

Information Sheet on Ramsar Wetlands (RIS) – 2009-2012 version

Available for download from http://www.ramsar.org/ris/key_ris_index.htm.

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX.22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 14, 3rd edition). A 4th edition of the Handbook is in preparation and will be available in 2009.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

Praia da Vitória Municipality
Praça Francisco Ornelas da Câmara
9760-851 Praia da Vitória – PORTUGAL
Tel: ++ 351 295 540 200
Fax: ++ 351 295 540 210
<http://cmpv.pt/>

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

10th January 2013

3. Country:

Portugal

4. Name of the Ramsar site:

The precise name of the designated site in one of the three official languages (English, French or Spanish) of the Convention. Alternative names, including in local language(s), should be given in parentheses after the precise name.

Paul da Praia da Vitória (Praia da Vitória Marsh)

5. Designation of new Ramsar site or update of existing site:

This RIS is for (tick one box only):

- a) Designation of a new Ramsar site or
b) Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

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a) Site boundary and area

The Ramsar site boundary and site area are unchanged:

or

If the site boundary has changed:

- i) the boundary has been delineated more accurately ; or
- ii) the boundary has been extended ; or
- iii) the boundary has been restricted**

and/or

If the site area has changed:

- i) the area has been measured more accurately ; or
- ii) the area has been extended ; or
- iii) the area has been reduced**

** **Important note:** If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

7. Map of site:

Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

- i) a hard copy (required for inclusion of site in the Ramsar List): **X**;
- ii) an electronic format (e.g. a JPEG or ArcView image) **X**;
- iii) a GIS file providing geo-referenced site boundary vectors and attribute tables **X**.

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park, etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The site boundaries were determined to cover all permanent or temporarily flood areas, and areas of interest for future interventions.

8. Geographical coordinates (latitude/longitude, in degrees and minutes):

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

38°44'N / 27°04'W

9. General location:

Include in which part of the country and which large administrative region(s) the site lies and the location of the nearest large town.

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The Praia da Vitória Marsh is located in the urban centre of the city of Praia da Vitória (local scope administrative unit), easternmost of Terceira island between Latitudes 38°38'N and 38°47'N and Longitudes 27°03'W and 27°24'W. Together with four other islands, Terceira is part of the Central Group of the Autonomous Region of the Azores, a Portuguese archipelago of nine islands.

10. Elevation: (in metres: average and/or maximum & minimum)

0 – 4 m

11. Area: (in hectares)

16 ha

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

The RAMSAR site a wetland located in the urban centre of a city, a characteristic that makes it unique in the Macaronesia region. It is a high primary production ecosystem that is capable of supporting wildlife.

The marsh has an important role in the local hydrological cycle, working the water mass as an absorbing system for the superficial fluidity of the surrounding hydrographic basin, expressing itself by the increase and decrease of the extension of the superficial water area, given by the fluctuation that the underlying aquifer is subjected. The marsh's strategic location also allows for the observation of a considerable number of migratory birds from both the European and American continents. These birds, which for various reasons are diverted from their normal routes, use the Marsh as a refuge to feed and recover. No species of birds so far registered for the site has a special conservation status for the IUCN red list. However the wide diversity of species, especially with regard to its geographical origin and the importance of local as a refuge for the mid-Atlantic migratory routes, transforms the space with a special interest in conservation. Locally the importance of the site can be measured by the presence of a considerable number (18 counted so far) of endemic species (e.g. *Columba palumbus azorica*, *Fringilla coelebs moreletti*, and *Motacilla cinerea patriciae*). Only in the universe of ichthyofauna there is an endangered (EN) specie considerate by IUCN red list, *Anguilla anguilla*, and a mammal also an EN, *Nyctalus azoreum*.

In 2009, following a long process of physical recovery (significant increase of the glass of water and improvement of accessibilities) the Praia da Vitória Marsh became a mandatory stopping point for birdwatchers who visit the Azores, namely Terceira Island.

13. Ramsar Criteria:

Tick the box under each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11). All Criteria which apply should be ticked.

1	•	2	•	3	•	4	•	5	•	6	•	7	•	8	•	9
X		<input type="checkbox"/>		<input type="checkbox"/>		X		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		X		<input type="checkbox"/>

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

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

The Praia da Vitória Marsh is a swamp-type coastal wetland of brackish water influenced by tides, located in the urban centre of this city. This aspect, together with its physical and ecological characteristics, makes it unique in the bio-geographical region of Macaronesia, where only one more ecosystem of this type is known, located in the Canary archipelago, therefore, on a very different geographical location, less centralized in the Atlantic and near the African continent. In the Azores there are other coastal wetlands,

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including in the municipality of Praia da Vitória, in particular the Belo Jardim Marsh and the Pedreira Marsh in Cabo da Praia parish. However, the Praia da Vitória Marsh is the first wetland rehabilitated in the Azores in an urban area, very close (within minutes) from the airport and the commercial city port, features that make it easily accessible not only for the local population, as for visitors, thereby enhancing it as a place of excellence for environmental education and specialized tourism - birdwatching.

On a hydrological level, and due to the topography of the location, it functions as a collecting basin of superficial fluidity of the surrounding hydrographic basin, under the influence of the oscillations in the base aquifer by fluctuations in the sea water level. This gives this ecosystem an important role as a mediator of the natural water flux, contributing to flood control and the aquifer maintenance.

Studies were made regarding the measurement of water quality, including salinity and conductivity, concluded that the Marsh had a brackish gradient resulting from the confrontation of the three elements (surface runoff, infiltration and aquifer oscillation of sea water). This gradient keeps stable in time and space, fostering a greater diversity of ecological niches and biodiversity associated with these, which differentiates it from other coastal wetlands in the islands that constitute the Macaronesian region.

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

The Praia da Vitória marsh is, by its location in the North Atlantic Ocean, approximately midway between the American and European Continents, a strategic point for birds that, for various reasons, come into marginal routes during their migrations. Thus, over time, there has been registered presence of birds from America and Europe that find refuge for food and rest when encounter an adversity that deviate from their normal migration route.

