

TRANSLATION (5th April 1995, Dave Fawcett) FROM ORIGINAL SPANISH TEXT SENT 26TH MAY 1994 BY INSTITUTO NACIONAL PARA LA CONSERVACION DE LA NATURALEZA (ICONA)
[Square brackets indicate translator's notes. Direct translations of common names which may not have produced standard English version for that species appear in inverted commas ("), as do words left in Spanish due to translation difficulties.]

Laguna De Gallocanta [Site Ref. 7ES029]

1. PHYSICAL ENVIRONMENT.

1.1. GEOGRAPHICAL LOCATION. BOUNDARIES.

The Laguna de Gallocanta National Refuge partially occupies the municipal areas of Gallocanta, Las Cuerlas, Santed and Berruoco, in the extreme southwest of the province [admin 2] of Zaragoza, and the municipal areas of Bello and Tornos in the northeast of the province of Teruel. [Admin 1=region of Aragon].

Area: 6,720 ha, with the following boundaries (map annexed): *[details not translated here - see original]*

1.2. CLIMATOLOGY

The climate of Laguna de Gallocanta and its surroundings is semi-continental semi-arid Mediterranean, typical of an intermediate latitude steppe.

The average annual rainfall is of the order of 500 mm, with considerable rain-gauged variation [not clear whether this is within or between years]. Maximum rainfall comes in the months of May and June, and the minimum in July, August, January and February.

The annual average temperature is 10.7°C, with the maximum monthly average in July (21.1°C) and minimum monthly average in January (2.9°C). The minimum temperatures for the months of November to March average below 0°C. The absolute maximum temperature recorded is 39°C and the minimum -21°C.

Winds from the northeast are frequent, often reaching speeds above 80 km/h. Evapotranspiration is of the order of potentially 650 mm [per year, presumably] and actually 370 to 400 mm, being favoured by the frequency of wind, the annual number of hours of sunlight and the high summer temperatures.

1.3. HYDROLOGY

The endorheic basin of the Laguna de Gallocanta occupies an area of 54,335 ha and includes the whole or a part of each of the following municipal areas: Gallocanta, Berruoco, Las Cuerlas, Santed, Used, Cubel and Torralba de los Frailes (all of these being in Zaragoza province); Bello, Tornos, Odón, Torralba de los Sisonos and Blancas (Teruel province); El Pedergal, Setiles, El Pobo de Dueñas and la Yunta (Guadajarja province).

The highest altitudes of the basin are at la Marajosa (1,482 m.a.s.l) in the municipal area of Setiles. The bottom of the lake lies at an altitude of approx. 995 m.a.s.l.

Most of the water comes from rainfall flowing as run-off to the bottom of the basin and entering the lake through small streams and channels (mainly the Arroyo [stream] de la Cañada, Arroyo de Santed, Acequia [channel] de la Reguera, Rambla [shallow ephemeral channel] de los Pozuelos and Acequia Madre). This does not maintain a constant supply, with variation in the annual total supply to the lake being between 0 and 6 Hm³/year. Some subterranean water also filters through, mainly in the vicinity of the northeast shore of the lake.

The annual variation in the hydric balance [i.e. between incoming/outgoing water] causes fluctuation in the water level and physico-chemical attributes of the lake.

In times of major water deficit the lake dries out totally, as in the 1983-86 period, whilst in rainy years the water in the lake can reach a depth of 2.5 m and a surface area of 1,330 ha.

Logically, the salinity varies between one of two situations: in 1977, with a high water level the salt concentration was recorded as 16 g/l, whilst in October 1981, when the water level was much lower, it reached 105 g/l, with chloride and sulphate anions and sodium and magnesium cations being predominant.

1.4. GEOMORPHOLOGY

The Gallocanta basin is a tectonic depression bordered to the north and east by Palaeozoic materials. Mesozoic

materials extend through the plains to the north, east, and southeast of the lake. Some of these plains are Cretaceous silts which, together with salts and Keuper clays (upper Triassic) contribute to the water composition of the lake. The other two levels of the German Triassic are weakly represented at the surface level. It is thought that the Triassic, principally the Keuper, forms the basis of the sediments of the Gallocanta basin. These materials, principally from the Mesozoic were, through undergoing erosion and transport, the principal contributors producing the quaternary sediments which occupy the central part of the basin and the entirety of the land in which the National Hunting Refuge is situated, with the exception of the hills of the northeast corner whose substrate is formed by Cretaceous materials.

