



# Ramsar Information Sheet

Published on 27 October 2017

## Brazil Guaratuba



Designation date	21 September 2017
Site number	2317
Coordinates	25°51'30"S 48°41'58"W
Area	38 329,34 ha

## Color codes

Fields back-shaded in light blue relate to data and information required only for RIS updates.

Note that some fields concerning aspects of Part 3, the Ecological Character Description of the RIS (tinted in purple), are not expected to be completed as part of a standard RIS, but are included for completeness so as to provide the requested consistency between the RIS and the format of a 'full' Ecological Character Description, as adopted in Resolution X.15 (2008). If a Contracting Party does have information available that is relevant to these fields (for example from a national format Ecological Character Description) it may, if it wishes to, include information in these additional fields.

## 1 - Summary

### Summary

The area has high biological importance, being inserted in the "mosaic of conservation units", which includes several conservation units and its buffer zones from the southern coast of the state of São Paulo to the southernmost of the coast of the state of Paraná (Decree of Brazilian Ministry of The Environment No. 150 of May 8, 2006). This Ramsar Site includes part of a full protection conservation unit in Paraná, the Boguaçu State Park, and is entirely inside a sustainable use conservation unit, the Environmental Protection Area of Guaratuba (EPA of Guaratuba). It also includes Parado Lagoon and its tributaries, which were enacted as public utility to nature conservation (Guaratuba municipality Decree n°1626 from December 10 of 1996). The Guaratuba site is partially surrounded by two National Parks, the Saint-Hilare / Lange National Park, and the Guaricana National Park (not yet implemented), both of which protects the highlands that are source of the rivers in the lowlands.

The site includes about 24,000 has of well conserved wetlands, of which about 5,000 has represent the aquatic area of Guaratuba bay (Diederichsen et. al., 2008). It includes mangroves, periodically flooded forests, marshes, and a high variation of transitional phytophysionomies between these, determined basically by the different degree of mixture of water with marine or fluvial sediments (Bornschein et al., 2003). The Site is also entirely in an Important Bird Area (IBA) ("APA de Guaratuba"; Bencke et al., 2006).

## 2 - Data & location

### 2.1 - Formal data

#### 2.1.1 - Name and address of the compiler of this RIS

##### Compiler 1

Name	Bianca Luiza Reinert
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#### 2.1.2 - Period of collection of data and information used to compile the RIS

From year	2014
To year	2015

#### 2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)	Guaratuba
Unofficial name (optional)	Guaratuba Environmental Protection Area

## 2.2 - Site location

### 2.2.1 - Defining the Site boundaries

#### b) Digital map/image

<1 file(s) uploaded>

Former maps	0
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#### Boundaries description

The most conserved areas on the coastal plain in the Guaratuba Environmental Protection Area (EPA) were selected to delimitate the site, including the Guaratuba bay. Part of the boundaries of the Saint Hilare/Lange National Park are at the northeastern portion of the site; the boundary of the future Guaricana National Park is at the northwestern, and at south follows the boundary of Guaratuba EPA. Road position was also used to determine the site boundaries. Large and continuous disturbed areas were not included in the Ramsar Site. The northern area of the Ramsar Site form a corridor between two National Protected Areas, the Saint-Hilare / Lange, and the Guaricana National Park's.

### 2.2.2 - General location

a) In which large administrative region does the site lie?	Paraná state
b) What is the nearest town or population centre?	Guaratuba city

### 2.2.3 - For wetlands on national boundaries only

- a) Does the wetland extend onto the territory of one or more other countries? Yes  No
- b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party? Yes  No

### 2.2.4 - Area of the Site

Official area, in hectares (ha):	38329.34
Area, in hectares (ha) as calculated from GIS boundaries	38329.34

### 2.2.5 - Biogeography

#### Biogeographic regions

RIS for Site no. 2317, Guaratuba, Brazil

Regionalisation scheme(s)	Biogeographic region
Other scheme (provide name below)	Southeastern-Southern Brazil secondary basin

### 3 - Why is the Site important?

#### 3.1 - Ramsar Criteria and their justification

<no data available>

Criterion 2 : Rare species and threatened ecological communities

Criterion 3 : Biological diversity

Justification

The site has about 3,286 has of remains of caxeta (*Tabebuia cassinoides*) forests, and about 5,115 has of mangroves in good conditions (Roderjan et al., 1996). The region houses only 8.16 has of the formation ariticunzal with herbaceous (where predominates the arboreal species *Annona glabra*) of all Paraná state coast (Bornschein, 2001). It is considered the most important area for the Paraná Antwren (*Stymphalornis acutirostris*), including about 42% of the global population species (Reinert, 2001; Reinert et al., 2007; Bornschein, 2013; BirdLife International, 2014e). The site presents a significant extension of unaltered habitats for the species, as is only slight altered by exotic grasses (Bornschein, 2001; 2013; Reinert, 2001; Reinert et al., 2007). The region also supports the largest area of continuous habitats for the Kaempfer's Tody-tyrant, which favors narrow patches of alluvial forests between 0-50 m a.s.l. (BirdLife International, 2014h). Previous studies mention about 64 mammal species as occurring or of probable occurrence on the region of the coastal plains of the EPA of Guaratuba, and of these, five are endemic of the Atlantic Forest, such as *Monodelphis scalopus*, *Delomys dorsalis*, *Oxymyctetus quaestor*, and *Kannabateomys amblyonyx* ( IAP,2006).







