**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.

For office use only.

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Designation date Site ReferenceNumber

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

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Estação Ecológica do Taim – BR 471, km 537 - Caixa Postal 28 – Avenida Rio Grande n°45 – AC Cassino/Rio Grande – RS – CEP 96207-970

**2. Date this sheet was completed/updated:**

July, 2013

**3. Country:**

Brazil

**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.*

Taim Ecological Station.

**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:**

**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): ;

ii) **an electronic format** (e.g. a JPEG or ArcView image) ;

iii) **a GIS file providing geo-referenced site boundary vectors and attribute tables **.

**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 area of 33.815 ha, occupying part of the coastal plain of the municipalities of Rio Grande and Santa Vitória do Palmar, between the Mirim Lagoon and the Atlantic Ocean, was decreed by the President in 1978, as of public utility with the objective of protecting wetland systems (Appendix 1). On July 21, 1986 the wetland of Taim was promoted to a Federal Conservation Unit (Decree n ° 92.963) (Appendix 2), creating the Taim Ecological Station with 10.764 hectares. The Taim Ecological Station was formed by four polygonal that had already been bought by federal government. The primary goal is to protect samples from Southern Wetlands and endangered Wildlife, besides preserving an area used by several migratory birds. Currently the Taim Ecological Station is in process of expansion to 32.800 hectares, thus encompassing the area that was originally enacted as public utility with the objective of protecting wetland systems.

**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.*

32°44’57.66”S

52°54’3.02”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.*

The Taim Ecological Station is located in the state of Rio Grande do Sul, 309 km from the state capital, Porto Alegre and 90 km from the city of Rio Grande, which has a population of 197.228 inhabitants (IBGE, 2010). This conservation area is located at the southern end of the coastal plain of Rio Grande do Sul, between the Atlantic Ocean and Mirim lagoon, covering part of the municipalities of Rio Grande and Santa Vitória do Palmar (Carvalho& Rizzo, 1994). The coastal plain is inserted into the largest lagoon complex in South America, constituted by the Laguna dos Patos, Mirim and Mangueira (Fagundes&Bager, 2007).

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

Minimum5.37 m

Maximum9.08 m

**11. Area:** (in hectares)

10.764 hectares.

**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 region where the Taim Ecological Station is located characterizes by a broad coastal plain, where the marshes, ponds and associated wetlands are the dominant landscape. In this region lays the Mirim lagoon and other smaller lagoons such as Mangueira, Flores, Caiubá, Nicola and Jacaré, which together comprise the Taim wetland system; it is also part of the Atlantic Forest Biosphere Reserve, which highlights the ecological relevance of this ecosystem (UNESCO, 1999; Burger, 2002). Taim Ecological Stationstands out as one of the richest areas for aquatic birds in South America, with residents, breeding and wintering at the southernmost areas of the Nearctic. We should also emphasize their value as genetic and landscape heritage, due to the great biological diversity and existing ecosystems, and for being one of the remnants of this type of ecosystem. The Taim wetland has a very important role in maintaining the ecological balance of the area. Among its functions it should be cited, food production, biodiversity conservation, containment of flooding and pollution control. The most important processes in this ecosystem are the generation of soil, plant production and nutrient, water and biodiversity storage (NEMA, 2008).

**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**

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**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** - The Coastal Plain of Rio Grande do Sul is a unique environment in Brazil. Some of its most striking features are its very recent geological formation, caused by marine transgressions and regressions of the Holocene, and a peculiar geographical position, which submits it to the Subtropical Convergence and a climate with strong marine influence. The wetlands occurrence areas are suffering rapid decline in Rio Grande do Sul. In 1986, through a flight over the wetlands of State, it was noticed that, except in specific locations, the environments of floodplains and wetlands were strongly altered and degraded (FundaçãoZoobotânica,2002). Within this biogeographical unit, Coastal Plain, wetlands inserted in the Taim Ecological Station are the most representative of this unique wetland ecosystem (Tucci et al., 1996;Carvalho& Ozorio, 2007).Of the total area of ​​ESEC Taim, about 60% is occupied by the wetland Taim, is still within the same lakes Jacaré and Nicola, and the northern part of Mangueira Lagoon (Tucci et al., 1996). The structure of the wetland Taim (vegetation, topography, channels, etc.) controls the exchange of water between this system and the Mangueira Lagoon. Indirectly, the Wetland of Taim regulates the amount of water stored in Mangueira Lagoon (Tassi, 2008). This area also makes the maintenance of ground water sources adjacent ecosystems (Tucci et al., 1996). The wetlands Taim reduces the flow velocity, provided the vegetation attenuates flow, controlling erosion and subsequently reducing the amount of sediment transported downstream. The process of removing nutrients and pollutants by "filtering" of the water inside this wetland also returns to improved water environment (Tassi, 2008). Moreover, this reduction in speed helps regulate the climate. All this makes the ESEC Taim a representative wetland area and important to the hydrologic cycle.

