

World Heritage Sites

Protected Areas and World Heritage



WHALE SANCTUARY OF EL VIZCAINO MEXICO

The coastal lagoons of Ojo de Liebre and San Ignacio on the central west coast of the Baja California peninsula are important breeding and wintering sites for the grey whale and great numbers of seabirds; also for California sea lions, northern elephant-seals and four endangered species of marine turtle.

COUNTRY

Mexico

NAME

Whale Sanctuary of El Vizcaino

NATURAL WORLD HERITAGE SERIAL SITE

1993: Inscribed on the World Heritage List under Natural Criterion x.

STATEMENT OF OUTSTANDING UNIVERSAL VALUE [pending]

INTERNATIONAL DESIGNATIONS

1993: Designated a Biosphere Reserve under the UNESCO Man & Biosphere Programme (2,546,790 ha; core area: 363,439 ha).

2004: *Laguna Ojo de Liebre* and *Laguna San Ignacio* designated Wetlands of International Importance under the Ramsar Convention (36,600 & 17,500 ha).

IUCN MANAGEMENT CATEGORY

Unassigned

BIOGEOGRAPHICAL PROVINCE

Sonoran (1.8.7)

GEOGRAPHICAL LOCATION

On the Pacific coast halfway down the Baja California peninsula in the state of Baja California Sur, the site covers two lagoons and two small coastal lakes all within the Biosphere Reserve of El Vizcaino. The Laguna Ojo de Liebre lies between 27°23'-27°59'N and 114°30'-114°55'W, with the adjoining lakes Guerrero Negro and Manuela; and the Laguna San Ignacio is 100 km southeast at 26°25'-27°13'N by 112°48'-113°17'W.

DATES AND HISTORY OF ESTABLISHMENT

1932/1949: The protection of migratory birds and game animals undertaken by two international agreements;

1971: The Laguna Ojo de Liebre, proclaimed a marine refuge zone for whales by federal Decree;

1972: A second decree proclaimed the two lagoons a refuge zone for migratory birds and wildlife;

1979: A third decree established Laguna San Ignacio as a whale refuge;

1980: The 1971 decree modified to include the lagoons of Manuela and Guerrero Negro;

1988: A national biosphere reserve proclaimed over the area between the Pacific and Gulf coasts.

LAND TENURE

Laguna Ojo de Liebre: ownership 40% national; 50% communal; and 10% private. Laguna San Ignacio: ownership 80% national; and 20% communal. The biosphere reserve is managed by the *Instituto Nacional de Ecología* (INE) for the Secretariat of Environment, Natural Resources and Fish (SEMARNAP)

AREA

370,950 ha: Laguna de Ojo de Liebre area (227,994 ha); and Laguna San Ignacio area (142,956 ha).

ALTITUDE

Sea-level to about 10m.

PHYSICAL FEATURES

The lagoons are on the Pacific coast of the Baja California peninsula. Laguna Ojo de Liebre which opens off the immense Bahía Sebastián Vizcaino is 9 km wide by 48 km long and 5-12m deep. Laguna San Ignacio some 100 km southeast is 6 km wide, 35 km long and between 2-4 metres deep (SEDUE, 1989). They extend into the mainland, not parallel to it and the sites include some of the surrounding land. The Laguna Ojo de Liebre is a hypersaline lagoon which contains lagoonal, coastal and marine ecosystems as well as tidal channels and intertidal flats; its surroundings also contain sandy bays, unstable dunes, saltpetre areas, halophilous bushes and marshes. The soils are alkaline and hypersaline, poor in organic material. Laguna San Ignacio on the very arid western side of the peninsula, is a brackish lagoon with wide intertidal flats, a lake at its northern end and bays and islets on the coast. It contains the northernmost mangrove forests on the continent. The Lagunas de Guerrero Negro and de Manuela are two small coastal lakes just north of the Laguna Ojo de Liebre. Together the lagoons form the main grey whale breeding refuge in the northeast Pacific. The site map shows six rivers from the Sierra Vizcaino to the west which dry up before reaching the lagoon, and to the east of Ojo de Liebre there is a large area of marsh.

