



GUIDE TO THE BIODIVERSITY OF THE GUADALQUIVIR ESTUARY

MISIÓN POSIBLE
DESAFÍO GUADALQUIVIR



Misión Posible is a project of WWF Spain with the support of The Coca-Cola Foundation

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**GUIDE TO THE BIODIVERSITY
OF THE GUADALQUIVIR ESTUARY**

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WWF IN THE GUADALQUIVIR ESTUARY AND DOÑANA

One of the first acts of the newly created WWF, in 1961, was to protect the Doñana marshes. The organisation's founders were introduced to this, then remote, corner of Europe thanks to the Doñana Expedition and they were able to study the migration patterns and conservation of many of the species featured in this guide.

Since that time, the WWF has continued to work in the marshes and at the mouth of the Guadalquivir River, key areas for conserving the ecosystems and biodiversity that have made it part of the Natura 2000 Network and which include many protected areas, such as the Brazo del Este Nature Reserve and the Bonanza salt flats in Sanlúcar de Barrameda, which are part of the Doñana Natural Area.

THE PROJECT - MISSION POSSIBLE

WWF Spain, in collaboration with The Coca-Cola Foundation, is developing the project "Mission Possible: the Guadalquivir challenge" to improve the quality and quantity of water in the estuary. To do this, WWF is working on two crucial aspects:

- Saving water and implementing good agricultural practices in the citrus farms in the Guadalquivir Valley.
- Restoring the marshes in Trebujena and improving the breeding rate of the teal, an endangered duck.

Thanks to this project, six hectares of marshland have been restored in Trebujena, where a lake has been recreated that contains several islands where many species of water birds can breed.



BIODIVERSITY ON THE LEFT BANK OF THE GUADALQUIVIR RIVER

The Guadalquivir marshes are tidal, in other words, they fill and empty according to the tides that flow through the estuary. Tidal marshes are one of the most productive ecosystems in the world:



- They contain a wealth of biodiversity as they provide a refuge for the offspring of an infinite number of birds, amphibians, insects, mammals, plants, and fish that, as adults, are typically caught in the Gulf of Cadiz (anchovies, shrimp, etc.)
- They play an important role in the hydrology as they cushion the impact of sea level rise due to climate change, and also capture CO₂.
- They maintain water quality, control erosion, retain sediment and pollutants, and regulate water turbidity.

HOW TO USE THIS GUIDE

This guide presents only the main species of flora and fauna found in the Guadalquivir River estuary. Its purpose is to bring nature closer to people who visit these incredible landscapes in Seville and Cadiz.

The guide includes one or more drawings of each species with its common and scientific name and, in some cases, its local name in the marshes. The key features for identifying the species are indicated with thin arrows.

For birds, the guide shows whether they are resident, in other words, they are present all year round, if they are summer visitors (they come to breed), or if they over winter in the area (they spend the winter here and in summer they go back to where they came from, to breed).

Birds

Collared pratincole

Glareola pratincola

Size: 25 cm

When you can see it: Summer visitor

Where you can see it: Lying on the paths in the marsh and hunting above either dry or wet marshland. Preferably in elevated areas within zones with water.

Description: The collared pratincole is a wading bird and a summer migrant, spending the winter in Africa and returning to the estuary in the summer to breed. It has lost its preference for silt and now feeds on flying insects. It is very easy to see flying in noisy groups, hunting mosquitoes, flies, moths and other insects. Locally, it is known as the cagazo, because when it lands on the ground it flattens its body out and looks like a cow pat. In flight it looks like a giant swallow because its tail is also split into two. The red colour under the wings is very characteristic.



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PLACES TO VISIT IN THE GUADALQUIVIR ESTUARY



THE MARSH AND ITS SPECIES

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Greater flamingo

Phoenicopterus roseus

Size: 150 cm

When you can see it: Resident and overwintering

Where you can see it: In any body of water (temporary pools, banks of channels, streams and rivers, rice paddies, salt flats, etc.).

Description: A large, slender, pink bird that is abundant on the salt flats and in the rice paddies. When it is born it is brownish white and the pink colour is obtained, little by little, as it feeds on a small crustacean called *Artemia salina*, or brine shrimp. When it is in the water, it moves its long legs repeatedly to stir up the bottom and drag these crustaceans up out of the mud. The shape of its beak helps it to filter the water like a "sieve", and only the food stays in.