The simultaneous presence of birds from America and Europe, driven by the location of this ecosystem at the confluence of several streams makes it a unique and strategic location for bird watching in the Macaronesian context. This uniqueness is underlined by the interest of the international community of birdwatchers.

Criterion 8: A wetland should be considered internationally important if it is an important source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere, depend.



The Paul of Praia da Vitória, being a brackish wetland, proved, since there are historical records, as an important habitat for the specie *Anguilla anguilla*. This specie, an catadromous fish in large quantities in this place, has a nationally conservation status of endangered (EN) in the IUCN red list.

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) **biogeographic region:** Biogeographic Region of Macaronesia.

b) **biogeographic regionalisation scheme** (include reference citation): Classification based on the biogeographic regions defined by the Natura network 2000 (European Directive 92/43/CEE, of May, 21) and by Directive 2000/60/CE, of European Parliament and the Council, of 23th October.

16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

The island of Terceira is a volcanic building mainly made up of lava and projection material, which demonstrates the alternation between explosive and vulcanian eruptions through time. To these materials

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joins sedimentary deposits, mainly in the coast, some created by sea abrasion and sea deposits, others as results of rock weathering in subaerial environment.

The island is grounded over three great structural massifs formed by the stratovolcanoes of Cinco Picos, Guilherme Moniz-Pico Alto and Santa Barbara. The Cinco Picos massif was the first of the island to emerge from the sea. Its build reflects in the accumulation of thick lava flows, interspersed by slim pyroclastic deposits and paleosols, creating the whole East side of the island. Morphologically it is made up of a succession of *grabens* limited by rifts.

The island of Terceira, as with the rest of the islands of the archipelago, has very specific hydrological characteristics, due to its volcanic nature, the youth of its formations, the high slopes of the terrains, the small dimension of the island and high precipitation.

The area of the island that was originated by the stratovolcanoe of Cinco Picos is the one that has less draining density, due to the not very pronounced relief and high fracturing, when compared to the other two massifs.

According to what happens in the various islands of the Azorean archipelago, the climate of the island of Terceira can be considered oceanic temperate, with a relatively low thermal amplitude (average annual temperature of 17°C), high annual precipitation values (regular throughout the year), high relative humidity (above 77%) and a average frequency of winds dominants from the west quadrant.

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).

The geomorphological evolution of the site where the Praia da Vitória's Marsh is located is a result of the convergence and continuous interaction of building processes framed in the formation of the Cinco Picos volcano, in the continuous sedimentary deposition, in sporadic landslides, and in destructive processes related to abrasion of the sea and negative vertical movements responsible for the formation of the Lajes' *graben*.

The Marsh's location has a quota close to the sea level. Therefore, the marsh receives freshwater from the intersection of the aquifer and the reception of superficial fluidity of the surrounding hydrographic basin, as well as sea water that comes from the marsh's direct connection with the sea – a connection course with the Praia da Vitória marina. Therefore, the marsh's water is brackish.

Presently, the extension of the superficial water area of the Praia da Vitória Marsh is a lot smaller than its original ecosystem, comprising a strip of deep water with lateral dimensions that are kept through tide variation and the emersion of the water table (base aquifer).

Like the rest of the island, the marsh is located in a temperate zone, being therefore characterized by a oceanic temperate climate.

18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Aside from the marsh's main visible water area, there are some sites that are permanently soaked during the times of year with greater rainfall. The marsh is a formation that is essentially made up of freshwater, with sea water penetration, making its water brackish. Because the marsh is close to the coastline, this penetration was done by periodic overtopping of the dune belt. Today, it is restricted to the passage through the channel that was initially built for drainage. The freshwater that supplies the marsh is essentially of underground provenance. Due to the marsh's quota close to the sea level, its plain intercepts part of the base aquifer, by emersion of the water table. The superficial flow of the watershed also contributes to the freshwater supply.

19. Wetland Types

a) presence:

Circle or underline the applicable codes for the wetland types of the Ramsar "Classification System for Wetland Type" present in the Ramsar site. Descriptions of each wetland type code are provided in Annex I of the *Explanatory Notes & Guidelines*.

Marine/coastal: A • B • C • D • E • F • G • **H** • I • **J** • K • Zk(a)

Inland: L • M • N • O • P • Q • R • Sp • Ss • Tp • Ts • U • Va •
Vt • W • Xf • Xp • Y • Zg • Zk(b)

Human-made: 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)

b) dominance:

List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar site, starting with the wetland type with the largest area.

H; J.

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

The Praia da Vitória Marsh biotope can be individualized and it has its own fauna, flora and biocommunities that support a considerable diversity of organisms and intense biological processes.

The Praia da Vitória Marsh is associated to a significant number of flora species, some characteristic and dominant in this type of ecosystems, such as the *Juncus* sp. and the *Cyperus eragrostis*, as well as others introduced into casually like the *Ricinus communis*.

In 1991, according to HP (1991), the natural heritage of the Praia da Vitória Marsh sheltered close to 190 species, distributed by 23 biotopes and habitats. Some of those species were rarely seen in the Azores, including resident and migratory species. Presently, this number keeps relatively up to date. No species of birds so far registered for the site has a special conservation status for the IUCN red list. Only in the universe of ichthyofauna there is an endangered (EN) specie considerate by IUCN red list, *Anguilla anguilla*, and a mammal also an EN, *Nyctalus azoreum*.

One of the characteristics associated to wetlands in general, and with this one in particular, lies in the brevity of the food chain, which main primary consumer is the avifauna.

In the Annex I there is the complete listing of registered species in the Praia da Vitória Marsh and their conservation status.

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

The Praia da Vitória Marsh has a flora biodiversity distributed by a considerable number of distinct areas, among others: ruderal area (e.g. *Cichorium intybus*, *Torilis arvensis* and *Lavatera cretica*); wetlands of freshwater dominance (e.g. *Cyperus eragrostis* and *Lythrum junceum*); wetlands of halophyte dominance (e.g. *Scirpus maritimus* and *Juncus acutus*) and pasture areas (e.g. *Trifolium pratense*).