**Criterion 2** - The Taim Ecological Station shelters important populations of reptiles and mammals that are threatened according to the national list of endangered species (Appendix3) and included in the IUCN Red List. These species being *Wilfredomys oenax* (this being the first record into the conservation unit) and *Ctenomys flamarioni,* both of them categorized as Endangered by the IUCN, as well as *Liolaemus occipitalis (Otros pero no este en la base datos) ,* categorized as Vulnerable by the IUCN. There is also the presence of the species: *Mazama gouazoubira* (veado-catingueiro), *Leopardus geoffroyi* (gato-do-mato-grande), listed as Near Threatened by the IUCN Red List and in Appendix I of CITES, and *Lontra longicaudis* (Otter), also listed in Appendix I of CITES, which are on the endangered fauna of the State of Rio Grande do Sul.

Moreover, due to the large reduction of wetlands in Rio Grande do Sul, the Ecological Station of Taim is very important to maintain this type of environment and the flora and fauna that live in this ecosystem area. This unit shelters a large number of species that can be easily viewed along the BR 471.In ESEC Taim there are records of 220 species of birds (Mähler*et al*., 1996) (Appendix 4). Among these, there are species considered as threatened in the national list of endangered species like *Circus cinereus* and *Thalasseus maximus;* as well as species listed in different categories in the IUCN Red List: *Larus atlanticus,* (categorized as Near Threatened in the Red List and listed in appendix I of CMS)*, Thalassarche melanophris* (Near Threatened in the Red List), *Diomedea sanfordi* (Endangered in the Red List)*, Procellaria conspicillata* (Vulnerable in the Red List)*, Thalassarche chlororhynchos* (Endangered in the Red List)*, Diomedea dabbenena* (categorized as Critically Endangered in the Red List and listed in appendix II of CMS)*, Procellaria aequinoctialis* (categorized as Vulnerable in the Red List and listed in appendix II of CMS)*, Diomedea exulans* (categorized as Vulnerable in the Red List and listed in appendix II of CMS)*,* and *Diomedeae epomophora* (categorized as Vulnerable in the Red List and listed in appendix II of CMS).

Regarding reptiles, 21 species were recorded (Gomes & Krause, 1982) (Appendix 5). There is the presence of six species considered threatened in the national list of endangered species and the IUCN Red List, these being: *Liolaemus occipitalis* (Vulnerable)*, Caretta caretta* (Endangered)*, Lepidochelys olivacea* (Vulnerable)*, Eretmochelys imbricata* (Critically Endangered)*, Chelonia mydas* (Endangered), and *Dermochelys coriacea* (Vulnerable), of which the last five are listed in appendix I of CITES and appendices I and II of CMS; as well as *Caiman latirostris,* listed in Appendix I of CITES.

**Criterion 3** - The ESEC Taim stands out among the current areas of *Coscoroba coscoroba*, the Coastal Plain (East and South region), associated with coastal lagoons and coastal fields. The Taim Ecological Station, in this context, harbors a high biodiversity in the region, due to the Atlantic Forest which is considered a biodiversity hotspot (IC, 2007), providing a haven for species typical of this type of environment. In addition, it shelters a unique environment of the coastal plain.

The Taim Ecological has two endemic species of spiders: *Nesticus taim* (Ott & Lise, 2002) e *Latonigea taim* (Ott et al., 2012).

This protected area has too three species of annual fish: *Austrolebias wolterstorffi* (categorized as Critically Endangered) (Appendix 3), *Cynopoecilus melanotaenia* e *Austrolebias aff. Gymnoventris*. The *Austrolebias aff. Gymnoventris* is possibly a new species and is in process of identification (personal communication Mateus Volcan).