CLIMATE

The climate of the area is warm temperate and very dry, especially on the west coast. The mean annual temperature ranges between 18°C and 22°C during the day in winter, plunging at night, but summer temperatures are much higher. Solar radiation is intense and the annual evaporation rate is 98%. In winter, transverse coastal northwest winds are fairly constant but there is also often coastal fog. The annual rainfall averages 80mm but fluctuates between zero and 200mm.

VEGETATION

Coastal dunes found around Laguna Ojo de Liebre form an unstable scrub community, dominated by *Abronia carterae*, *Lycium californicum*, *Errazurizia megacarpa* and *Larrea tridentate* with some halophytes. Slightly denser xeric scrub vegetation is found between the halophytic and dune vegetation. The plants scattered around the lagoons are tolerant of the saline and alkaline soils, constant wind, and high solar radiation. Genera include *Atriplex*, *Salicornia*, *Allenrolfea*, *Suaeda* and *Limonium*. Mangrove forest is here at its northernmost limit in the North Pacific. It comprises *Rhizophora mangle*, *Zostera marina* and *Salicornia bigelowii* with *Laguncularia racemosa*, confined to the margins of Laguna San Ignacio and *Spartina foliosa* to those of Laguna Ojo de Liebre (SEDESOL, 1993). 85 species of macro-algae are reported for Ojo de Liebre Bay, including *Sargassum* spp., *Neogardhiella* sp., *Laurencia iriei*, *L. pacifica*, *Colpomenia* sp., *Chondria californica*, *Gigartina tedii*, *Asparagopsis taxiformis*, and *Euchema uncinatum* (Carreón, 2004).

FAUNA

The Laguna Ojo de Liebre is one of the main refuges for gray whales *Eschrichtius robustus*, a once more widespread baleen species, where they meet to pair, breed and nurse their young. Laguna San Ignacio is also an important breeding site. The whales number some 300-400 individuals each winter. The lagoons are nearly the southernmost goal of an 8,000 km breeding migration from the Chukchi and Bering Seas. Oceanic visitors include blue whale *Balaenoptera musculus* (EN), humpback whale *Megaptera novaeangliae* and orca *Orcinus orca*. Resident marine mammals are northern elephant seal *Mirounga angustirostris*, California sea lion *Zalophus californianus*, common seal *Phoca vitulina* and common bottlenose dolphin *Tursiops truncatus*. The plains of Vizcaino are the last refuge of the Lower Californian pronghorn antelope *Antilocapra americana peninsularis* and one of the last refuges of the Mexican pronghorn *A. americana sonoriensis*. Desert bighorn sheep *Ovis canadensis nelsoni* and

mule deer *Odocoileus hemionus peninsulae* are found in the surrounding biosphere reserve, Four marine turtles occur on the coasts: hawksbill *Eretmochelys imbricata* (CR), loggerhead *Caretta caretta* (EN), green *Chelonia midas* (EN) and olive ridley *Lepidochelys olivacea* (VU) (SEDESOL, 1993). The exact number of fish species is not known but is high. Species off the western coast include spotted sand bass *Paralabrax maculatofasciatus*, and fringed flounder *Etropus crossotus* (Leija *et al.*, 1991; Acevedo, 1997). Important pelagic species supporting the fishing industry include Pacific sardine *Sardinops sagax*, Pacific anchoveta *Cetengraulis mysticetus* and California anchovy *Engraulis mordax*, milkfish *Chanos chanos*, Panama hake *Merluccius angustimanus*, yellowtail jack *Seriola dorsalis*, common dolphinfish *Coryphaena hippurus* and Spanish mackerel *Scomber japonicus*. Other species include *Hippocampus ingens*, *Signathus auliscus*, *Fistularia commersonii*, *Paralabrax clathratus*, *Calamus brachisomus*, and *Diodon holocanthus* (De La Cruz-Aguero *et al.*, 1996; Leija *et al.*, 1991). Both lagoons are important fish nurseries.

