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7ES001

Parque Nacional de Doñana

Coordinates: 36°57'N - 006°19'W **Elevation:** 0-36 m **Area:** 50,720 ha

Location: The site is situated approximately 50 km southeast of the city of Huelva and 50 km southwest of Sevilla, in Huelva province, in the autonomous region of Andalucía (southwestern Spain). This is about 50 km southeast of the Marismas del Odiel Ramsar site (7ES006) and 30 km northwest of the Laguna Salada, part of Ramsar site Lagunas de Cádiz (7ES004).

Criteria: 1a, 1c, 2a, 2b, 2c, 2d, 3a, 3b, 3c
Doñana is one of the largest and most important remaining wetlands in Europe. It consists of a vast coastal marshland complex in the floodplain of the lower Guadalquivir River, separated from the Atlantic Ocean by an extensive system of both active and stabilized dunes. The area is of international importance for breeding, staging and wintering birds. It is a breeding site of the endangered duck *Marmaronetta angustirostris* and the rare gull *Larus genei*. The trees in one area of the "Vera" (grasslands) support a large mixed nesting colony of *Ardea cinerea*, *Egretta garzetta*, *Nycticorax nycticorax*, *Ciconia ciconia* and *Platalea leucorodia*. Nesting species also include *Anas strepera*, *Aythya ferina*, *Netta rufina*, *Porphyrio porphyrio* (1,000-2,000 pairs), *Fulica cristata*, *Himantopus himantopus*, *Recurvirostra avosetta* and *Chlidonias hybridus*. Wintering species include *Anser anser* (80,000), *Anas penelope* (120,000), *A. acuta* (20,000), *A. crecca* (170,000), *A. clypeata* (80,000), *Fulica atra* (40,000) and *Limosa limosa* (40,000). *Lynx pardina* is the most notable mammal.

Wetland Types: Sp, Tp, E, M, N, Ss, Ts, 4 (dominant types listed first)
The area contains fresh and brackish areas, including permanent and seasonal marshes, dunes, and permanent and seasonal lakes.

Biological/ Ecological notes Nowadays the marshes cover 27,000 ha, but they are the last remnant of wetlands, which once occupied 200,000 ha of the lower Guadalquivir floodplain. The stabilized dunes or Cotos form an undulating landscape with a vegetation cover varying with the height above the water table. The southern zone of the Cotos is covered by low *Pinus pinea* forest. The area between the Cotos and the marshland consists of grassland, which is referred to as Vera because it is always green and lush. The emergent vegetation is dominated by *Scirpus lacustris* in areas of deeper, more permanent water and by *S. maritimus* in the seasonal marshes. The flora also includes halophytes of genera such as *Arthrocnemum*, *Suaeda*, *Salicornia*, and *Tamarix* scrub.

Hydrological/ Physical notes The marshes are fed mainly by autumn and winter rainfall and river flow, and therefore show marked seasonal variations in their extent. There are salinity gradients (increasing from north to south and from west to east), while subtle variations in the relief of the generally flat plain lead to the occurrence of deeper areas of water (Lucios) and slight elevations (Caños, Vetas and Paciles).

Human uses The area is owned by the state and is primarily devoted to nature conservation. Land use activities which are compatible with conservation objectives are permitted within the site. These include charcoal production, bee keeping, gathering of Pinus wood, fishing and extensive stock grazing. There is also development of tourism.

Conservation Measures The area has been declared a National Park (Parque Nacional). It is also a UNESCO Man and Biosphere Reserve and an EU Special Protection Area for wild birds. It was also awarded a Council of Europe Diploma. In 1990 the site was included in the Montreux Record. In April 1998 a Coordination Commission of the State Administration and the Autonomous Administration of Andalucía was established to deal with the spillage of toxic waste described below. The Spanish Ministry of Environment has formulated a project, "Doñana 2005", which encompasses a series of strategic actions to restore the traditional hydraulic dynamics of the site. Doñana is twinned with Ramsar site Humedal Caribe Noreste in Costa Rica (6CR006).

Adverse Factors In April 1998 there was an accidental spillage, upstream of the site, of millions of cubic metres of toxic mining waste, which contaminated a large area with highly acidic material rich in heavy metals. The Coordination Commission mentioned above has provided the principal framework for the authorities concerned to address the clean-up and restoration work. In recent years concern also has been expressed over the impact of mass tourism and intensive irrigated agriculture in the region outside the National Park. There have been fears that these activities are causing over-exploitation of regional aquifers, leading to a fall in groundwater levels and a gradual reduction of the extent and duration of seasonal flooding in the marshes

References {a16}

7ES002

Las Tablas de Daimiel

Coordinates: 39°09'N 003°40'W Elevation: 600-620 m Area: 1,928 ha

Location: The site is located at the confluence of the Rivers Guadiana and Gigüela, about 10 km northwest of the town of Daimiel and 20 km northeast of the city of Ciudad Real, Ciudad Real province, in the extreme southwest of the autonomous region of Castilla-La Mancha in central Spain. The Ramsar site Laguna del Prado (7ES022) lies about 20 km to the north-northeast.

Criteria: 1a, 2b, 2c, 3b
The area consists of a complex of shallow pools and associated marshland, which lies in the great plain of La Mancha. The combination of plant communities makes the area a characteristic Iberian wetland. The vascular plant *Limonium longibracteum* is an endemic species of saline sites in La Mancha. The area supports a diverse fauna, including the mammals *Lutra lutra*, *Meles meles* and *Vulpes vulpes*, 13 reptile species, amongst them *Mauremys* (or *Clemys*) *caspica* and *Emys orbicularis*, the amphibian *Hyla arborea* and the fish *Cyprinus carpio*. The area is also very important for nesting waterbirds. The international (1% population) criterion is met by *Ixobrychus minutus*, *Ardea purpurea*, *Marmaronetta angustirostris*, *Circus aeruginosus*, *Grus grus*, *Himantopus himantopus* and *Chlidonias hybridus*. Counts of wintering waterbirds regularly exceed 10,000 individuals, the most common species being *Anas strepera* and *Netta rufina*.

Wetland Types: Tp, M, N, Ss, W (dominant type listed first)
The vegetation formations of the shallow pools and the surrounding marshland are laid out like a mosaic, according to variations in water levels, salinity and other parameters.

Biological/ Ecological notes In the past the wetland was surrounded by dense oak wood of *Quercus rotundifolia*. Most of it is cleared, but traces remain on the right bank. The left bank has completely been turned into agricultural fields. The Tablas support a rich aquatic vegetation, with submergent species including *Zannichellia pedunculatus*, *Ceratophyllum demersum*, *Ruppia maritima* and *Chara aspera*. The emergent vegetation was once dominated by *Cladium mariscus*, but this has gradually been displaced by *Phragmites australis* and *Typha* sp. *Tamarix canariensis*, a halophylic species, is the most common bush/tree. *Netta rufina*, *Anas crecca*, *Aythya nyroca*, *A. ferina*, *Ardeola ralloides*, *Nycticorax nycticorax*, *Podiceps cristatus*, *P. nigricollis*, *Panurus biarmicus* and *Acrocephalus melanopogon* also breed here.

Hydrological/ Physical notes La Mancha is a depressed basin which was formed during the process of geologic uplifting. It filled up during the Tertiary Period. The resulting formation consists mainly of limestone and calcareous clays. The site receives floodwater from the permanent freshwater Rjo Guadiana and the seasonal brackish Rjo Gigüela, and groundwater from an underground water basin known as Aquifer 23. The climate is warm Mediterranean, with a continental character. The annual average rainfall is about 450 mm. Extreme summer droughts are common.

Human uses The reserve is almost completely owned by the state (98.3%). Bordering the reserve is another, partly state-owned, protected area of over 5,000 ha. The site is used on a small scale by the local inhabitants, for hunting, fishing and the collection of reeds and rushes. These activities have been conducted since the first settlers came to the area during the Bronze Age (1,500 BC, Las Motillas culture). Remnants of such a settlement have been found inside the park. The surrounding area is used for agriculture. Recently irrigation with water taken from the underground aquifer has expanded enormously. About 100,000 people of foreign nationalities visit the site each year, so tourism is becoming socio-economically important for the area. Conservation Measures: The site was designated a National Park (Parque Nacional) in 1973. This was enlarged in 1980. It is also a UNESCO Man and Biosphere Reserve and an EU Special Protection Area for wild birds. The site was included in the Montreux Record in 1990, with the aim of restoration of the hydrological functioning of the upper Guadiana River, notably the sustainable use of Aquifer 23 (the "Mancha Occidental" aquifer). This implies improvements in the amounts, quality, and seasonal timing of water for the site. To this end, an Expert Commission was established in 1998 by the Central Spanish Government and the Autonomous Government of Castilla-La Mancha. The Ramsar Bureau has been invited to participate in this Commission, which will report in 1999.

Conservation Measures The groundwater underlying the plain of La Mancha (i.e. Aquifer 23) has been subject to over-exploitation. As a result, the Tablas started to dry out. There have also been changes in the water quality at the site, owing to the differences in chemical composition between groundwater and surface water supplies. High rainfall since 1997 has improved the short-term hydrological and ecological situation, and steps are being taken to ensure adequate long-term improvements

Adverse Factors

References {a16}

7ES003

Laguna de Fuente de Piedra

Coordinates: 37°07'N 004°46'W **Elevation:** 0 m. **Area:** 1,364 ha

Location: The site is located about 20 km northwest of the city of Antequera, province of Málaga, in the autonomous region of Andalucía, in central southern Spain. It lies approximately 10 km southwest of [Laguna Amarga](#), part of the Ramsar site Lagunas del sur de Córdoba.

Criteria: 1a, 2b, 2c, 3a, 3b, 3c
The site is of special importance because of its nesting colony of *Phoenicopterus ruber* (12,000 pairs in 1988). Laguna de Fuente de Piedra is one of the most important breeding sites for this species in the Mediterranean region (second only to the Camargue, France). Other nesting birds include the rare gull *Larus genei* and *Gelochelidon nilotica*, while *Anser anser*, *Tadorna tadorna* and *Netta rufina* are amongst the wintering species. The fields surrounding the lagoon support nesting *Circus pygargus* (at least 20 pairs) and *Burhinus oedichnemus*, as well as up to 250 wintering *Grus grus*.

Wetland Types: R, M, N, Ss (dominant type listed first)
The site consists of a large shallow, seasonally variable, saline lagoon (the largest lagoon in Andalucía), and the surrounding marshlands.

Biological/ Ecological notes The edges of the lagoon and the island ridges are covered by halophytic vegetation (e.g. *Arthrocnemum sp.*, *Suaeda sp.*, *Salicornia sp.* and *Frankenietea sp.*). The emergent aquatic vegetation is dominated by *Phragmites australis* and *Arundo donax*. The affluent rivers support beds of *Juncus subulatus*, *Scirpus maritimus* and *Ranunculus muricatus*.

Hydrological/ Physical notes The lagoon is 6.5 km long and 2.5 km wide. It is situated at the centre of a basin that has no drainage to the outside. The wetland is fed by five small rivers, by rainfall and by highly mineralized groundwater. It contains many narrow, emergent ridges, most of them artificial. There are three small hills on different sides of the site. The wetland is surrounded by an old canal dug to protect the adjacent agricultural lands from flooding.

Human uses The area is owned by the province of Málaga. There is some tourism (birdwatching). A hydrological survey was made in 1983. Conservation Measures: The site has been designated a Natural Reserve (Reserva Natural) by the state, and is also a EU Special Protection Area for birds. No recent information concerning conservation measures is available.

Conservation
Measures

Adverse
Factors

References {a16}

Coordinates: 36°37'N 06°03'W **Elevation:** 0 m. **Area:** 158 ha

Location: These two lagoons are close to the city of Jerez de la Frontera (Medina is about 10 km southeast of the city; Salada about 10 km to the southwest), Cádiz province, in the autonomous region of Andalucía (Andalusia), southwesternmost Spain. Laguna Salada lies about 40 km southeast of the [Doñana](#) Ramsar site.

Criteria: 1a, 2a, 2c, 3b, 3c
The lagoons are important for nesting birds, including the endangered species *Oxyura leucocephala*, *Fulica cristata* and *Porphyrio porphyrio*. Wintering waterbirds include *Anser anser*, *Anas strepera*, *A. acuta*, *A. clypeata*, *Netta rufina*, *Aythya ferina* (1,400), *Oxyura leucocephala* (101) and *Fulica atra* (2,000). Flocks of *Phoenicopterus ruber* and *Marmaronetta angustirostris* occur regularly as non-breeding visitors.

Wetland Types: R, Ss
The site consists of two shallow, saline lagoons, with fluctuating water levels and salinity, fringed by beds of emergent aquatic vegetation.

Biological/ Ecological notes Laguna de Medina is surrounded by a dense belt of emergent aquatic vegetation, including *Scirpus maritimus*, *Typha dominguensis* and *Phragmites australis*, together with *Frankenia laevis* and *Tamarix canariensis* and *Salicornia* spp. in the less frequently inundated areas. The submergent flora includes *Potamogeton pectinatus* and *Zannichinella palustris*. The Laguna Salada is fringed by beds of *Arundo* sp., *Phragmites australis*, *Scirpus maritimus*, *Typha dominguensis* and *Juncus maritimus*, together with *Tamarix* sp. and *Atriplex* sp.

Hydrological/ Physical notes The lagoons (fed primarily by rainfall), lie in closed drainage basins set in a semi-arid, cultivated landscape. Laguna de Medina has an average depth of 1.5 m.

Human uses Both lagoons are surrounded by agricultural land and are used as supply sources for irrigation. In recent years, fish have been introduced with a view to commercial exploitation. Harvesting of *Typha* is a traditional activity.

Conservation Measures Both lagoons are a Natural Reserve. Laguna de Medina is also an EU Special Protection Area for wild birds. The Laguna de Medina Natural Reserve is surrounded by a buffer/protection zone covering 254 ha. According to local development plans, the Natural Reserves are classified as Specially Protected Areas not for Urbanization. In 1991 a management plan was under development.

Adverse Factors

References {a16}

7ES005

Lagunas del sur de Córdoba (Lagunas de Zóñar, Rincón y Amarga)

Coordinates: 3°29'N 004°41'W

Elevation: 0 m.