In the Annex I there is the complete listing of the registered flora in the Praia da Vitória Marsh up to date and their conservation status. The list included 87 flora species, which three are endemic to the Azores and one endemic to Macaronesia.

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

The specific vegetation in the area of the Praia da Vitória Marsh and its hydrological conditions provide for the appearance of several types of fauna, namely, mammals, fish, birds and arthropods. However, it is especially the migratory avifauna that most benefits these types of ecosystems by finding a strategic area of refuge and food, always faced with adverse conditions in their normal migration route.

Located in the Azores archipelago, thus belonging to the Palearctic, the Praia da Vitória marsh is also home to species, not only from the zoogeographical region to which it belongs, but also, and very often,

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from the Nearctic. Because it is located in the middle of the north Atlantic Ocean, between the Americas and Europe, the Praia da Vitória Marsh is an excellent site for the observation of American species (e.g. *Ardea herodias*, *Anas americana* and *Fulica americana*) and European species (e.g. *Ardea cinerea*, *Fulica atra* and *Anas crecca*). The simultaneous observation of these species makes it special bird watching on this site.

During the whole year it is possible to observe several species (e.g. *Egretta garzetta*, *Aythya* sp. and *Larus* sp.), some of which are endemic subspecies from the Azores such as: *Columba palumbus azorica*, *Buteo buteo rothschildi*, and *Motacilla cinerea patriciae*. In addition, Paul da Praia da Vitória is one of the few places in the Azores archipelago where *Gallinula chloropus* nesting occurs regularly.

In the Annex I there is the complete listing of registered fauna up to date in the Praia da Vitória Marsh, as well as its conservation status. The list included 94 fauna species that were divided into eight taxonomic groups. Of the species listed, 13 are endemic to the Azores and one to Macaronesia. The Species are covered by various conservation statuses, including The Habitats Directive (92/43/CEE) that identify one specie in Annex IV, The Birds Directive (79/409/CEE) that identifies six species in Annex I, five in the Annex II and 11 in Annex II/III. The Bern Convention identifies seven species in Annex II and eight in Annex III. The Washington Convention (CITES) recognized two species in Annex A and four species in Annex C. The Bonn Convention identifies 20 species in Annex II. Finally, the IUCN Red List of Threatened Species establishes 60 species LC (Least Concern), two as NT (Near Threatened), and two as EN (Endangered - *Nyctalus azoreum* and *Anguilla anguilla*).

23. Social and cultural values:

The Praia da Vitória Marsh is presently used as a recreation site, and for the city it is an important green site for leisure, namely with the presence of a playground and a skate and radical sports park, as well as a place for annual festivities. It is also used for educational and environmental awareness purposes, mainly with younger students, thanks to its proximity (less than a kilometer away) to a campus composed of several primary schools, a secondary and a vocational school. It is considered to be an excellent strategic point for bird watching, and an added value for tourism and local development. In terms of scientific investigation, it is an excellent site for the study of this type of ecosystem's biodiversity and behavior.

a) Describe if the site has any general social and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning?

If Yes, tick the box and describe this importance under one or more of the following categories:

- i) sites which provide 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:
- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where 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:

24. Land tenure/ownership:

a) within the Ramsar site: Public state-owned terrains.

b) in the surrounding area: Private and Public state-owned terrains.

25. Current land (including water) use:

a) within the Ramsar site: The pedological characteristics of the soil are propitious to natural vegetation, presenting a high degree of hydromorphism. In this site there is also a leisure zone, with catwalks, birds' observatories, a kid's park, a skate and radical sports park, an area for shows and free space.

b) in the surroundings/catchment: Because the Marsh is located in the urban centre of the city of Praia da Vitória, the surrounding area is mainly made up of residential areas, pastures, and road networks.

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

a) within the Ramsar site:

- Soil modification - The site was targeted, during the second half of the twentieth century, by a massive landfill with soil from various sources;
- Water eutrophication - Due to nutritional enrichment, through fertilization of adjacent crops, and supply of water runoff from the entire watershed in which it appears Paul, as well as agricultural activities and considerable urbanization;
- Changes in the water regime - The arrangement for the entry of seawater existing initially (before human presence on the island) was drastically changed by the destruction of dune dynamics;
- Deposits of organic and inorganic waste (rubbish and scrap);
- Practice of disruptive recreational activities, such as: cross-country racing and trampling bird's feeding and nesting places;
- Illegal poaching of species, by illegal means;
- Wild camping.

b) in the surrounding area:

- Intense traffic (light and heavy vehicles) mainly through one of the surrounding roads that access a military port;
 - Impervious surfaces in a significant area of the basin where paul is inserted;
 - Inerts Deposit/sale;
 - Proximity to an international airport and a military air base.
 - Proximity to a fuel storage park.
-

27. Conservation measures taken:

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

Ia ; Ib ; II ; III ; IV ; V ; VI

c) Does an officially approved management plan exist; and is it being implemented?

Although there wasn't a management plan approved for the area, existed over time many projects management. The requalification of the site surrounding the Praia da Vitória Marsh has been intent since

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the island's colonization. The Marsh has been seen as a troublesome site that needed human intervention for a long time, since the first settlers and until the past century, since the European culture looked at wetlands as sites that had to be intervened and reused for other purposes.

Therefore, in the 18th century the first project was presented. It aimed to transform the Marsh's area into a safe haven. This project of military engineering was never implemented and the Marsh's site began degrading with the increase of demographic pressure in its surroundings.

The need to protect the town that was growing around the bay from the ocean's effects led to the building of a protective wall which began in 1926. It was this construction that definitely broke the marsh's dune dynamic and its direct connection to the sea. Without this direct connection (which allowed for an at least annual renewal of the marsh's water), the marsh's ecosystem was largely affected and began posing a public health threat due to the poor quality of the water and plagues that found ideal conditions for their development.