Eurasian Spoonbill

Platalea leucorodia

Size: 85 cm

When you can see it: Resident

Where you can see it: On any surface that has water, feeding, in flight or perched on a tree that it uses as a rookery.

Description: White wading bird. It gets its name from the spoon shape of its beak, which it moves from side to side in the water, detecting and capturing crustaceans, molluscs, insects and larvae. In Spain the most important breeding colony is the one found in the Guadalquivir marshes and, unlike other areas, these birds can be seen all year round in the estuary. There are also other individuals from northern Europe that travel more than 1,000 km during the summer migration. Not far from the estuary is a migratory corridor that crosses the Barrosa-Cabo Roche beach, which the spoonbills use on their way to Africa.



Glossy ibis

Plegadis falcinellus

Size: 60 cm

When you can see it: Resident

Where you can see it: In the marshes and on any surface that has water where they can feed.

Description: The glossy ibis, with its downward curving beak, is the only ibis that can be seen regularly on the Iberian Peninsula. It was on the verge of extinction in the estuary until, starting in 1998, it began to naturally recolonise the area. It is now one of the most abundant birds in this zone. It is easy to see large flocks heading for their roosts at dusk and setting off in groups at dawn in search of food.



Eurasian Coot

Fulica atra

Size: 40 cm

When you can see it: Resident and overwintering

Where you can see it: In areas with enough water for it to dive and feed on macrophytes (large algae that live in the water at a certain depth), salt flats, salt ponds, lakes, irrigation channels, and so on.

Description: Known as *gallaretas* in the Guadalquivir marshes, it is a very common bird and easy to identify because it is totally black, except for the white frontal shield. In winter it forms large flocks as individuals from the estuary congregate with those that arrive from northern Europe. In the past it was common to collect their eggs for food, but today this is totally illegal.



Marbled teal

Marmaronetta angustirostris

Size: 40 cm

When you can see it: Resident

Where you can see it: It breeds in a few areas, where it can be seen. These areas are almost all restricted to the Brazo del Este, the WWF lake in Trebujena, Manegodor salt pond, Esparraguera Bend, and Bonanza salt flats.

Description: Medium-sized species of duck, with a dark mask, a bun behind the head and a mottled body that make it unmistakable. It used to be one of the most abundant water birds in the Guadalquivir marshes, but today it is the most endangered duck in Europe. This is due to the loss of wetlands, climate change, poaching, and a late breeding period (when most wetlands have dried up). There are still two stable breeding areas on the Iberian Peninsula, one in the estuary and the other in Alicante. In spring it is easy to distinguish the males as they have a pronounced feathery bun, this is more discrete in the females, and there is a grey-green triangle on the beak. The WWF is implementing measures to encourage the natural introduction of this species into a restored marshland area in Trebujena.



Mallard

Anas platyrhynchos

Size: 55 cm

When you can see it: Resident and overwintering

Where you can see it: In areas with sufficient water. Brazo del Este, lakes, channels, rice paddies, salt flats, etc.

Description: This is the most widely distributed duck in the world and there is a large breeding population in the estuary. In winter, these ducks come to the Guadalquivir from central and northern Europe in search of more food. Males can be identified by their yellow beaks and bright green heads. Like all ducks, the males moult their feathers and "lose" their colour when the breeding period ends. This makes them look more like females and less obvious. This species is also known as the *azulón* in Spanish because both males and females have iridescent blue feathers in the centre of their wing, known as a "speculum".



Common shelduck

Tadorna tadorna

Size: 65 cm

When you can see it: Resident and overwintering

Where you can see it: Salt flats and brackish lagoons. In waterlogged areas in the marsh.

Description: This is one of the most eye-catching ducks due to its white plumage and red beak. It looks like a cross between a duck and a goose. Although it is very adaptable, it prefers salt flats and brackish lagoons, and it nests in natural cavities or the burrows of other animals. A few days after they are born, the chicks follow their mother to the breeding area. This is a very dangerous journey that may be several kilometres long.