The lagoons host more than 500,000 individuals or 80% of the birds which winter along the Peninsula's Pacific coast (Carmona & Danemann, 1998). In Ojo de Liebre during 1995-1996 a total of 94 species were recorded along the rivers and in the islands in the lagoon. Species include American white pelican *Pelicanus erythrorhynchos*, grey-headed fishing-eagle *Ichthyophaga ichthyaetus*, osprey *Pandion haliaetus* and peregrine falcon *Falco peregrinus*; also red-necked phalarope *Phalaropus lobatus* (60,000) and black-necked grebe *Podiceps nigricollis* (60,000), western sandpiper *Calidris mauri* (70 000), marbled godwit *Limosa fedoa* (120 000) and Pacific black brent goose *Branta bernicla nigricans* (120,000) for which these lagoons are the main wintering grounds. Other important migrant species arriving in lesser numbers are lesser scaup *Aythya affinis*, red-breasted merganser *Mergus serrator*, and northern pintail *Anas acuta*.

CONSERVATION VALUE

The Baja California lagoons are wintering sites essential for breeding grey whales, very important for wintering birds and a significant nesting area for four of the world's marine turtle species. The Park lies within a Conservation International-designated Conservation Hotspot and a WWF Marine Global 200 Eco-region. It lies within a UNESCO Biosphere Reserve and each lagoon is a Ramsar wetland.

CULTURAL HERITAGE

Bahía Sebastián Vizcaíno is named after its first explorer in 1602 and the area was opened up by Spanish missionaries. The Laguna Ojo de Liebre is also known as Scammon's lagoon after the mid 19th century whaling captain who led the near extinction of the species there.

LOCAL HUMAN POPULATION

The Desierto de Vizcaino is one of the least populated parts of the peninsula. Guerrero Negro is a small port town of 10,000 near the mouth of the Laguna de Ojo de Liebre and is a main centre for whale tourism. It is the site of some of the largest manmade salt pans and the largest saltworks in the world, the *Exportadora de Sal*, from where the salt, produced by solar evaporation, is shipped out after mining via the offshore island of Isla Cedros (SEDUE, 1989). In Laguna San Ignacio an aquaculture farm produces commercial oysters; and five fishing cooperatives work the area. Some 28,000 live in the buffer zone on agriculture, pastoralism, mining and tourism.

VISITORS AND VISITOR FACILITIES

In 1980 1,000 tourists visited Laguna San Ignacio to view the whales from boats with local fishermen doubling as guides for the season; during the 1990 tourist season, 3,000 people visited. Whale watching is now officially confined to this lagoon. Tours are organised for those without their own transport. By 2003 the Biosphere Reserve received 13,000 visitors a year, though not all to the whale lagoons since there is deep sea fishing from the coasts and in the mountains to the east, wildlife and thousands of cave paintings. There are hotels and an airstrip at Guerrero Negro village which is just off the north-south transpeninsular highway. There is a landing strip at Laguna San Ignacio and hotels at San Ignacio inland from the lagoon.

SCIENTIFIC RESEARCH AND FACILITIES

Studies of the terrestrial, marine and island flora and fauna of the whole area were initiated by the *Centro de Investigaciones de Baja California Sur* (Anon, 1990) by a joint USA/Mexican scientific team, supported by IUCN/WWF, which undertook whale censuses and tagging over a five-year period. PRO-ESTERO, a USA/Mexican environmental education organisation, has a wealth of bibliographic information on the Vizcaíno wetlands and on research into the Ojo de Liebre, San Ignacio, and Guerrero Negro lagoons. Its descriptive profiles include full information on the physical