Criterion 4 : Support during critical life cycle stage or in adverse conditions

Criterion 8 : Fish spawning grounds, etc.

Justification




The region presents about 80 fish species (Chaves & Corrêa, 1998; Chaves & Vendel, 2001), with the estuarine and mangrove habitats being nurseries for some marine species as the "robalo" (*Centropomus* spp.) (e.g. Nogueira, 2009), the "tainha" (*Mugil* spp.), the "cangulo" (*Stellifer rastrifer*) (Chaves & Vendel, 1997), the "linguado" (*Citharichthys* spp.) (Chaves & Vendel, 1997), the "cangauá" (*Bairdiella ronchus*) (Chaves, 1995), and others, besides being feeding grounds for several other fish species (e.g. Chaves & Bouchereau, 2004; Chaves & Vendel, 2008).





























#### 3.2 - Plant species whose presence relates to the international importance of the site

Scientific name	Common name	Criterion 2	Criterion 3	Criterion 4	IUCN Red List	CITES Appendix I	Other status	Justification
 <i>Annona glabra</i>	ariticunzal	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		The region houses only 8.16 has of the formation ariticunzal with herbaceous (where predominates the arboreal species <i>Annona glabra</i> ) of all Paraná state coast (Bornschein, 2001).
 <i>Cyperus giganteus</i>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	Red List ( SEMA/ GTZ-PR, 1995)	
 <i>Gomesa barbata</i>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	Red List of flora species of Paraná State ( SEMA/ GTZ-PR, 1995)	
 <i>Leptotes bicolor</i>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	Red List of flora species of Paraná State ( SEMA/ GTZ-PR, 1995)	
 <i>Tabebuia cassinoides</i>	caxeta	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		The site has about 3,286 has of remains of caxeta ( <i>Tabebuia cassinoides</i> ) forests, and about 5,115 has of mangroves in good conditions (Roderjan et al., 1996).
 <i>Vitex polygama</i>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	Red List of flora species of Paraná State ( SEMA/ GTZ-PR, 1995)	

Considering the great habitat diversity the knowledge about the vegetation of the region is still scarce, being important to highlight that the available information is mostly generic and punctual. According to the Management Plan of the EPA of Guaratuba, data on the floristic composition of several plant formations indicates the occurrence of five species considered as threatened by the Paraná State Red List of Plants Threatened of Extinction (SEMA/GTZ, 1995a apud IAP, 2006). Between the most threatened families in the EPA is the Orchidaceae with two species, the Bearded Oncidium (*Oncidium barbatum*), considered vulnerable, and the Bicolored Leptotes (*Leptotes bicolor*), considered endangered in the Red List of flora species of Paraná State ( SEMA/ GTZ-PR, 1995). The Taruma (*Vitex polygama*, Verbenaceae) is also considered endangered in the Red List of flora species of Paraná State ( SEMA/ GTZ-PR, 1995, and the species *Cyperus giganteus* (Cyperaceae) is considered rare in the same Red List ( SEMA/ GTZ-PR, 1995). Other important species is *Dicksonia* sp., that is explored for the confection of vases. Several other species are under pressure, as forest suppression for logging or clearing for cattle or other cultures, illegal cutting of palm heart from the Jussara Palm (*Euterpe edulis*), besides the indiscriminated exploration of plants with ornamental potential (orchids, bromeliads, areceae, etc), and/or medicinal (IAP, 2006).

### 3.3 - Animal species whose presence relates to the international importance of the site

Phylum	Scientific name	Common name	Species qualifies under criterion								Species contributes under criterion								Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7	8																
<b>Birds</b>																										
CHORDATA/ AVES	 <i>Aburria jacutinga</i>	jacutinga	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				EN	<input checked="" type="checkbox"/>	<input type="checkbox"/>		hunting, and forest clearance					
CHORDATA/ AVES	 <i>Amazona brasiliensis</i>	papagaio-de-cara-roxa	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input checked="" type="checkbox"/>	<input type="checkbox"/>		habitat loss, and pouching for national and international trade. The site supports reproductive populations of several endangered birds, as the Paraná Antwren, the Kaempfer's Tody-tyrant, the Restinga Tyrannulet, the Red-tailed Amazon, and the Bl					
CHORDATA/ AVES	 <i>Hemitriccus kaempferi</i>	maria-catarinense	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				EN	<input type="checkbox"/>	<input type="checkbox"/>		deforestation, with the Guaratuba region being a stronghold for the species, as seems to keep the largest of its populations					