During WWII, the construction of a military port inside Praia da Vitória's bay and a connection road between the port and the Lajes airfield (installed by the North American forces stationed in Terceira) limited, although partially, the marsh's north site.

With the help of the economic and mechanic power of the North American forces stationed in Lajes, the City Hall at the time proposed for an embankment of the marsh's site, stating reasons of insalubrities and public health deriving from the marsh's degradation.

The works for the embankment of the marsh's site were held in the following three decades, and reached a conclusion in the 90's when the site was transformed into a huge green area complementary to a soccer field that was created in the early stages of the embankment process. The green area was made up of a large field with a couple of shade trees, ornamental plants and even the attempt to create an endemic plants garden.

In the meantime, there were many projects that intended to give a different use to the site, from a zoo to a golf course. In the 1990's there was a more structured project from HP Company that integrated an interesting ecological study about the site.

Recognizing the marsh's importance and its environmental value only happened after 2002. It was at that time that the municipality began seriously thinking about recovering the marsh as a wetland.

At an early stage a work team was brought together, composed of specialists in several areas: Hydrogeology, Soils, Climatology, Water Quality, Botany and Nature Conservation. This work team developed specific studies, asked by the Municipality of Praia da Vitória, which definitely assumed the wetland recovery project.

d) Describe any other current management practices:

At the same time that many studies were being developed to the area, several interventions were made in the site. First, the excavation of a contiguous area, although not communicant, with the small glass of water that survived the embankment of the old marsh, in order to study the ecosystem's reaction to the projected intervention.

The new glass of water reacted apparently well and at the end of a week it was perfectly stabilized (which was demonstrated by the chemical analysis of the water that demonstrated similar characteristics to the old glass of water). The Praia da Vitória Municipality ordered the opening of a second area of the old marsh of greater dimensions than the first one and the result was similar in terms of water characteristics.

In 2005, the Praia da Vitória Marsh recovery was integrated in the contract for the "renewal and extension of the Praia da Vitória marginal and environmental/touristic park of the Marsh". The project included the recovery of part of the wetland as basis for a site that one expects to respect its natural vocation and at the same time to serve the needs of the human community that is in contact with nature.

Therefore, three distinct zones were defined within the Marsh's site. A zone restrict to human presence and that potentiates the existence of the marsh ecosystem in a more complete way; an intermediate zone where human presence is allowed in less disturbing activities for the ecosystem; and a zone where people can walk freely and enjoy the radical sports and skate parks, playground, and a area for the city's festivities with marsh ecosystem surroundings. The amount of water present in the no-human zone is larger than in the playgrounds. Nevertheless, the existence of water helps the existence of a salinity gradient in the body of water (which nourishes biodiversity), frames the different valences and keeps the ecosystem present.

Once the excavation and terrain modeling works were over, in 2009, began the systematic monitoring of the ecosystem.

Since 2009, exists and is put is implemented a plan for monitoring water quality and the presence of birds in Paul da Praia da Vitória, which calls the measurement, three times a week, using a portable meter of the parameters pH, ORP, Temperature, Conductivity and Salinity.

In addition, the regular monitoring is confirmed by laboratory analyzes often biennial. Laboratory analyzes include also the measure of CBO (Biochemical Oxygen Demand), CQO (Chemical Oxygen Demand), Kedjal Nitrogen and Total Phosphorus.

Sightings of birds are compared and supplemented with the entries made in the specialty websites for the same data.

In two years now, has been implemented a plan to physical removal of algae as a way to control the excessive proliferation of those organisms. The operation constitutes in the removal of algae which are pulled out of water. After it dry, are forwarded to the composting of green materials implemented by the Municipality.

On the banks of the lake have been enhanced installation of native vegetation through the seed (the case of reeds) and the minimal intrusion of space just to eliminate weeds. The management of vegetation in the remaining space is made by cutting its regular monthly or bimonthly depending on the growth rate except for the spring time of year that widens the gap between cuts to allow flowering and thus facilitate the identification of flora existing.

The entry of domestic animals (dogs and cats) and this information is conditioned as well as all other aspects of the code of conduct are posted at the main entrances into the park.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

There is an eutrophication combat plan that includes the physical removal of macroalgae from the marsh water, with an increase of the entrance of sea water so as to approximate the present hydrodynamic with past observed hydrodynamic values.

The physical removal of the mass of algae has been implemented in 2010 and 2011. In 2011 was built a pipeline link between the end of Paul and the sea, which would get water in Paul with the rising tide. In general, none of these actions to date proved effective in combating the proliferation of algae (constancy over time and space).

There is the perception that Paul can never be sustainable natural ecosystem, until it is reconstituted to its direct connection to the sea. However, the infrastructure which delimit this wetland, and which stand between it and the sea, is still too important to the functioning of the city and its marina.

29. Current scientific research and facilities:

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Since 1990 there have been many scientific papers published on the Praia da Vitória Marsh, namely inventories of the fauna and flora, ecological and hydrogeological characterization and ecosystem functioning description. Most of the works are from investigators of the University of the Azores, some of them are part of the technical team responsible for the Recovery and Classification Plan of the Praia da Vitória Marsh, dated from 1991.

The uniqueness of the Marsh has aroused the interest of many researchers and served as the basis for many studies embodied in theses to graduate, example is the work done by Miguel (2004) and Goulart (2011), Roach (2002) and Rocha (2002) to obtain a Master's degree and more recently a doctoral thesis that is taking place. Marsh's Management Entity team undergoes regular monitoring work of the environmental quality indicators, namely physical and chemical parameters of water (pH, ORP, Salinity, Conductivity and temperature) and observed and records avifauna, cross-examining the results with other observation fonts.