and biological characteristics with flora and fauna lists. The salt mining company at Guerrero Negro has contributed to the area's conservation and research by water quality monitoring in the bays, and monitoring of gray whales, sea turtles, marine mammals, and wintering birds. The *Unidades del Centro de Investigaciones Biológicas*, investigating arid land agriculture, is also located in Guerrero Negro. Other national institutions working in the area, primarily on whales, birds and vegetation, have been the *Universidad Autónoma de Baja California*, *Universidad Autónoma de Baja California Sur*, *Universidad Autónoma de Chihuahua*, *Centro de Ecología*, *Universidad Autónoma de México* and the *Centro Interdisciplinario de Ciencias Marinas* (INE, in litt., 1995).

MANAGEMENT

The Reserve is managed by the *Instituto Nacional de Ecología* (INE) for the Secretariat of Environment, Natural Resources and Fish (SEMARNAP). The latter has formulated new long and short term plans for conservation of the area, but also continued with the plans prepared by the former Secretariat of Social Development (SEDESOL) which included further scientific research and environmental teaching. A management plan for the Biosphere Reserve was adopted in 2000 which treats the Ojo de Liebre and Guerrero Negro lagoons as protected core areas where environmental education, research, recreation and tourism are the only activities permitted. Offshore motorboat traffic is restricted from December 1 to April 1. But mining exploration and exploitation are not expressly prohibited there as they are in Laguna San Ignacio where boats are organised to guide and transport tourists to controlled areas by some 22 tour companies under permit from SEMARNAP. A powerboat for patrolling the lagoon against disturbance to the whales was bought with a WWF grant, enabling the lagoon guards to work full time on whale protection.

The RARE Center for Tropical Conservation and the US/Mexican NGO Wildcoast, have worked in the Reserve training naturalist guides and offering courses to train locals in ecotourism, to create and strengthen the bases for community development and to run campaigns to improve knowledge of the threats to the region's natural resources (Carreón, 2004). Twenty nature guides have been trained in environmental interpretation and half are working as whale-watching guides. Preparations also began for training in ecotourism promotion. Several government institutions cooperate with SEMARNAP in regulating tourism in the area, including *Secretaría de Gobernación*, *Secretaría de Relaciones Exteriores*, *Secretaría de Marina*, and *Secretaría de Turismo* (INE, in litt., 1995). A management plan for Laguna San Ignacio has been in place since 2000 when the proposal for a major saltworks there was stopped by presidential decree. Now, four Mexican and North American conservation NGOs combined in the Conservation Alliance led by Wildcoast, have agreed with a local *ejido* of communal landholders to create an easement of 308,000 hectares to limit development around Laguna San Ignacio in return for payment. This will protect both the whales and the local fishery (Dibble, 2005).

MANAGEMENT CONSTRAINTS

Although the migratory whale population has recovered well since protection from commercial whaling in 1938, it is still threatened by industrial and economic development and an increase in coastal shipping such as the heavy traffic from the saltworks to the Isla Cedros deepwater dock. The unregulated spread of the evaporation pans have had a degrading effect on the land. Oil drilling near the Laguna Ojo de Liebre which has long been under the threat of development (Swartz, 1981; Swartz, 1987; SEDUE, 1989). The constant passing of cargo ships through the lagoons has had a detrimental effect on marine flora and fauna, and tourist power boats disturb the whales (SEDESOL, 1993). In the past, marine turtles were heavily exploited in summer by nets set in the lagoons and coastal estuaries, the meat being sent to a turtle cannery in Bahía de Asunción, south of Laguna Ojo de Liebre (Groombridge & Luxmore, 1989). Human activities also increased around Laguna San Ignacio but are now under better control. In and around both lagoons, overfishing, illegal fishing, dumping and inadequate waste disposal are the main present problems. Tourist offroad driving degrades the land and there is illegal hunting in the surrounding desert. Lack of coordination between institutions is another cause of friction. The ambitious *Escalera Náutica* project, a major governmental investment in infrastructure to optimize the touristic use of the entire peninsula, proposes to site ports at Bahía Tortugas and Punto Abreojos between the two lagoons (Carreón, 2004).

