

Information Sheet on Ramsar Wetlands

Translation of official information by Charles Akin, March 1998

Siteref: 6CL006

Designation date: 02 December 1996

1. **Date this sheet was completed/updated:** 29 November 1996
2. **Country:** CHILE
3. **Name of wetland:** Laguna del Negro Francisco and Laguna Santa Rosa
4. **Geographical coordinates:**

Laguna del Negro Francisco: 27°27'S - 69°13'W

Laguna Santa Rosa: 27°04'S - 69°10'W

5. **Altitude:** 4,000 metres above sea level (Laguna del Negro Francisco)
3,715 metres above sea level (Laguna Santa Rosa)
6. **Area:** approximately 15,425 hectares (Laguna del Negro Francisco)
approximately 47,035 hectares (Laguna Santa Rosa including the Salar de Maricunga)

7. Overview:

The Laguna del Negro Francisco is the most important body of water south of the Salar de Atacama (Region II of Antofagasta) and acts as an important regulator of the biotic and abiotic elements that form the ecological web of the Andean ecosystems in this region.

The Laguna de Santa Rosa is a body of water located in the southwest corner of the Maricunga depression. The surface of the lake is at 3,715 metres above sea level. It is roughly oval shaped measuring 2 kilometres from north to south and is an average of 1 kilometre in width creating a surface of 200 hectares. It is shallow and joined to the Salar de Maricunga by two smaller bodies of water.

8. Wetland type:

permanent brackish lakes

9. **Ramsar criteria:** 1a, 2a, 2b, 2c, 3b
10. **Map of site included? Please tick yes -or- no**
11. **Name and address of the compiler of this form:**

Sección Fauna Silvestre

12. Justification of the criteria selected under point 9, on previous page:

~ no information available ~

13. General location:

This wetland is in Region III of Atacama, in the province of Copiapó, approximately 230 kilometres south of the town of Copiapó.

14. Physical features:

The Laguna del Negro Francisco and the Laguna Santa Rosa are in closed inter-Andean basins in large depressions with plateau features surrounded by volcanic barriers stretching from north to south and smaller barriers from west to east. This rocky landscape is completely volcanic in origin and the barriers are formed by successions of volcanic extrusions where andesite and basalt lavas, often of porphyritic texture, dominate. The depressions are filled with thick deposits of recent sediment, and at their lowest point the Salar de Maricunga and the two lakes of brackish water are without visible drainage. The western range formed by the Cordilleras de Domeyko and Darwin is the watershed between the tributaries of the closed basin toward the east and the Río Figueroa and the basin of the Quebrada de Paipote that drain toward the south. The waters of the Laguna Santa Rosa have a high salinity (12,000 mh), and the Laguna del Negro Francisco is separated into two distinct sections by an alluvial barrier. The eastern sector has the highest salinity (10,000 mh) while the water in the western section is less saline (5,000 mh) because of water from the Río Astaburuaga and probably the Río de La Gallina that flows underground into this section.

The depth of the Laguna Santa Rosa is estimated to be a maximum of 1.20 metres deep, while the Laguna del Negro Francisco is 1.50 metres deep. The climate is that of a cold montane desert, which is defined as a cold desert where temperature change is determined by altitude. The most important characteristics of this area are the extreme dryness of the air and seasonal and daily thermic fluctuations. The days are temperate because of direct insolation, but the nights can be very cold with temperatures below -30°C.

15. Hydrological values:

Both lakes play an important hydrological role by capturing sediment.

The Salar de Maricunga covers 1,200 hectares with a body of water in the centre of approximately 110 hectares.

The Laguna Santa Rosa is a three-part body of water located at the southern edge of the Salar de Maricunga at 3,715 metres above sea level. The Laguna Santa Rosa covers 200 hectares and is joined to the Salar de Maricunga by a channel almost 2 kilometres long. One part of the lake is toward the west, and two other bodies are to the east. Both sections have distinct natural characteristics and as a result, clearly different vegetation and fauna.

The western part is larger than the eastern section and is not linked on the surface with the Salar de Maricunga.

16. Ecological features:

The freshwater portion of the Laguna del Negro Francisco is surrounded by wide flatlands which are usually bare of vegetation but have a few *coironales*. There are, nonetheless, meadows and *bofedales* in the area near where the two bodies of water join and at the mouth of the Río Astaburuaga where there are meadows on brackish subsoil of Gramineae and other herbaceous plants such as *Calandrinia oculta*, *Deuyexia curvula*, *Potamogeton strictus* and *Ranunculus cymbalaria*. The growth of this vegetation is conditioned on fresh water from the Río Astaburuaga or from springs between the two sections of the Laguna del Negro Francisco.

