

CHILEAN TERRITORIES

INTRODUCTION

by Roberto Schlatter

A Directory of Neotropical Wetlands, published in 1986, contains a chapter on wetlands in Chile (Schlatter & Espinosa, 1986). This includes a brief account of the progress that had been made in wetland conservation and research in Chile up to 1985, and describes 50 of the principal wetland systems. However, no information was available at that time on the wetlands of Chile's remote offshore islands in the South Pacific, and these islands were therefore omitted from the *Directory*. The following account is confined to a description of the wetlands of Chile's oceanic islands, and the reader is referred to *A Directory of Neotropical Wetlands* for more general information on wetlands and wetland conservation in Chile as a whole.

Area of oceanic islands: 359.5 sq.km.

Population: Isla de Pascua 2,100; Juan Fernandez Archipelago 550 (1982).

Chile's oceanic islands comprise the Islas Desventuradas, Juan Fernandez Archipelago, Isla de Pascua (Easter Island) and Isla Sala y Gomez.

The Islas Desventuradas are situated some 972 km from the Chilean mainland. They include two main islands, Isla San Felix (26°17'S, 80°05'W) and Isla de San Ambrosio (26°20'S, 70°58'W), a small islet to the southeast of Isla San Felix, Islote Gonzalez (26°19'S, 80°04'W), and several tiny rocks and stacks. Together, the islands have a surface area of only 10.3 sq.km. The topography is very rugged, with peak elevations of 193 m on Isla San Felix and 479 m on Isla de San Ambrosio.

The Juan Fernandez Archipelago National Park and Biosphere Reserve consists of three islands, Isla Robinson Crusoe (33°37'S, 78°53'W), Isla Santa Clara (33°42'S, 79°01'W) and Isla Alejandro Selkirk (33°45'S, 80°45'W), with a combined area of 183 sq.km. Isla Robinson Crusoe Island (93 sq.km) and the nearby, much smaller Isla Santa Clara (5 sq.km) are situated about 670 km west of Valparaiso. Isla Alejandro Selkirk (85 sq.km) is 167 km west of Isla Robinson Crusoe and about 835 km west of Valparaiso. All three islands are mountainous, with maximum elevations of 915 m, 375 m and 1,650 m respectively.

Isla Sala y Gomez (26°27'S, 105°28'W), a Nature Sanctuary, lies about 3,400 km west of the Chilean mainland and about 415 km east of Isla de Pascua. This small volcanic island, with an area of only 2.5 sq.km, consists of two hills of bare rock joined by a narrow isthmus. The maximum elevation is only about 30 m.

Isla de Pascua, or Easter Island, (27°09'S, 109°23'W), is much the largest of Chile's oceanic islands, with an area of 163.7 sq.km. This high volcanic island, most of which is a National Park, is situated about 3,790 km west of the Chilean mainland and about 2,200 km east of the Pitcairn Island, which is the nearest inhabited island. The island is roughly triangular in shape, with an extinct volcano at each corner. The interior consists of high plateaus and craters surrounded by coastal bluffs. The maximum elevation is 560 m at the summit of the main volcano, Mauna Terevaka. Many parasitic craters exist on the southern and southeastern flanks of Mauna Terevaka, and three of these, Rano Aroi, Rano Raraku and Rano Kau, contain crater lakes. The island was once extensively wooded with an endemic tree species *Sophora toromiro*, but all the trees were cut down by the indigenous inhabitants and grasslands now cover the island.

Chile's oceanic islands have recently been described in some detail in Castilla (1987). This summarizes available information on the geology, climate, terrestrial fauna, marine fauna and flora of the islands, and identifies priorities for future investigation. All four island systems support a variety of breeding seabirds, but populations have been sadly depleted on all but Sala y Gomez (the only one of the four to remain uninhabited) because of egg collecting by islanders and degradation by introduced predators. The status and conservation of seabirds in Chile's oceanic islands have recently been summarized by Schlatter (1984, 1987). Only Isla de Pascua has significant coral communities, which are

described by UNEP/IUCN (1988).

The only significant wetlands are on Isla de Pascua, the most important of these being the three crater lakes: Rano Kau (the largest), Rano Rarako and Rano Aroi (the smallest). All three are approximately circular in shape, and support extensive stands of reeds and floating bogs of peat. There are no perennial freshwater streams on the island.