Phylum	Scientific name	Common name	Species qualifies under criterion			Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7								
CHORDATA/AVES	 <i>Leucopternis lacemulatus</i>	gavião-pombo-pequeno	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU 	<input checked="" type="checkbox"/>	<input type="checkbox"/>		habitat loss, and persecution as predator of domestic animals
CHORDATA/AVES	 <i>Phylloscartes kronei</i>	maria-da-restinga	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU 	<input type="checkbox"/>	<input type="checkbox"/>		habitat loss. The site supports reproductive populations of several endangered birds, as the Paraná Antwren, the Kaempfer's Tody-tyrant, the Restinga Tyrannulet, the Red-tailed Amazon, and the Black-backed Tanager.
CHORDATA/AVES	 <i>Platyrinchus leucoryphus</i>	Russet-winged Spadebill	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU 	<input type="checkbox"/>	<input type="checkbox"/>		
CHORDATA/AVES	 <i>Procnias nudicollis</i>	araponga	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU 	<input type="checkbox"/>	<input type="checkbox"/>		habitat loss and trapping for cage-bird trade
CHORDATA/AVES	 <i>Sporophila falcirostris</i>	cagarra-verdadeira	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU 	<input type="checkbox"/>	<input type="checkbox"/>		habitat loss and bird-trapping trade
CHORDATA/AVES	 <i>Sporophila frontalis</i>	pixoxó	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU 	<input type="checkbox"/>	<input type="checkbox"/>		habitat loss and pouching
CHORDATA/AVES	 <i>Stymphalornis acutirostris</i>	bicudinho-do-brejo	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				EN 	<input type="checkbox"/>	<input type="checkbox"/>		of habitat loss due to human activities and exotic invasive grasses, and sea level rise. It is considered the most important area for the Paraná Antwren ( <i>Stymphalornis acutirostris</i> ), including about 42% of the species global population (Reinert, 2001; Rei
CHORDATA/AVES	 <i>Tangara peruviana</i>	saira-sapucaia	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU 	<input type="checkbox"/>	<input type="checkbox"/>		habitat loss. The site supports reproductive populations of several endangered birds, as the Paraná Antwren, the Kaempfer's Tody-tyrant, the Restinga Tyrannulet, the Red-tailed Amazon, and the Black-backed Tanager.
CHORDATA/AVES	 <i>Tinamus solitarius</i>	Solitary Tinamou	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT 	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
CHORDATA/AVES	 <i>Touit melanonotus</i>	apuim-de-costas-pretas	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				EN 	<input type="checkbox"/>	<input type="checkbox"/>		deforestation, and seems to migrate seasonally to lowlands in the Ramsar Site
<b>Fish, Mollusc and Crustacea</b>																	
CHORDATA/ACTINOPTERYGII	 <i>Bairdiella ronchus</i>	cangauá	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			LC 	<input type="checkbox"/>	<input type="checkbox"/>		The region presents about 80 fish species (Chaves & Corrêa, 1998; Chaves & Vendel, 2001), with the estuarine and mangrove habitats being nurseries for some marine species as the "robalo" ( <i>Centropomus</i> spp.) (e.g. Nogueira, 2009), the "tainha" ( <i>Mugil</i> spp.), the "cangulo" ( <i>Stellifer rastrifer</i> ) (Chaves & Vendel, 1997), the "linguado" ( <i>Citharichthys</i> spp.) (Chaves & Vendel, 1997), the "cangauá" ( <i>Bairdiella ronchus</i> ) (Chaves, 1995), and others, besides being feeding grounds for several other fish species (e.g. Chaves & Bouchereau, 2004; Chaves & Vendel, 2008).
CHORDATA/ACTINOPTERYGII	 <i>Stellifer rastrifer</i>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			LC 	<input type="checkbox"/>	<input type="checkbox"/>		
<b>Others</b>																	
CHORDATA/REPTILIA	 <i>Caiman latirostris</i>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU 	<input checked="" type="checkbox"/>	<input type="checkbox"/>		The region also includes a reproductive population of the Broad-snouted Caiman ( <i>Caiman latirostris</i> ) (Bornschein et al., 2012).
CHORDATA/MAMMALIA	 <i>Delomys dorsalis</i>	Striped Atlantic Forest Rat; Striped Delomys	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>		

Phylum	Scientific name	Common name	Species qualifies under criterion			Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7								
CHORDATA/ MAMMALIA	<i>Kannabateomys amblyonyx</i>	Atlantic Bamboo Rat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			LC 	<input type="checkbox"/>	<input type="checkbox"/>			
CHORDATA/ MAMMALIA	<i>Monodelphis scalops</i>	Long-nosed Short-tailed Opossum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			LC 	<input type="checkbox"/>	<input type="checkbox"/>			
CHORDATA/ MAMMALIA	<i>Oxymycterus quaestor</i>	Quaestor Hociucudo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			LC 	<input type="checkbox"/>	<input type="checkbox"/>			

1) Percentage of the total biogeographic population at the site

Previous studies mention about 64 mammal species as occurring or of probable occurrence on the region of the coastal plains of the EPA of Guaratuba, and of these, five are endemic of the Atlantic Forest, and 11 are considered threatened of extinction in the Paraná state. The mammals actually recorded in the region of the Ramsar site are listed in the Appendix VI.