Area: 86 ha

Location: The Lagunas del sur de Córdoba are situated south of the town of Aguilar de la Frontera, Córdoba province, in the autonomous region of Andalucía (Andalusia), central southern Spain. Laguna Amarga is about 10 km northeast of the [Laguna de Fuente de Piedra](#).

Criteria: 1a, 2a, 2b, 2c, 3b
Unlike other lagoons in the region (which are subject to seasonal desiccation), Zóñar, Rincón and Amarga hold water throughout the year and support a distinctive flora and fauna. The site is of particular importance for breeding birds, including *Tachybaptus ruficollis*, *Podiceps cristatus*, *Ixobrychus minutus*, *Anas platyrhynchos*, *Netta rufina*, *Circus aeruginosus*, *Porphyrio porphyrio*, *Fulica atra* and *Acrocephalus arundinaceus*. The site is also one of the most important breeding areas in Europe for the endangered duck *Oxyura leucocephala*. Wintering species include *Anas clypeata*, *Aythya ferina*, *A. fuligula* and *Oxyura leucocephala*.

Wetland Types: Q, Ss The Ramsar site includes three physically separated, semi-permanent, saline lagoons set in a rolling cultivated steppe landscape.

Biological/ Ecological notes The lagoons are fringed by belts of *Phragmites australis*, *Typha dominguensis* and *Arundo donax*, with *Juncus maritimus* and *Tamarix* in drier areas. The submergent flora includes *Cladophora sp.*, *Chara sp.* and *Spirogira sp.*, with *Zannichellia palustris* (Zóñar), *Potamogeton spp.* (Amarga) and *Najas marina* (Rincón). Amongst notable fauna are the rare fish *Atherina boyeri*, frog *Bufo calamita* and snake *Natrix maura*.

Hydrological/ Physical notes The region receives 70% of its annual rainfall in the months of November and December; the lagoons are therefore subject to marked seasonal fluctuations in both water level and salinity.

Human uses The lagoons are only used for conservation and research.

Conservation Measures The three lagoons are Natural Reserves. Parts are designated an EU Special Protection Area for wild birds. Each of the three Reserves is surrounded by a buffer/protection zone; 304 ha at Zóñar, 130 ha around Rincón and 250 ha at Amarga. According to local development plans, the Natural Reserves are classified as Specially Protected Areas not for Urbanization. A land use management plan for the Natural Reserves was approved in 1987. Actions carried out under this plan include: provision of wardens, development of visitor facilities and interpretation at Zóñar and Rincón, erection of a fence to exclude feral dogs from Rincón, in situ sign-posting of the reserve boundaries, enforcement of a general hunting ban within 300-500 m of the reserves, and enforcement of a law prohibiting waterbird hunting in central southern Córdoba.

Adverse Factors

References

7ES006

Marismas del Odiel

Coordinates: 37°17'N 06°55'W **Elevation:** 0 m. **Area:** 7,185 ha

Location: The site is situated on the Atlantic coast, immediately west of the city of Huelva, Huelva province, in the autonomous region of Andalucía (Andalusia), southwesternmost Spain.

Criteria: 1a, 2a, 2c, 3b, 3c
The area is extremely important for waterbirds. A colony of *Platalea leucorodia* (>400 pairs) occurs on Isla de Enmedio (one of only two Spanish nesting sites for this species, the other site being Doñana). Other breeding species include *Ardea cinerea* (>300 pairs), *A. purpurea* (>300 pairs), *Egretta garzetta*, *Circus aeruginosus*, *Porphyrio porphyrio*, *Himantopus himantopus*, *Glareola pratincola*, *Charadrius alexandrinus*, *Larus genei*, *Gelochelidon nilotica* and *Sterna albifrons* (>300 pairs). Large numbers of shorebirds stage in the area during migration periods, while wintering birds include *Anas penelope*, *A. platyrhynchos*, *A. clypeata*, *Aythya ferina* and *Recurvirostra avosetta*.

Wetland Types: Sp, E, H, Tp, 5 (dominant type listed first)
The site is an extensive complex of marshes at the mouth of the River Odiel, in the vicinity of its confluence with the River Tinto, with sandy dunes, intertidal marshes, permanent saline and brackish pools, permanent freshwater lakes, and artificial salt pans. Saltmarshes constitute the most important wetland type.

Biological/ Ecological notes Several distinctive habitats can be identified. The lower saltmarsh is frequently inundated at high tides, and characterized by the presence of *Spartina maritima* and *Salicornia ramossissima*. The middle saltmarsh, less frequently inundated, has a vegetation characterized by *Sarcocornia perennis* and *Halimione portulacoides*. On the upper saltmarsh, well-consolidated and infrequently inundated, the vegetation is composed of *Spartina densiflora*, *Arthrocnemum macrostachyum*, *Inula crithmoides* and *Artemisia ferulescens*. The inland marshes are influenced by freshwater and support beds of *Phragmites australis*, *Typha latifolia* and *Juncus* spp. There also are sand dune spits, characterized by *Pinus pinea* and *Juniperus phoenicea*.

Hydrological/ Physical notes Most of the site is flat, intertidal marsh.

Human uses Land use within the site includes salt extraction (about 1,000 ha of the marshes have been converted to salt pans), forestry, agriculture, fishing and shell-fish harvesting.

Conservation Measures The site is a Natural Park, and partly Natural Reserve and UNESCO Man and Biosphere Reserve. The site is designated as an EU Special Protection Area for wild birds. Plans were being developed in 1991 to provide interpretation and conservation education facilities for visitors, to carry out research programmes required for supporting site management, to restore degraded habitats, to increase the area in public ownership, and to integrate tourism/recreation, forestry, fishing and shell-fish harvesting with conservation objectives.

Adverse Factors

References

7ES007

Salinas del Cabo de Gata

Coordinates: 36°44'N 002°12'W **Elevation:** 0 m. **Area:** 300 ha

Location: The site is located on the Mediterranean coast, about 23 km east-southeast of the city of Almería, Almería province, in the autonomous region of Andalucía (Andalusia), southeast Spain.

Criteria: 1a, 2a, 2c, 3b
The area is important for breeding, staging and wintering birds. Nesting species are *Himantopus himantopus*, *Recurvirostra avosetta* and *Charadrius alexandrinus*, while notable non-breeding species include *Phoenicopterus ruber*, *Netta rufina*, *Aythya ferina*, *A. fuligula*, *Oxyura leucocephala*, *Limosa limosa*, *Calidris canutus*, *C. alba* and *Larus audouinii*.

Wetland Types: 5, E, Ss
The site primarily consists of salt pans (salinas) which occupy a coastal depression at the foot of southwestern slopes of the Sierra de Gata mountains. There are also sand dunes and saltmarshes.

Biological/ Ecological notes The area in the immediate vicinity of the salt pans supports halophytic vegetation composed mainly of *Arthrocnemum macrostachym*, *Limonium cymuliferum*, *Frankenia corimbosa*, *Salsola vermiculatus* and *Inula crithmoides*. There are limited areas of *Phragmites australis* reedbeds.

Hydrological/ Physical notes Lying below sea level, the salinas are supplied with seawater by gravitational flow. A sand dune complex separates the wetland from the open sea.

Human uses The salinas are being used for salt extraction.

Conservation Measures The site is a Natural Park. It is also designated an EU Special Protection Area for wild birds, as part of the much larger Cabo de Gata-Níjar SPA (26,000 ha). Local development plans classify the site as a Specially Protected Area not for Urbanization. A management plan for the Natural Park, based on zonation, was under development in 1991. Three zones were projected: a core reserve area, an area for extensive uses, and a zone of intensive use (the latter including research and visitor reception/interpretation facilities).

Adverse
Factors

References

7ES008

S'Albufera de Mallorca

Coordinates: 39°49'N 003°07'E **Elevation:** -1 to 10 m **Area:** 1,700 ha

Location: The site is situated about 6 km south-southwest of the town of Alc dia, in the province of Palma de Majorca, on the northeast coast of Majorca island, in the autonomous region of Balears.

Criteria: 1a, 2a, 2c, 3b, 3c
The area is internationally important for breeding, staging and wintering birds. Nesting species include *Tachybaptus ruficollis* (>150 pairs), *Ardea purpurea* (30-50 pairs), *Ixobrychus minutus* (>50 pairs), *Botaurus stellaris* (2 pairs), *Circus aeruginosus* (9 pairs), *Himantopus himantopus* (100 pairs) and *Acrocephalus melanopogon* (500-1,000 pairs). *Pandion haliaetus* and *Falco eleonora* feed in the area during the breeding season

Wetland Types: Tp, O, P, Ts, 5, 9
The site consists of an extensive freshwater marsh. It is separated from the sea by a sand dune bar. It is dissected by a network of dykes and drainage canals. Much of the area is covered by dense reed beds. There are only limited areas of open water.

Biological/ Ecological notes The park includes the major part of the wetland, which is 1,800 ha. The total area of natural interest is 1,900 ha. Large parts are covered by dense beds of *Phragmites australis* and *Cladium mariscus*. There are also rushes and *Salicornia* beds. Lagoons and canals contain submerged macrophytes like *Potamogeton*, *Zannichellia* and *Myriophyllum*. The canals are fringed by woodland and *Tamarix* scrub, but these have partly been cut down in the past. The dune bar supports *Juniperus* scrub, with *Juniperus oxycedrus macrocarpa*, *Thymedaea velutina*, *Ophrys* sp. and *Orchis* sp., but has been partly developed for tourism. In the marsh itself *Orchis palustris* is abundant.

Hydrological/ Physical notes The marsh is situated on thick layers of marine sediments. It gets its water from surface runoff and groundwater. There is a system of dykes and drainage canals, remaining from attempts to convert the wetland into irrigated agricultural fields.

Human uses Of the park, 80% is owned by national, provincial and local governments. The other parts are private property. The surrounding area is privately owned. Human activities within the site include conservation education, eco-tourism, controlled traditional fishing (mainly eel) and traditional collection of natural fibers (Typha and Arundo). There are a visitors centre and bird watching hides. The surrounding area is used for agriculture (inland) and tourism (along the coast).

Conservation Measures The site was designated a Natural Park (Parque Natural) and a Hunting Refuge (Refugio de Caza) by the national government. The Balearic government declared it a Special Interest Natural Area. Some 2,584 ha of the site has been declared an EU Special Protection Area for wild birds. A management plan has been made, and most of it has been implemented.

Adverse Factors There are no threats from inside the site. Excessive growth of tourism along the coast may become a problem. The over use of groundwater for irrigation in the surrounding area may cause saltwater to come in from the sea to replace the freshwater, and the residues of pesticides and fertilisers may have negative effects when they flow into the reserve.

References

7ES009

Laguna de la Vega (o del Pueblo)

Coordinates: 39°25'N 002°56'W **Elevation:** 654 m **Area:** 34 ha

Location: The reserve is situated immediately north of the town of Pedro Muñoz, about 100 km northeast of the city of Ciudad Real, Ciudad Real province, in the autonomous region of Castilla-La Mancha in central Spain. This site is only a few kilometres west of Ramsar site [Lagunas de Manjavacas](#), and about 30 km east of Ramsar site [Lagunas de Alcázar de San Juan](#).

Criteria: 1a, 2c, 3b, 3c
The wetland is a representative example of a semi-permanent, brackish steppe lagoon, located in an enclosed drainage basin adjacent to the upper catchment of the Záncara river, which flows to the Guadiana River. The area is one of the most important breeding sites in the Iberian peninsula for *Podiceps nigricollis*. Other nesting waterbirds include *Tachybaptus ruficollis*, *Anas querquedula*, *Netta rufina*, *Himantopus himantopus*, *Recurvirostra avosetta* and *Chlidonias hybridus*. Large numbers of *Anatidae* and *Fulica atra* occur in winter.

Wetland Types: Q, Sp
The site consists of lakes and pools in a semi-permanent, brackish steppe lagoon.

Biological/ Ecological notes The open water area is surrounded by beds of *Phragmites australis* and *Scirpus maritimus*, grassland and scattered *Juncus* stands. Submerged macrophytes include *Chara* and *Ruppia*.

Hydrological/ Physical notes The lagoon is located on the northern edge of a major aquifer, known as Aquifer 23. The climate is extremely continental (very hot summers, very cold winters). The average rainfall is less than 400 mm, so under natural conditions, the lagoon would be hyper-saline in character and would dry out annually during the summer drought period.

Human uses The area is owned by the province. Only a limited number of visitors (bird watchers) are admitted. The surroundings are privately owned. Land use in the adjoining areas includes urban development and traditional agriculture (vineyards, olive groves and un-irrigated cereal cultivation).

Conservation Measures The site is a provincial hunting reserve. It has also been designated an EU Special Protection Area for wild birds as a part of the Complejo Lagunar de Pedro Muñoz - Mota del Cuervo SPA, which covers 600 ha. A management and restoration plan was initiated in 1989.

Adverse Factors About 35% of the waste water from Pedro Muñoz now enters the lagoon, disrupting the seasonal variation and causing pollution problems.

References

7ES010

Laguna de Villafáfila

Coordinates: 41°49'N 005°37'W **Elevation:** 680 m **Area:** 2,854 ha

Location: The area is situated immediately east of the village of Villafáfila, about 20 km south-southeast of the town of Benavente, Zamora province, in the autonomous region of Castilla-León, in northwestern Spain.

Criteria: 1a, 2c, 3a, 3b, 3c
The site consists of a characteristic example of a complex of saline lagoons, occupying an enclosed drainage basin in a gently rolling steppe landscape. The area's nesting birds include *Ciconia ciconia*, *Anas querquedula*, *Circus spp.*, *Falco naumani*, *Otis tarda*, *Tetrax tetrax*, *Himantopus himantopus*, *Recurvirostra avosetta* and *Pterocles orientalis*. Large numbers of waterbirds winter here, notably *Anser anser* (23,000) and *Anas spp.*

Wetland Types: R, (Q), Ss
In the enclosed drainage basin there are saline lakes, pools and flats surrounded by saline grasslands.

Biological/ Ecological notes The complex supports extensive beds of emergent vegetation dominated by *Scirpus maritimus* and *S. pungens*, with smaller areas of *Typha angustifolia*. The lagoons are surrounded by saline grasslands with *Suaeda* and *Aeluropus*, and cultivated fields.

Hydrological/ Physical notes The three larger lagoons (Laguna Barillos, Laguna Grande and Laguna de Salinas) are linked by the River Saldo. The water levels are subject to marked seasonal variations. The underlying aquifer is saline, and is therefore not used for irrigation of the surrounding fields.