WETLANDS

Site descriptions compiled by Roberto Schlatter of the Instituto de Zoologia, Universidad Austral de Chile, and Roger Hicks.

Wetland Name: Rano Kau

Country: Chile

Coordinates: 27°09'S, 109°27'W

Location: near the southwestern tip of Isla de Pascua (Easter Island).

Area: 100 ha.

Altitude: 120 m.

Overview: A freshwater crater lake almost completely covered by emergent and floating aquatic vegetation.

Physical features: Rano Kau is a collapsed cone now in the form of a caldera filled by a freshwater lake. The lake is about one km in diameter, and is fed by local run-off. More than 80% of the water surface is covered by a thick floating mat of reeds and peat. The pH of the water is 4.65. The lake is surrounded by crater walls which rise to 400 m above sea level on the east (island) side, with a lower saddle on the southern edge facing the sea.

Easter Island has an equatorial-oceanic climate, with an average annual rainfall of 1,126 mm and a mean annual temperature of 20.7°C (mean monthly minimum 15.5°C, mean monthly maximum 27.3°C). March to June are the wettest months; July to October the driest and coolest. Southeast trade winds dominate from October to April; during the rest of the year North and Northwest winds are more common.

Ecological features: Most of the wetland is covered with an emergent swamp of *Polygonum* and *Scirpus* and floating mats of the endemic moss *Campylopus turficola*. The surrounding grasslands are dominated by species of *Stipa* and *Nasella* as well as introduced *Sporobolus indicus* and *Cyndodon dactylon*. The vegetation of the island has been described by Etienne *et al* (1982).

Land tenure: State owned (Chilean Government).

Conservation measures taken: Protected within Rapa Nui National Park (4,755 ha) established in 1935 by Decree 103, Ministry of Lands and Colonization. A management plan for the park was published with the assistance of FAO in 1976 (Zentilli *et al*, 1976).

Land use: Tourism and water supply for the village of Hanga Roa.

Disturbances and threats: A species of *Gambusia* has been introduced into the lake for mosquito control, and there are many other introduced species of animal and plant on the island. Erosion, uncontrolled burning and damage caused by tourists may also pose problems to the wetland.

Hydrological and biophysical values: No information.

Social and cultural values: On the southwest slopes of the Rano Kau crater there are the remains of the ceremonial city of Orongo, consisting of 47 stone houses, and rocky outcrops covered in petroglyphs honouring the birdman and the god Make Make.

Noteworthy fauna: No waterbirds are known to have occurred at the lake (or indeed on Easter Island). The introduced Common Diuca Finch (*Diuca diuca*) occurs around the crater rim, and Red-tailed Tropicbirds (*Phaethon rubricauda*) occasionally visit the crater. There are no mammals on the island, other than introduced rodents and carnivores. Two terrestrial reptiles, *Lepidodactylus lugubris* and *Ablepharus boutoui poecilopleurus* occur on the island, but it is not known if they occur at the wetland.

Noteworthy flora: An endemic moss, *Campylopus turficola*, is present.

Scientific research and facilities: Limnological research is being carried out in the crater lakes in the National

Park (Steffen and Palma, 1992), but no detailed studies have been made of the fauna and flora of the wetlands. The Chilean Navy is currently promoting scientific research on the island under the "Projecto Oceanografico Integrado", and is constructing a research laboratory.

Conservation education: There is a museum in the national park, but this is dedicated totally to archeological and anthropological material, and there is no interpretive material dealing with the natural environment.

Recreation and tourism: Rano Kau is an site of outstanding archeological interest and scenic beauty, and is a very popular destination for tourists.

Management authority and jurisdiction: Corporacion Nacional Forestal.

References: Dahl (1986); Etienne *et al* (1982); IUCN (1991); UNEP/IUCN (1988); Steffen & Palma (1992); Zentilli *et al*, 1976.

Reasons for inclusion: 1a, 2b, 2d. Rano Kau and the other two freshwater lakes on Easter Island are of considerable interest because of their extreme isolation. Easter Island (with the small rocky islet of Sala y Gomez) is the most isolated island in the Pacific Ocean, and is thus of great importance in the study of biogeographical dispersion and colonisation.