Grey heron

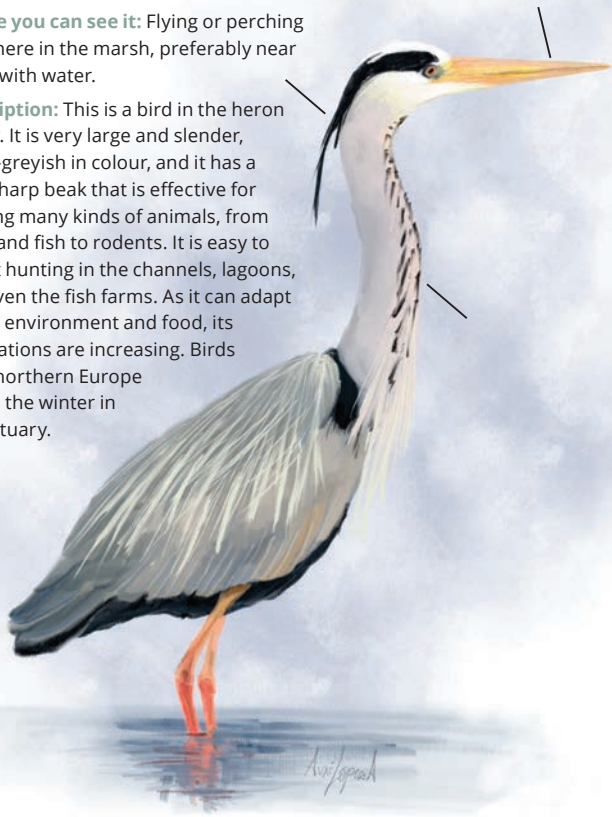
Ardea cinerea

Size: 80-100 cm

When you can see it: Resident and overwintering.

Where you can see it: Flying or perching anywhere in the marsh, preferably near areas with water.

Description: This is a bird in the heron family. It is very large and slender, white-greyish in colour, and it has a very sharp beak that is effective for hunting many kinds of animals, from frogs and fish to rodents. It is easy to spot it hunting in the channels, lagoons, and even the fish farms. As it can adapt to any environment and food, its populations are increasing. Birds from northern Europe spend the winter in the estuary.



Western cattle egret

Bubulcus ibis

Size: 45 cm

When you can see it: Resident

Where you can see it: In any part of the marsh, although it prefers areas close to livestock and with crops, where it takes advantage of the activity of tractors lifting the soil to hunt insects.

Description: It is the most abundant heron, its white feathers and yellow beak make it unmistakable. The locals know this bird as the *purgabuelles* or “cattle cleaners”, as it often perches on the backs of cows and people thought that it fed on their ticks. Now we know that it actually hunts the large insects that the cattle disturb when they walk. It breeds in colonies, known as rookeries: trees where many herons breed, as well as other birds like ibises and spoonbills.



Black-winged stilt

Himantopus himantopus

Size: 33 cm

When you can see it: Resident and overwintering

Where you can see it: Areas with shallow water where it can feed. Natural lakes, flooded marshes, salt ponds, salt flats, rice paddies, etc.

Description: This is one of the most common wading birds in the estuary. It is popularly known in the marshes as *patislargas* (long legs) or *ciguiñuelas*. It is very easy to identify due to its long beak, which it uses to detect small insects inside the mud, and its long legs (it looks like a small stork) which it uses to walk easily through the mud in the flooded areas of the marsh. If someone approaches its breeding area it lets out a shrill, high-pitched alarm call.



Pied avocet

Recurvirostra avosetta

Size: 43 cm

When you can see it: Resident and overwintering

Where you can see it: Areas with shallow water where it can feed: natural lakes, flooded marshes, salt ponds, salt marshes, rice paddies, etc.

Description: The pied avocet and black-winged stilts are the most common birds in the marsh. The pied avocet or *vaquiruela* has a characteristic upwardly curved beak, like a scythe. This shape makes it easy to lift the sediment and mud from the bottom of the waterlogged areas, like a spoon, helping it move small crustaceans, annelids and insect larvae out of their hiding places. Its beak is very sensitive, which allows it to quickly detect any larvae or insects.



Collared pratincole

Glareola pratincola

Size: 25 cm

When you can see it: Summer visitor

Where you can see it: Lying on the paths in the marsh and hunting above either dry or wet marshland. Preferably in elevated areas within zones with water.