STAFF

In 2004 the national Biosphere Reserve of which the World Heritage sites are only one fifteenth of the area had 22 employees: 5 core staff - Director, vice-director, administrator, and two project coordinators - and 17 field support staff and patrol officers. The central office and field station is at Guerrero Negro (Carreón, 2004).

BUDGET

The 1994 budget was 703,000 New Mexican pesos (US\$108,150) (INE, in litt., 1995). The total budget for 2003 was approximately \$US270,000. The principal sources of funding were the Federal Government via the National Commission for Natural Protected Areas (CONANP), which provided \$US87,000; the Global Environment Fund (GEF), which provided \$US100,000 for reserve operations. In 2003 a cooperation agreement was signed between Spain and Mexico to conserve the Reserve's natural resources and CONANP is also formalizing cooperation agreements with Brazil, Costa Rica, Belize, and Australia (Carreón, 2004).

LOCAL ADDRESSES

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REFERENCES

The principal source for the above information was the original nomination for World Heritage status.

Alvarez B. Granados, A. (1992). Variación espacio-temporal de temperatura en un hábitat de invierno de la ballena gris: Laguna Ojo de Liebre. *Ciencias Marinas* 18(1):151-165.

Arriaga, L. *et al.* (2000). *Regiones Terrestres Prioritarias de México*. CONABIO.

Carmona, R. & Danemann, G. (1998). Distribución espaciotemporal de aves en la salina de Guerrero Negro, Baja California Sur, México. *Ciencias Marinas* 24(4): 389-408.

Carreón, G. (2004). *El Vizcaino Biosphere Reserve*. ParksWatch - Mexico.

Cummings, J. & Itoi, N. (2007). Moon Baja: Tijuana to Cabo San Lucas. Pp. 172-9, 191-2.

De La Cruz-Aguero, J., Arellano-Martínez, M & Cota-Gómez, V. (1996). Lista sistemática de los peces marinos de las lagunas Ojo de Liebre y Guerrero Negro, B.C.S y B.C., México. *Ciencias Marinas* 22(1): 111-120.

Dibble, S. (2005). Conservation deal to preserve San Ignacio lagoon. *San Diego Union-Tribune*, Oct.22.

Groombridge, B. & Luxmore, R. (1989). *The Green Turtle and Hawksbill (Reptilia: Cheloniidae): World Status, Exploitation and Trade*. IUCN Conservation Monitoring Centre, Cambridge, UK.

IUCN (2008). *The Red List of Threatened Species*. IUCN, Cambridge, UK.

Leija, A. *et al.* (1991). *Estudio Biológico-pesquero del Camaron de la Costa Occidental de Baja California Sur*. Informe Técnico final. CIBNOR, CRIP, CICIMAR, CIONACYT.

Ramsar (2004). *The Annotated Ramsar List: Mexico*.

SEDESOL (1993). *Reserva de la Biosfera El Vizcaino, Baja California Sur, Mexico*. Secretaria de Desarrollo Social Instituto Nacional de Ecología. 105 pp.

SEDUE (1989). *Propuesta del Programa de Manejo de la Reserva de la Biosfera El Vizcaino*. Secretaria de Desarrollo Urbano y Ecología, La Paz, Mexico.

SEMARNAT (1997). *Salitrales de San Ignacio, Sal y Ballenas en Baja California*. México. 25 p.

Swartz, S. (1981). *Grey Whales, Mexico*. WWF Project 1804.

----- (1987). *Mexico - Behavioural Ecology of Gray Whales*. WWF List of Approved Projects Volume 3.

WWF Yearbook 1980-1981. World Wildlife Fund for Nature, Gland, Switzerland.

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