In the ESEC Taim, there are some endemic fish species of the Coastal Plain, such as *Odontesthes mirinensis, Odontesthesaff, Perugiae, Odontesthes retropinnis, Austrolebias wolterstorffi* and *Hisonotus taimensis*. Furthermore, there is the presence of *Austrolebias cf*. *charrua*, endemic and threatened species according to the Brazilian list of threatened species (Appendix 3).

**Criterion 4 -** It is known that without the reeds of the marshes, migratory birds like the *Cygnus melancoryphus*, and *Coscoroba coscoraba*, among many others that nest only in these ecosystems may have their future compromised. However, the wetlands of ESEC Taim still are preserved and serve as shelters for resting, breeding and feeding of various migratory birds. According to Nascimento *et al.* (2006), one of the places with the highest concentration of *Anasgeorgica* species in coastal areas was in the Taim Ecological Station, considered among the most representative areas. In a study by Nascimento *et al.* (2005) one of the places with the highest concentration of *Anas flavirostris* was in Taim (n = 561). According Calabuig and colleagues (2010) records of nests, chicks and juveniles of species *Coscoroba coscoroba* in the area of ESEC Taim during the years 2005-2008 confirms the data reported by other researchers (Belton 1994, Dias& Fontana 2001) and allow us to state that the area’s surrounding and within the ESEC Taim would be the most important breeding ground for population belonging to Argentina, Uruguay and Brazil (Seijas, 2001). Miño & Del Lama (2007) investigated a large breeding colony of *Platalea ajaja*. According to Serrano (2010) ESEC Taim is one of the critical areas for biodiversity, for the species of migratory aquatic birds of the Northern Hemisphere. Being extremely important for the species: *Pluvialis dominica, Tringa solitaria, Bartramia longicauda, Calidris canutus, Calidris alba, Limosa haemastica* and *Tryngites subruficollis*. Moreover, according to the same author by applying the criteria of the Ramsar Convention, 69 Critical Areas for Conservation of Charadridea and Escolopacidea were identified, being one of these areas the Taim Ecological Station, in Rio Grande do Sul.

**Criterion 7** – The Taim Ecological Station has a diversity of 63 fish species known (Garcia *et al*, 2006; Correa *et al*, 2011) (Appendix 6). However, few studies have been conducted in the area. A study of *Odentesthes humensis* recorded the highest occurrence of this species within coastal lagoons of Mirim and Mangueira, which includes the area of the ESEC Taim (Bemvenuti, 2002). In the ESEC Taim, there are some endemic fish species of the Coastal Plain, such as *Odentesthes mirinensis, Odontesthes aff, Perugiae, Odontesthes retropinnis, Austrolebias wolterstorffi* and *Hisonotus taimensis*. Furthermore, there is the presence of *Austrolebias cf*. *charrua*, endemic and threatened species according to the Brazilian list of threatened species (Appendix 3).

**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:** coastal plain

**b) biogeographicregionalisation scheme** (include reference citation):

Federal University of Santa Maria.Relief (in Portuguese).Continuous Forest Inventory.Accessed on October 16, of 2012. http://w3.ufsm.br/ifcrs/frame.htm

**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 Taim Ecological Station is located on the coastal plain of Rio Grande do Sul, and has its geological structure formed by the deposition of sediments of marine, wind, and lake origins. Its geological formation is recent, with its current form resulting from events occurring in quaternary.

The formation of the coastal plain occurred in the Quaternary period, comprising the Pleistocene and Holocene, i.e. in the last 2 million years. During this period advances (transgressions) and retreats (regressions) of the sea occurred, caused by freezing and thawing times of the poles and deposition of sediment erosion from the Escudo Cristalino and Planalto Meridional, and freshwater outflow (Schwarzbold& Schafer, 1984). These processes generated 4 formations of lagoon-barrier type, present in the Taim region, depositional systems types II, III and IV (Tomazelli *et al*. 2000). Due to their genesis, these bodies of water are typically shallow, with its largest diameter parallel to the shoreline, being long and narrow and tending to segment, by the wind, turning into smaller bodies of water or wetland areas, with ephemeral life and quite vulnerable to the action of man. Channels, forming long trails, very close to the sea (Lanzer, 2005), often interconnect these lagoons. The landscape of this region is characterized by a plain with micro-landscapes of little altimetry expression, highlighting the dune features and terraces with lagoon barriers.

