

Lake Naivasha - 1KE002

THIS IS A TRANSCRIPTION OF THE ORIGINAL DATA SHEET including some minor edits. Information categories not shown below (e.g. 2., 3., and 6.) were also not present on the original datasheet.

1. Country: Republic of Kenya

4. Name and address of compiler:
Kenya Wildlife Service,
P.O. Box 40241
Nairobi
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5. Name of wetlands: Lake Naivasha and surrounds

7. Geographical coordinates: 00°45'S, 36°21'E

8. General location: West of Naivasha town, Kakuru district, Rift Valley Province.

9. Area: approximately 30,000 ha. The area inside the Moi North Lake Road, the Moi South Lake Road and the railway in between these, excluding any high density urban areas or industrial areas of Naivasha town.

10. Wetland type:
Permanent freshwater lake (with sodic crater lake, riverine floodplain and delta).

11. Altitude: Average lake level is 1,886 m.a.s.l.

12. Overview: A shallow endorheic freshwater lake system of the Eastern Rift Valley which includes a deeper crater lake and a partially-separated sodic extension as well as a separate sodic crater lake. The larger lake system has fringing swamps and submerged vegetation and an attendant riverine floodplain with a delta into the lake.

13. Physical features:
The wetlands lie in a high altitude trough of the Gregory Rift Valley with the Nyandarua Range to the East (lake basin rim up to 4,000 m) and the Mau Escarpment to the West (up to 3,100 m). The catchment area is approximately 3,000 km². The wetland soils are mainly sediments of a former larger lake and are influenced by the volcanic origins of the basin rocks and soils; a recently active volcano Mt. Longonot (2700 m) forms the southern edge of the drainage basin and Eburu (2700 m) the north - western edge. The wetlands receive surface drainage from two perennial and several ephemeral streams - the largest being the Malewa river which, together with the next largest, the Gilgil river, has a floodplain and a delta where it enters the lake from the North. The mean depth of the main lake is around 4 m with the deepest part of the submerged crater being 16 m; but lake levels can vary several metres from year to year and within years. The waters of the main lake are mainly fresh - indicating that there must be some type of outlet as the sodic influence of the Rift Valley soils would otherwise produce a soda lake (such as Nakuru and Elementaita, nearby). Sub-

surface waters are certainly involved in the water balance of the lake. The climate of the wetland area is hot (mean max 26.5°C, mean min 16.4°C) and relatively dry (mean rainfall 600 mm p.a.) with a high potential evaporation exceeding the rainfall by around three times.

14. Ecological features:

The main lake is a freshwater lacustrine wetland with a fringing shoreline vegetation dominated by papyrus with many other emergent plants, floating-leaved wetland plants and submerged species of Potamogeton and Najas pectinata. The sodic crater lake is dominated by microscopic blue-green algae with soda-tolerant Cyperus laevigatus around its rim. All the wetland areas are dominated by a fringing woodland of Acacia xanthophloea including the floodplains of the rivers which run into the lake through a delta-like area which is dominated by papyrus. The edges of the main lake have a complex vegetation of terrestrial, water-tolerant and wetland plants due to the frequent changes in water level. The surrounding areas are mainly dry scrub with horticulture and planted shade and ornamental trees in some places.

15. Land tenure/ownership of:

(a) site: The waters of the lake and the riparian lands are the property of the State. The immediately surrounding land is mainly privately owned with access to the riparian land and Lake granted to the owners.

(b) surrounding area: The surrounding area is a complex of private land, state land, local authority land and some forest reserves higher in the catchment.

16. Conservation measures taken:

No protection status (National Park/Reserve) for the Lake exists, though the use and management of the Lake's resources are governed and regulated by a wide range of sectoral statutes i.e. Water Act, Fisheries Act, Wildlife Act, Agriculture Act, Tourism Act, Lake Naivasha Municipal Council rules and regulations etc. Wildlife is protected by Kenya Wildlife Service in Hell's Gate National Park which adjoins to the south. A private Game Sanctuary is found on Crescent Island on the main Lake. There are several large scale ranches in close proximity to the Lake where both wildlife and livestock are maintained within the framework of community wildlife conservation programme.

17. Conservation measures proposed:

A management and mechanism is being prepared for the proposed site which will be implemented by a group consisting of the Lake Naivasha Riparian Owners Association (representing residents of the wetland area) together with government agencies, NGO's and other local interests. Lake Naivasha Riparian Owners Association will be the principal management authority of the Lake Naivasha Ramsar site with assistance as noted above.

18. Current land use:

(a) site: The proposed site is dominated by agriculture, mainly irrigated horticulture involving flowers, vegetables, fruits and cereals; some pastoralism of cattle, sheep, goats and donkeys; fisheries in the lake; residence in the riparian areas; tourism involving water sports and hotels, lodges, camping as well as wildlife tourism and private conservation areas and the Naivasha urban area (60,000) and light industrial area.

(b) surroundings/catchment: The catchment land use includes various types of farming, one National Park and several forest reserves. There is also a geothermal electricity generation

plant in the catchment as well as the main road and railway line and oil pipeline from Nairobi to western Kenya.

19. Threats:

(a) at the site: The main potential threats to the site include excessive water extraction from the wetland systems, use of agrochemicals, siltation from soil erosion, increased intensity of human use, including fishing and tourism, illegal hunting, over use of wetland plants and re-infestation by Salvinia molesta and Eichhornia crassipes, floating ferns.