Description: The collared pratincole is a wading bird and a summer migrant, spending the winter in Africa and returning to the estuary in the summer to breed. It has lost its preference for silt and now feeds on flying insects. It is very easy to see flying in noisy groups, hunting mosquitoes, flies, moths and other insects. Locally, it is known as the *cagazo*, because when it lands on the ground it flattens its body out and looks like a cow pat. In flight it looks like a giant swallow because its tail is also split into two. The red colour under the wings is very characteristic.



Slender-billed gull

Chroicocephalus genei

Size: 40 cm

When you can see it: Resident and passing through

Where you can see it: Brackish wetlands for breeding. Easy to see on the Bonanza and Doñana salt flats.

Description: This is the most endangered gull that breeds in the estuary and it is very rare on the Iberian Peninsula. The pinkish highlights on the white breast feathers and its delicate beak are the main characteristics that help to identify it. It breeds on the tiny marsh islands (*vetas*) and raised areas of the fish farms and salt flats in Sanlúcar de Barrameda and Veta La Palma. Its chicks tend to be heavily preyed upon by more generalist animals. Poor management of the salt flats and fish farms and the loss of wetlands are leading to the decline of this species.





Black kite

Milvus migrans

Size: 55 cm

When you can see it: Summer visitor

Where you can see it: In summer, you can see it moving through the marshes in search of food or migrating. It nests in trees and other high places (navigation towers, watchtowers, etc.)

Description: It is one of the most abundant birds of prey, that is mainly a scavenger and an opportunist: it feeds on dead animals and rubbish, although it can also hunt voles, small birds and some insects. In flight it can be identified by its dark colour, long wings and forked tail. Black kites, known locally as *vilanos negros*, are migratory and can be seen in the estuary in spring and summer. Both when they leave and when they arrive, they congregate in groups containing thousands of individuals in the Strait area, where they wait for good weather conditions to make the crossing.

Osprey

Pandion haliaetus

Size: 53 cm

When you can see it: Overwintering

Where you can see it: Areas with sufficient water and fish. Around the river, in the Sanlúcar de Barrameda salt flats, in the Esparraguera bend, fish farms, and so on.

Description: This is a bird of prey that feeds exclusively on fish and can therefore be seen in aquatic habitats, diving into rivers and lagoons to catch its food. It is white underneath and brown on top, with a black mask that makes it unmistakable. This bird of prey is widespread throughout the world, but rare in Spain, and it was extinct as a breeding bird of prey until 2003, when it was introduced to the Odiel marshes. It does not (yet) breed in the estuary, but in winter it is easy to see it hunting along the Guadalquivir River and the salt flats and salt ponds in Trebujena and Sanlúcar de Barrameda, as individuals from central Europe migrate to this area in winter.



Western marsh harrier

Circus aeruginosus

Size: 50 cm

When you can see it: Resident and overwintering

Where you can see it: Anywhere in the marsh, near areas with water.

Description: This bird of prey is closely linked to the wetlands, as it lays its eggs and raises its chicks on the ground among bulrushes, reeds and rushes. Its plumage is very variable, so it is not easy to identify, except for its characteristic V-shaped flight. The male is unmistakable due to the white colour and black tips under the wing. The transformation of wetlands and intensive agriculture have reduced the populations of this species, although it is slowly recovering. In winter you can see large concentrations of individuals arriving from central Europe. The Paraje Natural Brazo del Este is home to the largest roost of wintering Marsh Harriers in Andalusia, with an estimated 1,000 birds.



Rufous-tailed scrub robin

Cercotrichas galactotes

Size: 16 cm

When you can see it: Summer visitor

Where you can see it: In the vineyards of Trebujena, Los Palacios and Villafranca.

Description: This endangered bird is closely linked to grape growing, so it is located in the hills and elevations with vineyards around the Trebujena marsh. In this area it is known as the *caberrubia* and can be seen in spring and summer, where there is a large population that breeds among the crops. It has a reddish body and a contrasting long tail that never stops moving, which it fans out to reveal black and white markings.



Red fox

Vulpes vulpes

Size: 65-80 cm and 5-8 kg

Where you can see it: In any area, from the natural environment to urban landscapes.

Description: This is one of the most opportunistic and numerous mammals in the estuary. It lives almost anywhere, including crop fields, marshes, forests, and can even be seen in cities. It has no preferences when it comes to food: it can prey on duck chicks, micromammals, rabbits, or even scavenge in the rubbish. Its copper-coloured coat and its long thick tail ending in a white tip make it very recognisable.