The climate is subtropical, It is temperate humid with hot summer(Cfa) (Koöppen, 1936), which makes this region different from other existing wetlands in Brazil due to climate characteristics in this region, with well-distributed four seasons throughout the year (Lima, 2011). The annual rainfall varies between 1000-1500 mm (Tomazelli & Villvock, 2000), and may vary significantly between consecutive years and may be related to the pattern and frequency of the passage of cold fronts (Paz, 1985). The average annual temperature is 18 °C and relative humidity remains high throughout the year, around 80%, because of the fact that both mT and mP have high levels of water vapor (Tucci et al., 1996). The prevailing winds in the south coast are the northeast, coming from the St Helena anticyclone, throughout the year, while southwestern winds are the second predominant direction, which are due to the penetration of migratory polar cyclones (Tucci et al., 1996).

The regional hydrology resents the lack of a well-defined drainage network, depending on its geological evolution. This fact is reflected upon the existence of several wetlands and lagoons, which makes the system very complex and broad, being its main feature in hydrological terms (Tucci et al., 1996).

According to Tucci and colleagues (1996), the water entry in the system is provided only by rainfall, and a significant contribution provided by a concentrated stream flow does not occur in the system area.

The variation of the water regimes in Taim (Tucci et al., 1996) may be related to the species of the wetland macrophytes, determining not only the presence/absence as well as its distribution (Motta Marques *et al*., 1997).

The region of ESEC Taim is within the sedimentary low plain level (deposition of the Holocene period, where floods are caused by rivers and ponds). This area was formerly occupied by a gulf linking Mirim Lagoon to the ocean, which by sedimentation processes was being clogged, leading to the current configuration. When the old gulf closed, the sedimentation processes occurring in the area happened through extravasation of Mirim and Mangueira Lagoons, i.e., the processes of sedimentation became thereafter-lacustrine (Tucci et al.,, 1996). The entire area has a certain diversity in terms of soils, with common impermeability characteristics in a greater or lesser degree, hydromorphism (poor draining), and very high groundwater, or even above the surface, and salinity (BRASIL, 1973,Tucci et al., 1996).

**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 area covered by the hydrologic system of Taim cannot be considered, strictly speaking, a watershed, the best conceptualize is that it is a Non-Typical Hydrological System (SHNT), as proposed by Fertonani and Prendes (1983). The complexity of the system is because the regional flow occurs mainly along ponds and marshes, where an extensive network of creeks and channels (Tucci et al., 1996) interconnects and the damping processes predominate.

According to Motta Marques and Villanueva (2001) the Taim Hydrological System is divided into several subsystems:

1 - North Subsystem: Composed by Caiubá Lagoon, Flores Lagoon, Maçarico Wetlands and the latter with turnout for the Flores Lagoon. The output of this system toward Taim is limited by a small channel capacity that is often closed during the drought. In practical terms, the influence of this subsystem on Taim is null.

2 – Swamp Subsystem: Consisting of the Jacaré Lagoon and Nicola in its northern part, close to the point of lowest elevation of the Taim System. This area consists of wetlands, and there is a slight positive gradient of bottom topography in the direction west east. Its total area is 270 km2. Low surface velocities due to the existence of aquatic weeds and biomass characterize the flow.

3 - Southern Subsystem: Composed of Mangueira Lagoon and its contribution basin. The union between the South subsystem and the swamp is performed by:

(a) The channel along the road BR 471 by concentrated flow;

(b) The pond bathed in diffuse interface flow.

Several factors contribute to the definition of water levels within the Taim (MottaMarques & Villanueva, 2001):

• Precipitation and evapotranspiration on the tributary basin;

• Drainage capacity of channels;

• Storage capacity of the ponds and the surrounding areas;

• Levels of Mirim lagoon;

• The flow characteristics of the output structure’s set of conduits;

• Withdrawal of water for irrigation.

**18. Hydrological values:**

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

According to a study by Tassi (2008), the main functions of Taim were identified:

1 - Providing habitat for many species of fauna and flora.

