

Information Sheet on Ramsar Wetlands

1. **Date this sheet was completed/updated:** 17 January 1997
2. **Country:** SPAIN
3. **Name of wetland:** Laguardia (Alava): Carral로그roño, Carravalseca and Prao de la Paul lakes

4. **Geographical coordinates:**

42°32'47" North
2°33'54" West

5. **Altitude:** between 548 and 564 metres above sea level

6. **Area:** a total of 42.4 hectares

7. **Overview:**

This enclave is formed by three wetlands located near Laguardia, in the Basque region. Two of the wetlands are the most northern endorheic, medium-saline lakes in the European Union. The third wetland, Prao de la Paul, is a reservoir on the site of a former area that had the same characteristics as Carral로그roño and Carravalseca. These are the only wetlands of any importance in the region of Rioja Alavesa, indispensable for the preservation of highly unique species and communities.

8. **Wetland type:**

Ss, 2

9. **Ramsar criteria:**

1a, 2a, 2b, 2d

10. **Map of site included?** Please tick **yes** -or- **no**

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

Dirección de Ordenación del Medio Natural e Investigación
Departamento de Industria, Agricultura y Pesca
Gobierno Vasco
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12. **Justification of the criteria selected under point 9, on previous page:**

In function of aquatic birdlife

At the Carral로그roño, Carravalseca and Prao de la Paul lakes, the following species endangered in Spain have been recorded according to the *Red List of Vertebrates in Spain*: *Anas querquedula*, *Ardea purpurea*, *Charadrius dubius*, *Chilidonias niger*, *Ciconia ciconia*, *Circus aeruginosus*, *Gallinago ganillago*, *Netta rufina*, *Numenius arquata*, *Nycticorax nycticorax*, *Plegadis falcinellus* and *Recurvirostra avosetta*.

With reference to the "Catalogue of Endangered Species," in preparation by CAPV, the following information has been recorded about fauna in the enclave: one species is in danger of extinction; there are six vulnerable species, sixteen rare species and fourteen species of special interest.

In function of the vegetation

According to Cirujano et al. (1992), the following indicator species exist at the Carralagroño, Carravalseca and Prao de la Paul lakes: *Alisma lanceolatum*, *Callitriche stagnalis*, *Chara galioides*, *Lamprothamnium papulosum*, *Lemna minor*, *Polygonum amphibium*, *Potamogeton pectinatus*, *Pragmites australis*, *Ruppia drepanensis*, *Scirpus lacustris lacustris*, *Scirpus maritimus*, *Sparganium erectum*, *Thypha angustifolia*, *Typha latifolia*, *Tolypella salina*, *Veronica anagallis-aquatica* and *Veronica beccabunga*.

The indices for these species are: $I_F = 5$, $I_D = 8$, $I_H = 6.5$ which justifies a national category. The presence of *Tolypella salina* justifies the additional category of an enclave with special interest.

In function of ecological criteria

The Carralagroño and Carravalseca lakes are the most northern of the medium-saline lakes in the European Union. They are now the only enclave with these characteristics in the Basque region. They are part of a former, much larger, lake system, which was drained for agriculture. Of the former system, there are only these three lakes left.

These ecosystems are unique because of the ecological, botanical, zoological and hydrological processes that occur in them. At the district level, they are the only wetlands of any size in Rioja Alavesa and are indispensable for the presence in this district of a large number of species of fauna and flora, with the presence of highly unique communities.

13. General location:

The Laguardia lake is one of three wetlands located near the town of Laguardia. It is the lake closest to the town, only 500 metres from the town centre, while the farthest, Carravalseca, is at a distance of approximately 2 kilometres.

The town of Laguardia, population 1,445, is one of the most important towns in the administrative district of Rioja Alavesa. This district is the most southern of those forming the Basque autonomous region. The rural landscape of this district is formed by Mediterranean crops, especially vineyards with well-known wines.

14. Physical features:

a) Geology and geomorphology - The Laguardia lakes are on a sandy-clay, rock and silt substrata from the Tertiary. The bottom of the depressions are evaporitic clay materials carried by dissolution and deposited on the surface which dissolve in water when the basin is full (creating the salinity of the water) and which crystallize on the bottom when the water evaporates during the summer.

b) Origin - The lakes are in closed depressions whose origin is the differential erosion of former river beds, surrounded by sandy hills that form its watershed. These are the most northern endorheic lakes on the Iberian Peninsula.

Prao de la Paul has the same origin, although the depression is less closed, which allows it to dry up. A dam was recently constructed, and the lake is supplied with water from the San Ginés stream that maintains a constant volume of water.

c) Hydrology - According to current knowledge, the only water contribution to the Carralagroño and Carravalseca wetlands is surface runoff and direct precipitation. Because of this, the lake has a distinct seasonal character with important variations during the year, because of the region's irregular climate.

