DE MOND NATURE RESERVE

SOUTH AFRICA

Information sheet for the site designated to the

List of Wetlands of International Importance

in terms of the

Convention on Wetlands of International Importance

especially as Waterfowl Habitat

South African Wetlands Conservation Programme
Document No 24/21/3/3/3/4 (1986)
Department of Environmental Affairs and Tourism
Private Bag X447
PRETORIA 0001
South Africa

DE MOND NATURE RESERVE (HEUNINGNES ESTUARY): RAMSAR DATA SHEET

1. COUNTRY
SOUTH AFRICA

2. DATE OF COMPILATION
30 NOVEMBER 1984

3. REFERENCE NUMBER
1ZA003

4. COMPILER
4.1 Name: Regional Director - Western Cape Forest Region
4.2 Address: Private Bag X9005
Cape Town
8000
Telephone no: 021-467010

5. NAME OF WETLAND
DE MOND (HEUNINGNES ESTUARY) NATURE RESERVE

6. DATE OF RAMSAR DESIGNATION
2 October 1986

7. GEOGRAPHICAL CO-ORDINATES
South: 34 41' - 34 45'
East: 20 05' - 20 10'

8. GENERAL LOCATION
Bredasdorp: 25 km
Boundaries:
The Indian Ocean in the south
In the north by agricultural lands where they meet the coastal sand dunes
In the east and west by non-physical cadastral boundaries of the Forest Reserve

9. AREA (ha)
918 ha

10. WETLAND TYPE
Estuary that is artificially maintained open to the sea

11. ALTITUDE
Min: 0 m Max: 30 m

12. OVERVIEW OF SITE
The Heuningnes Estuary extends approximately 12 km across the flat coastal plain of the Zoetendals Vallei farm area. It is however only the lower 2 km stretch which shows the proper characteristics of a proper estuary. The estuary breaks out to the sea through a double dune ridge at De Mond Forestry Station.

13. PHYSICAL FEATURES

13.1 Geology and geomorphology
The geology of the upper catchment of the Kars River is dominated by Table Mountain Group sandstone, quartzite and shales of the Heuningberg mountain near Bredasdorp in the southern parts and Bokkeveld Shales in the undulating northern parts. Further downstream, east of Bredasdorp, the river transverses calcified dune sand and coastal limestone of the Bredasdorp Beds.

The geology of the upper catchment of the Nuwejaars River is dominated by sandstone, quartzite and shales of the Table Mountain Group. Post Malmesbury, pre-Cape granite outcrops occur on the south-facing slopes of the Heuningnes mountain. Further downstream near Elim, the Nuwejaars River transverses shale and sandy shale of the Bokkeveld Group which persists eastwards almost to where the Nuwejaars River enters Zoetendalsvlei.

There are two fault lines running almost east/west, one just south of the Heuningnes mountain and the other just north of Soetanysberg further south.

From Soetendalsvlei and Nachtwacht almost to the mouth of the Heuningnes river, the drainage system transverses calcified dune sand and coastal limestone of the Bredasdorp Beds. Approximately 2 km from the mouth, the Heuningnes estuary is situated on unconsolidated sand.

13.2 Origins
The development of the area took place during the Tertiary and Recent (that is, during the past 70 million years) periods, beginning with prolonged erosion, after which the ocean covered most of the area underlain by Bredasdorp Beds which consist of calcified dune sand. These occur along the whole coast up to the Potberg Mountain in a band varying from three to twenty kilometres in width. During the Miocene (that is 26 to 7 million years ago) the ocean began to retreat and on this wave-cut platform the Bredasdorp Beds were left as inshore deposits. The beach sand was blown up into dunes that crossed the former extension of the ocean. Subsequently the sea level rose again and a platform was cut over Bredasdorp and older formations. As the sea retreated again, the beach sand was blown up into dunes locally on this younger marine terrace. Still later the sea level sank further, due to world-wide glaciation and another terrace was formed. Its maximum height is 7 m and it is preserved only in patches along the coast.

Greater resistance to weathering processes has left the Table Mountain Sandstone as the most prominent feature in the landscape, forming high ground and mountain ranges. The less resistant shales have weathered into lower elevations, characterized by the round hilly nature of the Bokkeveld shales in the undulating country in the upper reaches of the Heuningnes catchment.

13.3 Hydrology

13.4 Soil type and chemistry
N/A

13.5 Water quality

Monthly pH values at three sampling stations in the Heuningnes Estuary were in the range of 8,0 to 8,6. Most of the readings were fairly consistent between 8,2 and 8,4, which is close to the normal pH value of seawater.

