

## Information Sheet on Ramsar Wetlands

1. Country: Portugal

3. Ref: 7PT007

4. Name and address of compiler: António M. Teixeira, SNPRCN/CEMPA, Rua Filipe Folque, 46,3<sup>o</sup>, 1000 LISBOA, Portugal. Tel: +351 1 352 30 18, Fax: +351 1 57 4771

5. Name of wetlands: Estuário do Sado (Sado Estuary)

7. Geographical coordinates: 38°27'N, 008°43'W

8. General location: Região Alentejo/Setúbal

9. Area: 25588 ha

10. Wetland type: E; F; G; H; 1; 3; 5

11. Altitude: 36m (maximum); 0m (minimum)

12. Overview: This is a major estuarine area on the mouth of the Sado river adjacent to industrial Setúbal on central western Portugal. Marked saline influences in most of the estuary with freshwater habitats located basically upstream.

13. Physical features: Natural wetland on alluvial basin with vast areas permanently flooded. Strong tidal influences. Salinity values inside the estuary widely changing in time according to precipitation and tide. Important saltmarsh areas with many salines still operating in traditional way, other already changed into commercial fish farms. Vast areas upstream put to rice cultivation. There are also vast areas around the estuary with comparatively low human occupation, mostly on the southern and eastern sides. Climate temperate with Atlantic and strong Mediterranean influences.

14. Ecological features: Estuarine area dominated by sand and mud flats partially exposed at low tide. Sand dunes with characteristic vegetation separate the estuary from the sea. Vast saltmarshes and extensive reed beds further upstream are typical vegetation around most of the estuary, with rice fields and combinations of forest and dry pastureland in the adjacent zones.

15. Land tenure/ownership of: (a) site: The estuarine areas are basically State-owned but management practices must be shared among a number of different official bodies. The rice fields and most of the salinas are privately-owned.

(b) surrounding area: Most of the areas around the estuary are privately-owned, with a few cases of comparatively large plots owned by individual farmers.

16. Conservation measures taken: Most of the wetland is a Nature Reserve under Portuguese law (Decreto-Lei no 430/80 from 1 October). The area was also declared as SPA under Article 4 of the EC Wild Birds Directive (79/409).

17. Conservation measures proposed: There is a Management Plan for the Reserve proposed by the SNPRCN but not yet approved officially.

18. Current land use: (a) site: Traditional fishing and salt production; commercial fish farming; rice cultivation and other forms of agriculture; cattle raising; hunting; heavy industries concentrated around Setúbal; tourism and recreational activities mostly on seashore areas around the mouth of the estuary.

(b) surroundings/catchment: Basically related to agriculture and forestry with very low human occupation levels in some areas.

19. Disturbances/threats, including changes in land use and major development projects:

(a) at the site: The most obvious threats are associated to industrial developments around the estuary with expanding harbour facilities and new industries now planned to the area. Wastes from industrial and urban concentrations and also agrochemicals flowing from the rice cultivation areas into the estuary. Conversion of many salinas to fish farms. Illegal hunting. Overfishing. Urban developments on the seashore areas associated to tourism interests there.

(b) in the surroundings/catchment: Basically related to urban and industrial developments on the northern shore of the estuary around Setúbal and also to growing tourism pressures on the southern seashore areas.

20. Hydrological and physical values: This wetland is extremely important in keeping the water table in the areas around and plays also a crucial role to minimise damage caused by floods under torrential surges.

The sand spit on the western side of the estuary is essential for coastal defence against erosion.

21. Social and cultural values: Traditional fishing activities, salt production, rice cultivation and some forms of forestry have deep cultural roots in the area and do have very strong social implications there.

There are a few important archaeological sites around the estuary, including a major and extremely well preserved Roman harbour settlement at Tróia on the entrance to the area.

22. Noteworthy fauna: The area holds an extremely important fauna. Migratory waders and waterfowl are prominent inside the estuary while many passerine species are regularly found in the reedbed and saltmarsh areas. There is a major heronry on the southern side of the estuary and flamingos *Phoenicopterus ruber* are now making a spectacular comeback after many years absent from the area (no observations in recent years up to 1988 with ca. 60 birds in 1989 and 1990; then ca. 210 in 1991 and 255 in 1992).

Terrestrial mammals like the otter *Lutra lutra* and the Wildcat *Felis sylvestris* are comparatively common in some areas around the estuary and there is also a most remarkable resident population of the common bottlenose dolphin *Tursiops truncatus* living in the estuary and adjacent ocean areas.

23. Noteworthy flora: The wetland habitats at Murta and Agualva have truly outstanding botanical value. There are also most valuable areas with dune vegetation on the sand spit to the South of Tróia on the western part of the estuary.

24. Scientific research and facilities: There are quite a few research projects under way in the area, most of them involving scientific teams based at Lisboa. Very basic research facilities are available at Setúbal but most scientific activities must be completed at Lisboa.

25. Conservation education: There is a fairly well-equipped visitors centre at the Reserve headquarters and these are most conveniently placed in Setúbal. School groups and other educational parties are very much encouraged to come and see the area.

26. Recreation and tourism: Some parts of the wetland are widely used for recreation and tourism, basically on the sandy seashore to the South of Tróia between the estuary and the sea.

27. Management authority: SNPRCN/Reserva Natural do Estuário do Sado, Praca da República, 2900 Setúbal, Portugal. Tel: +351 65 372 56. Fax: +351 65 372 56.

28. Jurisdiction: State jurisdiction/Min. Environment

29. Bibliographical references: Bruxelas *et al.* 1992; Grimmett & Jones 1989; Rufino 1992; Rufino & Neves 1991; Serra Guedes & Teixeira 1991; SNPRCN 1992; Teixeira 1980; Trindade 1993.

30. Reasons for inclusion: The area qualifies for inclusion under criteria 1a and 1c; also under 2a, 2b and 2c; the Sado estuary fits also criteria 3a, 3b and 3c.

31. Map of Site: enclosed.