The recent problem of the excessive proliferation of algae, especially during seasons of higher temperatures, has led to an annual physical removal of algae. These algae have been the target of two identification studies, carried out in 2010 and 2011, concluding that species were *Gayralia oxysperma*,

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Cladophora coelothrix, Blidingia marginata, Cladophora álbida, Cladophora hutchinsiae and Ulva intestinalis.

In an attempt to let more sea water directly into the Marsh a connection was built on the other side of the Marsh, which led to better local control of the proliferation of algae. There is the perception that in order to make the ecosystem sustainable in the future a direct connection to the sea is required.

The stabilizing of a large mirror of water has created a considerable ictiofauna community which was also studied by a specialized team of investigators from the University of the Azores.

There have been records of the sightings of avifauna species considered to be very rare in several specialized sites (www.birding.azores.com; www.azores.avesdeportugal.info; www.azoresbs.weebly.com).

These species were from European and American origin, which shows us that the Marsh serves not only locals but also a specific niche for tourism: national and international Birdwatching. With this in mind, several infrastructures were built to support and stimulate this activity, such as observatories and information boards with basic information about the existent flora and avifauna.

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

Presently, the Praia da Vitória Marsh is one of the places in the municipality where more environmental awareness sessions and activities are held, addressing environmental issues related to the various descriptors (water, waste, biodiversity), and arousing awareness of the importance that ecosystem in a regulatory perspective water, and its importance for resident and migratory birds. In the Marsh there is a marked ecological route and two observatories that facilitate bird watching activity. Next to the observatories there is information about the more common species. Visits can be accompanied by a guide whenever requested to the management entity.

The Marsh is located in the urban frame of the city and less than a kilometer away from an elementary, middle and high schools and a vocational school. With its high environmental valued ecosystem, the Marsh has been an excellent site for environmental education. It has held many environmental awareness sessions organized by the Municipality and solicited by schools.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

The site is located in the urban centre of the city of Praia da Vitória, the second city of the island, to which is associated a landscape, bathing areas and history of excellence. Besides, the Praia da Vitória Marsh, as with the other marsh in the county, is considered by the international birdwatchers community to be a hotspot for avifauna observation, being especially interesting the junction of American and European species, species whose records of sightings are in the various specialty websites. Is that frequent and numerous record that reinforces the importance of Paul as a hotspot for nationally and internationally. Birdwatching. The record sightings of species of birds can be found at various sites (www.birding.azores.com; www.azores.avesdeportugal.info; www.azoresbs.weebly.com).

Inside of the Praia da Vitória Marsh there is an area for entertainment shows throughout the year, especially during the Municipality's Festivities in the summer.

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept of Agriculture/Dept. of Environment, etc.

Câmara Municipal da Praia da Vitória
Praça Francisco Ornelas da Câmara
9760 – 851 Praia da Vitória
Ilha Terceira/Açores/Portugal
Tel.: + 351 295 540 200 / Fax: + 351 295 540 210
e-mail: geral@cmpv.pt
website: <http://www.cmpv.pt>

33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Paulo Manuel Ávila Messias
Vice-President of Câmara Municipal da Praia da Vitória
Praça Francisco Ornelas da Câmara
9760 – 851 Praia da Vitória
Ilha Terceira/Açores/Portugal
Tel.: + 351 295 540 200 / Fax: + 351 295 540 210
e-mail: geral@cmpv.pt
website: <http://www.cmpv.pt>

34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

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Conventions

- [Convenção de Berna](#) - Vida Selvagem e do Ambiente Natural na Europa de 19 de Setembro de 1979.
- Decreto-Lei n.º 316/89, de 22 de Setembro – Regulamenta a aplicação da Convenção de Berna.
- [Convenção de Bona](#) - Espécies Migradoras Pertencentes à Fauna Selvagem.
- Decreto-Lei n.º 103/80, de 11 de Outubro - Aprova para ratificação a Convenção de Bona.
- Convenção de Washington (CITES) - Comércio Internacional das Espécies de Fauna e Flora Selvagens Ameaçadas de Extinção de 3 de Março de 1973.
- Decreto-Lei n.º 114/90, de 5 de Abril – Promove a aplicação da Convenção de Washington.

Legislation

- Diretiva 2000/60/CE, do Parlamento Europeu e do Conselho, de 23 de Outubro - estabelece um quadro de ação comunitária no domínio da política da água.
 - Diretiva do Conselho n.º 79/409/CEE, de 2 de Abril. Conservação de aves selvagens (Directiva Aves).
 - Diretiva do Conselho n.º 92/43/CEE, de 21 de Maio. Preservação dos habitats naturais e da fauna e da flora selvagens (Directiva Habitats).
-

Appendix

Appendix I – List of species from Paul da Praia da Vitória (based on the literature).

Scientific name	Directives		Conventions			Red List IUCN (2011)	Endemic
	Habitats (92/43/CEE)	Birds (79/409/CEE)	Berna	CITES	Bona		
Flora							
<i>Amaryllis belladonna</i>							
<i>Anagallis arvensis</i>							
<i>Arctotheca calendula</i>							
<i>Arundo donax</i>							
<i>Banksia integrifolia</i>							
<i>Bolboschoenus maritimus</i>							
<i>Briza minor</i>							
<i>Bromus catharticus</i>							
<i>Canna indica</i>							
<i>Chrysanthemum coronarium</i>							
<i>Cichorium intybus</i>							
<i>Convolvulus arvensis</i>							
<i>Conyza canadensis</i>							
<i>Cortaderia selloana</i>							
<i>Cynodon dactylon</i>							
<i>Cyperus eragrostis</i>							
<i>Cyperus esculentus</i>						LC	
<i>Cyperus longus</i>						LC	
<i>Dactylis glomerata</i>							
<i>Datura stramonium</i>							
<i>Daucus carota azoricus</i>							AZO
<i>Echium vulgare</i>							
<i>Eleusine indica indica</i>						LC	
<i>Foeniculum vulgare</i>							
<i>Galactites tomentosa</i>							
<i>Galinsoga ciliata</i>							
<i>Galium aparine</i>							
<i>Geranium purpureum</i>							
<i>Helminthotheca echioides</i>							
<i>Hordeum murinum leorinum</i>							
<i>Ipomoea indica</i>							
<i>Juncus acutus</i>							
<i>Juncus effusus</i>						LC	
<i>Lagurus ovatus</i>							
<i>Laurus azorica</i>						NT	AZO
<i>Lotus creticus</i>							
<i>Lotus parviflorus</i>							
<i>Lythrum junceum</i>							
<i>Malva pseudolavatera</i>							
<i>Medicago lupulina</i>							
<i>Melilotus indicus</i>							
<i>Mentha suaveolens</i>						LC	
<i>Metrosideros excelsa</i>							
<i>Morella faya</i>							
<i>Oenothera rosea</i>							
<i>Orobancha minor</i>							
<i>Oxalis pes-caprae</i>							
<i>Papaver rhoeas</i>							
<i>Parentucellia viscosa</i>							
<i>Paspalum dilatatum</i>							
<i>Persicaria capitata</i>							