There is a total of six species of aquatic mammals registered in the Guaratuba bay. Among these, the most common is the River Otter (*Lontra longicaudis*), that is resident and found in the region during all year. Two species of marine mammals are frequently seen during most of the year, the Guyana Dolphin (*Sotalia guianensis*), that can be seen during all year round in the bay and in several estuary rivers, and the Common Bottle-nosed Dolphin (*Tursiops truncatus*), that is common during the winter season, when schools of Mulletts (*Mugil sp.*) enter in the bay, with fishermen relating that the Common Bottle-nosed Dolphin go upstream on the estuary rivers after the Mulletts.

The region is the largest area of continuous distribution of the marsh-dwelling Paraná Antwren (*Stymphalornis acutirostris*), and also the largest area of continuous distribution of the Kaempfer's Tody Tyrant (*Hemitriccus kaempferi*), which is most common in alluvial forests. The Guaratuba site is also the range limit for some species as the Kaempfer's Tody Tyrant (*Hemitriccus kaempferi*) (northern limit, M.R. Bornschein and R. Belmonte-Lopes, unpublished data), the Red-tailed Amazon (*Amazona brasiliensis*) and the Fork-tailed Palm Swift (*Tachornis squamata*) (southern limit of both), and as stopover or wintering ground for migratory birds as the Solitary Sandpiper (*Tringa solitaria*), the Lesser Yellowlegs (*Tringa flavipes*), the Barn Swallow (*Hirundo rustica*), the White-tuffed Grebe (*Rollandia rolland*), the Osprey (*Pandion haliaetus*), among others.

Bornschein et al. (2012) recorded a nest of the Broad-snouted Caiman (*Caiman latirostris*) at the Preto River Lagoon, and according to locals Caiman nests are frequently found in the lagoon. M.R. Bornschein and C.O.A. Gussoni registered other six lizard species in the region, including the rare Banded Galliwasp (*Diploglossus fasciatus*), nine snake species, and 14 amphibian species (unpublished data).

The region presents about 80 fish species.

### 3.4 - Ecological communities whose presence relates to the international importance of the site



Name of ecological community	Community qualifies under Criterion 2?	Description	Justification
Fishes	<input checked="" type="checkbox"/>	In the region occurs four species of Chondrichthyes and two of Osteichthyes considered vulnerable, including the seahorse. <i>Rachoviscus crassiceps</i> is considered critically endangered in Paraná state.	
Birds	<input checked="" type="checkbox"/>	Occurrence of 390 species and 68 families of birds in the Ramsar Site region (Appendix VI), of which about 30% are endemic to the Atlantic Forest, and about 2.8% (11 species) are considered threatened of extinction.	
Terrestrial Mammals	<input checked="" type="checkbox"/>	Previous studies mention about 64 mammal species as occurring or of probable occurrence on the region of the coastal plains of the EPA of Guaratuba, and of these, five are endemic of the Atlantic Forest, and 11 are considered threatened of extinction.	

## 4 - What is the Site like? (Ecological character description)

### 4.1 - Ecological character

In the site is possible to find:

Saw-grass Marsh: Open formation dominated by herbs, located between forest and mangrove, as long and narrow bands. It is not covered by water column except on the occurrence of high spring tides, or storm tides. There are up to 41 plant species in this habitat;

Tidal Marsh: Open formation dominated by herbs, located in areas that suffer direct or indirect influence of the variations on the water column due to the tidal regime. The vegetation grows in places where the water column vary from casual (as consequence of floods on totally floating tidal marshes) to periodical (daily variations with the tides, or seasonally due rains) or constant;

Meander Marsh: Open formation dominated by herbs that occurs in abandoned meanders and river channels that does not receive water from the original river except when it extrapolates its bed during flood periods. The presence of water column is seasonal, depending on the rainfall, or eventual, as consequence of floods on floating meander marshes (in this situation there is no water column over the surface);

Secondary Marsh: Develops in the same way that the three types of primary marshes described above, both in species composition as in cover and height, and can be only identified by the historical area;

Mangrove with herbs: Closed formation characterized by arboreal typical of mangrove at canopy and an understory of herbs and shrubs, located at terrains that suffer regular flooding according to the tide regime;

Guanandizal with herbs: Closed formation characterized by the tree Guanandi (*Calophyllum brasiliense*), and by the existence of an understory dominated by herbs and shrubs, mainly Saw-grass (*Cladium mariscus*), Swamp Lily (*Crinum salsum*), *Panicum* sp. cf. *P. mertensii*, and Seaside Mahoe (*Hibiscus pemambucensis*);