Eurasian otter

Lutra lutra

Size: 60-75 cm and 4-9kg

Where you can see it: In any watercourse.

Description: It lives exclusively in aquatic habitats, where it feeds on crustaceans, fish and crabs. Its excrement can be detected because of its odour of fish and crustaceans, and the remains of these creatures. As a result of historical persecution and hunting, its populations declined, but fortunately it is now flourishing and can be found in practically all permanent watercourses.



Horseshoe whip snake

Hemorrhois hippocrepis

Size: 100-130 cm

Where you can see it: In areas with piles of stones, abandoned houses, and at dusk as it searches for food. In winter it usually stays hidden.

Description: This is one of the most common snakes, and it gets its name from the horseshoe-shaped black spot on its head. Its body is patterned with brown diamonds that have yellow or light grey edges. It feeds on voles, small mice and certain chicks. This fast snake is shy, comes out during the day, and is completely harmless to humans. It is often seen near buildings where it lives in walls, as well as in areas with lumps of dry earth and stones.



Perez's frog

Pelophylax perezii

Size: 5-11 cm

Where you can see it: In any area with fresh water.

Description: This is a medium-sized frog, usually green with black spots and two white lines. It needs an aquatic environment with permanent water, although the water does not need to be good quality. It feeds mainly on small invertebrates, like mosquitoes, flies, and butterflies, and sometimes it eats other small frogs. Females lay an average of 2,300 eggs. Females reach sexual maturity within the first year, and males when they are two years old.



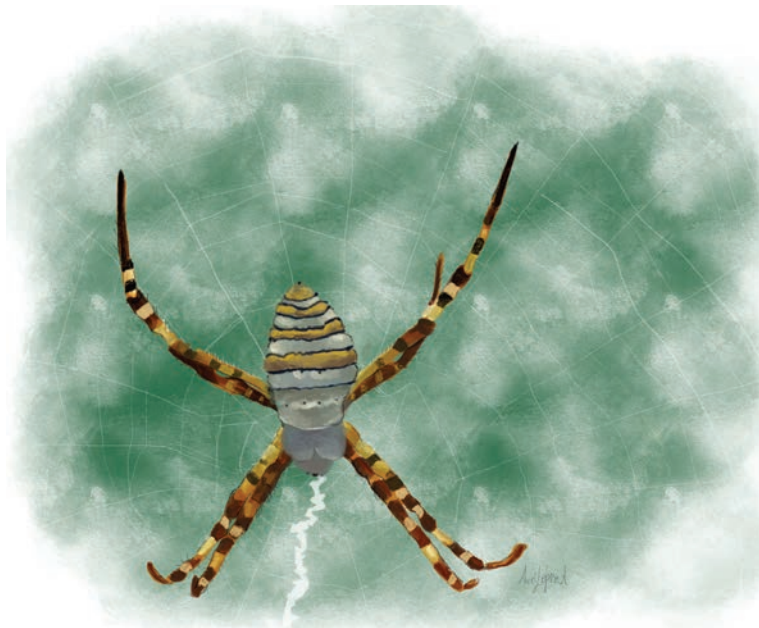
Banded garden spider

Argiope trifasciata

Size: 6 mm males and 25 mm females.

Where you can see it: Natural areas, gardens and among crops.

Description: Very common both in gardens and natural settings. Its legs and body have yellow, black and white bands similar to the stripes of a tiger, and its common name in Spanish means "tiger spider". It builds its web completely vertically and, compared to those of other spiders, this one seems to be very good quality. You can often see a characteristic thick white zigzag running towards the centre of the web.



Old World swallowtail

Papilio machaon

Size: 6-9 cm

Where you can see it: In any area of the marsh where there is wild fennel.

Description: It has striking yellow, black and orange colours, both in the caterpillar stage and as an adult butterfly. It produces three generations a year: at the end of February, in June, and the most numerous in August. The adult butterfly has a very characteristic “tail” at the end of each hindwing. This butterfly and its larvae both love wild fennel plants, and it is easy to spot them in areas of the marsh where there is still some natural vegetation.



