Tomeguín de la tierra	no
Todus multicolour	Cartacuba, Pedorrera	yes
Turdus plumbeus ssp.	Zorzal Real	no
Tandrannus caudifasciatus caudifasciatus	Pitirre guatíbere	yes
Tandto alba furcata	Lechuza	no
Xiphidiopicus percussus percussus	Carpintero verde	yes
Xiphidiopicus percussus ssp.	Carpintero verde	yes
Zenaida asiatica asiatica	Paloma aliblanca	no
Zenaida macroura ssp.	Paloma rabiche	no
Mammals		
Odocoileus virginianus	White-tailed deer	no
Sus scrofa	Pig jíbaro	no
Bos Taurus	Cow	no
Equus caballus	Horse	no
Felis domesticus	Cat jíbaro	no
Canis familiaris	Dog jíbaro	no
Herpestes auropunctatus	Mongoose	no
Caprimis pilorides	Jutia conga	no X
Trichechus manatus manatus	Manatee	no X
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