Scientific name	Directives		Conventions			Red List IUCN (2011)	Endemic
	Habitats (92/43/CEE)	Birds (79/409/CEE)	Berna	CITES	Bona		
Flora (cont.)							
<i>Persicaria maculosa</i>							
<i>Physalis peruviana</i>							
<i>Pittosporum undulatum</i>							
<i>Plantago coronopus</i>							
<i>Plantago lanceolata</i>							
<i>Plantago major</i>							
<i>Polygogon monspeliensis</i>							
<i>Portulaca oleracea</i>							
<i>Pseudognaphalium luteo-album</i>							
<i>Pteridium aquilinum</i>							
<i>Ranunculus muricatus</i>							
<i>Ranunculus repens</i>							
<i>Raphanus raphanistrum</i>							
<i>Rapistrum rugosum orientale</i>							
<i>Reseda luteola</i>							
<i>Ricinus communis</i>							
<i>Rubus ulmifolius</i>							
<i>Salpicbroa organifolia</i>							
<i>Sherardia arvensis</i>							
<i>Silene gallica</i>							
<i>Solanum nigrum</i>							
<i>Sonchus asper</i>							
<i>Sporobolus africanus</i>							
<i>Tolpis azorica</i>							AZO
<i>Tolpis succulenta</i>							MAC
<i>Torilis arvensis arvensis</i>							
<i>Trifolium arvense</i>							
<i>Trifolium pratense</i>							
<i>Trifolium repens</i>							
<i>Tropaeolum majus</i>							
<i>Urtica membranacea</i>							
<i>Verbena bonariensis</i>							
<i>Verbena officinalis</i>							
<i>Verbena rigida</i>							
<i>Veronica persica</i>							
<i>Vicia sativa sativa</i>							
Molluscs							
<i>Napaens alabastrinus</i>						LC	AZO
<i>Theba pisana</i>							
Decapods							
<i>Palaemon</i> sp.							
Insects							
<i>Acupalpus dubius</i>							
<i>Agonum marginatum</i>							
<i>Anax imperator</i>						LC	
<i>Anisodactylus binotatus</i>							
<i>Anisolabis maritima</i>							
<i>Bembidion semipunctatum</i>							
<i>Colias croceus</i>							
<i>Dilla saxicola</i>							
<i>Euborellia annulipes</i>							
<i>Forficula auricularia</i>							
<i>Gryllus bimaculatus</i>							
<i>Harpalus distinguendus distinguendus</i>							
<i>Labidura riparia</i>							

Scientific name	Directives		Conventions			Red List IUCN (2011)	Endemic
	Habitats (92/43/CEE)	Birds (79/409/CEE)	Berna	CITES	Bona		
Insects (cont.)							
<i>Lampides boeticus</i>							
<i>Locusta migratoria</i>							
<i>Paranobus albipes</i>							
<i>Pieris brassicae azorensis</i>							AZO
<i>Proatelerina pseudolepisma</i>							
<i>Pterostichus aterrimus aterrimus</i>							
<i>Pterostichus vernalis</i>							
<i>Stenolophus teutonius</i>							
<i>Sympetrum fonscolombei</i>						LC	
<i>Tachys micros</i>							
<i>Vanessa atalanta</i>							
Fishes							
<i>Anguilla anguilla</i>						EN	
<i>Atherina presbyter</i>						LC	
<i>Chelon labrosus</i>						LC	
<i>Gobius paganellus</i>							
Amphibians							
<i>Rana perezi</i>							
Reptiles							
<i>Lacerta dugesii</i>							
Mammals							
<i>Nyctalus azoreum</i>	IV		II		II	EN	AZO
<i>Oryctolagus cuniculus</i>						NT	
<i>Rattus rattus</i>						LC	
Birds							
<i>Anas americana</i>						LC	
<i>Anas crecca</i>		II/III	III	C	II	LC	
<i>Anas discors</i>						LC	
<i>Anas penelope</i>		II/III	III	C	II	LC	
<i>Anas platyrhynchos</i>		II/III	III		II	LC	
<i>Anas querquedula</i>		II			II	LC	
<i>Anas rubripes</i>						LC	
<i>Ardea cinerea</i>			III			LC	
<i>Ardea herodias</i>						LC	
<i>Ardeola ralloides</i>		I	II			LC	
<i>Aythya affinis</i>						LC	
<i>Aythya collaris</i>						LC	
<i>Aythya ferina</i>		II/III			II	LC	
<i>Aythya fuligula</i>		II/III			II	LC	
<i>Aythya marila</i>		II/III			II	LC	
<i>Botaurus lentiginosus</i>						LC	
<i>Bubulcus ibis</i>			II	C		LC	
<i>Bucephala albeola</i>						LC	
<i>Buteo buteo rothschildi</i>			III	A	II	LC	AZO
<i>Calidris alba</i>			II		II	LC	
<i>Calidris melanotos</i>						LC	
<i>Calidris pusilla</i>						LC	
<i>Carduelis carduelis</i>			II			LC	
<i>Ceryle alcyon</i>						LC	
<i>Charadrius alexandrinus</i>		I	II		II	LC	
<i>Charadrius vociferus</i>						LC	
<i>Chlidonias hybrida</i>		I				LC	
<i>Chlidonias leucopterus</i>					II	LC	
<i>Columba livia domestica</i>		II/III	III	C		LC	AZO
<i>Columba palumbus azorica</i>		I				LC	AZO