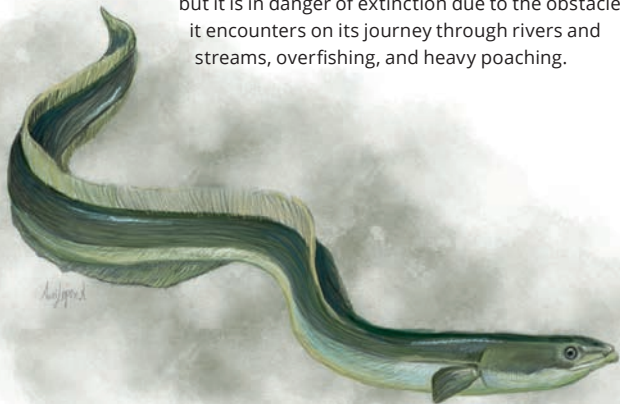
European eel

Anguilla anguilla

Size: Juveniles: 65 to 70 mm. Adults: up to 1.5 m

Where you can see it: In any continuous water course that has no barriers: channels, rivers, streams, canals, etc.

Description: It has a very elongated snake-like body that is cylindrical in shape. Its eyes are very small, its scales are tiny and embedded into the skin, and it is covered with lots of mucus, making it very slippery. It lives in almost any body of water: rivers, salt ponds, marshes, channels, and so on, between the stones or in the mud. To breed, the adults travel to the Sargasso Sea, where they spawn and die. From there, the larvae are carried by the ocean currents to the European coasts. The young, known as “elvers”, enter the rivers and stay there for 7 or 8 years until they, too, make the long journey to breed. This species can withstand very harsh conditions (it can spend a considerable length of time out of the water, breathing through its skin and crawling across damp ground), but it is in danger of extinction due to the obstacles it encounters on its journey through rivers and streams, overfishing, and heavy poaching.



Mullet

Mugilidae family

Size: Up to 60 cm

Where you can see it: In the Guadalquivir River and at its mouth.

Description: There are five different mullet species, known locally as albuces or lisas. Three species, the thinlip mullet (*Chelon ramada*), golden-grey mullet (*Chelon aurata*) and flathead grey mullet (*Mugil cephalus*) are easy to tell apart. The other two, the leaping mullet (*Chelon saliens*) and thicklip grey mullet (*Chelon labrosus*) are difficult to distinguish from the other species. Mullet have a characteristic elongated and fusiform (spindle) shape. The most abundant species in the river and tidal channels is *L. ramada* (pictured), both in its juvenile and adult stages. This fish forms part of the traditional local cuisine in the estuary area, and in May it has its own festival, known as the "Fiesta del Albur". It breeds at the mouth of the Guadalquivir River from August to November and, once this period is over, both juveniles and adults return to the river and coastal lagoons. The adults are carnivorous, but they also feed on the remains of decomposing organic matter, stirring up the mud.



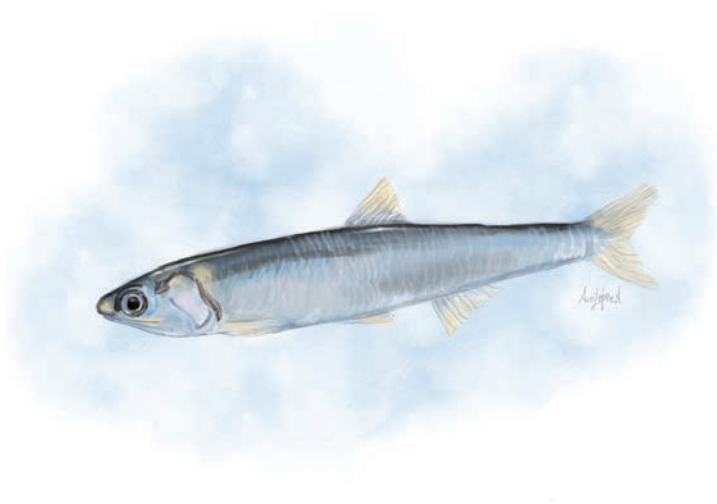
European anchovy

Engraulis encrasicolus

Size: Up to 20 cm

Where you can see it: Juveniles in the river itself and adults at the mouth of the river as well as the Gulf of Cadiz and Doñana coast.

Description: It is probably the most abundant species in the estuary because of the large number of juveniles that seek protection here. It breeds twice a year, in late spring and again in late summer, off the coast of Doñana. The vast majority of the population that enters the estuary are fry and newborn juveniles (9-60mm in length). Adults also visit the estuary, especially in summer, when the salinity is higher. Individuals can even be found in the Brazo de La Torre, Caño de Brenes and other channels in the marshland.