In the case of fauna, there are species that depend on Taim throughout their lifetime and there are also migratory species that need the same area for a short period of their life cycle. The loss of habitat for any of these species may lead to population reduction or even extinction.

Regarding the local flora, it can be said that there is plenty of emerging macrophytes, which play important role in the removal of nitrogen and phosphorus entering the area, mainly through the water from the rice fields. The vegetation also plays an important role in the hydrodynamics of the water, reducing the flow velocity, allowing more sediment deposition and reduction of water turbidity, essential for the maintenance of life for some aquatic species found at the site.

2 - Supply of water for rice irrigation.

The structure of Taim (vegetation, topography, channels, etc.) controls the exchange of water between this system and the Mangueira Lagoon. Indirectly, Taim regulates the amount of water stored in the Mangueira Lagoon, the latter being the main point of water captation for irrigation in the region.

3 - Control of the dynamics of the communities who live and/or depend on the Lagoa Mirim.

The point of lowest elevation of the Taim is Mirim Lagoon (shared water management), and it exercises vital influence on the chemical, physical and biological processes that control the dynamics of the communities who live and/or rely on this lagoon. The Taim is responsible for the export of organic matter and nutrients to this lagoon, and seasonal variations, both of natural or anthropogenic origins, on the nutrient export patterns, can significantly influence the ecology of the lagoon (PELD, 2002).

According to Tassi (2008), the following values derive from the functions mentioned above:

a) Ecological Value: The ecological value associated with the preservation of the species present in Taim and with all the knowledge that can be acquired through research. Unfortunately, this value is difficult to quantify, since there are not available elements for predicting the monetary loss with population reduction or extinction.

b) Economic Value: The economic value associated with rice production. This value can be quantified monetarily from an economic analysis based on the planted area.

c) Service value to society: Reducing the flow velocity, provided by the vegetation, attenuates the flow, controlling erosion and hence reducing the amount of sediment transported downstream. The process of removing nutrients and pollutants through "filtering" of the water inside Taim also returns better quality water to the environment.

**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.

Tp, K, U, Xf

**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 Taim Ecological Station is recognized worldwide as one of the most important conservation areas, preserving wetlands and lagoons, fields, dunes and forests, and sheltering a great diversity of species of plants and animals. Its birdlife draws attention, part from the migratory northern hemisphere countries, part from the Southern Cone and other species that live here all year round. The exuberant and easy viewing wildlife is a differential offered by the region. There are over 220 species of birds, among billed pochards, *Coscoroba coscoroba* and *Cygnus melanocoryphus*, *Chaunatorquata*, sandpipers and passerines. Typical site for reptiles and amphibians found in swamps, the *Caiman latirostris* and the *Trachemys dorbigni*, are easily found in these swamps. The *Hydrochoerus hydrochaeris*) is extremely abundant and the *Lycalopex gymnocercus* is more visible at dusk.

Endangered species such as the *Lontralongicaudis* and *Circus cinereus* are found in more remote areas of the Unit. The flora of Taim is adapted to this coastal region. From the reeds and sedges of wetlands, grasslands and shrubs of the fields and dunes to the clumps of forest sandbank, a wide variety of plants are found. Many species are considered medicinal, others have their ornamental value, such as orchids, and their distributions respond to climatic factors, soil, presence of water and stress caused by wind and temperature, typical of the region. Samples of the Pampa ecosystem can be seen in its most exuberant, preserved form and kept away from the pressure of cattle raising on this type of ecosystem.

This conservation unit is noted for its value as genetic and landscape heritage, due to its high biological and ecosystem diversity, and for being one of the remnants of this type of ecosystem. The Taim has a very important role in maintaining the ecological balance of the area. These functions include food production, biodiversity conservation, flooding prevention and pollution control. The most important processes in this ecosystem are the generation of soil, plant production and storage of nutrient, water and biodiversity (NEMA, 2008).

In addition, the conservation unit is a core zone of the Biosphere Reserve of the Atlantic forest and of great importance due to the presence of endangered and endemic species (Programme "Man and the Biosphere" (Man and the Biosphere Programme) (UNESCO, 1998; NEMA, 2008).

**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 Taim region is like a mosaic whose matrix is characterized by herbaceous vegetation covering plains and swamps in its various forms of presentation and evolution (Ferrer, 2004). In ESEC Taim, there are over 200 species of Flora.