Water temperature: The following means were determined from data:

Summer	Autumn	Winter	Spring
19,8 C	17,5 C	13,3 C	17.3 C

Transparency: Secchi disc measurements taken indicate the strong influence of the sea high up into the estuary.

13.6 Depth, fluctuations and permanence
Min: 0,5 m Max: 2.5 m

13.7 Tidal variations

Highest Astronomical Tide	2,42	
Lowest Astronomical Tide	-0,01	
Mean High Water Springs		2,00
Mean Low Water Springs	0,25	
Mean High Water Neaps	1,41	
Mean Low Water Neaps	0,84	
Mean Level	1,13	

13.8 Catchment area
The effective catchment area is 1 185 km2.

13.9 Downstream area
The Indian Ocean

13.10 Climate
The Heuningnes river and its catchment lie within a Mediterranean climatic region, receiving most of the rainfall in the winter from about May to September and characterized by a warm to hot and dry summer. The mean annual rainfall over most of the catchment is between 400 and 600 mm, with a mean annual precipitation of 447 mm for the Heuningnes drainage system.

Average daily temperatures:

	Max (C)	Min (C)
January	28	15
July	17	6

Sunshine duration varies from about 60 % of the possible duration in July to over 70 % in January.

14. ECOLOGICAL FEATURES
This wetland falls into Acock's (1953) veld type 47 - Coastal *Macchia*. Heydorn and Tinley (1980) describe the vegetation of the area as Dune Thicket and Coastal Heath, while Moll et al. (1984) describe it as South Coast Strandveld, being an open to closed (40 - 80% canopy cover) mid-high vegetation with evergreen and deciduous broad-leafed and less conspicuous succulent elements. Graminoid components and herbaceous species form the understorey.

15. LAND TENURE
The site is mostly state land and is a proclaimed reserve. Inland of the reserve the land is owned by grain-farmers while the flood plains are utilized for livestock grazing.

16. CONSERVATION MEASURES TAKEN

16.1 Legal status

The area is state land.

16.2 Management category
Nature Reserve

16.3 Management practices
1. The maintenance of a viable ecosystem in the estuary and the prevention of the flooding of developed agricultural and grazing lands by keeping the estuary mouth open.

2. The conservation of the indigenous fauna and flora of the reserve.

3. Control of public access to the reserve for recreation and fishing is by means of a permit system. Control of access to the area below the high water mark along the coast does, at present, rest with the Overberg Regional Services Council.

4. Monitoring of bird breeding colonies.

17. CONSERVATION MEASURES PROPOSED
1. The conservation of the indigenous fauna and flora of the reserve.
2. The maintenance of a healthy productive estuarine ecosystem.
3. The prevention of flooding of developed productive agricultural land.

These aims will be achieved through the following practices:
1. Maintenance of the artificial sand dunes to prevent the mouth of the estuary becoming closed.
2. The curtailment of artificial vegetating activities to maintenance work only, thus allowing the maximum choice of nesting sites for the Damara Tern.
3. The maintenance of a diverse vigorous indigenous flora by applying a prescribed burning policy on a 8-15 year rotation. The rotation will be subject to monitoring the response of vegetation to burning.
4. The control of public access by the application of a permit system and efficient policing.
5. The confinement of vehicle access to the reserve for approved management and research activities only.
6. The confinement of oil pollution by closing the estuary mouth if this should become necessary.

Owing to the sensitive nature of vegetated sand dunes both natural and artificial and because of the sensitivity of nesting birds (especially the Damara Tern) to human activities, the following constraints should be applied:
1. No vehicles should be allowed into the nature reserve except for approved management activities.
2. Access by the public, on foot, should be controlled by a permit system to restrict visitor numbers with due regard to the breeding season of the Damara Tern during November to February.

The application of the above constraints are complicated owing to the fact that the Cape Nature Conservation only has legal control down to the high water mark and not to the low water mark. Extension of control to the low water mark is being negotiated.

3. The Damara Tern requires unvegetated slacks between the dunes for nesting sites.

The mouth is kept open artificially to allow tidal flow within the estuary and preventing the system from stagnating. Owing to human activities upstream, natural flow is not sufficient to open the mouth at regular intervals to allow for rejuvenation of the estuary.

The mouth is also kept open to prevent flooding of agricultural lands upstream during periods of high rainfall.

18. LAND USE
To the immediate NE and SW of the reserve undeveloped coastal dunes occur, areas very suitable for inclusion into the reserve as aquatic birds breed in these areas. Beyond these areas are the coastal resorts of Struisbaai and Waenhuiskrans.

Inland of the reserve the land-use is grain-farming while the flood plains are utilized for livestock grazing.