European sturgeon

Acipenser sturio

Size: Up to 2 m in length and 80 kg in weight

Where you can see it: Currently extinct in this area. You can only see it in fish farms.

Description: Now extinct in the estuary, it used to be very common in the Guadalquivir and the nearby towns traded it. It lived in the sea and entered the estuary to breed in the middle course of the river. The adults began would migrate in the autumn, spend the winter in the river, reproduce in the spring and then return to the sea. The construction of the Alcalá del Río dam in 1932 marked the end of the species in the area, as the fish continued to move up the river, accumulating at the base of the dam where they were captured in huge numbers until they became extinct.



Shrimp

Palaemonetes varians up to 7 cm (illustration).

Palaemon longirostris up to 4 cm

Where you can see it: In the estuary and salt ponds.

Description: The two most abundant species are the common ditch shrimp (*Palaemonetes varians*), which lives in the marshes, salt ponds and channels where the salinity is higher, and the estuarine shrimp (*Palaemon longirostris*), which prefers less brackish waters and therefore lives in the river itself, as well as lakes and freshwater ponds. Both are small swimming crustaceans that are edible and highly appreciated in local cuisine.

It should be mentioned that both are threatened by the oriental shrimp (*Palaemon macrodactylus*), an exotic species from Japan that competes with them and eventually wipes them out in the salt ponds it colonises. This species of shrimp is bigger, not as tasty, and has more shell.



Shrubby sea-blite, shrubby seablight, alkali seepweed

Suaeda vera

Size: Up to 100 cm

Where you can see it: Saltwater marsh.

Description: Small salt marsh shrub, often red in colour. It has many branches that are covered with small fleshy leaves. Like the amaranth (*Arthrocnemum macrostachyum*) it is a salt marsh plant, and therefore shares the same habitat.



Amaranth

Arthrocnemum macrostachyum

Size: Up to 150 cm

Where you can see it: Saltwater marsh.

Description: This shrub is part of the salt marsh vegetation. It is very frequent in salty coastal areas (salt marshes, salt flats, estuaries). The highest parts of the marsh (the marsh islands known as *vetas* and *paciles*) and the salt-rich soils are dominated almost exclusively by *Arthrocnemum macrostachyum*. It forms low but very extensive scrub together with some other salt marsh plants like the shrubby sea-blite (*Suaeda vera*). In this area, all the salt marsh shrub species are referred to as *armajo*, even though they are totally different species.



Rush

Juncus sp.

Size: 30-150 cm

Where you can see it: Saltwater and freshwater marshes, near areas with water.

Description: Plant with erect stems and very thin, needle-like green leaves. Small, usually brown, flowers group together at the ends of the stems. There are many species in the genus *Juncus* that are all adapted to a certain degree of salinity. Rushes have been extremely important in the history of human beings, as many of the species in this genus have been used to make baskets, chairs and thatched roofs.



Sea clubrush

Bolboschoenus maritimus

Size: 15-50 cm

Where you can see it: Freshwater marsh.

Description: Plant of freshwater marshes, or *castañuela* marshes, after its name in Spanish. The sea clubrush appears in areas where there is a supply of fresh water that persists for some time. In the past, the roofs of the marsh huts were constructed from this plant. Its rhizome, or underground stem, is the main food of the wintering geese that come to Doñana. After eating the hard rhizome of the sea clubrush, the geese fly in large flocks to the Doñana dunes to ingest sand, which helps them digest it.



Fennel

Foeniculum vulgare

Size: Up to 250 cm

Where you can see it: Easy to see at the edges of the paths through the marshes.

Description: A herbaceous plant that is particularly abundant along the edges of the paths. The Old World swallowtail butterfly feeds on it, which makes them easy to spot in the marshes. Fennel is easy to recognize by its yellow flower, which opens up like a bowl, and its characteristic aroma. This is a plant of great culinary interest.



Pond water crowfoot

Ranunculus peltatus

Size: Up to 30 cm

Where you can see it: Areas flooded with fresh or salt water.