A study by Motta Marques (1997) identified the presence of 49 species of emergent and floating macrophytes, distributed in 28 families, in Taim (Appendix 7). Among the species identified standout for relative and absolute frequency, floating macrophytes: *Salvinia herzogii, Azolla caroliniana, Lemna valdiviana, Pistia stratiotes, Wolffiella oblonga, Altermanthera philoxeroides, Spirodelainter media* and *Limnobium laevigatum.* The group of emerging macrophytes includes *Scirpus californicus, Zizaniopsis bonariensis* and *Scirpus giganteus*.

The presence of *Pavonia rosengurttii* was recorded within the reserve, being found only in three other places in the state of Rio Grande do Sul (Grings, 2011).

Ferrerand Salazar (2004) recorded the presence of some endangered species in the State of Rio Grande do Sul, which are *Rollinia maritima, Butiac apitata, Ephedra tweediana, Myrcianthes cisplatensis, Acanthosyris spinescens, Jodina rhombifolia* and *Bumelia obtusifolia*.

Among the flora in the Coastal Plain of Rio Grande do Sul, the predominance of the field vegetation and the lack of endemic species occur because this plain is geologically recent. The coastal flora did not originate through processes of local speciation, but rather, from the migration of geologically older neighboring regions (Schäfer, 2009).

According to Schäfer (2009), the salt marsh vegetation is quite complex, ranging from herbaceous to shrubby and arboreal types. This variability results not only from changes in climate and soil conditions, but also by succession. The gradients of moisture and salinity determine a vegetation zonification in the ocean-continent direction and mosaics in smaller areas. The existence of extreme environments, nutrient and water, determines the types of pioneer vegetation, in early stages of primary succession, characterized by low diversity and by ecological adaptations of plants. This can be observed on the vegetation of dunes. On the other hand, dry and sandy woods, in well-drained soils and swamp forests, related to poorly drained soil, represent the most complex and advanced stage of vegetation succession (Schäfer, 2009).

**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 Taim Ecological Station is a place of shelter, feeding and reproduction of many species, being one of the greatest breeding areas in terms of ecological significance of southern Brazil, home to endangered and endemic species.

Although the fish fauna is poorly investigated in ESEC Taim, 63 fish species were recorded (Garcia *et al.*, 2006; Correa *et al.,* 2011 Appendix 6 and 8). Recently threespecies of killifishes also listed as threatened on the national list of endangered species (unpublished data) were recorded.

The presence of 18 species of amphibians was recorded (Gayer *et al*., 1988) (Appendix 9). According to Gayer *et al.* (1988), the characteristic of the region enables the development and migration of amphibians with variety of shapes and great number of specimens. Amphibian species found so far in the studied area, make up 27% of the already known species throughout the state of Rio Grande do Sul. Among these, four had not been cited for the region and therefore should be considered as new occurrences to Taim, namely: *Siphonops annulatus, Physalaemus biligonigerus, Ololygon berthae* and *Ololygon x-signataeringlophila* (Gayer *et al*., 1988).

There is still no quantitative study of the mammalian species covering all the environments present within the unit. Currently there are small studies covering some environments (Azambuja, 2010; Sponchiado et al, 2012). However, it is believed that there are 40 species of mammals.

**23. Social and cultural values:**

**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:

The area of ESEC Taim contain “Cerritos” (artificial elevations) which served people as shelter from the waters. The site was also the scene of the Neutral Fields. The Portuguese signed with the Spanish the Treaty of San Ildefonso (1777) mediated by the pope, under which the Neutrals Fields were constituted, as an uninhabited strip of land stretching from the marshlands of the Taim to Chuí creek, to avoid a direct confrontation among the settlers. Information on the historical process of colonization in the Neutral Fields is scarce and currently studies employing archaeological methods are providing exceptional data that can be analyzed and compared to the existing documentation (Oliveira, 2011). According to Oliveira (2011), the dynamics of the first inhabitants of the Neutral Fields left traces of great importance but were little preserved. The vestiges are mainly found in areas of rice cultivation. This requires production techniques that compromise the Cultural Heritage.

Moreover, artisanal fishers have been involved in this activity for generations, and include the communities that live around this unit.