19. POSSIBLE CHANGES IN LAND USE AND PROPOSED DEVELOPMENT PROJECTS

20. DISTURBANCES AND THREATS

1. Oil pollution from oil spilling at sea.
2. Pollution of the system arising from agricultural activities in the wetlands catchment area. Pesticides and artificial nutrients are already widely used by the agricultural sector in the area.
3. Recreational and coastal development pressures are increasing on all South African coastal areas.
4. Further road culverts or bridges and dams would adversely affect the flow of the tributaries.
5. The use of two, three and four wheeled off-road vehicles is an increasing problem on the beach and coastal dunes. This is the most severe threat to the security of the nesting Damara Terns at present.

21. HYDROLOGICAL AND BIOPHYSICAL VALUES

22. SOCIAL AND CULTURAL VALUES

23. NOTEWORTHY FAUNA

1. Aquatic invertebrates:
The Heuningnes estuary has a tidal influence for 12 km upstream and the mouth has been kept open artificially since 1976. This has resulted in a strong marine influence on the aquatic fauna of the estuary.

As this is the southernmost estuary in Africa it is important for the documentation of southernmost extremities in the distribution of estuarine species. Examples of these are the Ginger Mud Prawn (*Penaeus japonicus*) the Giant Mud Crab (*Scylla serrata*) both tropical crustaceans, and a tropical gastropod *Nerita albicilla*.

2. Fish:
The marine influence on the estuary is illustrated by the presence of marine species such as baardman (*Umbrina capensis*), galjoen (*Coracinus capensis*), zebra (*Diplodus cervinus*) and strepies (*Sarpa salpa*) not often found in estuaries.

The occurrence of the sea horse (*Hippocampus*) is also noteworthy.

3. Birds:
This is the most important element of the system. The importance of this wetland is due to the presence of the Damara Tern (*Sterna balaenarum*), probably South Africa's rarest sea bird. This species is listed by Siegfried et al. (1976) as Rare and Vulnerable.

It nests on the interdune pebble slacks along the coast on either side of the estuary, both within and outside the Reserve. The estuary is used for foraging and for pair formation prior to breeding. Counts indicate that in excess of 30 individuals of this species utilize the estuary and that between 5 and 7 pairs use the surrounding coast dunes for nesting. It is estimated that about 15 % of the national population of this species can be found in this wetland area. The flock sizes seen at the estuary are amongst the largest seen in Southern Africa, (Cooper pers com).

Other bird species use this wetland for nesting as well. A colony of ± 300 pairs of Kelp gulls (*Larus dominicanus*) and several pairs of Caspian Terns (*Hydroprogne caspia*) regularly nest in the dunes along the coast. Other breeding species include the African Black Oystercatcher (Haematopus moquini), the Blue crane (*Anthropoides paradisea*), the Spotted Prinia (*Prinia maculosa*), the Kittlitz Sandplover (*Charadrius pecuarius*) and the Egyptian Goose (*Plectropterus gambensis*) (Bickerton, 1981) (Underhill, 1984). The Pied Kingfisher (*Ceryle rudis*) also nests in the area.

24. NOTEWORTHY FLORA

Bickerton (1984) describe the vegetation of the wetland in some detail and the following description is mainly summarized from this work. His vegetation map is attached.

1. Algae: No information is available but filamentous green algae (*Enteromorpha linga* and other *Enteromorpha* species), an *Ulva* species as well as an *Arthrocarcia* species have been reported from this area (Mehl 1974).

2. Aquatic Angiosperms: Owing to the turbidity of the water, aquatic plants are sparse. A *Ruppia* species does however occur in the estuary.

3. Semi-Aquatic Vegetation: Near the mouth, salt marshes on sandy substrate occur in three areas. Typical species here include *Limonium* species, *Salicornia* cf. *meyerana* and *Sarcocornia* species. Owing to road protection levees tidal activity has been curtailed on these areas and pioneer terrestrial species such as *Tetragonia decumbens* and *Chrysanthemoides monilifera* are starting to encroach.

Further upstream, salt marshes on more muddy substrates are found. Here the typical species include *Sarcocornia perennis, S. decumbens, Chenolea diffusa, Sueda maritima, Limonium scabrum* and *Juncus kraussii*.

Flood plain vegetation above the salt marshes has been heavily grazed and degraded (outside the reserve). Species occurring here include *Sarcocornia pillansia* and *Chrysanthemoides incana*.

Patches of reeds (*Phragmites australis*) occur at places along the river banks.
Zostera and Spartina species do not occur in this wetland.