Human uses Of the site, 58% is private property. The remaining area is owned the different governmental bodies. Occasionally shepherds may take their livestock to the lagoons. The banks are either heavily grazed, or cultivated with cereals. The area is being promoted for tourism. There are a number of archaeological sites close to the reserve. In the surrounding area there is intensive agriculture.

Conservation Measures The site is a National Refuge from Hunting (Refugio Nacional de Caza) and has been proposed as a Nature Reserve (Reserva Natural) under the regional law concerning Natural Areas. It is also a part of the EU Special Protection Area for wild birds, named Villaf filla SPA, which comprises a total area of 32,682 ha.

Adverse Factors

The natural vegetation of the grasslands suffers from overgrazing. A marked increase in the numbers of wintering geese has also caused a decline in the extent of the Scirpus beds. The underground parts of Scirpus plants form their principal food supply. Ongoing and increasing sedimentation, as a result of soil erosion in the catchment, poses a significant management challenge too. The intensive agriculture in the surrounding area may cause pollution problems.

References

Coordinates: 42°28'N 008°50'W **Elevation:** 0-15 m **Area:** 2,561 ha

Location: The site is situated on the Atlantic coast, about 20 km northwest of the city of Pontevedra, Pontevedra province, in the autonomous region of Galicia, in the extreme northwest of Spain. The site is composed of three physically separate units:

(a) the inter-tidal plain between the mouth of the Umia river and the town of El Grove (Complejo intermareal Umia-Grove, 2,412 ha), including a dune system at La Lanzada,

(b) a small freshwater lagoon, Laguna de Bodeira (71.5 ha), and

(c) Punta Carreiron (77.5 ha), the southern end of an offshore island, Isla de Arosa, which is connected with the mainland via an artificial causeway. The site is about 15 km southeast of the [Complejo de Corrubedo](#) Ramsar site.

Criteria: 1a, 2d, 3b

The site supports an interesting flora, including several plant species which are endemic to the Iberian peninsula, e.g. *Iberis procumbens*, *Echium rosulatum*, *Linaria caesia* var. *ducumbens*, *Helichrisum picarii* and *Phelipaca arenaria*. The area is important for nesting and wintering waterbirds. It supports the largest number of wintering shorebirds (more than 10,000) to be found along the Atlantic coast of Spain. Anatidae include *Melanitta nigra* and *Mergus serrator*.

Wetland G, A, E, F, K (dominant type listed first)

Types: The site consists of an intertidal plane, a dune system, a small freshwater lagoon and part of an off shore island.

**Biological/
Ecological
notes** The intertidal flats in sector (a) support beds of *Zostera*, while the Laguna de Bodeira (b) is fringed by *Phragmites* and *Arundo donax*.

**Hydrological/
Physical
notes**

Human uses The site is owned by the local government. Human activities within the complex include tourism, shellfish harvesting, fishing and marine aquaculture.

Conservation Measures The area has been designated a Refuge from Hunting (Refugio de Caza) and was included in the General Register of Natural Areas in Galicia (Registro General de Espacios Naturales de Galicia). The site is also designated as a natural area in regional urban development plans and it is an EU Special Protection Area for wild birds. A Natural Resources Development Plan is in preparation.

Adverse Factors Management problems include the inflow of pollutants from surrounding urban and industrial zones, uncontrolled urban development, dumping of construction refuse, illegal hunting and the impact of tourism (especially dune erosion).

References

Coordinates: 43°42'N - 007°47'W **Elevation:** 0-117 m **Area:** 2,920 ha

Location: The site is situated on the Atlantic coast, immediately north and west of the town of Ortigueira, La Coruña province, in the autonomous region of Galicia, in the extreme northwestern part of Spain. It is about 30 km northeast of the [Laguna y arenal de Valdoviño](#) Ramsar site.

Criteria: 1a, 3b
The site consists of a rocky coastal inlet and an estuarine complex at the mouths of the Mera and Ladrado Rivers. It is a typical 'elevated' estuarine system with extensive intertidal flats. Wintering shorebirds include *Haematopus ostralegus*, *Pluvialis squatarola*, *Numenius arquata* and *Calidris alpina*, while the most numerous wintering Anatidae are *Anas penelope*, *A. platyrhynchos* and *A. clypeata*. Mammals include the otter *Lutra lutra*.

Wetland Types: G, A, E, F, Sp (dominant type listed first)
The area contains salty and brackish parts. It is composed of an elevated estuarine system with two river mouths and large intertidal flats, and a rocky coastal inlet.

Biological/ Ecological notes The areas most influenced by freshwater inflow from the rivers support beds of *Phragmites* and *Juncus*, while lower intertidal areas are colonised by *Zostera marina* and *Z. nana*. Other parts of the site support typical sand dune plants such as *Ammophila arenaria* and *Pancratium maritimum*. The most inland parts of the dunes harbour *Helichrysum picardi*, *Crucianella maritima*, *Linaria polygalifolia*, *Ulex europaeus*, *Pinus pilaster* and *Eucalyptus globulus*.

Hydrological/ Physical notes

Human uses Of the site, 1,633 ha consists water and intertidal areas. This part is therefore owned by the state. The other 1,267 ha are private property. The area is used for fishing, shell-fish harvesting and farming of other marine products. There is some tourism too.

Conservation Measures The area has been designated a Reserve from Hunting (Refugio de Caza). It is also an EU Special Protection Area for wild birds. In May 1989, the site was included in the General Register of Natural Areas in Galicia (Registro General de Espacios Naturales de Galicia) for possible designation as a Generally Protected Natural Area (Espacio Natural de Régimen de Protección General). However, almost all of the local authority development plans which cover parts of the site show the area as urban land (Suelo Urbano). A natural resources development plan is being drafted.

Adverse Factors The area is threatened by urban pollution. Some damage is caused by tourists. The avifauna is occasionally disturbed too by activities on a local shooting-range.

References

Coordinates: 39°20'N - 000°21'W **Elevation:** 3 (0-60) m **Area:** 21,000 ha

Location: The site is located on the Mediterranean coast, about 16 km south of the city of Valencia, Valencia province, in the autonomous region of Paï's Valencià (Valencia), in southeastern Spain.

Criteria: 1a, 2a, 2c, 2d, 3a, 3b, 3c The site's fauna is notable for its species diversity. Regional endemics include decapods as *Dugastella valentina* and *Palaemonetes zariquieyi*, the fishes *Aphanius iberus* and *Valencia hispanica*, and the crustacean *Palaemonetes zariquieyi*. The most conspicuous element of the site's international importance, however, lies in its birds. More than 250 bird species stay in the area occasionally or regularly, and up to 90 breed here. Amongst them are *Podiceps cristatus*, *Ardea cinerea* (335 pairs in 1989), *A. purpurea*, *Egretta garzetta*, *Bubulcus ibis*, *Nycticorax nycticorax*, *Ardeola ralloides*, *Ixobrychus minutus*, *Netta rufina*, *Glareola pratincola*, *Charadrius alexandrinus*, *Acrocephalus* spp., *Panurus biarmicus* and *Remiz pendulinus*. Large numbers of staging and wintering water birds may also be seen, especially *Anas penelope* (2,010), *A. acuta* (1,982), *A. platyrhynchos* (5,720), *A. clypeata* (24,430), *Netta rufina* (12,205), *Aythya ferina* (4,831), *Vanellus vanellus* (27,204) and *Gallinago gallinago* (1,193).

Wetland Types: J, E, K, M, Tp, Y, 3 (dominant type listed first)
The site consists of a large coastal lagoon fed by streams, rivers and irrigation channels. The lagoon is separated from the sea, along most of its length, by a wide sand dune peninsula. The area contains fresh, brackish and saltwater wetlands.

Biological/ Ecological notes The vegetation is dominated by aquatic communities (species include *Potamogeton crispus*, *Lemna* spp., *Ceratophyllum demersum*, *Cladium mariscus*), halophytes (e.g. *Suaeda*, *Salicornia*) and sand dune communities. Two-thirds of the site is used for rice-growing.

Hydrological/ Physical notes The sand bank closing off the lagoon was formed by fluvial material deposited near the mouth of the River Turia. From there it was spread further by a stream along the coast. When the bay was closed off by this wall, a coastal lake developed. This is being filled in by natural siltation processes, which are greatly increased by human influence. The average depth of the lagoon is 1 m. The water levels are artificially managed, in relation to ricefield requirements.

Human uses The Devesa del Saler (800 ha, sited on the sand bank) and the lagoon (2,000 ha) are Public Property and belong to the Council of Valencia. The remaining area is privately owned. The surrounding area is private property too. The seaward side of the bank is heavily urbanized. The lagoon is fringed by areas with rice cultivation. Other human activities inside the reserve include fishing and hunting. Around the site the main activities are agriculture, fishing, tourism and industrial developments.

Conservation Measures The area has been designated a Regional Natural Park (Paraje Natural). It is also an EU Special Protection Area for wild birds. Development of a Special Protection Plan (El Plan Especial de Protecci n del Parque Natural de l'Albufera) was completed in 1988. The plan was adopted in 1990, with the aim of conserving and restoring the wetland's natural characteristics.

Adverse Factors The problems affecting the site are related to three main issues, namely the silting up of the lagoon, illegal building activities in the area, and the use of chemicals for rice cultivation. This affects the water quality within the site, a problem which is exacerbated by the inflow of urban waste and industrial pollution water from nearby areas.

References

7ES014

Pantano de El Hondo

Coordinates: 38°10'N - 000°42'W **Elevation:** 3-9 m **Area:** 2,387 ha

Location: The site is located about 11 km south-southwest of the city of Elx, Alicante province, in the autonomous region of Comunidad Valenciana (Valencia). It lies approximately 10 km inland (west) of the [Salinas de Santa Pola](#) Ramsar site.

Criteria: 1a, 2a, 2c, 3b, 3c
El Hondo contains five vegetation communities which are endemic to south and southeastern Spain. These are Halimiono - Sarcocornetum alpini, Cistancho lutae - Arthrocnemetum fruticosae, Frankenio - Arthrocnemetum macrostachyi, Frankenio corymbosae - Halocnemetum strobilacei and Limonio caesii - Lygeetum sparti. The plant species *Cynomorium coccineum* also has a restricted distribution area. The fish species *Aphanius iberus* and the crustacean *Palaemonetes zariquieyi* are endemic too. The area is extremely important for breeding birds, including the endangered duck *Marmaronetta angustirostris* (13-21 pairs in 1992). Other nesting species which meet the Ramsar criteria include *Ixobrychus minutus*, *Egretta garzetta*, *Ardea purpurea*, *Oxyura leucocephala*, *Himantopus himantopus*, *Sterna albifrons*, *Chlidonias hybridus*, *Glareola pratincola*, *Ardeola ralloides* and *Acrocephalus melanopogon*. Large numbers of Anatidae (15,000 - 20,000) occur in winter, the most numerous species being *Anas clypeata* (up to 4,000) and *Netta rufina* (1,500).

Wetland Types: 6, O, R, Sp, Tp, (4), (9) (dominant type listed first)
The site consists of two large reservoirs and associated natural wetlands, in the floodplain of the Rivers Vinalopó and Segura. The manmade lakes contain fresh water, but parts of the surrounding natural marshes are brackish.

Biological/ Ecological notes The site contains beds of marsh vegetation belonging to the classes Phragmitetea, Lemnetea and Potamotea, salt-tolerant vegetation belonging to the class Arthrocnemetea, cultivated fields and palm groves. The site is also an important breeding area for *Tadorna tadorna*, *Netta rufina* (500 pairs), *Botaurus stellaris*, *Phoenicopterus ruber* and *Circus aeruginosus*.

Hydrological/ Physical notes The Canal de Levante (21.5 km long) carries water from the River Segura to the entire region of Alicante and Elx. It passes through El Hondo over a distance of 5.9 km, supplying water to the two reservoirs Embalse de Poniente and Embalse de Levante. The reservoirs (average depth 1.5 m) are used for irrigation purposes and are linked with the canal by five gates, which allow inflow and outflow to be controlled. The irrigated fields are fringed by brackish/saline pools, which are formed by natural seepage of water from the Vinalopó River. The site contains water throughout the year, although in summer the levels are significantly lower than in winter.

Human uses The area is privately owned and contains many irrigated fields. Human activities within the site also include hunting and fishing. The surrounding areas are intensively cultivated. In total 40,000 ha is irrigated with water from the site.

Conservation Measures The area has been designated a Natural Park (Paraje Natural). It is also an EU Special Protection Area for wild birds. A management plan for the site is in preparation. A *Marmaronetta angustirostris* Recovery Plan as well as a *Tadorna tadorna* Management Plan are being developed too.

Adverse Factors The water in the reservoirs is highly contaminated by agricultural, industrial and domestic effluents, while illegal dumping of refuse within the site is also a problem. Over-pumping for irrigation has caused water shortages in the natural wetlands. Hunting and fishing are also insufficiently controlled. There are plans for the construction of a motorway (autopista) from Alicante to Cartagena, which would pass close to the site with possible adverse effect.

References {a16}

Coordinates: 38°00'N - 000°42'W **Elevation:** 0-31 m **Area:** 3,700 ha

Location: The site is located immediately northwest of the Mediterranean coastal town of Torrevieja, Alicante province, in the autonomous region of Comunidad Valenciana (Valencia), in southeastern Spain. It lies approximately 23 km south-southwest of the [Salinas de Santa Pola](#), Ramsar site.

Criteria: 1a, 2a, 2c, 2d, 3b, 3c
The area supports several vegetation communities which are endemic to the southeastern part of the Iberian peninsula, namely Halimiono - Salicornietum alpini, Cistancho lutae - Arthrocnemetum fruticosi, Frankenio corymbosae - Arthrocnemetum macrostachyi and Limonio caesii - Lygeetum sparti. Additionally the site harbours the endemic plant species Cynomorium coccineum and Limonium album, which have very restricted ranges. Nesting birds include Tadorna tadorna (rare as a breeding species in Spain), Circus pygargus, Burhinus oedicnemus (declining owing to agricultural change), Himantopus himantopus, Recurvirostra avosetta, Charadrius alexandrinus and Sterna albifrons. Up to 2,000 non-breeding Phoenicopterus ruber may occur on the Laguna de Torrevieja, especially when the Salinas de Santa Pola are subject to disturbance. The site is especially important for wintering waterbirds, notably Podiceps nigricollis (numbers may exceed 3,000), Anas clypeata and Netta rufina. At times it may support great flocks of shorebirds and Anatidae, seeking refuge during shooting periods in nearby areas [Pantano de El Hondo](#) and [Salinas de Santa Pola](#).