Description: A small herbaceous plant with lamellar leaves that grows in dense tufts in areas with fresh or brackish water, that are either permanent or seasonal, stagnant or flowing. This species has white flowers, and is very striking in spring when it covers the areas it grows with a white blanket.



Tamarisk, salt cedar

Tamarix sp.

Size: 1-3 m

Where you can see it: Anywhere in the marsh and the Guadalquivir estuary.

Description: Shrub or small tree that can reach a height of 6 metres. The leaves have small, pointed, oval scales. The flowers are grouped into pinkish-white cylindrical clusters. The tamarisk is adapted to moist or waterlogged salt-rich soils.



Invasive species are one of the greatest threats to biodiversity. We have collected them in the guide because, although they should not be here, it is likely that you will see them on your routes through the estuary.

Red swamp crayfish

Procambarus clarkii

Size: Up to 10 cm



Where you can see it: In any watercourse.

Description: This small freshwater crustacean is edible and highly prized in the marshes, especially on Isla Mayor. It is an invasive species that is not part of the Iberian fauna, and was introduced in 1974 from the United States. It competes with the native crayfish, which is now practically extinct in the marshes of the estuary. It is also quite an aggressive species and has annihilated populations of amphibians that used to reproduce in the marshland. In certain areas of Doñana it can be fished for, but in other areas it cannot be sold.



Blue crab

Callinectes sapidus

Size: Up to 23 cm

Where you can see it: In any watercourse.

Description: This crustacean is a new invader detected in the estuary. Originally from America, its native habitat are the estuaries and brackish lagoons along the coast, from Nova Scotia to the Gulf of Mexico. It is very highly prized for its sweet tender meat, and its scientific name, *Callinectes sapidus*, means "beautiful tasty swimmer". It is stronger than the red swamp crayfish and it has destroyed many fishing pots with its pincers.



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Water fern

Azolla filiculoides

Size: 2.5-10 cm



Where you can see it: Areas flooded with fresh or salt water.

Description: This is an invasive alien water fern from South America that is causing serious problems in aquatic ecosystems. It generates a smothering lawn-like blanket that prevents other aquatic plants from photosynthesising and starves the water of oxygen. It has oval fleshy leaves measuring about 1 mm in diameter. It is used as an ornamental plant in aquariums.



Pampas grass

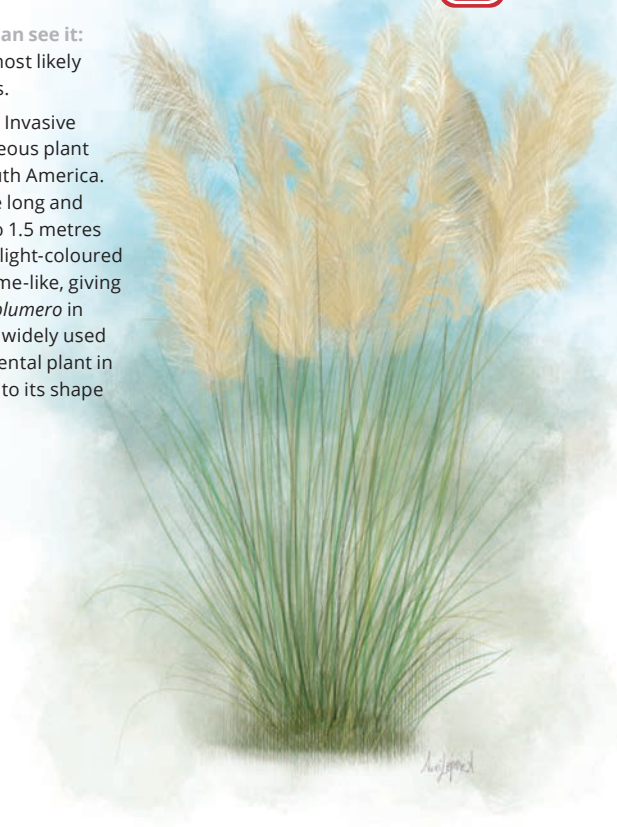
Cortaderia selloana

Size: 3-4 m

Where you can see it:

Anywhere, most likely near gardens.

Description: Invasive alien herbaceous plant native to South America. Its leaves are long and arched, up to 1.5 metres long, and its light-coloured flower is plume-like, giving it the name *plumero* in Spanish. It is widely used as an ornamental plant in gardens due to its shape and beauty.





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