The main currently active process is sedimentation of muds, given that the "push" and "drag" of the drainage system is very slow. Amongst the algal deposits of the lake there is an element of organic muds. Chemical sedimentation is also very important, and is dominated by clay minerals (iolite and kaolinite) and carbonates (calcite and dolomite). The quartz and the feldspate have a detritic origin, whilst the gypsum comes from chemical precipitation.

1.5. FLORA. VEGETATION COMMUNITIES.

In addition to the climatic characteristics, three phenomena have a great importance for the vegetation of the Gallocanta basin: thermal inversion, cryoturbation and salinity, to which must be added the results of various human activities such as fires, ploughing and tree felling.

The flora of the Laguna de Gallocanta and its surroundings is rich and varied, owing to the Iberian System being a transition zone in the migration of numerous species of Mediterranean, Atlantic, Eurosiberian, etc. origins. Without doubt the communities associated with the lake shore are the most outstanding, for still maintaining an acceptable state of conservation and being home to numerous species of interest (*Puccinellia oungens*, *Lythrum flexuosum* amongst others).

The following vegetation communities can be distinguished within the limits of the Laguna de Gallocanta National Hunting Refuge:

A. Communities on acid soils

A.1. Gall-oak (*Quercus faginea valentina*) grove Series

A.1.1. Dense scrub of *Cistus laurifolius*, *Lavandula stoechas*, *Halimium viscosum*, etc. with Kermes oak (*Quercus rotundifolia*). Present in a very small quantity on the boundary of the Refuge between the localities of Gallocanta and Berrueco.

A.1.2. Sparse pastures with *Plantago holosteum*, *Corynephorus canescens*, *Festuca indigesta*, *Jasione crispa*, etc. Present only on the northeast boundary, in the vicinity of Berrueco and in a smaller area, between Berreuco and Tornos. Fragmented by crops (non-irrigated).

B. Communities on limestone or basic-neutral soils

B.1. Kermes oak (*Quercus rotundifolia*) grove Series

B.1.1. Dry, sparse pastures of *Poa ligulata*, *Festuca hystrix*, *Koeleria vallesiana*, *Arenaria aggregata erinacea*, *Potentilla cinerea velutina*, generally with remnants of thyme beds and thorn scrub. Situated on the hills of the northwest corner of the Refuge, in the municipal areas of Las Cuerlas and Gallocanta.

B.1.2. Limestone cliff vegetation with *Antirrhinum barrelieri*, *Jasonia glutinosa*, *Crepis albida*, *Seseli montanum*, *Ptychotis saxifraga*, etc. Only present on the small cliff on the eastern edge of the Loma [hill] de la Ermita de la Virgen del Buen Acuerdo, in the Gallocanta municipal area.

C. Shore and wetland vegetation

C.1. Communities with *Salix alba*, *Salix eleagnos angustifolia*, planted poplars, elms, etc. Restricted to various streams and channels which feed into the lake: Arroyo de Santed (municipal areas of Santed and Gallocanta),

Acequia Madre (Tornos) and Acequia del Cañuelo (Bello).

C.2. Planted poplar grove. There are small planted poplar groves, of American poplar (*Populus x canadensis*) around the canals, streams, springs and wet ground in all the municipal areas.

C.3. Wetlands with reeds (*Phragmites australis*) and cat's-tail [a reed mace] *Typha* sp., as well as *Scirpus maritimus* and *S. lacustris*. These form a narrow belt along the banks of the lake and some channels near it. The most developed reedbeds are found on the northwest bank in the places called "Los Ojos" and "La Reguera", in the municipal areas of Gallocanta and Las Cuerlas.

C.4. "Saladares" [a type of halophytic formation on rarely flooded ground=intermittent saline marsh] with *Salicornia ramosissima*, *Suaeda maritima*, *Suaeda splendens*, *Puccinellia fasciculata*, etc. The location and size of these communities varies according to the lake's water level and the fluctuation in this. The main area are found in "Los Lagunazos" [= "the pools"] of Bello and Tornos, in the extreme south of the lake.

C.5. Brackish rush beds with *Juncus maritimus*, *Elymus pungens*, *Schoenus nigricans*, *Puccinellia pungens*, etc. Extends in the form of a border along the shore of the lake, reaching considerable extensions in "Los Lagunazos" [= "the pools"] of Bello and Tornos, behind the border of *Salicornia ramosissima* and *Suaeda* spp. Highly altered by overgrazing and ploughing.

C.6. Fresh/young pastures (grasslands, etc.) with *Lolium perenne*, grass (*Cynodon dactylon*), *Agrorostis stolonifera*, *Trifolium fragilerum*, etc. Scarcely apparent, around streams, springs and pools near the lake, and being found at "La Fuente del Cañizar", the most representative site for this community.