Wetland Types: J, 5, Sp, Tp (dominant types listed first)
La Mata and Torrevieja are two large saline lagoons in a basin like depression near the sea, which are connected with each other and with the sea by artificial canals. The saline lagoons are used for salt exploitation.

Biological/ Ecological notes La Mata is surrounded by rather open halophytic vegetation (especially Salicornia europaea), giving way to Pinus and Eucalyptus scrub in the south. North and west of this lagoon are cultivated fields. The hyper-saline conditions in and around the Laguna de Torrevieja also have created belts of halophytic vegetation. Both lagoons are partly fringed by Phragmites beds along their northwestern edges, where there is an inflow of freshwater. The abundance of the crustacean Artemia salina in the lagoons is very important as it serves as food for many of the bird species using the site.

Hydrological/Physical notes The site is located in a tectonic depression. The lagoons are isolated from the sea by a sand bar. The El Acequión canal, connecting Torrevieja Lagoon to the sea, was constructed in 1482. In 1907, a similar canal was dug from La Mata to the sea, as was the canal connecting the two lagoons. Water levels are artificially managed by the salt mining company according to their needs, and may vary greatly.

Human uses Most of the site is owned by the state. It is leased to the Nueva Compañía Arrendataria de las Salinas de Torrevieja, S.A., belonging to the Belgian multinational company Solvay. This is the second most important European salt mine and the fourth largest in the world. La Mata is used as a concentration area. When required, water can be pumped from La Mata to Torrevieja, where the final stages of the process take place. The surrounding area is privately owned and mainly used as citrus orchards. The coast is used for tourism and recreation, and there is some urban development.

Conservation Measures The site is designated a Natural Park (Paraje Natural) and a Reserve from Hunting (Refugio Nacional de Caza). Of the area, 2,100 ha also have been declared an EU Special Protection Area for wild birds. A management plan for the site is in preparation.

Adverse Factors The use of La Mata as a reservoir for the salt industry means that water levels may vary dramatically. Sometimes the islands in the lagoon are flooded at unusual times of the year, causing considerable damage to nesting birds. Other management difficulties include the illegal dumping of refuse, the influx of polluted water and uncontrolled tourism/recreational activities (disturbance, pollution). Urban developments are closing in on the site, and there are plans for the construction of a motorway (autopista), from Alicante to Cartagena, which would pass close to the site.

References

Coordinates: 38°08'N - 000°37'W **Elevation:** 1-6 m **Area:** 2,496 ha

Location: The site is located on the Mediterranean coast, about 13 km southeast of the city of Elx, Alicante province, in the autonomous region of Comunidad Valencia (Valencia), in southeastern Spain. It lies approximately 23 km north-northeast of the [Salinas de La Mata y Torrevieja Ramsar site](#).

Criteria: 1a, 2a, 2c, 2d, 3b, (3c)
The following endemic plant communities are found inside the reserve: the Halimiono - Salicornietum alpini, Cistancho lutae - Arthrocnemetum fruticosi, Frankenio corymbosae - Arthrocnemetum macrostachyi, Limonio caesii - Lygeetum sparti, Gasouletum cristallino - nodiflori and Atriplici glaucae - Suaedetum pruinosae. The area supports a rich faunal diversity, including invertebrates, reptiles and fish (notably the endemic fish *Aphanius iberus*), but the most important feature of the site is its importance as a habitat for nesting, staging and wintering birds. Breeding species include the severely threatened *Marmaronetta angustirostris* (2-4 pairs in 1992), *Podiceps nigricollis*, *Ixobrychus minutus*, *Tadorna tadorna*, *Netta rufina*, *Aythya ferina*, *Himantopus himantopus*, *Recurvirostra avosetta* (500 pairs), *Charadrius alexandrinus*, *Larus genei*, *Chlidonias hybridus*, *Sterna albifrons*, *Acrocephalus melanopogon* and *Panurus biarmicus*. *Phoenicopus ruber* occurs throughout the year, with peak numbers (more than 2,000) occurring in November/December. Wintering species include many Anatidae (especially *Anas clypeata* and *Netta rufina*), Charadriidae and Scolopacidae.

Wetland Types: 5, E, Q, Sp, Tp (dominant type listed first)
The site comprises an extensive complex of salt pans (salinas) that are in use, and seasonal saline pools, bordered by sand dunes and sandy beaches.

**Biological/
Ecological
notes** The vegetation varies considerably according to the salinity. In the salt pans the vegetation varies from phanerogams to extremely halophylic bacteria, which are the main food of the flamingos and shorebirds that use the site. The margins of the salinas are colonised by plant species able to tolerate hyper-saline conditions (e.g. *Salicornia europaea*), giving way to other communities as levels of salinity and humidity decrease. The saline vegetation has an interesting insect and lizard fauna. In seasonal ponds with brackish water there are reed beds and canelike vegetations, which are used by ducks, herons, terns, grebes, etc. The northwestern part of the site is characterised by the presence of freshwater which supports stands of *Carex* and *Juncus*, interspersed with the halophytic plants mentioned above. There are three rows of dunes. The outer one is mobile, the other two are vegetated. The dunes support plant species like *Ammophila* sp. and pine woods. The dunes and the beach have an interesting insect fauna and harbour shorebirds, terns and gulls.

**Hydrological/
Physical
notes** The water quality is good, although there is a runoff of polluted water from agricultural fields, and leakage from the separate channel carrying untreated waste water from the surrounding irrigated agricultural fields to the sea.

Human uses The site is privately owned. The company Salinas del Braç del Port S.A. owns 35% of the land. The main human activity within the site is the production of salt. The salinas are filled with water that is pumped in from the sea via an artificial canal. Land uses also include hunting, fishing and, to a lesser extent, agriculture and transportation (the main road from Santa Pola to La Marina passes through the site). In the surrounding area there is agriculture, industry and urbanisation. The reserve contains an important archaeological site, the 16th century Tamarit Tower, which is a ruin now.

**Conservation
Measures** The site has been designated a Natural Park (Paraje Natural). It is also an EU Special Protection Area for wild birds. A management plan has been approved and is being implemented.

**Adverse
Factors** There are a number of management difficulties, including the adverse impact of insufficiently controlled hunting, coastal development pressures, conversion of salt pans into fish farming ponds, and water pollution. The surrounding areas are subject to intensive development pressures. There are plans for the construction of a motorway (autopista) from Alicante to Cartagena, which would pass close to the site and cause disturbance.

References {a16}

Coordinates: 40°14'N - 000°12'E **Elevation:** 0-4 m **Area:** 812 ha

Location: The site is located on the Mediterranean coast, immediately south of the small town of Torreblanca and about 30 km northeast of the city of Castellón, province of Castellón, in the autonomous region of Comunidad Valenciana (Valencia), in southeastern Spain.

Criteria: 1a, 2a, 2b, 2c, 2d, 3b
The site comprises the largest marsh in the province of Castellón, with well-developed hydrophytic and halophytic plant communities which are in excellent condition. The area is very important for a number of fish species (e.g. *Aphanius iberus* and *Valencia hispanica*) and invertebrates (e.g. the crustacean *Palaemonetes zariquieyi*), which are endemic to the Mediterranean coast. The site also supports several notable plants, such as *Limonium doufourii* (an endangered species which is endemic to Valencia); *Iris xiphium* and *Limonium angustibracteatum*, also endemic to Valencia; *L. densissimum*, which here reaches the northern limit of its range; and *Juniperus oxicedrus macrocarpa* (uncommon in Valencia). Nesting birds include *Circus pygargus*, *Glareola pratincola*, *Sterna albifrons*, *Acrocephalus melanopogon* and *Emberiza schoeniclus*.

Wetland Types: Sp, E, U
Saline pools and marshes occupy the former lagoon, which also contains extensive areas of peat.

Biological/ Ecological notes The principal vegetation types include aquatic (submergent and emergent), halophytic and dune communities. Along the edges of the basin there are freshwater plant communities.

Hydrological/ Physical notes The marsh has developed through long-term sedimentation in a former coastal lagoon. It is separated from the sea by a sand dune and calcareous gravel complex.

Human uses Large parts of the site are owned by the provincial and local governments. The remaining areas are private property. Human activities in the area include commercial peat extraction, agriculture and grazing along the borders of the site, and hunting. It is surrounded by cultivated land.

Conservation Measures The site has been designated a Natural Park (Paraje Natural). It is also an EU Special Protected Area for wild birds. Most of the site (except for 60 ha in the extreme south) has been classified as especially protected land that cannot be developed (Suelo No Urbanizable de Protección Especial). The area has an important role in conservation education and there is a reception/interpretation centre for visitors. A management plan was initiated in 1987 with the aim of integrating traditional land uses with conservation objectives. Peat exploitation is regulated by a restoration plan. This specifies the shape and size of the pools that are created by the extraction, in order to meet the requirements of waterbirds

Adverse Factors Peat exploitation remains a problem. Agriculture and grazing tend to be too intensive. The site is becoming progressively more saline as a result of decreasing freshwater inflow and falling ground water levels, caused by extraction outside the area. Tourism and recreational activities along the beach cause serious disturbance during the summer and result in damage to the sand dunes.

References {a16}

7ES018

Aiguamolls de l'Empordà

Coordinates: 42°14'N - 003°06'E **Elevation:** 0 m

Area: 4,784 ha

Location: The site is located on the Mediterranean coast, approximately 15 km east of the city of Figueras, Girona province, in the autonomous region of Catalunya, in the northeast of Spain.

Criteria: 1a, 1c, 2a, 2c, 3b
Several rare plant species occur at this site, e.g. *Centaurea seridis* and *Orchis laxiflora*. The site is also notable for the rare endemic fish species *Aphanius iberus* (at its northernmost locality) and *Gasterosteus aculeatus*. Amphibians of particular interest are *Discoglossus pictus*, *Hyla meridionalis*, *Triturus helveticus* and *Mauremys caspica*. Nesting waterbirds include *Ardea purpurea*, *Ixobrychus minutus*, *Botaurus stellaris*, *Anas querquedula*, *Circus aeruginosus*, *Porzana pusilla*, *Himantopus himantopus* and *Acrocephalus melanopogon*. Various Anatidae, *Bubulcus ibis*, *Vanellus vanellus*, *Pluvialis apricaria* and *Gallinago gallinago* winter here.

Wetland Types: Sp, E, H, J, M, O, Tp, Ts, Xf, W, 3, 4, 9 (dominant type listed first)
Aiguamolls is a coastal complex of saline and freshwater wetlands in the floodplains of the Rivers Muga and Fluvi . It is separated from the sea by sand dunes

Biological/ Ecological notes
The saline wetlands support a halophytic vegetation with *Salicornia herbacea* and *Arthrocnemum fruticosum*, while less saline, better-drained areas give rise to meadows of *Agropyron* sp., *Puccinellia* sp. and *Juncus maritimus*. In some of these meadows spectacular spring displays of flowering *Iris spuria* may be seen. Areas which are regularly flooded by freshwater (naturally or artificially) support lush beds of *Carex* spp. and *Eleocharis palustris*. The numerous drainage channels dissecting the floodplain support a characteristic flora composed of *Phragmites australis*, *Typha* spp., *Scirpus lacustris*, *Iris pseudacorus* etc., and riparian woodlands of *Salix alba*, *Populus alba*, *P. nigra*, *Alnus glutinosa*, *Ulmus minor*, *Fraxinus angustifolia* and *Tamarix gallica* fringe the rivers. The coastal beaches and dunes support specialized plant communities with *Agropyron junceum*, *Sporolobus pungens*, *Ammophila arenaria*, *Convolvulus soldanella*, *Eringium maritimum*, *Euphorbia paralias* and *Echinophora spinosa*. The most common reptiles are *Lacerta viridis*, *Chalcides chalcides*, *Psammodromus hispanicus*, *Natrix natrix* and *N. maura*. The most numerous mammal species is *Crossidula russula*, but *Arvicola sapidus*, *Mus spretus* and *Microtus agrestis* are also present. The population of *Oryctolagus cuniculus* has been decimated by myxomatosis, whereas the hare *Lepus capensis* is expanding into orchard areas. Other noteworthy

mammals are the well-established *Putorius putorius*, and *Lutra lutra*, which is recovering after a period of decline.

Hydrological/Physical notes In summer, surface waters fall below sea-level, so the area behaves as a continuous drainage basin. As the water evaporates, the salinity increases.

Human uses The area is government property and partly privately owned. It is divided into two separate zones by the town of Ampuriabrava. Inside the area there is some agriculture, and tourism is important. In the surrounding areas there is agriculture, urbanisation and tourism developments.

Conservation Measures The site has been designated a Natural Park (Parque Natural). It is also an EU Special Protection Area for wild birds. Of this area, 876 ha has been declared an Integral Natural Reserve (Reserva Natural Integral). In general, potentially disturbing activities are prohibited in this part of the site (much of which is in public ownership and under the direct control of Park authorities). However, certain activities which enhance the conservation value of the reserve (e.g. vegetation control by grazing and mowing) are permitted. There is no management plan for the site as a whole, but a variety of management measures have been planned for specific areas. Elsewhere, the land is in multiple private ownership. Here the traditional land uses are maintained, subject to controls on the use of pesticides, etc.

Adverse Factors There is pressure to convert meadows into intensive maize cultivation fields. The extraction of water for agricultural purposes and, in particular, for tourism has resulted in an increased salinity of many wells close to the sea

References {a16}

Coordinates: 40°43'N - 000°44'E **Elevation:** 0 m

Area: 7,736 ha

Location: The Ebro Delta is situated on the Mediterranean coast, approximately 25 km southeast of the town of Tortosa, Tarragona province, in the autonomous region of Cataluña, eastern Spain.