(b) in the surroundings/catchment: The catchment may be threatened by increasing extractions of surface and underground waters upstream, erosion, agrochemicals, deforestation and increasing industry and transport. There could be pollution (domestic and industrial effluents) from the fast-expanding Naivasha Town and inter basin water transfer to areas to the north lacking in adequate supply.

20. Hydrological and physical values:

The great value of lake Naivasha is as the highest and freshest lake in the Rift Valley in Kenya; it is one of the few freshwater lakes in the country and thus is a valuable source and store of water for man as well as a rare wetland habitat for Kenya and Eastern Africa. The fringing wetland vegetation is believed to prevent pollution of the lake by agrochemicals in the runoff and the delta of the Malewa River is a sediment trap. There are no surface outlets and the Lake water is maintained in fresh status by an intricate underground seepage through some unique hydro-geological mechanisms in this part of Rift the Valley.

21. Social and cultural values:

Residence within the wetlands, tourism and relaxation, water sports (yachting, boating and water-skiing), sport fishing, significant (legal and illegal) fishery, refuge for pastoralists. Harvesting of reeds and other wetland plants. Horticulture is one of the largest industries in Kenya providing livelihood to almost 40,000 Kenyans. The Ol-Karia Geothermal power plant supplies nearly 15% of Kenya's energy demand. Sport and subsistence hunting of game in the surrounding ranches within the catchment.

22. Noteworthy fauna:

Hippos (Hippopotamus amphibius) occur in the lake in hundreds and there are several species of large herbivorous mammals living in the riparian land including the African Buffalo, Colobus monkey and Waterbuck (Kobus ellipsiprymnus). Hell's Gate National Park, with an access corridor to the lake, is home to many species of game i.e. the Burchell's Zebra, Cook's Hartebeest, Grant's Gazelle, African Buffalo, Eland, Impala, Warthog, Klispringer, Leopard etc. There is an abundance of terrestrial birds including the Masai Ostrich, Ruppel's G. Vulture, Helmeted Guinea fowl, Secretary bird etc. and until recently the Lammergeyer. The most common fish in Lake Naivasha is Tilapia spp. including T. nigra (introduced in 1925); T. zillii (introduced in 1965) and T. leucosticta (introduced in 1954). Another common fish is the large mouthed Black Bass Micropterus salmoides (introduced in 1929, 1940 and 1951).

Other species present are Oreochromis leucostictus, Barbus amphigramma and Lebistes reticulata. Between 1963 and 1988, the average catch was from 37 to 1150 tonnes per year. More than 350 species of birds have been recorded in Lake Naivasha during the regular counts for the African Waterfowl Census. Total counts in January have been, in recent years: 1990 - 30,000; 1991 - 25,000; 1992 - 21,000; 1993 - 14,000; 1994 - 26,000; 1995 - ?????.

These include Grebes, Pelicans, Cormorants and African Darter, Herons, Storks, Ibises and

African Spoonbill, Greater Flamingos, 22 species of Ducks and Geese, Gallinules and Coots, Plovers Sandpipers, Stints and other waders, Gulls and Terns, African Skimmer and three species of Kingfishers. African Fish Eagles, African and Eurasian Marsh Harriers and Ospreys are also present. Over 15,000 Red-knobbed Coot were present in January 1991 and up to 92 Maccioa Duck have been recorded - probably more than 1% of the world population.

23. Noteworthy flora:

One of the tallest stands of papyrus (Cyperus papyrus) at this elevation with plants regularly exceeding 5 m in height. Three species of Potamogeton occur together in the lake and there are several species of Cyperus as well as a complex of submerged, emergent, floating-leaved and floating species and a range of wetland edge plants on the shore lines. The woody vegetation is dominated by the Acacia xantophloea which fringes most of the wetland.

29. Bibliographical references:

Hartley, J. 1985. **A Guide to the Lake Naivasha Area.** Evans Brothers (Kenya), Nairobi, 36pp.

Harper, D. 1993. **Publications on the Ecology of Lake Naivasha and Hell's Gate National park, 1984-91 plus recent unpublished reports of work at the lake and park, 1991-92.** Ecology Unit, Department of Zoology, University of Leicester, U.K.

Lake Naivasha Riparian Owners Association, 1993. **A three-phase environmental impact study of recent developments around Lake Naivasha. Phase I, An assessment of current information on the lake, relevant to a management plan, and recommendations for phase II of the study.** LNROA, Naivasha, 109pp.

IWRB 1991,1992,1993,1994. **African Waterfowl Census.** Annual Reports.

Bennun, L. A. 1993. **Waterbirds in the southern Kenya Rift Valley, January 1993.** Centre for Biodiversity Research Reports: Ornithology, No. 13, June, 1993. National Museums of Kenya, Nairobi 16pp.

KWS - HELL'S GATE NATIONAL PARK - Annual reports, 1993-94.

30. Reasons for inclusion:

- of special ecological value to the region - high altitude rift valley freshwater lacustrine system with adjacent sodic wetlands.
- regularly supports 20,000 waterfowl.
- supports around 1% of a waterfowl population.
- it is of national value for its freshwater storage and source in the Rift Valley, as a refuge for wildlife in a dry area, as having the largest number of waterbird species of any wetland in Kenya.

31. Map of Site: Sketch Map of Lake Naivasha Wetland site is attached.