Source: Roberto P. Schlatter and Roger Hicks.

Wetland Name: Rano Aroi

Country: Chile

Coordinates: 27°09'S, 109°27'W

Location: on the southern slopes of Maunga Terevaka volcano, near the centre of Isla de Pascua (Easter Island).

Area: 1 ha.

Altitude: 250 m.

Overview: A small freshwater crater lake with rich emergent aquatic vegetation.

Physical features: No information.

Ecological features: No information.

Land tenure: Privately owned.

Conservation measures taken: None.

Land use: A water supply for domestic livestock. Surrounding grasslands are intensively grazed.

Disturbances and threats: Possible excessive use of water.

Hydrological and biophysical values: No information.

Social and cultural values: No information.

Noteworthy fauna: No information.

Noteworthy flora: No information.

Management authority and jurisdiction: No information.

Reasons for inclusion: 1a, 2b. Rano Aroi and the other two freshwater lakes of Easter Island are of considerable interest because of their extreme isolation.

Source: Roberto P. Schlatter.

Wetland Name: Rano Raraku

Country: Chile

Coordinates: 27°09'S, 109°27'W

Location: near the eastern end of Isla de Pascua (Easter Island).

Area: 10 ha.

Altitude: 50 m.

Overview: A small freshwater crater lake with extensive emergent aquatic vegetation.

Physical features: A freshwater lake in the crater of Rano Raraku volcano, roughly circular in shape and approximately 350 m in diameter. The lake, which has a volume of 206,100 cubic metres, is fed by local run-off. The pH of the water is 7.15. The climate is equatorial-oceanic, with an average annual rainfall of 1,126 mm and a mean annual temperature of 20.7°C. March to June are the wettest months, and July to October the driest and coolest. Southeast trade winds dominate from October to April; during the rest of the year North and Northwest winds are more common.

Ecological features: The lake is fringed with stands of *Polygonum* and *Scirpus californicus* which cover

45% of the surface, mostly in the southern third of the lake, and there are floating mats of the endemic moss *Campylopus turficola*.

Land tenure: State owned (Chilean Government).

Conservation measures taken: Protected within Rapa Nui National Park (4,755 ha) established in 1935 by Decree 103, Ministry of Lands and Colonization. A management plan for the park was published with the assistance of FAO in 1976 (Zentilli *et al.*, 1976).

Land use: Water supply and tourism. A pipe takes water from the lake to a nearby homestead. Domestic livestock visit the lake to drink.

Disturbances and threats: Erosion, uncontrolled fires and damage caused by tourists may pose problems to the wetland. Islanders do not recognise the Chilean Government's authority to declare their lands a national park and consequently respect few of its rules (UNEP/IUCN, 1988).

Hydrological and biophysical values: No information.

Social and cultural values: The southern wall of the volcano was the quarry for most of the stone statues (moai) for which Easter Island is famous. About 200 statues remain in the quarry, in various stages of completion.

Noteworthy fauna: No waterbirds are known to have occurred at the lake (or indeed on Easter Island). Large numbers of introduced Common Diuca Finches (*Diuca diuca*) and House Sparrows (*Passer domesticus*) utilise the reed beds, while introduced Chimango Caracaras (*Milvago chimango*) and Chilean Tinamous (*Nothoprocta perdicaria*) occur in the area. Dragonflies (Neuroptera) are present.

Noteworthy flora: An endemic moss, *Campylopus turficola*, is present.

Scientific research and facilities: Limnological research is being carried out in the crater lakes in the National Park (Steffen and Palma, 1992), but no studies have been made of the fauna and flora of the wetlands. A research laboratory is currently being constructed.

Recreation and tourism: The quarry in the southern wall of the crater is frequently visited by tourists.

Management authority and jurisdiction: Corporation Nacional Forestal.

References: Dahl (1986); IUCN (1991); UNEP/IUCN (1988); Steffen & Palma (1992); Zentilli *et al.*, 1976.

Reasons for inclusion: 1a, 2b. Rano Raraku and the other two freshwater lakes of Easter Island are of considerable interest because of their extreme isolation.

Source: Roberto P. Schlatter, Wladimir Steffen and Roger Hicks.

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