Criteria: 1a, 1c, 2a, 2b, 2c, 2d, 3a, 3b, 3c
The Ebro Delta is a typical example of a fluvial delta. Some 30,000 pairs of waterbirds nest annually, while mid-winter waterbird counts have recorded 180,000 individuals. Breeding species include *Ardea purpurea*, *Egretta garzetta*, *Bubulcus ibis*, *Ardeola ralloides*, *Nycticorax nycticorax*, *Ixobrychus minutus*, *Botaurus stellaris*, *Netta rufina*, *Himantopus himantopus*, *Glareola pratincola*, *Larus audouinii* (with 7,000 pairs in 1992, the largest colony in the world), *Chlidonias hybridus*, *Gelochelidon nilotica*, *Sterna albifrons*, *Sterna hirundo* and *S. sandvicensis*. In summer, up to 4,000 non-breeding *Phoenicopiterus ruber roseus* occur. Thousands of *Egretta garzetta* and *Bubulcus ibis* winter, as well as duck species, such as *Anas platyrhynchos* (42,800 in 1989), *A. strepera* (4,119 in 1985), *A. clypeata* (14,200 in 1991) and *Netta rufina* (6,100 in 1991), and up to 32,000 shorebirds (e.g. *Recurvirostra avosetta* and *Limosa limosa*).

Wetland Types: F, M, A, E, G, H, J, Y, 1, 3, 4, 5, 9 (dominant types listed first)
The site is a fluvial delta, including a variety of wetlands, amongst which are shallow coastal waters, sandy beaches and dunes, saline lagoons, salinas, freshwater marshes, and freshwater pools fed by groundwater springs. At the end of the 19th Century, the introduction of agriculture transformed most of the delta so that rice fields, covering more than 20,000 ha, now dominate the region. The primary natural wetland types are permanent rivers and estuarine habitats.

Biological/ Ecological notes The shallow offshore waters around the delta are extremely important as spawning and nursery areas for fish, including many commercially valuable species. Four of the delta's fish species are endemic to the Iberian Peninsula (e.g. *Aphanius iberus*). The delta also supports an outstanding mollusc fauna (marine and freshwater), while the saltwater channels hold a small endemic shrimp *Palaemonetes zariqueyi*. In addition to typical Mediterranean plant communities, some plant species reach their northern limit in the delta (*Lonicera biflora*, *Tamarix boveana* and *Zygophyllum album*), while for others this is their southernmost locality (*Nymphaea alba*, *Alnus glutinosa*).

Hydrological/ Physical notes The delta's flooding regime is now artificially regulated for rice cultivation. During the winter (November to April) low water levels are maintained, and inflow of sea water occurs. Conversely, during summer, fresh water is fed into the delta from the river, through a network of artificial channels, and high levels are maintained until October. The inundated area shrinks to a minimum between February and April.

Human uses Much of the Natural Park (including virtually all of the littoral zones) is in public ownership, although some of the major lagoons are privately owned. The principal land uses within the site are hunting, fishing, shellfish harvesting, tourism and limited agriculture, aquaculture and livestock rearing.

Conservation Measures The Ebro Delta is a Natural Park. Parts of the area are designated as Natural Reserves (Illa de Sapinya 4ha and Punta de la Banya 2,500 ha), National Hunting Refuges (Laguna de l'Encanyissada and Laguna de la Tancada), or Hunting Refuges (Punta del Fangar 500 ha, Garxal 137.5 ha, Canal Vell 17 ha, Laguna de la Tancada 312 ha). A management plan was under development in 1992. The area is an EU Special Protection Area for wild birds.

Adverse Factors The water in the delta is highly contaminated by agricultural chemicals and some of the lagoons (Encanyissada, Olles, Platjola) are in an advanced state of eutrophication. Other reported problems within the site include over-exploitation of natural resources (through hunting, fishing, shellfish harvesting etc.) and insufficiently regulated tourism/recreation. Dam construction in the delta's catchment has resulted in a significant decrease in the volume of sediment reaching the wetland, leading in turn to shrinkage of the delta by as much as 75 m per year in some of the most important areas (e.g. Isla de Buda, Punta de la Banya).

References {a16}

7ES020

Laguna de Manjavacas

Coordinates: 39°25'N - 002°52'W **Elevation:** 670 m **Area:** 231 ha

Location: The site is located about 5 km east-northeast of the town of Pedro Muñoz, and 110 km northeast of the city of Ciudad Real, Cuenca province, in the autonomous region of Castilla-La Mancha, in central Spain. This site lies in the eastern sector of La Mancha Húmeda, only a few kilometres east of the [Laguna de la Vega](#) (o del Pueblo) Ramsar site.

Criteria: 1a, 1b, 1c, 2a, 2b, 2c, 3b
The site is important for nesting waterbirds, including *Himantopus himantopus* (435 pairs), *Recurvirostra avosetta* (225 pairs) and *Gelochelidon nilotica* (150 pairs). The lagoon is also an important spring staging area and feeding ground for migratory ducks, e.g. *Anas clypeata*, and shorebirds, e.g. *Philomachus pugnax*. Up to 9,000 waterbirds have been counted in winter, notably *Anas* spp., *Netta rufina*, *Aythya ferina* and *Fulica atra*.

Wetland Types: R, Sp
The site comprises a shallow, seasonally variable, highly saline lagoon and the surrounding marshes.

Biological/ Ecological notes The vegetation contains hydrohalophytic and xerohalophytic species. When the main part of the wetland is flooded, the submerged vegetation includes *Ranunculus* spp. and *Utricularia* sp. Less frequently inundated areas support *Salicornia ramosissima*, *Puccinellia fasciculata*, *Althaea officinalis*, *Suaeda splendens*, etc., and the lagoon is fringed by belts of *Phragmites australis* and *Scirpus maritimus*. There are also several islands, covered by *Polypogon monspeliensis* and *Avena alba*.

Hydrological/ Physical notes The site lies in an enclosed (endorreic) drainage basin which covers some 6,000 ha. This is within the catchment of the Guadiana River and within the zone influenced by "Aquifer 23". The maximum depth of the lake is 1 metre. The water is highly saline with an abundance of organic matter. The wetland is fed by spring rainfall and dries out rapidly during the hot, dry summer months.

Human uses The site has been owned by the autonomous region of Castilla-La Mancha since 1989. The surrounding area is used for traditional agriculture, including the cultivation of grapes, olives and arable crops.

Conservation Measures The site has been designated a Refuge from Hunting (Refugio de Caza). It is also part of the 600 ha EU Special Protection Area for wild birds named Complejo Lagunar de Pedro Muñoz - Mota del Cuervo. Management and restoration measures have been implemented in parts of the site, but there is no overall management plan.

Adverse Factors No reports of any problems have been received, although the lagoon receives polluted wastewater from the settlement of Mota del Cuervo. Some vegetational changes have been noted where the effluent enters the lagoon (i.e. increase of species more typical of freshwater). The underlying fossil water basin, Aquifer 23, has officially been recognized as over-exploited by the surrounding population.

References {a16}

7Es021

Lagunas de Alcázar de San Juan

Coordinates: 39°24'N - 003°15'W **Elevation:** 0 m **Area:** 160 ha

Location: The site is located about 5 km northwest of the town of Alcázar de San Juan, and 75 km northeast of the city of Ciudad Real, Ciudad Real province, in the autonomous region of Castilla-La Mancha, central Spain. This site is 25 km west of [Laguna de la Vega](#) and 30 km west of [Laguna de Manjavacas](#).

Criteria: 1a, 1b, 1c, 2a, 2d, 3b
The lagoons are important for nesting waterbirds, including *Himantopus himantopus*, *Recurvirostra avosetta* (>100 pairs), *Gelochelidon nilotica* (500 nests), *Larus ridibundus*, *Anas strepera* and *Netta rufina*. The site is also important for wintering waterbirds, especially *Anas* spp., *Netta rufina* and *Fulica atra*.

Wetland Types: Q, Ss
The site includes two separate lagoons, Laguna del Camino de Villafranca (160 ha) and Laguna de las Yeguas (80 ha). Both are highly saline and support halophytic vegetation.

Biological/ Ecological notes The halophytic flora includes *Suaeda splendens*, *Cressa cretica*, *Salsola soda*, and *Puccinellia fasciculata*. Beds of *Phragmites australis* and *Scirpus* sp. occur to the north of the Laguna del Camino de Villafranca. Both lagoons support submerged beds of *Chara* spp. The lagoons contain several islands which are important nesting sites for waterbirds.

Hydrological/ Physical notes The site is located in western La Mancha, in the southern sub-plateau. The lagoons are located in an enclosed arid drainage basin covering about 6,600 ha, with only little seasonal rainfall. They lie on the northern edge of "aquifer 23", which is over-exploited by pumping. The climate is extreme continental, with maxima higher than 40 °C and minima as low as -14 °C.

Human uses The area is used for conservation, research and birdwatching.

Conservation Measures The lagoons are a Wildlife Refuge (Refugio de Caza). In 1992 a management plan was under development. The most sensitive areas, with nesting birds, have been fenced. Hunting is forbidden. Some limnological research takes place, as well as the restoration of the original plant communities. A general brochure dealing with the La Mancha Lagoons is available. Visits are promoted and are free. Two observation hides are available for booked visitors

**Adverse
Factors**

The lagoon holds the wastewaters from Alcazar de San Juan, after being purified by a conventional plant. Daily output is about 7,500 cubic m. Negative impacts of wastewaters have been eliminated by purification.

References {a16}

Coordinates: 38°55'N - 003°49'W **Elevation:** 640 m **Area:** 52 ha

Location: The site is situated immediately north-northeast of the town of Pozuelo de Calatrava, and 10 km southeast of the city of Ciudad Real, Ciudad Real province, in the autonomous region of Castilla-La Mancha, central Spain. This site is approximately 20 km south-southwest of [Las Tablas de Daimiel](#) Ramsar site.

Criteria: 1a, 1b, 1c, 2a, 2d, 3b
The site is important for nesting waterbirds, notably *Himantopus himantopus*, *Recurvirostra avosetta*, *Charadrius alexandrinus* and *Sterna albifrons*. Small numbers of *Anas* spp. occur in winter.

Wetland Types: Q, Ss, W
Laguna del Prado is a shallow, highly saline lagoon with halophytic shrubs.

Biological/ Ecological notes The lagoon, with waters rich in organic matter, supports submerged beds of *Chara* spp. and *Ruppia* sp. and is fringed by typically halophytic vegetation (e.g. *Salicornia* spp. and *Suaeda* spp.) There are also beds of *Phragmites australis* and *Scirpus maritimus*, and *Tamarix gallica* scrub, with a plantation of *Pinus halepensis* on the western shore.

Hydrological/ Physical notes The shallow lagoon (average depth 0.5 m) lies in an enclosed (endorheic) drainage basin within the wider catchment of the Guadiana river. The climate is extreme, with a maximum registered temperature of 45 °C and a minimum of -14 °C. Average rainfall is about 400 mm.

Human uses The site is now only used for conservation, recreation and research. There was a gypsum mine in the past. Around the site there is traditional agriculture, with vineyards, olive trees and un-irrigated cereals.

Conservation Measures The lagoon is a Hunting Refuge (Refugio de Caza), with a management plan being implemented. The site was purchased by the regional government (Junta de Comunidades de Castilla-La Mancha) in 1987. A hide has been provided for bird watchers. A fence has been erected around the site in order to prevent nest predation by dogs, and other disturbances. Aquatic habitat restoration activities take place.

**Adverse
Factors**

Several private owners started filling parts of the lagoon with rubble. This problem has been solved by purchasing the properties involved. There is a risk of pollution by wastewater pouring into the lagoon from the nearby village.

References {a16}

Coordinates: 38°59'N - 005°32'W **Elevation:** 318-353 m **Area:** 5,500 ha

Location: The site is located immediately east-northeast of the town of Orellana de la Vieja, approximately 25 km east of the town of Villanueva de la Serena, Badajoz province, in the autonomous region of Extremadura, west central Spain.

Criteria: 2a, 2c, 2d, 3a, 3b, 3c
The Embalse de Orellana's fish include several species and subspecies endemic to the Iberian Peninsula (e.g. *Barbus microcephalus*). The reservoir is of particular importance for nesting birds. The islands support a major colony of *Gelochelidon nilotica* (500 pairs in 1991). Other notable species include *Himantopus himantopus*, *Glareola pratincola* and *Sterna albifrons*. Up to 65,000 waterbirds have been counted in winter, including *Phalacrocorax carbo* (1,000), various Anatidae (20,000), *Grus grus* (18,000) and Laridae (25,000). The area also holds significant post-breeding concentrations of *Ciconia nigra* (>100).

Wetland Types: 6
Embalse de Orellana is a vast artificial reservoir built to regulate the Guadiana River in order to irrigate the agricultural zone of Las Vegas Altas.

Biological/ Ecological notes The site includes a number of islands and is surrounded by *Quercus* and *Pyrus* forests. The forest was cleared in the region of the dam wall and some limited areas of non-irrigated agriculture have been developed. Apart from waterbirds, there are high densities of raptors (e.g. *Aquila chrysaetos*, *Hieraaetus fasciatus* and *Bubo bubo*).

Hydrological/ Physical notes The level of the reservoir varies seasonally, with highest levels occurring in early May, prior to the commencement of summer irrigation. Levels reach a minimum in early winter.

Human uses The primary purpose of the impoundment is irrigation, but there is also fishing, boating, and recreation.

Conservation Measures In 1992 the area had no national protected status, but designation as a Natural Reserve was in process. Hunting has been forbidden since 1991. The wetland is an EU Special Protection Area for wild birds (part of Embalse de Orellana y Sierra de Pela SPA, covering 25,000 ha). The Environment Agency (Agencia de Medio Ambiente) of Extremadura and the Guadiana Hydrographic Confederation have established a commission responsible for drawing up a management plan for the reservoir.

Adverse Factors Problems reported from the site include illegal hunting, disturbance from fishermen and boating, and a water level control which is directed only to agricultural needs and does not take the preservation of the natural resources into account. Tourism and recreation have increased substantially in recent years

References {a16}

Coordinates: 42°33'N - 009°02'W **Elevation:** 0-50 m **Area:** 550 ha

Location: The site is located on the Atlantic coast, about 50 km southwest of the city of Santiago, La Coruña province, in the Galicia autonomous region, extreme northwest Spain. It is about 15 km northwest of the [Complejo intermareal Umia-Grove](#) Ramsar site.

Criteria: 1a, 2c, 2d, 3b
The site provides an outstanding example of sand dune flora, and is particularly notable for several endemic species and sub-species. The site supports many reptiles (e.g. *Lacerta scheriberi*), amphibians (e.g. *Bufo calamita*) and mammals (e.g. *Lutra lutra*), and is important for staging and wintering birds such as *Pluvialis apricaria*, *Numenius arquata*, *Anas clypeata* and *A. crecca*. Species like *Falco columbarius* and *Asio flammeus* are regular winter visitors. Nesting species include *Charadrius alexandrinus* (at one of its few breeding sites in Galicia).