Vegetation is dominated by various sizes of clumps of *Scirpus* sp. along the shore up to about two metres from the edge of the water. Towards the slopes, the typical steppe vegetation composed primarily of *Stipa frigida* begins. On the steeper slope, it grows in association with *Adesmia aecigeras*, a thorny shrub forming half-circle clumps. In some areas these two species form almost pure communities.

The eastern part is formed by two almost triangular bodies of water, shallower than the western part and joined to the Salar de Maricunga by a channel of varying width. The vegetation is that of meadows or *bofedales* where growth depends on the saline gradient. It can reach some 200 metres in width between greatest salinity and greatest humidity.

The shore is cut by several channels and ponds distributed in patches which favour greater numbers of species and dense vegetational cover. There is underwater vegetation of algae of the species *Ruppia filifolia* and *Potamogeton strictus* while the shore is dominated by ground-covering *Scirpus* sp. and Gramineae such as the *Deuyexia velutina* and *Triglochin palustris*. Where humidity decreases, the predominant species is *Deschampsia caespitosa*. This is where an area of short steppe vegetation of *Stipa frigida* begins.

17. Noteworthy flora:

The following species of flora have been recorded around the Laguna del Negro Francisco:

1. Marsh vegetation

Calceolaria pinnifolia

Oxychloe andina

Patosia clandestina

Arenaris rivularis

Malesherbia lactea

Menovillea cuneata

Scirpus sp.

Nastanthus caespitosus

Ranunculus cymbalaria

Ranunculus uniflorus

2. Perennial pastures

Deyeuxia velutina

Deyeuxia eminens

Deyeuxia curvula

Deyeuxia nigriscens

Deschampsia ceaspitosa

Critesion santacrucense

Critesion comosum

Juncus balticus

Poa brevis

Poa sp.

Puccinellia oresigena

Scripus americanus

Stipa chrysophylla

3. Annual herbaceous plants

Chaetanthera spp.

Gilia crassifolia

Pacelia cumingii

Doniophyton anomalum

4. Aquatic plants

Ruppia filifolia

Musgo sp.

Chara sp.

Lilaeopsis andina

Miriophyllum aquaticum

Potamogeton strictus

Triglochin palustris

The species of flora that have been recorded around the Laguna Santa Rosa are exactly identical to the ones of the Laguna Negro Francisco

18. **Noteworthy fauna:**

There are 53 species of fauna recorded here, of which 41 are birds and 8 are mammals. Approximately one third of these species are threatened to some degree.

Of particular importance are the three species of flamingos in northern Chile, the vicunas and guanacos, the *chuluo*, the Chilean coot (*Tagua cornuda*) that settled in this area of the lake in 1994, the *pato juarjual* and many other species.

Structure and Faunistical Composition of the sector Laguna del Negro Francisco:

TAXA	BS	CS	S
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Classe Aves

Orden Podicipediformes

Familia Podicipedidae

Podiceps occipitalis R - O

Orden Falconiformes

Familia Cathartidae

Phalcoboenus megalopterus R - O

Familia Accipitridae

Geranoaetus melanoleucus ? - O

Orden Phoenicopteriformes

Familia Phoenicopteridae

Phoenicopus chilensis R V O

Phoenicoparrus andinus R V O

Phoenicoparrus jamesi R V O

Orden Anseriformes

Familia Anatidae

Anas sibilatrix R - O

Anas puna R - O

Anas flavirostris R - O

Anas platalea V - O

Lophonetta specularoides R - O

Chloephaga melanoptera R V O

Orden Ralliformes

Familia Rallidae

Fulica cornuta R V O

Gallinula chloropus V - O

Orden Charadriiformes

Familia Charadriidae

Charadrius alticola R - O

Familia Scolopacidae

Calidris bairdii Mhn - O

Calidris melanotus Mhn - O

Phalaropus tricolor Mhn - O

Familia Recurvirostridae				
<i>Recurvirostra andina</i>	R	-	O	
Familia Thinocoridae				
<i>Thinocorus orbignyianus</i>	?	-	O	
<i>Attagis gayi</i>	R	R	O	
Familia Laridae				
<i>Larus serranus</i>	R	R	O	
<u>Orden Passeriformes</u>				
Familia Furnariidae				
<i>Geositta isabellina</i>	R	-	O	
Familia Emberizidae				
<i>Sicalis uropygialis</i>	R	-	O	
<i>Sicalis auriventis</i>	R	-	O	
<i>Zonotrichia capensis</i>	R	-	O	
Familia Tyrannidae				
<i>Agriornis montana</i>	R	-	O	
<i>Muscisaxicola flavinucha</i>	?	-	O	
<i>Muscisaxiola rufivertex</i>	?	-	O	
<i>Muscisaxiola frontalis</i>		?	-	O
<i>Lessonia oreas</i>	?	-	O	
<i>Lessonia rufa</i>	R	-	O	
Clase Mammalia				
<u>Orden carnivora</u>				
Familia Canidae				
<i>Pseudalopex culpaeus</i>	R	Y	O	
<u>Orden Artiodactyla</u>				
Familia Camelidae				
<i>Lama guanicoe</i>	R	P	O	
<i>Vicugna vicugna</i>	R	P	O	
<u>Orden Rodentia</u>				
Familia Cricetidae				
<i>Phyllotis darwini</i>	R	-	L	
<i>Abrothrix andinus</i>	R	-	L	

Familia Chinchillidae			
<i>Lagidium viscacia</i>	R	V	O

Familia Ctenomidae			
<i>Ctenomys fulvus</i>	R	-	O

Orden Logomorfa

Familia Leporidae			
<i>Lepus capensis</i>	R	-	O

Clase Reptilia

Orden squamata

Familia Iguanidae			
<i>L. eleodori</i>	-	-	L
<i>L. anticolor</i>	-	-	L
<i>L. multiformis</i>	-	-	L
<i>L. nigriceps</i>	-	-	L

In the Laguna Santa Rosa, fauna is represented by 49 species, corresponding with 41 bird species and 8 mammal species. Of those species presented, 32,6% has a problematic conservation status.

TAXA	BS	CS	S
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Clase Aves

Orden Tinamiformes

Familia Tinamidae			
<i>Tinamotis pentlandii</i>	R	V	O

Orden Podicipediformes

Familia Podicipedidae			
<i>Podiceps occipitalis</i>	R	-	O

Orden Falconiformes

Familia Cathartidae			
<i>Vultur griphus</i>	R	V	O

Familia Falconidae			
<i>Falco peregrinus</i>	?	P	O
<i>Falco femoralis</i>	?	-	O

<i>Falco sparviero</i>	R	-	O
<i>Phalcoboenus megalopterus</i>	R	-	O
<u>Orden Phoenicopteriformes</u>			
Familia Phoenicopteridae			
<i>Phoenicopterus chilensis</i>	R	V	O
<i>Phoenicoparrus andinus</i>	R	V	O
<i>Phoenicoparrus jamesi</i>	R	V	O
<u>Orden Anseriformes</u>			
Familia Anatidae			
<i>Anas cyanoptera</i>	V	-	O
<i>Anas spinnicauda</i>	V	-	O
<i>Anas sibilatrix</i>	R	-	O
<i>Anas puna</i>	R	-	O
<i>Anas flavirostris</i>	R	-	O
<i>Anas platalea</i>	V	-	O
<i>Lophonetta specularoides</i>	R	-	O
<i>Chloephaga melanoptera</i>	R	V	O
<u>Orden Ralliformes</u>			
Familia Rallidae			
<i>Fulica leucoptera</i>	V	-	O
<i>Fulica rufifrons</i>	V	-	O
<i>Fulica cornuta</i>	R	V	O
<u>Orden Charadriiformes</u>			
Familia Charadriidae			
<i>Charadrius alticola</i>	R	-	O
<i>Charadrius alexandrinus</i>	?	-	O
Familia Scolopacidae			
<i>Calidris bairdii</i>	Mhn	-	O
<i>Calidris melanotus</i>	Mhn	-	O
<i>Tringa melanoleuca</i>	Mhn	-	O
<i>Phalaropus tricolor</i>	Mhn	-	O
<i>Gallinago andina</i>	?	V	O
Familia Recurvirostridae			
<i>Recurvirostra andina</i>	R	-	O
Familia Thinocoridae			
<i>Thinocorus orbignyianus</i>	?	-	O
<i>Attagis gayi</i>	R	R	O

Familia Laridae				
<i>Larus serranus</i>	R	R	O	
<u>Orden Passeriformes</u>				
Familia Hirundinidae				
<i>Notiochelidon cyanoleuca</i>	R	-	O	
Familia Furnariidae				
<i>Geositta isabellina</i>	R	-	O	
<i>Geositta rufipennis</i>	?	-	O	
Familia Emberizidae				
<i>Sicalis uropygialis</i>	R	-	O	
<i>Sicalis auriventis</i>	R	-	O	
Familia Tyrannidae				
<i>Agriornis montana</i>	R	-	O	
<i>Muscisaxicola flavinucha</i>	?	-	O	
<i>Muscisaxiola frontalis</i>		?	-	O
<i>Lessonia rufa</i>	R	-	O	
Classe Mammalia				
<u>Orden carnivora</u>				
Familia Canidae				
<i>Pseudalopex culpaeus</i>	R	Y	O	
Familia Felidae				
<i>Felix concolor</i>	?	P	L	
<u>Orden Artiodactyla</u>				
Familia Camelidae				
<i>Lama guanicoe</i>	R	P	O	
<i>Vicugna vicugna</i>	R	P	O	
<u>Orden Rodentia</u>				
Familia Chinchillidae				
<i>Lagidium viscacia</i>	R	V	O	
Familia Ctenomidae				
<i>Ctenomys fulvus</i>	R	-	O	