Scientific name	Directives		Conventions			Red List IUCN (2011)	Endemic
	Habitats (92/43/CEE)	Birds (79/409/CEE)	Berna	CITES	Bona		
Birds (Cont.)							
<i>Coturnix coturnix conturbans</i>		II/III	III		II	LC	AZO
<i>Egretta alba egretta</i>							
<i>Egretta garzetta</i>		I	II	A		LC	
<i>Erithacus rubecula</i>		II			II	LC	
<i>Estrilda astrild</i>						LC	
<i>Fringilla coelebs moreletti</i>		I				LC	AZO
<i>Fulica americana</i>						LC	
<i>Fulica atra</i>		II/III				LC	
<i>Gallinago delicata</i>							
<i>Gallinago gallinago</i>		II/III	III		II	LC	
<i>Gallinula chloropus</i>		II				LC	
<i>Larus delawarensis</i>						LC	
<i>Larus michahellis atlantis</i>						LC	AZO
<i>Larus ridibundus</i>		II	III			LC	
<i>Larus smithsonianus</i>							
<i>Limosa limosa</i>		II			II	NT	
<i>Motacilla cinerea patriciae</i>		II				LC	AZO
<i>Nycticorax nycticorax</i>						LC	
<i>Passer domesticus</i>						LC	
<i>Phalaropus lobatus</i>					II	LC	
<i>Platalea leucorodia</i>					II	LC	
<i>Podilymbus podiceps</i>						LC	
<i>Rallus aquaticus</i>						LC	
<i>Serinus canaria</i>						LC	MAC
<i>Sterna hirundo</i>		I			II	LC	
<i>Sturnus vulgaris granti</i>		II/III				LC	AZO
<i>Sylvia atricapilla atlantis</i>					II	LC	AZO
<i>Turdus merula azorensis</i>						LC	AZO

LEGENDA

Habitats Directive (92/43/CEE)

IV – Animal and plant species of community interest that requires strict protection

Birds Directive (79/409/CEE)

I – Species of birds of community interest whose conservation requires the designations of special protection areas

II – Species of birds whose trade is permitted but conditioning

III – Species of birds whose trade may be subject to limitations

Convention on the Conservation of European Wildlife and Natural Habitats (Berna)

II – Strictly protected fauna species

III – Protected fauna species

Washington Convention (CITES)

A - Species that are threatened with extinction

C - Species that are listed after one member country has asked other CITES Parties for assistance in controlling trade in a species

Convention on Migratory Species (Bona)

II – Migratory species whose conservation status is unfavorable

Red List IUCN (2011)