Caxetal with herbs: Closed formation characterized by the tree Caxeta (*Tabebuia cassinoides*), and by herbs and shrubs in the understory, as *Rhynchospora* sp. cf. *R. corymbosa*, *Panicum* sp. cf. *P. mertensii*, *Scleria* sp., *Rapanea* sp., and Cattails (*Typha domingensis*). Besides the Caxeta (*Tabebuia cassinoides*), other trees sometimes are present, as the Swamp Apple (*Annona glabra*), Pedra Hume (*Myrcia multiflora*), and *Myrcia palustris*;

Swamp Apple with herbs: Closed formation characterized by the Swamp Apple (*Annona glabra*) and the presence of an understory composed by herbs, in which *Panicum* sp. cf. *P. mertensii* is dominant.

### 4.2 - What wetland type(s) are in the site?

Marine or coastal wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
A: Permanent shallow marine waters		1		Representative
F: Estuarine waters		2		Representative
H: Intertidal marshes		3	4400	Representative
I: Intertidal forested wetlands		4	5000	Representative

Inland wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
Fresh water > Marshes on peat soils >> Xp: Permanent Forested peatlands		4		Representative

### 4.3 - Biological components

#### 4.3.1 - Plant species

Other noteworthy plant species

Scientific name	Common name	Position in range / endemism / other
<i>Euterpe edulis</i>		

Invasive alien plant species

Scientific name	Common name	Impacts
<i>Bracharia subquadrifera</i>		Actually (minor impacts)
<i>Hedychium coronarium</i>		Actually (minor impacts)

#### 4.3.2 - Animal species

Other noteworthy animal species

Phylum	Scientific name	Common name	Pop. size	Period of pop. est.	%occurrence	Position in range /endemism/other
CHORDATA/AVES	Hirundo rustica	Barn Swallow				
CHORDATA/AVES	Pandion haliaetus	Osprey,Western Osprey				
CHORDATA/AVES	Rollandia rolland					
CHORDATA/AVES	Tachomis squamata	Neotropical Palm Swift				
CHORDATA/AVES	Tringa flavipes	Lesser Yellowlegs				
CHORDATA/AVES	Tringa solitaria	Solitary Sandpiper				
CHORDATA/ACTINOPTERYGII	Cynoscion leiarchus					
CHORDATA/ACTINOPTERYGII	Larimus breviceps					
CHORDATA/ACTINOPTERYGII	Paralichthys brasiliensis					
CHORDATA/ACTINOPTERYGII	Rachoviscus crassiceps					
CHORDATA/ACTINOPTERYGII	Stellifer brasiliensis					
CHORDATA/ACTINOPTERYGII	Trichiurus lepturus					
CHORDATA/MAMMALIA	Arctocephalus australis	South American Fur Seal				
CHORDATA/MAMMALIA	Arctocephalus tropicalis	Subantarctic Fur Seal				
CHORDATA/REPTILIA	Diploglossus fasciatus					
CHORDATA/MAMMALIA	Lontra longicaudis					
CHORDATA/MAMMALIA	Otaria flavescens	South American Sealion				
CHORDATA/MAMMALIA	Panthera onca	Jaguar				
CHORDATA/MAMMALIA	Sotalia guianensis					
CHORDATA/MAMMALIA	Tursiops truncatus					

#### 4.4 - Physical components

##### 4.4.1 - Climate

Climatic region	Subregion
A: Tropical humid climate	Af: Tropical wet (No dry season)

##### 4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres)

a) Maximum elevation above sea level (in metres)

- Entire river basin
- Upper part of river basin
- Middle part of river basin
- Lower part of river basin
- More than one river basin
- Not in river basin
- Coastal

Please name the river basin or basins. If the site lies in a sub-basin, please also name the larger river basin. For a coastal/marine site, please name the sea or ocean.

The main contributors of the Guaratuba bay are the Cubatão river basin and the São João river basin. The main rivers found in the area are: Cubatão, Cubatãozinho, Canasvieiras, Alegre, Parado, do Meio, Preto, Rasgado, Rasgadinho, Guanxumã, São João, dos Patos, das Palmeiras, dos Meros, Parati, do Ariri, André Gomes, das Ostras, Birigui, Fundo, and Quilombinho. The hydrographical basins assigned to the Guaratuba bay drains a significant area of about 24,000 hectares of the coastal plain until the Atlantic ocean.

##### 4.4.3 - Soil

- Mneral
- Organic
- No available information

Are soil types subject to change as a result of changing hydrological conditions (e.g., increased salinity or acidification)? Yes  No

Please provide further information on the soil (optional)

On the coastal plain region the soils occur over a flat relief and present a high degree of humidity. The main types are mangrove soils near the bays, spodosols were lowland forests and restingas occurs, alluvial soils at river margins, and hidromorphic gley soils at the remaining of the plain ( Silveira, 2005). At Serra do Mar, the great geological complexity contributes to the formation of diversified soils, with predominance of cambisols, neosoils (both young and fragile) and rock outcrops in the stepper areas.