Orden Logomorfa

Familia Leporidae

Lepus capensis

R - O

Key to the codes:

BS = biological state

R - reproducing in the area

V - visitor

Vo - occasional visitor

Vr - regular visitor

M - migratory species

MHN - migratory species from Northern Hemisphere

Mh - migrating horizontally within country

Mv - migrating vertically within country

CS = conservation state

E - extinct

V - vulnerable

R - rare

T - threatened

U - undetermined

S = Source

L - literature

O - observation

19. Social and cultural values:

In the surrounding area, there are archaeological vestiges of pre-Hispanic hunters and evidence of earlier occupation.

20. Land tenure/ownership of:

The land in the wetland as well as that outside the wetland, which is part of the Parque Nacional Nevado Tres Cruces, is owned by the government.

21. Current land use:

~ no relevant information available ~

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

The greatest negative impact is caused by the concessions for water use held by the mining companies that work on the altiplano. A negative impact is also produced by the prospecting

and digging for minerals and underground water which leaves vehicle tracks and in some cases roads. The roads make it possible to reach places that were formerly inaccessible. There is also intense illegal hunting of birds, vicuna and guanaco. Of increasing importance as a factor of degradation of the landscape is uncontrolled tourism, especially the use of four-wheeled vehicles that mar the landscape.

23. Conservation measures taken:

Both the Laguna del Negro Francisco and the Laguna Santa Rosa are included in the Parque Nacional Nevado Tres Cruces that forms part of the national system of protected wildlife areas (SNASPE).

24. Conservation measures proposed but not yet implemented:

A management plan for the Parque Nacional Nevado Tres Cruces is being prepared.

25. Current scientific research and facilities:

Surveys to determine the summer populations of threatened species are being carried out in northern Chile within the framework of the guanaco, vicuna and flamingo projects. Monthly field reports are made on populations from which annual fluctuation is calculated. The following species are being surveyed: *Attagis gayi*, *Cloephaga melanoptera*, *Fulica cornuta*, *Lagidium viscacia*, *Lama guanicoe*, *Larus serranus*, *Phalcoboenus megalopterus*, *Phoenicoparrus andinus*, *Phoenicopterus chilensis*, *Phoenicoparrus jamesi* and *Vicugna vicugna*.

There is a rustic cabin of 18.5 square metres at the Laguna Santa Rosa and a guard house of 41.8 square metres at the Laguna del Negro Francisco.

26. Current conservation education:

An annual environmental education plan is carried out by the park wardens. A centre for environmental information is also planned in the park.

27. Current recreation and tourism:

The wetland is used for mountain ecotourism, especially during the summer season.

28. Jurisdiction:

Region III de Atacama
Province of Copiapó
Ministerio de Agricultura
Secretaría Regional Ministerial de Agricultura
Corporación Nacional Forestal
CONAF Region III

29. Management authority:

Unidad de Gestión Patrimonio Silvestre
CONAF Region III
Sr. Fernando Bascuñan, Ing. Forestal
Jefe Regional Unidad de Gestión Patrimonio Silvestre
Atacama 898, Casilla 568, Telefono 213404, Copiapó

30. Bibliographical references:

Arroyo, M.; Marticorena, C. and Villagrán, C., 1988. La Flora de la Cordilera de los Andes, en el área de la Laguna Grande y la Laguna Chica, III Región, Chile. *Gayana, Botánica* 42: 3-46.

Bencke, R., 1987. Informe preliminar sobre la factibilidad técnica y ecológica de extraer agua de la Laguna del Negro Francisco, III Región. MOP, DGA, 42 pp.

Oyarzo, H. and Correa, H., 1990. Avifauna asociada a la Laguna del Negro Francisco, III Región de Atacama, Chile. I Congreso Internacional de Especialistas en Flamencos Sudamericanos. Ses. y Res. Antofagasta, Chile 25-34.

Oyarzo, H. and Bascuñan, F. , 1994. El Patrimonio Ecológico de Acatama. Dto. Técnico, CONAF III Región, 43 pp.