Wetland Types: E, J, A, H, K, M, N, Tp (dominant types listed first) The site comprises two sizeable coastal lagoons, and large expanses of coastal sand with an old dune system which is overtaken by shifting dunes.

Biological/ Ecological notes Endemic plants of the sand dune flora are *Jasione montana sabularia*, *Scrophularia frutescens* and *Iberis procumbens*. The Laguna de Carregal supports submerged beds of *Ruppia maritima*. The marshes beyond the lagoon are dominated by halophytic vegetation (e.g. *Puccinellia*, *Halimione*, *Sarcocornia*, *Limonium*, and *Suaeda* spp.) with beds of *Apium*, *Stenotaphrum*, *Juncus* and *Scirpus* spp. The Laguna de Carreira and the marshes associated with it are less rich, botanically, but support similar species.

Hydrological/ Physical notes The two saline lagoons are separated from the sea by 4 km of dunes and sandy beaches. Only the Laguna de Carregal is linked directly with the sea, by means of a narrow channel. The soils are basically sands or coastal muds. The site comprises a major dune system with an enormous shifting dune moving in a northeasterly direction, which is 1 km long, 200 to 300 m wide and 12 to 15 m high (the largest dune in Galicia).

Human uses The site includes both private (ca. 80%) and public (ca. 20%) land, and is mainly used for tourism, cultivation of crops, and harvesting of rushes.

Conservation Measures The site is a Natural park (Parque Natural) and a Hunting Refuge (Refugio de Caza). A natural resources development plan was adopted by a decree of the Government of Galicia. The local planning authorities have designated the site as a special protection area where urban development will not be permitted (Suelo No Urbanizable de Protección Especial).

Adverse Factors In recent years there has been some removal of sand for construction purposes. The area is subject to moderate pressure from tourism during the summer months. There is some pollution with solid urban waste.

References {a16}

Coordinates: 43°37'N - 008°10'W **Elevation:** 0-44 m **Area:** 255 ha

Location: The site is located 5 km north-northwest of the town of Valdoviño, and approximately 35 km northeast of the city of La Coruña, La Coruña province, in the autonomous region of Galicia, northwest Spain. It is about 30 km southwest of the [Rias de Ortigueira y Ladrido](#) Ramsar site.

Criteria: 1a, 3b
The site is important for staging birds, mainly Anatidae and shorebirds (e.g. *Aythya ferina*, *Anas platyrhynchos*, *Fulica atra*, *Calidris alpina* and *Tachybaptus ruficollis*).

Wetland Types: J, E, H, M, Xf (dominant type listed first)
The site comprises an oval coastal lagoon (1,600 m by 500 m), which is largely separated from the sea by a sand dune barrier (with typical dune vegetation) and beach complex.

Biological/ Ecological notes The lagoon is fringed by *Phragmites australis* and *Juncus* spp. In the submerged vegetation dense beds of *Ruppia maritima* are the dominant feature. There is an important area of riparian *Salix* sp. and *Alnus glutinosa* woods at the mouths of the Castro and L ngara Rivers. The dune system is dominated by *Ammophila arenaria*, interspersed with *Euphorbia* and *Crassula* spp. The site is rich in amphibians and reptiles. Mammals include the otter *Lutra lutra*.

Hydrological/ Physical notes As the lagoon connects with the sea via a man-made channel, the water regime is artificially regulated.

Human uses The site is partly in public ownership (ca. 40%), with the remainder being privately owned. The site is used for tourism, fishing, cultivation of crops, and harvesting of rushes. The level of the lagoon is regulated by local farmers through periodic opening and closing of the connection with the sea.

Conservation Measures The site is a Hunting Refuge. The entire wetland is a protected area under regional legislation. A management plan was in preparation in 1995.

**Adverse
Factors**

The site is subject to moderate tourist pressure during the summer months and disturbance from temporary buildings in the beach area. The site is also used for dumping of solid urban waste.

References {a16}

7ES026

Ria de Mundaka-Guernika

Coordinates: 43°22'N - 002°40'W **Elevation:** 0 m. **Area:** 945 ha

Location: The site is located approximately 25 km northeast of the city of Bilbao, Bizkaia Province, in the autonomous region of País Vasco, in northeastern Spain.

Criteria: 2a, 2b, 3b
The area is notable for its rich fauna, which includes a diversity of amphibians, e.g. *Bufo calamita*, reptiles, e.g. *Natrix maura*, birds, and mammals such as *Mustela lutreola*, *Putorius putorius* and *Arvicola sapidus*. The site is of significance for breeding, staging and wintering waterbirds. It is the second most important staging area in Spain for the Dutch breeding population of *Platalea leucorodia*.

Wetland Types: F, G, H, M, Ss (dominant type listed first)
The site consists of a saline and brackish tidal coastal estuary around the mouth and the lower reaches of the Rivers Guernika and Mundaka. There are sandy beaches, regularly and intermittently inundated saltmarshes, intertidal mud and sand flats, and sedge and reed beds.

Biological/ Ecological notes The saltmarshes contain *Spartina*, *Salicornia*, *Suaeda*, *Halimione*, *Aster*, *Triglochin*, *Limonium* etc. The intertidal mud flats support beds of *Zostera noltii*. The small sedge and reed beds along the water courses consist of *Phragmites*, *Typha*, *Juncus*, *Cyperus*, etc. Nesting birds include *Rallus aquaticus*, *Charadrius dubius* and *Locustella naevia*, while *Phalacrocorax carbo*, *Egretta garzetta*, *Ardea cinerea*, *Anas* spp., *Haematopus ostralegus*, *Vanellus vanellus*, *Pluvialis squatarola*, *Numenius arquata*, *Gallinago gallinago* and *Calidris alpina* are regular during winter and/or migration periods.

Hydrological/ Physical notes

Human uses The area is almost entirely privately owned. The most important traditional human activity is shellfish harvesting. The area is also used to collect worms for bait and there is some livestock grazing. Tourists visit the area too. The surrounding land is cultivated.

Conservation Measures The area is designated a Refuge from Hunting (Refugio de Caza). At present, an area of 2,000 ha in the Guernika estuary is officially closed to hunting. The site is also part of the Valle de Urdaibai UNESCO Man And Biosphere Reserve (MAB), which encompasses a total of 22,500 ha. In 1989 the regional government established a Special Protection and Ordination Plan for the MAB.

Adverse Factors In the past, many marsh areas were drained and converted into agricultural fields. The rate of loss has slowed significantly in recent years. Nevertheless drainage of small areas of land is still taking place and this is affecting the bird communities. The area suffers from an increasing disturbance by tourism too. Invertebrate populations (molluscs, crustaceans and annelid worms) suffer from over-collection. Recent lower census counts of bird species such as *Haematopus ostralegus* are perhaps indicative of this. Pollution of urban and industrial origin which reaches the area (some heavy industries are located upstream) is a further cause for concern.

References {a16}

Coordinates: 38°46'N - 001°26'E

Elevation: 0 m.

Area: 1,640 ha

Location: The salinas are located on the southernmost point of the island of Ibiza and the northernmost point of the island of Formentera, in the autonomous region of Baleares (Balearic Islands), southeast Spain.

Criteria: 1a, 2b, 2c, 3b
The area is of special importance for nesting and migratory birds. Nesting birds typical of the salt pans are *Himantopus himantopus* and *Charadrius alexandrinus*. Visitors during winter and migration include *Podiceps nigricollis*, *Ardea purpurea*, *A. cinerea*, *Bubulcus ibis*, *Egretta garzetta*, *Phoenicopterus ruber* and *Tadorna tadorna*.

Wetland Types: J, E, 5
The site includes a variety of typical Mediterranean coastal habitats, with sandy and rocky shores, small islands, lagoons, shallow offshore waters, and in particular, a complex of salt pans.

Biological/ Ecological notes The salt pans are fringed with low, halophytic vegetation. *Juniperus* scrub is found on the dry sandy parts of the site. Rare raptors, like *Pandion haliaetus*, *Falco peregrinus* and *F. eleonora* nest nearby and hunt over the lagoons. The area is also important for reptiles, notably the endemic lizard *Podarcis pityusensis torretensis*. The numerous small islands between Ibiza and Formentera, which are included in the site, are important for breeding seabirds, such as *Puffinus yelkouan*, *Calonectris diomedea*, and *Hydrobates pelagicus melitensis*.

Hydrological/ Physical notes A large part of the natural coastal habitat has been converted into salt pans, where salt is produced by evaporation of seawater.

Human uses The salinas are used for conservation and salt extraction.

Conservation Measures The site is a Natural Reserve established in 1995, and a Natural Area of Special Interest under the laws of the Balearic Parliament in 1991 and 1992. It is also an EU Special Protection Area for wild birds.

Adverse Factors There is considerable pressure from urban developments around the site, and disturbance by unregulated tourist activities.

7ES028

Laguna de Chiprana

Coordinates: 41°15'N - 000°12'W **Elevation:** 150 m **Area:** 162 ha

Location: The site is located in the municipality of Chiprana, in the extreme southeast of the province of Zaragoza, in the autonomous region of Aragón.

Criteria: 1d, 2a
The endorrheic (closed basin) saline lakes of the Mediterranean zone constitute a specific type of wetland which is now very rare. The Salada de Chiprana is the only deep permanent endorrheic saline lake left in western Europe and is a good example of this type of wetland because of its state of conservation and its special ecological and geological characteristics. Since 1985, one to three pairs of *Tadorna tadorna* have been nesting here. This is one of the few Iberian breeding localities for this bird species.

Wetland Types: Q, Sp, 3, 9 (dominant type listed first)
The Laguna (or Salada) de Chiprana is a deep, permanent saline lake. The site also includes the Salada de Rocés, a much smaller lake that used to be saline too, the Prado de Farol, a shallow basin filled with sediments and covered with reeds, and parts of the surrounding land.

Biological/ Ecological notes
The vegetation of the shores of the lakes is sparse, except at the Prado de Farol, and consists of patches of *Phragmites australis*. Low, halophytic vegetation is distributed according to gradients in parameters such as salinity and inundation, with *Salicornia ramosissima*, *Suaeda maritima*, *Limonium* spp., *Inula chritmoides* and *Aleuropus littoralis* being the dominant species. In areas with less open water and higher concentrations of organic matter, there are beds of *Juncus acutus* and *Juncus maritimus*. *Tamarix boveana* and *T. canariensis* are also fairly common. Owing to the salinity, only two submerged macrophytes occur, both forming dense beds. These are *Ruppia maritima* in shallow water and *Lamprothamium papulosum* in water of average depth. Amongst the fish species, *Gambusia affinis* is very abundant in the Salada de Rocés. It can reach Chiprana through a drainage channel. Salada de Rocés also contains the fish species *Carassius auratus*. *Rana perezi* and *Bufo calamita* are the only species of amphibians present at the site. They are absent in the larger lake, due to its hypersaline character. The lizard *Podarcis hispanica* is the most abundant and widely distributed of the reptile species occurring here. Waterbirds are the best represented group of the fauna. Regularly nesting species include *Tachybaptus ruficollis*, *Anas platyrhynchos*, *Netta rufina*, *Gallinula chloropus*, *Rallus aquaticus*, *Fulica atra*, *Larus ridibundus*, *Charadrius alexandrinus* and *Himantopus*

himantopus.

Hydrological/Physical notes Salada de Chiprana has 31 ha of open water. The maximum depth is 5.6 metres. Salada de Rocés measures 2.8 ha and Prado del Farol 1.5 ha. The whole site lies within a closed drainage basin. The hydrological regime of Chiprana itself is changing, because nowadays there is an almost continuous inflow of freshwater coming from the Salada de Rocés (also called Salobrosa). This small lake has almost completely lost its saline character through artificial inflow from an irrigation ditch. Chiprana also intermittently receives supplies of the area's surplus irrigation water through other channels.

Human uses The land within the site is privately owned. The water surfaces of the lakes themselves are public property. Hunting of waterbirds is a significant activity. The land surrounding the Laguna de Chiprana complex is mainly used for cereal cultivation, both irrigated and non-irrigated. In the immediate vicinity of the eastern shore there are some olive groves. The halophytic vegetation on the shores of the lake is used for sheep grazing.

Conservation Measures The site has no other national or international conservation status. It is a "Private Hunting Reserve", which means that hunting is subject to a special regime. The absence of legal protection means there is no plan for usage and management of the resources in the Laguna de Chiprana complex.

Adverse Factors The changing water regime adversely affects the site, and the halophytic vegetation is being overgrazed.

References

Coordinates: 40°58'N - 001°30'W **Elevation:** 995-1,482 m **Area:** 6,720 ha

Location: The Laguna de Gallocanta is situated in the municipal areas of Gallocanta, Las Cuerlas, Santed and Berrueco, in the extreme southwest of the province Zaragoza and the municipal areas of Bello and Tornos in the northeast of the province Teruel, in the Aragón Region, northern Spain.

Criteria: 1d, 2a, 2d, 3a, 3b, 3c
The site is especially known as the most important staging area in Spain for cranes *Grus grus*. About 80% of the entire western population (more than 60,000 individuals counted in autumn 1989) visit the site during migration. In winter, an average of 47,000 waterbirds (36,000 Anatidae) were recorded during the period 1972-1989, including large concentrations of *Anas strepera*, *Netta rufina*, *Aythya ferina*, and *Fulica atra*. Nesting bird species include *Pterocles orientalis*, *Recurvirostra avosetta*, *Himantopus himantopus* and *Glareola pratincola*. The halophytic vegetation communities, and the zoo- and phyto-plankton of the lagoon include endemic species.

Wetland Types: R, N, Ss, Xf, 3, 4 (dominant type listed first)
The Laguna de Gallocanta is a seasonal brackish to saline lake, with some seasonal freshwater elements depending on water supply, surrounded by agricultural land.