**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:Within the limits of the Taim Ecological Station, there is the presence of “Cerritos”. According to Schäfer (2009), a Cerrito or landfill is an artificial elevation of the ground in the middle of wetlands of the Laguna dos Patos, Mirim and Mangueira. The indigenous people would build them in order to obtainshelter from the waters. The Cerrito has an ellipsoid or circular shape, measuring 15-100 m in diameter and 0.5 to 6.0 m tall. It consists mainly of land, or large amount of human food leftovers, lying alone or in groups of 2-5 Cerritos. Over them, houses were built that seem to have had circular or oval shapes. These were built probably during successive occupations of the indigenous groups of hunters and gatherers who lived in this region for at least 4,000 B.P.

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:

The Ecological Station of Taim has public domain.

b) in the surrounding area:

In the area around the site, there are certain private properties that exert agriculture and cattle raising activities and there are also lands that belong to the Federal Government.

**25. Current land (including water) use:**

a) within the Ramsar site:

Inside the ESEC Taim, this land is aimed only to conservation purposes, research and Environmental Education.

b) in the surroundings/catchment:

Around the site, there are different land uses. The main activity is farming, mostly rice cultivation in large areas, which is irrigated by flooding. This type of farming uses, in the summer months, a large amount of water, thus a significant reduction in the level of ponds in a period of low rainfall, which ultimately affects the water level within the Taim (Motta Marques & Villanueva, 2001). In the surrounding area, there are also fishing, livestock and pasture and reforestation activities.

**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:

The areas where there are wetlands in Rio Grande do Sul have suffered rapid decline. In the past, the Provárzea Program of the Federal Government (Instituto Socioambiental, 2005) drained much of the wetlands for agricultural use. Currently, it can be considered as vulnerable ecosystems, threatened due to urban growth, silting, pollution and drainage. According to the Fundação Zoobotânica (2002), the state had originally 5.3 million acres of wetlands, including wetlands and floodplains (Klamt et al., 1985). In 1986, through a flight over the wetlands of the State, it was noticed that, except specific locations, the environments of floodplains and wetlands were strongly altered and degraded (Fundação Zoobotânica, 2002). However, it appears that the Rio Grande do Sul also has important and significant remnants of these systems (Carvalho & Ozorio, 2007).

In Rio Grande do Sul, in the last thirty years, the great expansion of rice in wetland fields contributed to the degradation of wetlands in a frightening proportion. There are several examples of aggression and drainage of wetlands in the state. Currently it lost much of what it was due to developmental model adopted.

These factors have not affects inside this site, but Ecological Station Taim is a sample a health wetlands.

Within the area there are no adverse factors affecting the ecological characteristics of the site.

b) in the surrounding area:

In the surrounding area there are many adverse factors affecting the ecological characteristics, among which are:

• Agriculture: large areas of rice cultivation, using flood irrigation. For this, water is gathered from the lagoons in the summer period (time of low rainfall), which ultimately affects the water level within Taim. The use of pesticides can contaminate soil and watercourses.

• Reforestation: the existence of two large reforestation companies who work with exotic species with high scattering power.

• Artisanal Fisheries: The increase in fishing pressure in the region ultimately affects quantitatively and qualitatively the fish fauna of ESEC Taim.

• Livestock: Cattle prevents or retards the natural plant succession through trampling and grazing (Hentshel, 2009). Moreover, it can also spread disease to wild species.

• Wind Energy: The installation of wind farms near the unit may come to affect it directly because there are many migratory species of birds, which may have their routes intercepted by structures that are part of this complex with variable minimum and maximum height.

• Roads: Federal Highway BR 471, cuts the unit area of approximately 17 km in length, causing the trampling of many taxa (Bager, 2003).

**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.*

Aiming to the protection of wetland systems, an area of 33,815 ha was decreed in 1978 as of public utility by the President.On July 21, 1986 the Taim was promoted to a Federal Conservation Unit (Decree n ° 92.96.3), creating the Ecological Station of Taim (Annex 2).

In addition, this conservation unit is a core zone of the Biosphere Reserve of the Atlantic and of great importance due to the presence of endangered and endemic species (Programme "Man and Biosphere"(UNESCO 1998; NEMA 2008).