In a normal year's cycle, rains begin to flood the lakes at the end of autumn. The water level gradually increases during winter and the beginning of spring, periods of abundant precipitation and little evaporation because of the gentle temperature. After that, the lakes begin to dry gradually until the beginning of the summer when they are completely dry. This is when there is least precipitation and maximum temperature. The surface of the lake develops a whitish crust caused by the precipitation of dissolved salts. Because they are endorheic basins, water is lost only through evaporation.

The water regime and the permanence of water in Prao de la Paul can be considered to be between seasonal-permanent-variable and permanent.

d) Dimensions and depth - Lake Carralagroño has a circular-oval form with a maximum diameter of approximately 300 metres and a width of 200 metres. Its maximum depth is estimated to be 1-1.2 metres.

Lake Carravalseca has a more rectangular shape. It is about 450 metres long and has a maximum width of 150-175 metres and a maximum depth of 1-1.2 metres.

The Prao reservoir has an elongated shape, with a wider northern part and more irregular shores than the southern part. Its largest and smallest axis are 700 and 300 metres. Maximum depth is 2.21 metres, with an average of 0.85 metres. There can be up to more than one metre of crust.

e) Water basin - The Carralagroño and Carravalseca lakes have water basins of 57.6 and 61.9 hectares, with precipitation being the only source of water.

The Prao reservoir receives water from a water basin of 2.8 square kilometres plus water from the San Ginés stream which has a water basin of 3.37 square kilometres.

f) Climate - Rioja Alavesa is the district with the most Mediterranean characteristics in the Basque autonomous region.

Average annual temperature is 13°C, with average minimum and maximum temperatures of 8° and 19°C. There are three months during which the average temperature does not exceed 7.5°C. The temperature category is lower upper-Mediterranean. Average annual precipitation is 490 mm. The wettest season is spring, and then winter with little difference. Summer is the driest period and has the highest temperatures. The shade index is upper dry. According to Thornthwaite's classification, the potential evapotranspiration is 725 mm, with winter values 50 per cent lower.

15. Hydrological values:

The Carralagroño and Carravalseca lakes are seasonal and very conditioned by the local climate, which has a distinct seasonality. In the summer, the

lakes completely dry up by evaporation, with a saline crust forming on the surface. Because they are closed basins, they receive only rainwater and runoff. The concentration of ions in both wetlands is medium-saline.

Prao de la Paul is a former sump that was drained. A dike was recently constructed in the southern part that captures rain water and runoff, plus water is supplied from a capture point in the San Ginés stream. The ionic concentration is freshwater.

16. **Ecological features:**

These wetlands are the only wetlands of any size in the district. Because of this, the organisms in the enclave, both animals and plants, are rare at the district level.

The Carralagroño and Carravalseca enclaves form the only medium-saline lake system in the Basque autonomous region, and their survival is essential to the survival of an important number of living organisms.

The water's high salt content facilitates the development of a very specialized halophytic flora. These seasonal lake bottoms are the last and only refuge for some species.

At the same time, these lakes offer a refuge for aquatic birdlife. The life cycles of most of the amphibians and reptiles develop around the basins; especially the reproductive cycles of the amphibians of the area.

The ecological quality of the landscape created by the surroundings should be given highest importance because of its nature and resilience over centuries in the face of intense human activity. These lake systems were formerly more abundant, but irreversible destruction and their use for agriculture have made it possible to preserve only those in this enclave.

17. **Noteworthy flora:**

The flora of the Laguardia lakes is unique. There is a big difference between this flora and the communities of the saline lakes and Prao de la Paul. In the natural saline lakes, there are very rare species of halophytes for the area of Rioja Alavesa, for example *Hordeum marinum*, *Juncus maritimus*, *Puccinellia fasciculata*, *Scirpus maritimus* and *Spergularia marina*. There is also an alga in the Characeae family (*Tolypella salina*) of which there are few known populations in the world.

Several vegetative communities grow in concentric bands in the lakes. In the external band are beds of large reeds dominated by *Phragmites australis*. Mixed in with the large reeds are beds of smaller reeds and hydrohalophytes. In the Carralagroño and Carravalseca lakes are well-developed plant communities with vascular plants such as *Rupia drepanensis* and articulated algae such as *Chara galioides*, *Lamprothamnium papulosum* and *Tolypella salina*.

Large areas of reeds and large water grasses grow in some of the small bays of Prao. In the surrounding water basin, there are *Thymus loscosii*, endemic to the Ebro valley, *Narcissus assoanus*, endemic to the Iberian Peninsula. This is the northern limit of its range as is the case for *Odontites eliasennenii*.