Biological/ Ecological notes The flora of the Laguna de Gallocanta and its surroundings is rich and varied. Deciduous trees with *Salix* spp., *Ulmus* and planted *Populus*, are found along the streams and channels which run into the lagoon. Beds of *Phragmites australis*, *Typha* sp., *Scirpus maritimus* and *S. lacustris* form a narrow belt along the banks of the lagoon. The location and size of open areas of low, halophytic vegetation with *Salicornia ramosissima*, *Suaeda maritima*, *Suaeda splendens* and *Puccinellia fasciculata*, varies with water level fluctuations. Brackish rush beds with *Juncus maritimus*, *Elymus pungens*, *Schoenus nigricans* and *Puccinellia pungens*, fringe the lake, covering extensive areas in places. The submerged aquatic flora includes *Potamogeton* sp., *Groenlandia* sp., *Ruppia* sp., *Zanichellia* sp., *Lemna* sp., *Myriophyllum* sp., and *Utricularia* sp. Extensive beds of *Lamprothamnium papulosum* and *Chara galoides* partially cover the bottom of the lagoon. The lake is surrounded by highly modified pastures and grassland, and irrigated and non-irrigated crops. Small numbers of the bustard *Otis tarda* occur outside the breeding season. The area is rich in butterflies (70 species), including endemic species of the Satyridae family.

Hydrological/ Physical notes The saline Laguna de Gallocanta is the lowest point of the largest endorheic basin (54,335 ha) of the Iberian Peninsula. The lagoon is supplied mainly through rainfall runoff through small streams and channels. Supply is irregular over the year. Some groundwater also filters through, mainly in the vicinity of the northeast shore of the lake. In times of drought the lake may dry out totally (e.g. 1983-86), while in rainy years the lake depth can reach 2.5 m and the surface area may extend to 1,330 ha. Salinity varies considerably (16 g/l in 1977 when the lake was full, compared with 105 g/l in October 1981 when the water level was very low).

Human uses The land around the lake is used for agricultural crops and grazing. Hunting is not permitted.

Conservation Measures The site is a National Refuge from Hunting, and an EU Special Protection Area for wild birds. In 1994 there was no approved management and land use plan for the site.

Adverse Factors

References

Coordinates: 37°19'N - 004°40'W **Elevation:** 0 m. **Area:** 1,972 ha

Location: These two embalses (reservoirs) are situated in the south of the province of Córdoba, alongside the Genil River, which forms the boundary between the provinces Córdoba and Sevilla, in the autonomous region of Andalucía.

Criteria: 2a, 3b
The Embalses de Cordobilla y Malpasillo are especially important in winter for the globally threatened duck *Oxyura leucocephala*, but also for *Porphyrio porphyrio*, *Ardea purpurea*, *A. cinerea*, *Egretta garzetta*, *Anas platyrhynchos*, *A. clypeata* and *Circus aeruginosus*. Smaller numbers of *Phoenicopus ruber*, *Himantopus himantopus*, *Recurvirostra avocetta*, *Charadrius alexandrinus* and *C. dubius* also occur.

Wetland Types: 6, Tp, W
The site comprises two permanent freshwater reservoirs.

Biological/ Ecological notes Stable water levels have given rise to a dense riparian vegetation, composed of *Typha dominguensis*, *Arundo donax* and *Phragmites australis*. Around the Embalse de Cordobilla there are stands of the shrub *Tamarix* and riparian trees like *Salix* sp., *Populus* sp., and *Ulmus minor*. The Embalse de Malpasillo is shallow and supports extensive marsh vegetations, with *Typha dominguensis*, and smaller areas of *Iris pseudacorus* and *Scirpus* spp., together with *Populus* spp. There is also a great diversity of terrestrial habitats within the site, which are important for raptors like *Aquila chrysaetos*, *Hieraeetus fasciatus*, *Buteo buteo*, *Circus pygargus*, *Accipiter nisus*, *Falco peregrinus*, *F. tinnunculus* and *F. naumanni*.

Hydrological/ Physical notes The man-made embalses of Cordobilla and Malpasillo do not experience great annual fluctuations in water level (even in extremely wet or dry summers and winters). Cordobilla has an average depth of 10 m, and a total volume of nearly 34 million cubic metres. The Embalse de Malpasillo (volume approximately six million cubic metres) acts as an overflow for another reservoir, the Embalse de Iznajar. The most important freshwater supply comes from the Río Genil, which is fed by the meltwaters of the Sierra Nevada, and regulated by the Iznajar reservoir.

Human uses The predominant land use in the area is agriculture. There are olive groves, cereals, and some irrigated crops.

Conservation Measures The two reservoirs are Natural Parks (Parajes Naturales). The Environment Agency of the Junta of Andalucía made an agreement with the Sevillan Electricity Company - owner of the land occupied by these reservoirs - to maintain optimal water levels for breeding waterbirds, in particular the duck *Oxyura leucocephala*.

Adverse Factors

References

7ES031

Albufera de Adra

Coordinates: 36°45'N - 002°57'W **Elevation:** 0 m. **Area:** 75 ha

Location: Albufera de Adra is located on the Mediterranean coast, within the municipality of the town of Adra, in the extreme southwest of the province Almería, in the autonomous region of Andalucía, southwest Spain.

Criteria: 1a, 2a, 2d, 3b, 3c
The lagoons hold significant populations of the fish *Aphanius iberus*, which is endemic to the Iberian peninsula and is currently in danger of extinction. The site is also important for the globally endangered duck species *Oxyura leucophala* which nests and winters in the lagoons, and the threatened species *Marmaronetta angustirostris* which occurs as a passage migrant. Other nesting waterbirds include *Podiceps cristatus*, *Ixobrychus minutus*, *Aythya ferina* and *Netta rufina*, whilst *A. ferina*, *A. fuligula* and *Fulica atra* are the most numerous wintering species.

Wetland Types: J, H, Sp, 3 (dominant type listed first)
The site includes intertidal marshes, coastal lagoons, permanent brackish pools, and irrigated ricefields. The most important parts are two large lagoons, the Albufera Nueva (29 ha) and Albufera de Adra (13 ha).

Biological/ Ecological notes The Albufera Nueva has an abundant macrophyte flora. The predominant species growing on the shore are *Phragmites australis*, *Arundo donax*, *Typha angustifolia*, *Scirpus litoralis* and *Scirpus maritimus*. There are extensive beds of *Typha latifolia* around the outermost parts of the lagoon. The submerged vegetation is dominated by *Najas marina*. Albufera Honda has lower salinity and nutrient levels, and its macrophyte vegetation is even richer than that of Albufera Nueva, with several additional species, including *Cladium mariscus*. The Albufera de Adra is considered a wetland of national botanical importance.

Hydrological/ Physical notes The Albufera Nueva and Albufera de Adra are endorheic lagoons within the eastern part of the delta of the Río Adra.

Human uses Traditional use of the marshes included fishing, hunting, and irrigated agriculture. Since the 1950s, cultivation under plastic has spread into the area. Within the reserve boundaries, all activities except those of a scientific or educational nature, are now prohibited.

Conservation Measures The site is a Natural Reserve (Reserva Natural). A management plan is being implemented. Planned actions include the establishment of scientific facilities, research programmes to direct management of the area, wardening, interception of waste materials from surrounding agricultural land, fencing of one of the lagoons, and purchase and restoration of farmland. The lagoons also benefit from Regional and Municipal conservation measures.

Adverse Factors The lagoons are subject to agricultural pollution, causing considerable die-back of aquatic vegetation.

References

Coordinates: 43°30'N - 007°01'W **Elevation:** 0-42 m **Area:** 1,740 ha

Location: The Ría enters the Bay of Biscay (Atlantic Ocean) between the municipalities of Ribadeo and Castropol. It forms the geographical and administrative boundary between the province of Lugo and the Principality of Asturias, in the autonomous regions of Galicia and Asturias, northwest Spain.

Criteria: 1a, 3b, 3c
The Ría del Eo is a characteristic estuary, important for staging and wintering ducks and waders; at least 1% of the northwestern European winter population of *Anas acuta* occurs. Other waterbird species include *Anas penelope*, *Calidris alpina* and *Numenius arquata*.

Wetland Types: F, G, H, Sp (dominant type listed first)
The site includes estuarine waters, intertidal mudflats, tidal marshes, and some brackish pools and marshes.

Biological/ Ecological notes The site contains a range of typical coastal vegetation communities. Amongst the most important are the subtidal eelgrass beds of *Zostera marina* (possibly the most extensive in Spain), and *Z. noltii*. Away from the influence of high tides there are extensive beds of *Juncus maritimus* with species like *Glaux maritima*, *Carex extensa* and *Juncus gerardi*, or beds of *Scirpus maritimus* or *Phragmites australis*. Other halophytic vegetation, such as *Sarcocornia perennis* beds and *Puccinellia maritima* meadows is less extensive. The immediate surroundings of the estuary have been greatly altered. The primary native woodlands of oak *Quercus robur* and alder *Alnus glutinosa* have been reduced to relics, and replaced by farmland and plantations of eucalyptus and pine. Characteristic fauna includes migratory fish (e.g. *Anguilla anguilla* and *Salmo salar*), 12 species of reptiles and amphibians, and the otter *Lutra lutra*.

Hydrological/ Physical notes The site is the estuary of the Eo River, and is also known as Ría de Ribadeo).

Human uses Around the estuary there are three important human settlements with 4,000 permanent inhabitants. Within the estuary, the reed and rush beds are divided into plots and periodically harvested for cattle bedding. Seafood harvesting, above all of razor-shells and clams, is commercialized and an area of 60 ha is dedicated to oyster and clam culture. Fishing in the inner part of the estuary takes place on a small scale with the exception of seasonal eel fishing.

Conservation Measures The estuary is a Refuge from Hunting (Refugio de Caza), on both the Galician and Asturian shores.

Adverse Factors Small-scale land-fillings, possibly with solid waste, affect the Vegadeo "Specially Protected from Development Land" in Asturias. Some of the coastal communities of Galicia discharge untreated sewage water into the estuary (a problem which increases in summer because of the large numbers of tourists). A potential problem could be the proliferation of mollusc cultivation, not only through its effect on the saltmarshes and *Zostera* beds, but also because the species used are non-native, and in other areas have already become vectors of algal plagues.

References

7ES033

Mar Menor

Coordinates: 37°43'N - 000°48'W **Elevation:** 0 m. **Area:** 14,933 ha

Location: Mar Menor is located northeast of the city of Cartagena, in the province of Murcia, autonomous region of Murcia, on the southeastern Mediterranean coast of Spain.

Criteria: 1a, 2c, 2d, 3b, 3c
The site is of special botanical importance for its well-developed communities of halophytic and sand dune vegetations. Notable amongst the fish fauna is the Iberian endemic *Aphanius iberus*. The site is important for nesting, staging and wintering birds. Breeding species include *Burhinus oedicephalus*, *Himantopus himantopus*, *Recurvirostra avosetta*, *Charadrius alexandrinus* and *Sterna albifrons*. The globally threatened *Marmaronetta angustirostris* occurs regularly and may breed. Non-breeding species include *Podiceps nigricollis* (up to 2,000 in autumn) and *Phoenicopterus ruber* (up to 1,400 in August/September).

Wetland Types: J, E, H, N, 5 (dominant type listed first)
The main part of the site is the saline lagoon, but there are also sandy shores and dunes, saltmarshes, freshwater streams and saltpans for salt extraction

Biological/ Ecological notes The bottom of the lagoon is largely covered by beds of *Caulerpa prolifera* (algae) and marine phanerogams (e.g. *Cymodocea nodosa*), with *Ruppia cirrhosa* in some areas. One of the most important areas is the saltpan and dune complex of San Pedro del Pinatar on the northern side of the lagoon, with 460 ha of saltpans. Lo Pollo is an important area along the southern and western shoreline, including a full range of lagoon, beach, and dune barrier habitats, together with abandoned saltpans.

Hydrological/ Physical notes The Mar Menor is the largest lagoon of the Spanish Mediterranean coast (average depth 4 m, maximum 6.5 m), and has a salinity (42-47g per litre) greater than the Mediterranean Sea because of low precipitation and high evaporation rates. The coastline is low-lying, with sandy or rocky beaches and negligible tidal influence. La Manga, a sand bar of 24 km length and a maximum width of 900 m, separates the lagoon from the Mediterranean. In the lagoon there are five islands. The communication between the Mar Menor and the Mediterranean occurs through *golas* (shallow channels). The lagoon receives run-off from various temporary water courses called *ramblas*. These are wide, shallow gullies, which are generally inactive, but carry great quantities of water and sediment when it rains. The torrential nature of the supplies is also due to the impermeable soils and the

scarce vegetation cover of the headwaters in the catchment areas.

Human uses There are dense urban and touristic developments on the shores of the Mar Menor. Notably at La Manga, industrial activities on the salt pans of San Pedro, Marchmalo and Rasall, and agriculture along the inner shores, with irrigated crops. There is military activity at San Javier, Cabezo Air Base and Carmolj Marines. Fishing in the lagoon is declining. Large parts are only extensively used for grazing, recreation and hunting.

Conservation Measures Parts of the site have a status as Regional Park (Parque Regional de las Salinas y Arenales de San Pedro del Piantar, 790 ha, and Parque Regional de Calblanque, Monte de las Cenizas y Peña del Aguila, 2,528 ha). Part is a Protected Landscape (Paisaje Protegido de los Espacios Abiertos e Islas del Mar Menor, 1,154 ha). A management plan is being implemented. The EU LIFE programme supported a major project for the management of arid zone wetlands in Murcia, with some 860,000 ECUs allocated to wetlands around the Mar Menor during the period 1994-1996. Activities included setting up monitoring and research programmes, campaigns for cleaning-up and restoring degraded wetlands, and facilities for the public.

Adverse Factors There are significant pressures on the site from tourism, urban development, military activities, and pollution.

References

Coordinates: 43°25'N - 003°26'W **Elevation:** 0-378 m **Area:** 6,907 ha

Location: The site is located on the Atlantic coast of the Bay of Biscay, adjacent to the city of Santoña, in the province and autonomous region of Cantabria, northern Spain.

Criteria: 1a, 2c, 3a, 3b, 3c
The Marismas de Santoña, Victoria y Joyel complex constitutes the most important wetland of the northern Iberian peninsula for waterbirds, with up to 86 species occurring. It is the only breeding site in the north of the peninsula for *Ardea purpurea*, *Ixobrychus minutus*, *Netta rufina* and *Himantopus himantopus*. More than 50% of the Dutch population of the spoonbill *Platalea leucorodia* pass through the saltmarshes on spring migration. The site is important for *Podiceps nigricollis*, *Phalacrocorax carbo*, *Anas penelope*, *Anas clypeata*, *Recurvirostra avosetta* and *Pluvialis squatarola* and regularly supports more than 20,000 waterbirds. Occasionally the threatened duck *Oxyura leucocephala* has been observed (up to 5 individuals).

Wetland Types: Tp, D, E, F, G, H, M (dominant type listed first)
The site includes a wide variety of rocky and sandy shores, estuarine waters, intertidal mudflats and extensive saltmarshes, with permanent freshwater streams and ponds.

Biological/ Ecological notes In the submerged areas, beds of *Zostera marina* grow, whilst in areas uncovered during most low tides, there are beds of *Z. noltii*, with monospecific beds of *Spartina maritima* on the higher parts. Areas normally flooded at high tide support a saltmarsh community of *Halimione portulacoides*, *Inula crithmoides*, *Athrocnemum perenne*, *A. fruticosum*, *Aster tripolium*, *Triglochin maritima*, *Puccinellia maritima*, *Spergularia media*, *Limonium vulgare*, *Salicornia perennis*, *S. ramosissima*, *Suaeda maritima*, etc. In areas with a weak tidal influence and freshwater input, there are beds of *Scirpus maritimus* and *Juncus maritimus*, *J. gerardii* and *Carex extensa*. In freshwater areas, *Phragmites australis* and *Typha* spp. occur. In the dune areas near the sea are found: *Ammophila arenaria*, *Euphorbia paralias*, *Erygium maritimum*, *Cakile maritima*, *Carex arenaria*, *Aetheorrhiza bulbosa*. Other habitats include meadows, beaches, dunes, cliffs, some groves of *Quercus ilex*, and small plantations of *Eucalyptus globulus* and *Pinus radiata*. The Monte Buciero, which is included in the site, has well-developed woods of *Quercus ilex*. The estuary is rich in fish species.

Hydrological/ Physical notes The site includes three separate saltmarsh areas: the Marismas de Santoña covering 3,345 ha (including the 460 ha Monte Buciero) in the eastern part, and the much smaller Marismas de Victoria (150 ha) and Joyel (249 ha) further to the west. The estuary of the Marismas de Santoña is formed by the lower valley of the Río Asón, which has a catchment area of 562 square km, and is the main freshwater source for the wetland, with smaller contributions from other rivers. The Marismas de Victoria and Joyel only receive freshwater from rainfed aquifers.

Human uses In the north and east of the Santoña estuary are the fishing ports of Santoña and Colindres. Eels *Anguilla anguilla* and salmon *Salmo salar* are exploited when they pass through the estuary on their annual migrations, heading up the Río Asón. Sport fishing on marine species takes place from boats and from the shore. There is also exploitation of shellfish, principally of molluscs. Two marine aquaculture installations have been set up for raising clams. In addition, there is a small fishery of crustaceans and cuttlefish *Sepia officinalis*. Benthic worms and sipunculids are collected by fishermen for use as bait. Near the mouth of the estuary, there is a recreational port. There may have been hunting on the wetland, but currently it is prohibited. Farming is found bordering the areas of open water, and in many cases on in-filled land in the intertidal zone, and there is dispersed cattle farming. Two limestone quarries were inactive in 1994, pending the conclusions of the Land Use Regulation Plan.

Conservation Measures The site is a Natural reserve (Reserva Natural, established in 1992), and an EU Special Protection Area for wild birds. Hunting is currently prohibited. A Land Use Regulation Plan for natural resources was being drawn up in the first half of 1994. Upon approval, a corresponding management plan for the designated Ramsar site is to be drawn up.

Adverse Factors Tourism and the proximity of the beaches have caused considerable growth of the nearby urban centres, and the development of several small settlements, as well as scattered building, hotels, single-family dwellings, and a disco at the edge of the wetland. This results in strong development pressure, with environmental implications for the wetlands.

References

7ES035

Marjal de Pego-Oliva

Coordinates: 38°52'N - 000°04'W

Elevation: 0 m.

Area: 1,290 ha

Location: The site is located at the extreme south of the Gulf of Valencia, between the town of Pego, province of Alicante, in the west, and the town of Oliva, province of Valencia, in the east. Both are situated in the autonomous region of Comunidad Valenciana, in southeastern Spain. In the south the site is bordered by the Sierra de Segaria.

Criteria: (1a), 2a, (2b, 2c), 3b
This coastal marsh system is notable as a breeding site for the globally threatened bird species *Marmaronetta angustirostris*, and botanically for its population of *Valencia hispanica*. The marsh supports an important range of nesting waterbirds, including *Ixobrychus minutus*, *Ardea purpurea*, *Himantopus himantopus* and *Chlidonias hybridus*. It is an important wintering area for *Bubuculus ibis*.

Wetland Types: Tp, E, M, Sp, Ss, Ts, 4, 9 (dominant type listed first)
Marjal de Pego-Oliva is an extensive marsh in a coastal basin. The marsh is situated in the central area of the catchment, which slopes gently towards the sea. In the surrounding limestone area there are numerous freshwater springs. A sand bar and vegetated dunes separate the marsh from the shoreline. Two main rivers flow through the marsh. The site also includes an artificial network of channels and cultivated areas.

Biological/ Ecological notes The characteristic aquatic vegetation includes floating plants like *Lemna* spp., submerged species (e.g. *Potamogeton* spp.), and emergent vegetation (e.g. *Phragmites australis* and *Typha angustifolia*).

Hydrological/ Physical notes The basin of Marjal de Pego-Oliva is bounded by highly fractured limestone-dolomite, giving rise to a karst landscape with freshwater springs. Its hydrological functioning is associated with regional subterranean waterflow systems whose supplies depend on annual precipitation. The water table is subject to seasonal variations, but is normally very near the surface. The Río Racons-Molinell has a constant flow because of its connection with the underlying aquifers. It runs through the southern part of the marsh to the sea. The Río Vedat-Bullens crosses the marsh in the northern part and also reaches the sea, although most of its water drains directly into the marsh. The water coming from the springs is usually fresh, but there are considerable variations in salinity according to the influence of the sea. The highest salinity is found in the immediate vicinity of the sandbar, and at the mouth of the Río Racons.

Human uses The site is privately owned. Land uses include non-intensive horticulture (citrus orchards), hunting (the hunting association in Pego owns more than 700 rifles), sport fishing and livestock herding (about 100 cattle and 1,000 sheep). The main economic activity in the basin is citrus cultivation, followed by non-irrigated agriculture and livestock grazing. There is a tourism development of 400 chalets in the Sierra de Segaria.

Conservation Measures At the time of the compilation of Ramsar site data by the Spanish authorities (1994), the protection of the marsh as a Natural Park was waiting for approval by the government of the autonomous region of Valencia. A Plan for Regulation of Natural Resources of the marsh had almost been completed. The main aim of the plan is to establish sustainable subterranean water management.

Adverse Factors

References

7ES036

Lagunas de Laguardia (Alava): Carralagroño, Carravalseca y Prao de la Paul

Coordinates: 42°32'N - 002°34'W **Elevation:** 548-564 m **Area:** 42 ha

Location: The lagoons of Carralagroño, Carravalseca and Prao de la Paul are close to the village of Laguardia in the Rioja Alavesa, in the autonomous region País Vasco, northern Spain.

Criteria: 1a, 2a, 2b, 2d
The three lagoons are the northernmost mesosaline inland lagoons in Europe, and in the region represent the last examples of this characteristic ecosystem. Of special interest is the aquatic flora, in particular the extremely rare Charophyte *Tolypella salina*. Of the terrestrial plant species, *Narcissus assoanus*, *Odontites eliasennenii* and *Thymus loscosii* are endemic to the Iberian peninsula, the latter being confined to the Ebro valley. A variety of waterbirds uses the lagoons, including the nationally threatened *Plegadis falcinellus*.

Wetland Types: Ss, 2
The lagoons of Carralagroño and Carravalseca are natural mesosaline seasonal wetlands. Prao de la Paul is an artificial impoundment built in a similar wetland

Biological/ Ecological notes The lagoons have a particularly interesting aquatic flora, with species like *Ruppia drepanensis* and the algae *Chara galioides*, *Lamprothamnium papulosum* and *Tolypella salina*, a species known from very few localities only. The occurring halophytes *Juncus maritimus*, *Puccinellia fasciculata*, *Scirpus maritimus*, *Spergularia marina*, and *Hordeum marinum* are rare in the region. Many insects of the lagoons are typical for the Mediterranean coast and are rare further inland. Breeding birds include *Tachybaptus ruficollis*, *Podiceps cristatus*, *Anas platyrhynchos*, *Aythya ferina*, *Rallus aquaticus*, *Gallinula chloropus* and *Fulica atra*. For *Aythya ferina* the site is the only known breeding locality in País Vasco. The site is also frequented by *Phalacrocorax carbo*, *Ardea purpurea* and *Nycticorax nycticorax*.

Hydrological/ Physical notes The lagoons are situated in the northernmost endorheic basins of Western Europe. They only receive water from rainfed rivulets. The water in the lagoons of Carralagroño and Carravalseca is saline, while the impoundment of Prao de la Paul contains freshwater.

Human uses The saline wetlands are not used, but the lake of Prao de la Paul is used for recreation by the inhabitants of the village of Laguardia, 500 m away. Although the impoundment was constructed to collect water for irrigation, this has never been effected, and there are no plans to use it for irrigation in the future.

Conservation Measures The site is declared a Protected Biotope (Biotopo Protegido) by País Vasco law, where observation and research are the only activities permitted.

Adverse Factors The lagoons receive agricultural wastewater from nearby fields, which may be contaminated with fertilisers and pesticides. Around Carralagro some landowners have drained parts to extend their farms, and at these localities there are some refuse dumps. Along the shores of Carravalseca vegetation cover for waterbirds has been destroyed through overgrazing by sheep. Recreational activities around Prao de la Paul disturb waterbirds.

References

Coordinates: 42°29'N - 002°24'W **Elevation:** 370 m **Area:** 101 ha

Location: The Embalse de Las Cañas is located in the municipality of Viana, in the region known as Salobre, in the autonomous region of Navarra, close to the border with the Rioja region.

Criteria: 3c
The most important breeding bird is *Nycticorax nycticorax*, with 470 pairs in 1994. This is the largest colony of this species in the entire Ebro valley. Other valuable breeding waterbirds include *Ardea purpurea*, *Botaurus stellaris* and occasionally *Porzana porzana*, *P. parva* and *P. pusilla*.

Wetland Types: Sp, 6
The site was originally a permanent brackish lagoon, but it has been converted into an artificial impoundment.

Biological/ Ecological notes The aquatic vegetation includes *Chara* spp., *Polygonum amphibium*, *Ranunculus aquatilis*, *Ranunculus fluitans* and *Potamogeton pectinatus*, with *Phragmites australis*, *Typha angustifolia*, *Scirpus tabernaemontani* and *Scirpus maritimus* along the shores. The lake is surrounded by aromatic shrubs (matorral) of the Sideritido-Salvion (*Salvia lavandulifoliae*-*ononidetum fruticosae*) association, in a mosaic with steppe-like Ligeo-Stipetea pasture. The lake is rich in amphibians. In terms of fauna values, the site is most important for nesting waterbirds, especially various heron species like *Ardea purpurea*, *Nycticorax nycticorax*, *Bubulcus ibis* and *Egretta garzetta*.

Hydrological/ Physical notes The site is situated in a closed (endorheic) basin of 6,602 ha. The impoundment was created and later enlarged for irrigation purposes, but has undergone a considerable natural vegetation succession and is only marginally used for irrigation. The lake receives its water from rainfed rivulets and canals. Rainfall is irregular, and most of the annual average of 443 mm falls in a few torrential showers.

Human uses The site can only be visited peripherally. Information is posted along the 'Camino de Santiago' (pilgrims route to Santiago de Compostella) which passes along the northern edge of the site. Fishing is permitted in parts of the lake only. 'El Bordo'n' visitors centre is situated near the Camino de Santiago.

Conservation Measures The site is a Natural Reserve (Reserva Natural), and is designated EU Special Protection Area for wild birds. A management plan is being implemented. The site is guarded by wardens who also provide information for visitors.

Adverse Factors The original character of the wetland has been completely altered by the construction of the dykes now holding the water.

References

7ES038

Laguna de Pitillas

Coordinates: 42°24'N - 001°34'W **Elevation:** 350 m **Area:** 216 ha

Location: The site is located 3 km from the small village of Pitillas, in the municipality of Pitillas y Santacara, in the autonomous region of Navarra, in northeastern Spain.

Criteria: 3c
Laguna de Pitillas is the most important wetland in Navarra for nesting marsh birds. It holds 6-11% of the Spanish wintering population of *Circus aeruginosus*, and 9% of the Spanish breeding population of this species. *Botaurus stellaris* nests regularly, and *Porzana porzana* occasionally.

Wetland Types: Sp, 6
The site was originally a permanent brackish lagoon, but it has been converted into an artificial impoundment.

Biological/ Ecological notes The lake is surrounded by dry kermes oak forest of the Querceto-rotundifoliae-Sigmetum association, with characteristic species like *Juniperus oxycedrus*, *J. phoenicia*, *Rubia peregrina*, *Osyris alba*, *Phillyrea angustifolia*, *Jasminum fruticans* and *Bupleurum rigidum*. Dry pastures are steppe-like, with *Stipa offneri* and *Brachypodium retusum*. Aquatic plant species include *Chara* spp., *Ranunculus fluitans*, *R. aquatilis* and *Potamogeton pectinatus*, with *Phragmites australis*, *Typha angustifolia*, *Scirpus maritimus*, *S. tabernaemontani* and *S. triquetrus* in the shallower parts. The lake has dense populations and a great variety in species of amphibians, of which *Pelobates cultripes* is the most noteworthy.

Hydrological/ Physical notes The site is an oligohaline wetland at the lowest point of an endorheic basin of 7,639 ha. The site has been modified by the construction of a dyke to contain the water. The lake receives water from rainfed rivulets. The average annual precipitation of 525 mm usually falls in only a few, torrential storms.

Human uses The only activities permitted in the reserve are observation by visitors, and research.

Conservation Measures The site is a Natural Reserve, and an EU Special Protection Area for wild birds. A management plan has been approved. A visitors centre has been constructed and was under development in 1997/1998. There is an EU LIFE project on the ecology of *Botaurus stellaris* for the period 1996-2000.

Adverse
Factors

References