4.4.4 - Water regime

Water permanence

Presence?
Usually permanent water present

Source of water that maintains character of the site

Presence?	Predominant water source
Marine water	<input type="checkbox"/>
Water inputs from surface water	<input type="checkbox"/>

Water destination

Presence?
Marine

Stability of water regime

Presence?
Water levels fluctuating (including tidal)

Please add any comments on the water regime and its determinants (if relevant). Use this box to explain sites with complex hydrology.

The EPA of Guaratuba presents a dense drainage network, mainly along its two main hydrographical basins, which are also the main contributors of the Guaratuba bay, the Cubatão river basin, that drains more than 100,000 hectares on three municipalities of Paraná state, representing one third of the EPA area, and the São João river basin, which drains an area of more than 33,000 hectares within the EPA. Besides these two, the hydrographical basin assigned to the Guaratuba bay drains a significant area of about 24,000 hectares of the coastal plain. The main rivers found in the area are: Cubatão, Cubatãozinho, Canasvieiras, Alegre, Parado, do Meio, Preto, Rasgado, Rasgadinho, Guanxumã, São João, dos Patos, das Palmeiras, dos Meros, Parati, do Ariri, André Gomes, das Ostras, Birigui, Fundo, and Quilombinho.

4.4.5 - Sediment regime

Significant erosion of sediments occurs on the site

Significant accretion or deposition of sediments occurs on the site

Significant transportation of sediments occurs on or through the site

Sediment regime is highly variable, either seasonally or inter-annually

Sediment regime unknown

Please provide further information on sediment (optional):

Fluvial sediments are on the coastal plain, with disproportion between the size of the alluvial plain and the fluvial channels. They were originated by the flooding of large fluvial valleys excavated during low sea levels, and flooded in subsequent high tide periods. The paleoestuarine sediments occur in flat areas with altitude inferior to 7 m a.s.l., and don't present visible alignments. The sediments are interpreted as being deposited on an estuary or lagoon environmen. Sediments with wavy stratification and bioturbation are associated with paleo tidal plains, with clay-sand sediments with abundance of shells corresponding to the lower part of the paleo tidal flats or shallow waters. The tidal flats are developed along the coast in areas with low slopes, with a marked tidal cycle, where there are enough sediment available and no strong wave influence. Sandy depositional features submerged or semi-submerged occurs associated to the bay outfall, and a micro and mesotidal organization.

4.4.6 - Water pH

Acid (pH<5.5)

Circumneutral (pH: 5.5-7.4)

Alkaline (pH>7.4)

Unknown

4.4.7 - Water salinity

Fresh (<0.5 g/l)

Mxohaline (brackish)/Mxosaline (0.5-30 g/l)

Euhaline/Eusaline (30-40 g/l)

Hyperhaline/Hypersaline (>40 g/l)

Unknown

4.4.8 - Dissolved or suspended nutrients in water

Eutrophic

Mesotrophic

Oligotrophic

Dystrophic

Unknown

4.4.9 - Features of the surrounding area which may affect the Site

Please describe whether, and if so how, the landscape and ecological characteristics in the area surrounding the Ramsar Site differ from the i) broadly similar  ii) significantly different  site itself.

- Surrounding area has greater urbanisation or development
- Surrounding area has higher human population density
- Surrounding area has more intensive agricultural use
- Surrounding area has significantly different land cover or habitat types

Please describe other ways in which the surrounding area is different:

There are private lands at the surroundings of the site, including small producers and company areas; a Federal Conservation Unit that is working on its land regularization (National Park Saint-Hilare / Lange) and a newly created National Park, the Guaricana National Park. The Guaratuba municipality has a total area of 131,650 ha, with 99.2% (130.663,53 ha) being in the EPA of Guaratuba. According to data from 1996 IBGE agricultural census, of 23,898 ha mapped for the municipality, most of it is composed by native forests (11,318 ha or 47.36%), followed by reforestation for logging (4,681.41 ha or 19.59%), permanent crops (2,308 ha or 9.66%), and temporary crops (417.60 ha or 1.75%). In relation to livestock in the EPA of Guaratuba, there is predominance of cattle and buffalo (extensive and semi-extensive) at large properties, with the traditional populations preferring poultry and swines.