C.7. Floating and submerged vegetation. Aquatic phanerogams are frequent in pools, channels and streams, with various species of *Potamogeton* sp., *Groenlandia* sp., *Ruppia* sp., *Zanichellia* sp., *Lemna* sp., *Myriophyllum* sp., and *Utricularia* sp.

Large "meadows" of rooted filamentous phanerogams partially cover the bottom of the lake, with *Lamprothamnium papulosum* and *Chara galoides* being the dominant species.

D. Crops

D.1. Non-irrigated crops.

These extend through a large part of the Refuge area, surrounding the belt of palustrine/lacustrine vegetation. Wheat and barley are the main non-irrigated crops, occupying more than 80% of these lands. Rye and oats are grown to a small extent and -for only the last 10 years - sunflowers.

Some legumes grow without irrigation, such as sainfoin [grown for fodder and flowers] and "veza", although they have suffered a drastic decline in recent lustrums [half-decades], as has happened with saffron.

D.2. Irrigated crops.

Situated basically to the south of the lake in the municipal areas of Bello and Tornos, and to the west in Las Cuerlas, amounting to some 400 ha. The species sown varies through the years, with beetroot, potato, barley and sunflower being the most frequent.

1.6. FAUNA. VERTEBRATE COMMUNITIES.

[not yet translated]:

1.6.1. Invertebrates

1.6.2. Fish

1.6.3. Amphibians

1.6.4. Reptiles

1.6.5. Birds.

1.6.6. Mammals

2. LAND REGIME

[not yet translated]:

2.1. Land ownership

2.2. Urban planning

2.3. Agricultural planning

2.4. Forms of protection

3. CRITERIA OF INTERNATIONAL IMPORTANCE

According to the criteria for identification of Wetlands of International Importance established by the Third Meeting of the Conference of Contracting Parties to the Ramsar Convention (Regina 1987), the Laguna de Gallocanta complies with the following criteria:

[1d] An example of a specific type of wetland which is rare or unusual in the biogeographic area under consideration. The endorheic saline lakes of the Mediterranean zone of the Western Palaearctic constitute a specific type of wetland which is now very rare due to the attacks of a distinct nature which they have suffered in the last decades. The Laguna de Gallocanta, for its size (the largest in the Iberian Peninsula), general state of conservation and special ecological characteristics, as much as in animal as vegetal communities, can be considered a good example of this type of wetland.

[2a] Supports an appreciable number of individuals of one or more rare, vulnerable or threatened species or subspecies of plants or animals. The Common Crane (*Grus grus*) can be considered a vulnerable species in the Palaearctic. The Laguna de Gallocanta is home on passage during migration to practically the entire Western Palaearctic population of this species, with concentrations of more than 60,000 individuals in Autumn 1989 (Table 2).

[2d] Special value for endemism amongst the halophytic vegetation communities, zooplankton and phytoplankton of the lake.

[3a] Regularly supports 20,000 waterbirds in the winter period: average of 47,000 waterbirds for the period 1972-1989 (Table 3).

[3b] Regularly supports high numbers of individuals of groups, particularly of waterbirds, indicative of wetland values, productivity or diversity: average of 36,000 Anatidae in the period 1972-1989 (Table 3)

[3b] Regularly supports 1% of individuals from a population of a species or subspecies of waterbirds, to be precise fulfilling this criterion in the winter period for the following species:

gadwall *Anas strepera*, red-crested pochard *Netta rufina*, common pochard *Aythya ferina*, coot *Fulica atra*.

The largest concentrations of the red-crested pochard for the Western Palaearctic have been recorded on the Laguna de Gallocanta, reaching counts of 37,000 individuals which amounts to 62% of the total estimated population for that geographic region. The maximum count of common pochard *Aythya ferina* on Gallocanta amounted to 90,000 birds: more 9% of the Western Palaearctic population, this figure only surpassed in the Danube Delta. Likewise, more than 3.5% of the total Western Palaearctic population of coots has been concentrated on the Laguna del Gallocanta (up to 70,000 individuals), a figure only surpassed in this biogeographic area by the Tunisian locality of Akyatan and comparable to counts obtained on the Laguna de Fuentedepiedra (Málaga).

Criteria for wetlands of *National* Importance are fulfilled by the concentrations of the wigeon *Anas penelope*, mallard *Anas platyrhynchos*, teal *Anas crecca*, shoveler *Anas clypeata* and tufted duck *Aythya fuligula*.

4. MANAGEMENT PLAN

[not yet translated]