**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?:

The management plan is being prepared and should be finalized in the middle of 2018.

**d)** Describe any other current management practices:

Currently, the management practices used in the unit are performed in accordance with guidelines outlined in the Protection Plan of the Ecological Station of Taim and the Operational Plan for Prevention and Control of Forest Fires in the Ecological Station of Taim. In addition, the Unit has the support of an Advisory Board of the Unit, which is very active.

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

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

Several proposals are being drawn up by the Management Unit that are at different levels of implementation these being:

• Expansion of the Ecological Station of Taim from 10.764 ha to 33.000 ha. This proposal was discussed and built by a working group formed by members of the Advisory Council of ESEC Taim, and approved by the same (Annex 10);

• Construction of a Visitation Center to welcome the visitors. (Annex 10);

• Green Seal to qualify environmentally agricultural and livestock activities, in and around the buffer zone of the Unit. This proposal is aimed to obtain a more sustainable production;

• Stimulate the production of Organic Rice in the surroundings and in the buffer zone of the unit, making cultivation practices compatible with the conservation objectives of ESEC Taim;

• Unified Licensing to water irrigation of rice cultivation. Every year should be calculated the volume of water can be used without cause impact the wetland;

• Creation of Reservas Particulares do Patrimonio Natural (RPPNs) by the reforestation companies located in the buffer zone of ESEC Taim;

• Management of the BR 471 highway stretch that cuts the ESEC Taim. Conduct studies and proposals that reduce the rate of road kills of wild animals.

•To mitigate the winds farms impacts are avoid these facilities near to Taim Ecological Station. Besides we give our technical position in the process of licensing of these farms.

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

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

The Ecological Station of Taim has as one of its main objectives to perform scientific research. This unit has 20 beds for researchers and four bases located in different environments, which are also used by researchers. Management of the Unit has focused its efforts in order to boost scientific research, and there are currently 60 ongoing research projects (Annex 11).

The Unit has worked with scientific researchers since its inception and has already authorized over 100 surveys (Annex 12) which generated over 450 publications (Annex 13). This high number of publications resulting from research conducted at ESEC Taim demonstrates its environmental importance and training of new researchers.

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

The Taim Ecological Station has in the area of its Administrative Headquarters, a museum that is open to the public. This museum gives visitors greater contact and knowledge about this wetland environment. In addition to this museum, it is the management's intention to build an Interpretation Center of the Ecological Station of Taim (Annex 14), which is in preparation. The Unit receives annually a large amount of visitors, including tourists, students from schools and universities. During the visit a presentation on the conservation is performed.

Unit managers always attend events and seminars, conferences and other academic or community activities that can bring the society awareness about the importance of conservation.

Every year there is an event to celebrate its anniversary with several activities, including environmental education activities with schools, photographic exhibitions etc.

**31. Current recreation and tourism:**

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

According to Law No. 9.985/2000, establishing the National System of Conservation Units in Ecological Stations public visitation is prohibited, except for educational purposes, according to the Unit’s Management Plan. However, four trails surrounding the unit are open for visitation and can be guided by local monitors. Furthermore, the Headquarters of the Unit is open to visitors and offers visitors, as scheduled, a presentation with video about the Conservation Unit, distribution of booklets (Appendix 16) and the visit to its small museum. The unit receives the visitation of over 2000 people annually, which visit the Headquarters and roam the surrounding trails.

**32. Jurisdiction:**

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

Ecological Station of Taim is located in the state of Rio Grande do Sul, and is under the jurisdiction of the Federal Government through the Chico Mendes Institute for Biodiversity Conservation (ICMBio)/Ministry of Environment.

Estação Ecológica do Taim – BR 471, km 537 - Caixa Postal 28 – Avenida Rio Grande n°45 – AC Cassino/Rio Grande – RS – CEP 96207-970

Phone number: 55 5335033151

**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.*

The authority responsible for managing the Ecological Station of Taim is ICMBio/MMA.

Henrique Horn Ilha – Analista Ambiental da ESEC Taim

Phone number: 55 5335033151

Email: henrique.ilha@icmbio.gov.br

Estação Ecológica do Taim – BR 471, km 537 - Caixa Postal 28 – Avenida Rio Grande n°45 – AC Cassino/Rio Grande – RS – CEP 96207-970

**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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