4. Terrestrial Vegetation:

4.1 Vegetation on artificially stabilized areas:
Exposed sand dunes on either side of the estuary mouth have been artificially vegetated. Species used for this operation include the exotic grass Ammophila arenaria (Marram grass), which disappears after the pioneer stage has been succeeded, and the indigenous species listed below:

Wasbessie	*Myrica cordifolia*
Bitou	*Chrysanthemoides monilifera*
Blombos	*Metalasia muricata*
Gonna	*Passerina spp.*
Slangbos	*Stoebe spp.*
Keur	*Sutherlandia frutescens*
Pypgras	*Ehrharta villosa*
Suurvy	*Carpobrotus acinaeifermis*
Hotnotsvy	*Carpobrotus edulis*
Seekoring	*Agropyron distichum*
Bitterbos	*Chironia baccifera*
Skilpadbos	*Mundia spinosa*
Seepampoen	*Arctetheca niveum*
Seegousblom	*Didelta carnosa*
Tolbos	*Leucadendron spp.*
Daisy	*Senecio spp.*
Taaibos	*Rhus spp.*

4.2 The following species occur on vegetated dunes:
Tall shrubs like *Colpoon compressum, Euclea racemosa, Pterocelastrus tricuspidatus* and *Sideroxylon inerme* occur while restiods and herbs like *Restio eleocharis, Thamnochortus paniculatus* and *Ficinia lateralis* are common. Riparian species such as *Lycium ferocissimum, Zygophyllum morysana, Salvia aurea* and *Rhus lucia* can be found at places along the river.

25. SCIENTIFIC RESEARCH FACILITIES
N/A

26. CONSERVATION EDUCATION
Not as yet.

27. RECREATION AND TOURISM
N/A

28. MANAGEMENT AUTHORITY
Cape Nature Conservation

29. JURISDICTION
The lower reaches of the estuary fall within the De Mond Nature Reserve which is controlled by the CPA. Further upstream the estuary and river are bordered by privately owned farmlands.

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31. REASONS FOR INCLUSION

The main motivation for registration of this wetland is the importance of the area for the continued existence of the Damara Tern (*Sterna balaenarum*). This species is listed as Rare and Vulnerable, (Siegfried et al 1976) and is possibly the rarest resident sea bird in South Africa (Cooper 1983). It is endemic to Southern Africa.

The De Mond area is one of the very few confirmed breeding areas of this species and is one of only two breeding sites in South Africa falling within a Nature Reserve (Cooper 1983).

It is estimated that about 15 % of the national population of this species can be found in this wetland area (Cooper pers com).

The importance of the dune areas and pebble slacks of the beaches to the NE and SW of the estuary is their suitability for nesting sites while the estuary is a vital foraging ground for the birds and is used as a meeting ground during pair formation.

This area is also used as a breeding area by the Caspian Tern (*Hydroprogne caspia*) according to Bickerton (1984). This species is classified as vulnerable in the SA Red Data Book - Aves (Siegfried et al 1976).

A large colony (± 300 pairs) of Kelp Gulls (*Larus dominicanus*) breed in the reserve, several African Black Oystercatchers (*Haematopus moquini*) and Blue Crane (*Anthropoides paradisea*) nests have also been reported in the area (Bickerton, 1984).

The Heuningnes estuary is the most southerly estuary in Africa and is therefore scientifically important for species distribution extremities. Three tropical species, the Ginger Prawn (*Penaeus japonicus*), the Giant Mud Crab (*Scylla serrata*), both crustaceans, and a tropical gastropod, *Nerita albicilla*, have been recorded in this estuary. This is the southernmost distribution record of these species.

32. OUTLINE MAP OF SITE
(To be appended)

De Mond Nature Reserve (Heuningnes Estuary)

Location
South: 34 41' - 34 45', East: 20 05' - 20 10'
Bredasdorp: 25 km

Area
918 ha

Degree of Protection
The area is state land. Reserve inside a Forestry Reserve.

Site Description
The Heuningnes Estuary is artificially maintained open to the sea. It extends approximately 12 km across the flat coastal plain of the Soetendalsvlei area. It is however only the lower 2 km stretch which shows the proper characteristics of a proper estuary. The estuary breaks out to the sea at De Mond Forestry Station.

The Heuningnes and its catchment lie within a Mediterranean climatic region, receiving most of its rainfall in the winter from about May to September and characterized by a warm to hot and dry summer. The mean annual rainfall over most of the catchment is between 400 and 600 mm with a mean annual precipitation of 447 mm for the Heuningnes drainage system.

Average daily temperatures:

	Max (C)	Min (C)
January	28	15
July	17	6

Sunshine duration varies from about 60 % of the possible duration in July to over 70 % in January.
Depth: Min: 0,5 m Max: 2.5 m

International and National Importance
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