18. **Noteworthy fauna:**

Invertebrates - In the group of lakes at Laguardia, apart from Lepidoptera, 125 species of invertebrates in 92 genera, 44 families and 6 orders have

been recorded. This is probably only a small sample of the richness and diversity of the entomofauna that lives there. Many of the insects recorded are also found on the salt flats of the Mediterranean shore, but are seldom recorded in the interior of Spain. Among the insects found here are *Amblystomus metallescens*, *Anisodactylus* (*Hexatrachus*) *virens*, *Calathus ambiguus chevrolati*, *C. circumseptus*, *Chlaenites spoliatus*, *Cicindela paludosa*, *Dichirotrichus obsoletus*, *Harpalus microtorax f. salinator*, *Ophonus rotundatus*, *Orthomus aubryi*, *Paraphonus mendax*, *Pogonistes gracilis* and *Pogonus chalceus*.

There is also a large number of Odonata with 4 families and 16 species of the suborder Zygoptera and another 4 families with 10 species of the suborder Anisoptera.

Vertebrates - There are fish in only Prao de la Paul, and these were introduced. The only two species represented are *Carassius auratus* and *Cyprinus carpio*. The fluctuating level in the natural lakes, apart from other limiting factors, prevents these vertebrates from living there.

As for amphibians, 8 species have been recorded. The protected biotype of the Laguardia lakes is especially important for this group of fauna because it is considered to be one of the few isolated wetlands in the district. There are four species of reptiles, most important of which are *Lacerta lepida* and *Malpolom monspessulanus*, with a very restricted distribution in the Basque autonomous region.

Given the very irregular nature of the seasonal and annual water conditions of the natural wetlands, there is strong variation in the communities of aquatic birds. The communities of birdlife of the Laguardia lakes are of exceptional interest for conservation in the Basque autonomous region, both because of the size of the populations as well as for the diversity of species and the rarity of some of them. During an annual cycle, a total of 18 species of shorebirds, 12 species of ducks, 4 species of herons and about 10 other aquatic birds have been recorded.

The following 7 species of birds are considered to nest at this site: *Anas platyrhynchos*, *Aythya ferina*, *Fullica atra*, *Gallinula chloropus*, *Podiceps cristatus*, *Rallus aquaticus* and *Tachybaptus ruficollis*, with more than fifty couples per species.

Reproduction of *Aythya ferina* has been reported for three consecutive years by an important source. This is the only known breeding place for this species in the Basque autonomous region.

Several species are listed in Annex I of the E.U. directive 79/409/EEC, including *Ardea purpurea*, *Nycticorax nycticorax* and *Phalacrocorax carbo sinensis*.

In addition to these 44 species, 118 different species of birds have been observed in the system of wetlands and the surrounding area. This is truly a very large quantity given the size and the circumstances of the lakes and their small basins.

There are at least 12 species of mammals recorded, but only *Arvicola sapidus* and *Rattus rattus* are apparently linked to the wetland.

19. Social and cultural values:

Prao de la Paul is a place frequently visited by the inhabitants of Laguardia for recreation. Public use of the other lakes is infrequent. A project is being prepared for the rehabilitation and improvement of the

habitat and improvements for public use and environmental education at the Prao reservoir, which will promote more intensive public use of this area.

20. Land tenure/ownership of:

a) at the site - The three wetlands are public property belonging to the Ayuntamiento of Laguardia.

b) around the site - The surrounding land is primarily private property and is divided into small plots. The percentage of public property around Carralagroño and Carravalseca lakes is 12 per cent. This decreases to 7 per cent in the case of Prao de la Paul.

21. Current land use:

a) at the site - There is no productive use of the lakes, although before their declaration as a protected site there was fishing in Prao de la Paul and hunting at the Carralagroño and Carravalseca lakes. The shores of Carravalseca and Prao are occasionally used for grazing sheep. Although the dam at Prao de la Paul was built to accumulate water for irrigation, it has not been used for this purpose and will probably not be used for this in the future.

b) around the site - Agriculture is the main activity in the lakes' water basins, especially vineyards, which are well known in the district. To a much lesser degree, cereals are grown. In the areas of greatest slope and of less economic importance, pasture and bushes grow. The only wooded area is a poplar grove on the northwestern edge of Prao de la Paul.

22. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land use and development projects:

a) at the site - There is the site of a former wetland, Musco, between Carralagroño and Carravalseca. This wetland was drained and is used for agriculture. A transversal ditch was dug to drain this area and empties into Lake Carravalseca. Certain parts of Carralagroño have been dried to expand neighbouring farms. There are deposits of rubble and trash on the shores and slopes of this space. The area around Carravalseca is used to graze sheep. This leads to the elimination of large reeds (*carrizos*) and negatively affects the aquatic birds.