LC – Least Concern

NT – Near Threatened

EN – Endangered

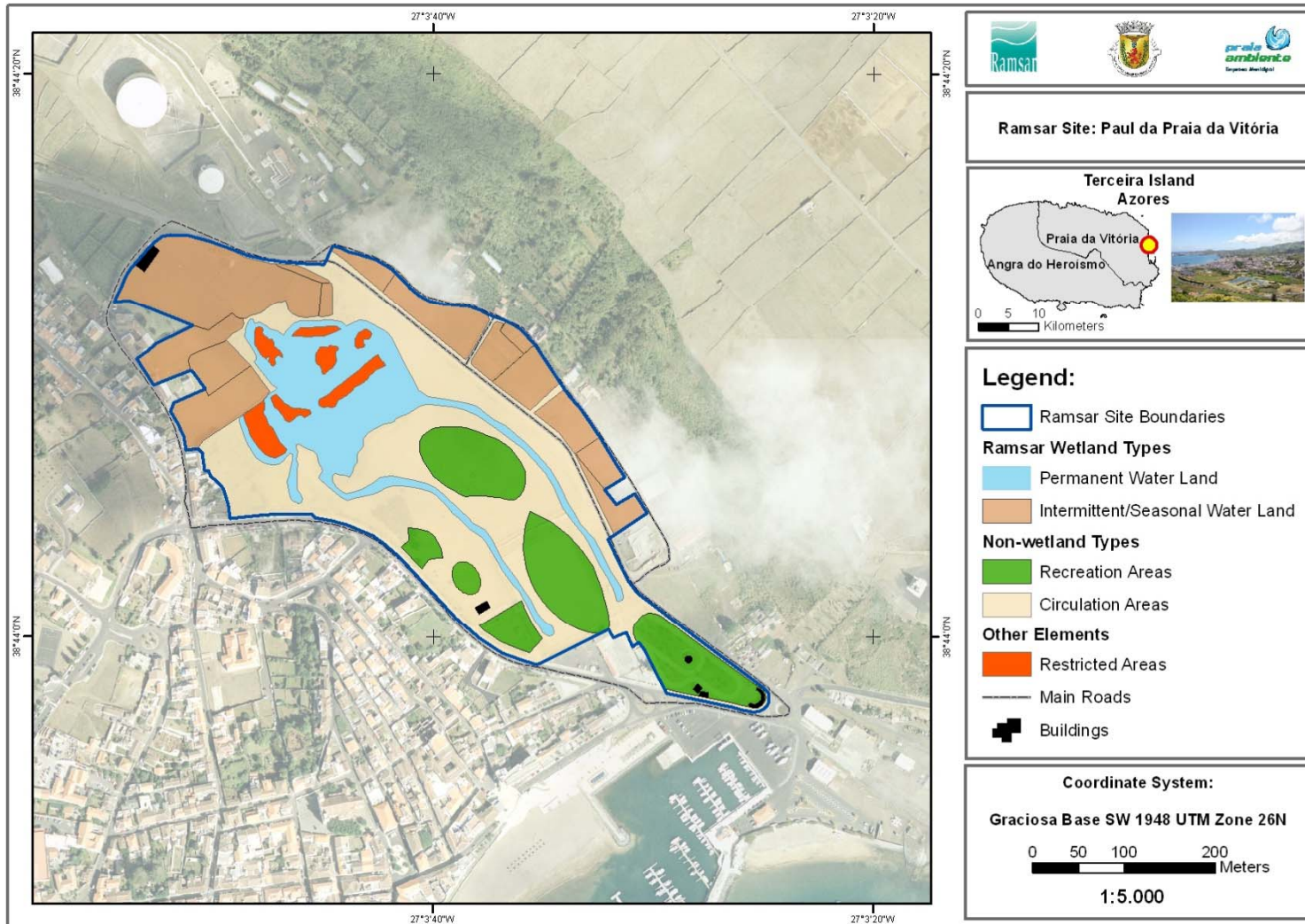
CR – Critically Endangered

Endemic

AZO – Azores endemism

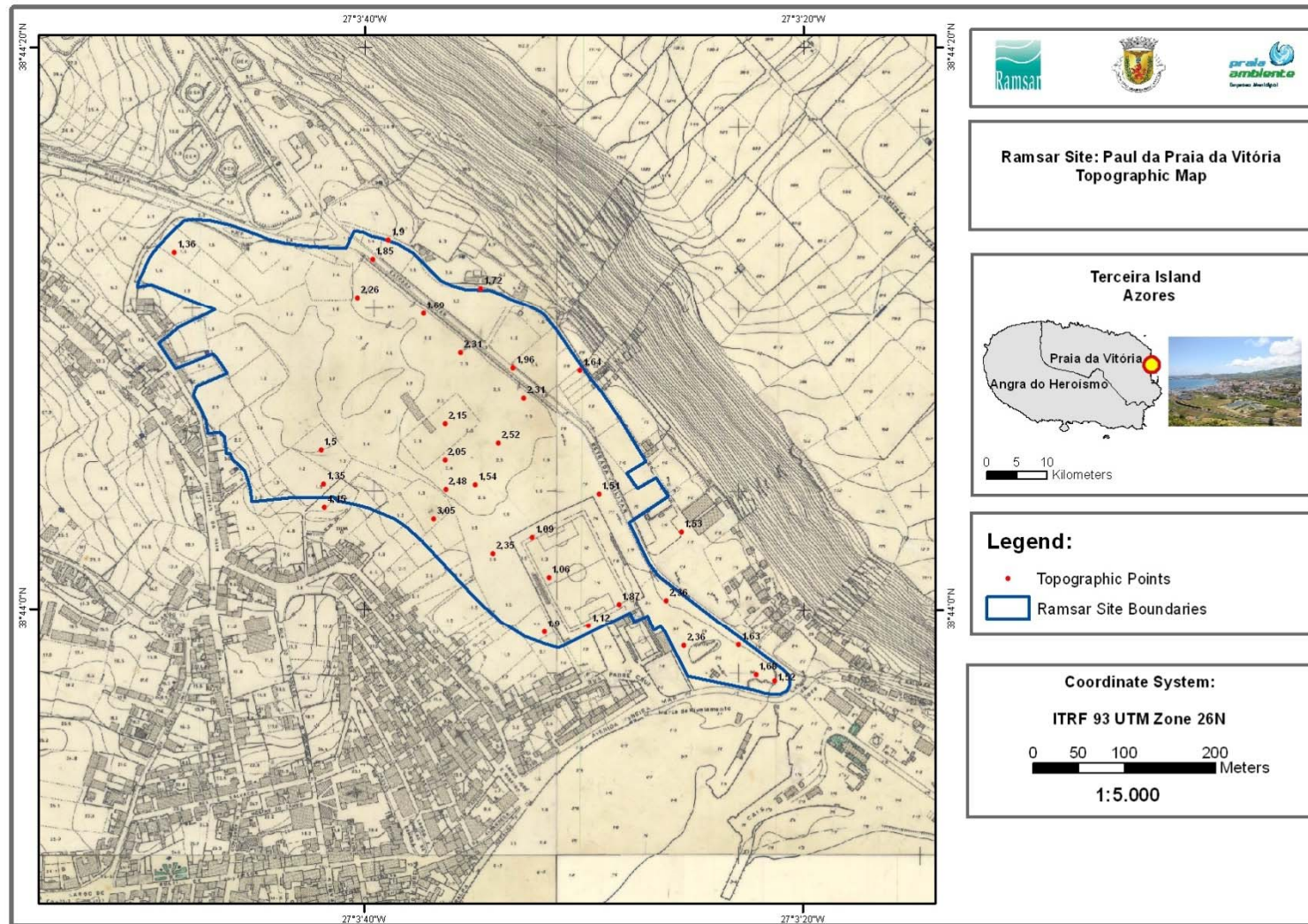
MAC – Macaronesian endemism

Appendix II – Paul da Praia da Vitória Map.



Please return to: **Ramsar Convention Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**
 Telephone: +41 22 999 0170 • Fax: +41 22 999 0169 • e-mail: ramsar@ramsar.org

Appendix III – Paul da Praia da Vitória boundaries.



Please return to: **Ramsar Convention Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**
 Telephone: +41 22 999 0170 • Fax: +41 22 999 0169 • e-mail: ramsar@ramsar.org

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Telephone: +41 22 999 0170 • Fax: +41 22 999 0169 • e-mail: ramsar@ramsar.org

Appendix IV – Paul da Praia da Vitória photos.



Photo 1. Paul da Praia da Vitória integrated into the center of the city (source: 2011©João Pedro Meneses).



Photo 2. Environmental awareness activity in Paul da Praia da Vitória (source: 2010©Madail Ávila).



Photo 3. Birdwatching in Paul da Praia da Vitória (source: 2009©Madail Ávila).