## 4.5 - Ecosystem services

### 4.5.1 - Ecosystem services/benefits

#### Provisioning Services

Ecosystem service	Examples	Importance/Extent/Significance
Food for humans	Sustenance for humans (e.g., fish, molluscs, grains)	Medium

#### Regulating Services

Ecosystem service	Examples	Importance/Extent/Significance
Climate regulation	Regulation of greenhouse gases, temperature, precipitation and other climatic processes	Low

#### Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Recreation and tourism	Recreational hunting and fishing	Medium
Recreation and tourism	Water sports and activities	Medium
Recreation and tourism	Picnics, outings, touring	Medium
Recreation and tourism	Nature observation and nature-based tourism	Medium
Scientific and educational	Type location for a taxon	High

#### Supporting Services

Ecosystem service	Examples	Importance/Extent/Significance
Biodiversity	Supports a variety of all life forms including plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part	High

Have studies or assessments been made of the economic valuation of ecosystem services provided by this Ramsar Site? Yes  No  Unknown

### 4.5.2 - Social and cultural values

- i) the site provides a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland

Description if applicable

According to Sonda (2002 apud Mellinger, 2013) the populations within the Guaratuba bay can be characterized as traditional Caiçara, since they practice subsistence agriculture, using simple manual tools as sickle, hoe, and machete, fish in small scale, practice extraction of some products from forests and wetlands; present some degree of kinship, and practice mutual aid for land management. The Caiçara population in the EPA of Guaratuba is constituted of families, mostly having only possession of the land (propriety is not assured), with the members being self-identified as farmers, with predominance of crops of cassava or banana, characterized as family farming, with production structured around the family, possessing a most particular operation defined by the simple production of the familiar unit. Handmade fishing and plant extraction are also important activities that generate income for these families within the EPA of Guaratuba (Balzon, 2006 apud Mellinger, 2013).

- ii) the site has exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland

Description if applicable

The archaeological registers most known in the region are the sambaquis, that are deposits formed by large number of shells from mollusks and crustaceans and fish bones. These structures are true monuments to the adaptation and survival of men to the coastal habitats, with the sambaquis keeping in its interior several kinds of archaeological traces, including human burials. The archaeological richness of the EPA was evident with fieldworks, during which were located 73 sites with archaeological vestiges, with 33 being uncatalogued previously. Adding this uncatalogued sites to the total of 98 occurrences cited in the bibliography, there is a total of 131 archaeological sites in the Ramsar site. However, as no systematic research has been made in the region, this number should reflect only part of the total of sites (Brochier, 2009).

- iii) the ecological character of the wetland depends on its interaction with local communities or indigenous peoples
- iv) relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland

## 4.6 - Ecological processes

<no data available>

## 5 - How is the Site managed? (Conservation and management)

### 5.1 - Land tenure and responsibilities (Managers)

#### 5.1.1 - Land tenure/ownership

##### Public ownership

Category	Within the Ramsar Site	In the surrounding area
Provincial/region/state government	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Local authority, municipality, (sub)district, etc.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
National/Federal government	<input type="checkbox"/>	<input checked="" type="checkbox"/>

##### Private ownership

Category	Within the Ramsar Site	In the surrounding area
Other types of private/individual owner(s)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Provide further information on the land tenure / ownership regime (optional):

##### Within the Ramsar site:

A large part of the site area is composed by particular proprieties, including small villages of fishing communities. Even the areas located inside conservation unities as the Bogaçu State Park and the Municipal Park of Parado Lagoon are still in the process of regularization of ownership.

##### In the surrounding area:

There are private lands at the surroundings of the site, including from small producers to company areas, a Federal Conservation Unit that is doing its land regularization (National Park Saint-Hilare / Lange), and a newly created National Park, the Guaricana National Park.

#### 5.1.2 - Management authority

Please list the local office / offices of any agency or organization responsible for managing the site:

Instituto Ambiental do Paraná (IAP)

Provide the name and title of the person or people with responsibility for the wetland:

Célia Cristina Lima Rocha

Postal address:

Address: Rua Almirante Tamandaré, 1676, Jardim Jurimar, Instituto Ambiental do Paraná (IAP) de Guaratuba, Guaratuba, Paraná, Brazil, CEP: 83280-000.

E-mail address:

celiarocha@iap.pr.gov.br

## 5.2 - Ecological character threats and responses (Management)

### 5.2.1 - Factors (actual or likely) adversely affecting the Site's ecological character

#### Human settlements (non agricultural)

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Tourism and recreation areas	unknown impact		<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### Water regulation

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Drainage	Low impact	Low impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### Agriculture and aquaculture

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Livestock farming and ranching	Medium impact	High impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

#### Biological resource use

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Fishing and harvesting aquatic resources	unknown impact		<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### Natural system modifications

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Vegetation clearance/ land conversion	unknown impact		<input checked="" type="checkbox"/>	<input type="checkbox"/>

Invasive and other problematic species and genes

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Invasive non-native/ alien species	unknown impact		<input checked="" type="checkbox"/>	<input type="checkbox"/>

Pollution

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Agricultural and forestry effluents	unknown impact		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Garbage and solid waste	Medium impact	High impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Please describe any other threats (optional):

In 2008 a plan for conservation and management of the Guaratuba bay was elaborated, using the Conservation Action Plan methodology developed by The Nature Conservancy (TNC), which identified the following as threats to the conservation targets chosen: overfishing, several kinds of illegal practices, fails in fishery management, pollution (sewers, trash, oils, fishing residues), unregulated tourism, mangrove degradation, dredging at São João river, use and occupation of areas of mangrove and/or marsh, established exotic species, and use of pesticides (Diederichsen, et al., 2008). Although the Guaratuba bay can be considered a well preserved habitat if compared to other bays in Brazil, in general the threats to the site were classified as "very high" (Diederichsen et al., 2008). Figure 7 presents the map of "threats – use and occupation" obtained by Diederichsen et al. (2008), that shows the utilization of natural resources and threats to conservation in the Guaratuba bay. Some of the threats are further described below.

Exotic species. The herbaceous wetlands of the proposed site have suffered with the invasion by exotic species, especially Brachiaria grasses, very widespread and of high impact power in tidal marshes at southern Brazil, and for which there seem to be no barriers, except the water salinity (Reinert et al. 2007). Once established this grasses become denser continuously until eliminate the native vegetation (Reinert et al. 2007). One of the factors that has contributed to the spread of the Brachiaria grasses is the use of them in cages for maturing of pitu shrimps that are used for sport fishing, a common practice in the region, and the invasion by Brachiaria can be observed in several spots, not only around the Guaratuba bay, but also along several rivers and marshes in the rivers Cubatão and Cubatãozinho, and in the Parado Lagoon (comm. per. B.L. Reinert, 2013)

Water quality, erosion and land use, chemical fertilizers, and sewage. All over the coast of the state of Paraná sanitation and treatment of water and sewage are precarious. The exposure of bays and river basins as destination of domestic, commercial, and or industrial sewage is visible, being reflected in the need of treatment of the distributed water, in the index for sea bathing, and in the harm to the fluvial and marine fauna and flora. In order to prepare the management plan of the EPA of Guaratuba a study named " River Basin analysis of Guaratuba Protected Area as an indicative of water quality " was commissioned, and it identified three main impacts to the quality of water at the EPA: (1) erosive processes, (2) utilization of chemical fertilizers, and (3) domestic and/or subsistence activities sewage (IAP, 2006). In the lowland plains of the EPA of Guaratuba, the erosive processes are caused by (I) total removal of vegetation of areas of lowland forests and alluvial forests, were hidromorphic and podz. In the surrounding area the roads area a threat to water quality.

5.2.2 - Legal conservation status

Global legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
UNESCO Biosphere Reserve	Biosphere Reserve of the Atlantic Forest.		whole

National legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
mosaic of conservation units	Lagamar		partly
protected area	Guaratuba Environmental Protection Area (EPA)		partly

5.2.3 - IUCN protected areas categories (2008)

- Ia Strict Nature Reserve
- Ib Wilderness Area: protected area managed mainly for wilderness protection
- II National Park: protected area managed mainly for ecosystem protection and recreation
- III Natural Monument: protected area managed mainly for conservation of specific natural features
- IV Habitat/Species Management Area: protected area managed mainly for conservation through management intervention
- V Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation
- VI Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems

### 5.2.4 - Key conservation measures

#### Legal protection

Measures	Status
Legal protection	Implemented

#### Habitat

Measures	Status
Habitat manipulation/enhancement	Proposed

#### Species

Measures	Status
Threatened/rare species management programmes	Implemented
Control of invasive alien plants	Implemented

#### Human Activities

Measures	Status
Research	Proposed
Communication, education, and participation and awareness activities	Proposed

### 5.2.5 - Management planning

Is there a site-specific management plan for the site? Yes

Has a management effectiveness assessment been undertaken for the site? Yes  No

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning processes with another Contracting Party? Yes  No

### 5.2.6 - Planning for restoration

Is there a site-specific restoration plan? Please select a value

### 5.2.7 - Monitoring implemented or proposed

Monitoring	Status
Animal species (please specify)	Implemented

Implementation of a National Plan for Conservation of the Marsh Antbird, including subsidies to the present proposal



## 6 - Additional material

### 6.1 - Additional reports and documents

#### 6.1.1 - Bibliographical references

It's included in section 6.1.2 vi (other published literature)

#### 6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)

<5 file(s) uploaded>

ii. a detailed Ecological Character Description (ECD) (in a national format)

<no file available>

iii. a description of the site in a national or regional wetland inventory

<no file available>

iv. relevant Article 3.2 reports

<no file available>

v. site management plan

<no file available>

vi. other published literature

<2 file(s) uploaded>

#### 6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:



Aerial view of the Parado Lagoon, Guaratuba Environmental Protection Area, Paraná state, Brazil. Photo: Roberto Boçon. ( Roberto Boçon, 01-01-2014 )

#### 6.1.4 - Designation letter and related data

Designation letter

<1 file(s) uploaded>

Date of Designation