The Prao de la Paul is very close to the town of Laguardia and is an area frequently visited for recreation, mainly for walks along the road that runs around the lake. The presence of humans is a disturbing factor that negatively affects wildlife. This area was recently rehabilitated as a wetland. It was an area of swamp, probably seasonal, that several centuries ago was drained and converted to a humid pasturing area. In 1990, a small dam was constructed in the main drainage canal. In addition, a point of capture was constructed in the San Ginés stream, providing water during the whole year. This project was conceived as a reservoir for the accumulation of water for irrigation, although it has never been used for this purpose.

b) around the site - The land is cultivated up to the shore of the wetland, and, as a result, the agricultural practices directly affect the lakes. The phenomena that cause greatest impact are processes of erosion and sedimentation, accelerating the filling up of the lakes and bringing contamination by fertilizers and insecticides.

There are several scattered farm buildings that were constructed for storage of farm materials, although some of the buildings are no longer used for

this and have been converted for recreation. Construction of new buildings is not permitted.

Given the high profitability of the vineyards, there has been a slow change in land use, with an increase in the surfaces used for this to the detriment of cereals, pasture and scrubland.

23. Conservation measures taken:

The decree declaring this protected biotype created a special legal protection status in accordance with Article 15 of Law 16/1994, on 30 June for the conservation of nature in the Basque region.

The management of the protected biotype area is the responsibility of the Diputación Foral de Alava, with guidelines for management, conservation and restoration of protected biotype, compatible with its rational use.

The initial decree assigns strict protection to Carral로그roño and Carravalseca lakes, in light of their high intrinsic fragility and their limited capacity from public use. Around Prao de la Paul, given its greater capacity for reception and its proximity to the urban centre of Laguardia, there is public use. For this area, a programme has been established to regulate public use and access to the environment.

All use is prohibited in the lakes proper, except observation and scientific research and restoration of damage caused by unusual alterations created man-made interventions.

Activities are limited in the buffer areas when they affect the quality of the water in the lakes or the hydrological cycle. There are plans to promote the development of agriculture compatible with the environment through non-erosional agricultural practices, the use of non-residual pesticides and the regulation of their distribution and their residues, regulation and decrease in the use of fertilizers, non-cultivation of land in the area surrounding the lakes and contour ploughing.

In addition, the natural lakes benefit from protection against urbanization in the form of planning regulations of the town of Laguardia, approved on 5 February 1990. Carral로그roño and Carravalseca lakes, together with their immediate surroundings, are classified as "non-constructible land of exceptional scientific or natural value." The rest of the river basin is classified as "forest to be restored" or "protected area of special agricultural value."

Prao de la Paul is in a non-constructible protected area of special agriculture importance. Part of this wetland is classified as protected non-constructible land as a component of the system of road communications, because there was a project for highway N-232. This project has now been abandoned.

24. Conservation measures proposed but not yet implemented:

All of the measures reported have been recently implemented, but there is not yet an evaluation of the results. The grazing of sheep on the shores of Carravalseca seems to be the cause of the almost complete lack of reed vegetation on the shore. This affects the communities of aquatic birds negatively. There has not yet been a specific programme to correct this situation.

25. Current scientific research and facilities:

This area is the object of an annual survey of nesting and wintering birds.
A survey of the hydrogeology of the lakes is under way.

26. Current conservation education:

The criteria used for classifying this area for public use and environmental education on the basis of which this system of wetlands was declared a protected biotype are the preservation of the natural wetlands given their greater fragility and lower capacity for reception, orienting the public to Prao de la Paul, which has greater receptive capacity. As a result, a technical project for the rehabilitation and improvement of the habitat and improvement for public use and environmental education of the reservoir "El Prao-Laguardia" is now being implemented.

This project provides for the didactic use of the reservoir by groups of primary and secondary schoolchildren in the province of Alava. There will be marked trails, a teaching centre, information panels, parking, a tower for interpreting the landscape and a bird observatory. These facilities will be open to the public. In the event that studies show that there is an increase in demand for public use, an interpretation centre could be built.

27. Current recreation and tourism:

In addition to the activities already mentioned, an itinerary for bicycles has been organized by the local authorities on the roads around the wetlands. This information is included in the tourist information available on the district. The district is an important tourist attraction. During 1996, the tourist office in Laguardia received 48,000 requests for information on the district.

28. Jurisdiction:

Territorial - The wetlands are located in the municipality of Laguardia, province of Alava, Basque autonomous region. The land is public property.

Administrative - The management of the wetland corresponds to the Diputación Foral de Alava, through the Department of Agriculture.

29. Management authority:

Servicio de Conservación de la Naturaleza
Dirección de Medio Natural y Enología
Departament de Agricultura
Diputación Foral de Alava
Vitoria-Gasteiz

30. Bibliographical references: