

SIBAYA LAKE KWAZULU, NATAL

1. COUNTRY

SOUTH AFRICA

2. DATE OF COMPILATION

October 1990

3. REFERENCE NUMBER 1ZA 012

4. COMPILER

4.1 Name: M.C. WARD / R. KYLE

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MBAZWANA KWANGWANASE
3974 3973

5. NAME OF WETLAND

LAKE SIBAYA

6. DATE OF RAMSAR DESIGNATION

7. GEOGRAPHICAL CO-ORDINATES

27°15'S - 27°25'S
32°32'E - 32°44'E

Map number: 1:50000 2732 BC & BD SIBAYI

8. GENERAL LOCATION

430 km north east of Durban

Boundaries:

Situated on Maputaland coastal plain, cut off from the sea by large, vegetated dunes. Remainder of the area, recent reworked sands. Situated between Manzengwenya and Mbazwane plantations, to the west is Mseleni.

Between the eastern shore and the sea is a range of high dunes attaining altitudes of up to 165 m. To the west of the dunes the land is very flat, and consequently the boundary

of the catchment feeding the lake is difficult to define. The total catchment area is estimated at 530 km², of which 60-70 km² is taken up by the lake itself.

9. AREA (ha)

7750 ha

10. WETLAND TYPE

Coastal freshwater lake

11. ALTITUDE

MIN: 20 m MAX: 20 m

MAX DEPTH: 43 m

12. OVERVIEW OF SITE

Lake Sibaya is situated on the seaward margin of the low-lying Mozambique Plain in eastern Maputaland. The lake is bedded on Tertiary marine deposits overlying Cretaceous to Palaeocene sediments and is narrowly separated from the sea by a range of high afforested coastal dunes. Marine canyons offshore of Lake Sibaya suggest that the lake was previously connected to the sea by a large river, possibly the Pongolo which is presently diverted northwards to Delagoa Bay.

13. PHYSICAL FEATURES

13.1 Geology and geomorphology

Lake Sibaya, situated on the coastal plain of Maputaland, is a landlocked freshwater lake of surface 60-70 km², elevated roughly 20 m above mean sea-level. The coastal plain is composed of Recent and Tertiary sands and Pliocene/Miocene beds overlying Cretaceous mudstone.

Between the eastern shore and the sea is a range of high dunes attaining altitudes of up to 165 m. To the west of the dunes the land is very flat, and consequently the boundary of the catchment feeding the lake is difficult to define.

13.2 Origins

The occurrence of well developed sub-marine canyons is strongly suggestive of a former extension of the Pongolo River to an estuary at Sibaya in Pleistocene time, the existing lake presenting the former lagoon of the Pongolo River prior to the development of the river's present course northwards along the eastern foot of the Lebombo Range to join the Ingwavuma and Usutu rivers to form the Maputo River.

13.3 Hydrology

The chief mechanism by which water is lost from the lake is by evaporation, but it is suspected that a relatively small amount may be lost from the lake by seepage to the sea.

13.4 Soil type and chemistry

In that the greater proportion of Maputaland comprises recent wind-redistributed grey sand, its soils are very sandy and thus are characterized by adverse physical and chemical properties which render them generally very infertile and of low potential agriculture capacity. In the high-rainfall eastern portion of Maputaland, the soils are also much leached which makes them even more inherently infertile on dune areas.

13.5 Water quality

The lake water is clear with Secchi disc transparency averaging 3,2 m. The pH of the lake varies between 8,2 and 8,3. The main chemical characteristics are an elevated chloride level for fresh water (135 mg/l) and constantly high dissolved oxygen concentrations.

13.6 Depth, fluctuations and permanence

Extreme states of Lake Sibaya over a sixty year period:

State	Minimum	Average	Maximum
Level (m above M.S.L.)	19,4	20,8	22,9
Area (km ²)	54	64	77
Volume (10 ⁶ m ³)	620	700	840
Mean depth (m)	10,9	10,9	11.5

13.7 Tidal variations

N/A

13.8 Catchment area

The total catchment area is estimated at 530 km², of which roughly 60-70 km² is taken up by the lake itself.

13.9 Downstream area

N/A

13.10 Climate

Mean annual precipitation (east)	1200 mm
Mean annual precipitation (west)	800 mm
Mean figure	1030 mm

Mean annual temperature for a year is 21,6° C, varying from 11,5° C in July to 28,7° C in January.

At Lake Sibaya Research Station relative humidity had maximum and minimum values of 88 and 56 per cent respectively for the winter months and 83 and 60 per cent for the summer months.

14. ECOLOGICAL FEATURES

On the eastern side of Lake Sibaya is Dune Forest (Acocks Veld Type No. 1). Tinley (1958) recorded 147 species belonging to 52 families for the Dune Forest in the vicinity of Lake Sibaya. On the drainage lines leading into the lake, remnant swamp forest is found. Vegetation on the surrounding coastal sands is markedly diverse. On the eastern edge are tall dune forest trees, while the main dunes are covered by a shorter dune forest. Around the remainder of the lake a dry coastal forest occur. Open and closed woodland covers extensive areas of the surrounding area. High water-table grasslands and hygrophilous grasslands are found adjacent the lake.

15. LAND TENURE

The area is situated within rural KwaZulu. The surrounding area is administered by three different chiefs namely Zikhali, Nxumalo and Tembe.

16. CONSERVATION MEASURES TAKEN

16.1 Legal status

The entire proposed area is state land.

16.2 Management category

A start has been made on fencing the area, with an electric fence being erected around a third of the lake. In the long term, it is expected that the whole lake will be fenced and managed as a formally protected area.

16.3 Management practices

Since the area is not yet a formally protected area, activities in the area are dependant on rural people, subsistence agriculture and local needs. Management by the Bureau is essentially limited to law enforcement, protecting the fauna and selected forest communities.

Alien plant control has taken place on the eastern shore, combating *Pereskia aculeata*.

Problem species control - hippopotamus/human conflicts are dealt with, either by stationing staff in problem areas to drive hippopotamus away from fields or, rarely to shoot animals.

17. CONSERVATION MEASURES PROPOSED

- Need to control the numbers of herbivores using the grasslands, as severe overgrazing and veld degradation is occurring.
- Control on irrational burning throughout the year which is aiding veld degradation.
- Levels for sustained utilization of natural resources by local people need to be determined and enforced.
- Limited tourist activity to maintain the wilderness atmosphere of the area.
- Water surface is being proclaimed as a nature reserve.

18. LAND USE

The area is situated within rural KwaZulu. Many of the people rely upon subsistence agriculture (following a shifting cultivation method). The area is heavily grazed by their livestock and natural resources are used in everyday routine.

Large plantations (mainly *Pinus*) were established to the south of the area (Mbazwana) and to the north (Manzengwenya).

19. POSSIBLE CHANGES IN LAND USE AND PROPOSED DEVELOPMENT PROJECTS

Water extraction for Mbazwane and Vasi is underway with pumphouses being erected on the shores.

At one stage, Forestry considered floating logs from the plantation onto the lake to store them before transport from the region.

20. DISTURBANCES AND THREATS

Due to its endorheic nature, the lake is particularly susceptible to pollution, Extensive DDT spraying for malaria control in the area is a cause of concern, while more recently, interest has been shown for spraying molluscicide in the wetlands to destroy the bilharzia snail (the poison will also kill invertebrates and even small fish).

Extensive cultivation has occurred in most of the drainage lines leading into the system.

Overgrazing and injudicious burning are problems.

Overexploitation of natural resources.

21. HYDROLOGICAL AND BIOPHYSICAL VALUES

22. SOCIAL AND CULTURAL VALUES

The area is situated within rural KwaZulu. The area is under developed and therefore the people that live here, lead their lives to a large extent in a traditional way.

23. NOTEWORTHY FAUNA

A) INVERTEBRATES:

(1) Zoo plankton - the major species are entomostracan crustacea - copepods and cladocerans. Rotifers are common; water mites and zoeae larvae of the benthic brown crab occur in moderate densities. Seasonally insect larvae and larvae of the fish *Grilchristella aestuarius* are abundant. One endemic copepod (*Tropocyclops brevis*) occurs in the Lake.

(2) Zoobenthos - the main species are various Crustacea and Molluscs. Crustaceans dominated by burrowing amphipods and taniads. Larger crustaceans include the crab *Hymenosoma orbiculare* and a freshwater shrimp *Caridina nilotica*. Also found are various coelenterates, nematodes, a marine polychaete worm and many insect larvae (mayflies, chironomids, dragon flies, damselflies, water bugs, water boatmen.) 15 Species of Molluscs in the waterbodies, with 43 species of terrestrial Molluscs in the adjacent dune forest.

Fifty six species of spiders identified in the area, 3 species of scorpion, 1 solifuge species, 5 pseudoscorpion species and 3 species of opiliones. Myriapods - 20 species. *Megaraneus campbell* (Araneidae) only from Sibaya's eastern shore.

B) VERTEBRATES

(1) Fish - 18 species occur in the lake and feeder streams; these are dominated by cichlids (4 species) and gobiids (3 species). The fauna reflect a marine origin and have close affinities with tropical forms. One goby (*Silhouettea sibayi*) has its largest known population in the lake as very few records of it have been received from other localities. The most successful and abundant fishes are *Oreochromis mossambicus* (Mozambique tilapia), *Pseudocrenilabrus philander* (southern mouth-brooder), *Tilapia sparrmanii* (banded tilapia), *Clarias gariepinus* (sharp-tooth catfish) and *Glossogobius giuris* (tank goby).

(2) Amphibia - 22 species of frog recorded from Lake Sibaya; 20 of these are tropical forms, 1 a "cape" form and the other a transitional species. Common species are reed frogs (*Hyperolius* spp.), grass frogs (*Ptychadena* spp.), *Rana* spp. and toads (*Bufo* spp.)

(3) Reptiles - 8 species are closely associated with Sibaya (these include *Varanus niloticus* (water monitor), *Python sebae* (African python), *Lycodonomorphus r. rufulus* (brown water snake), *Natriciteres variegata sylvatica* (olive marsh snake), *Philothamnus r. irregularis* (northern green water snake) *P. hoplogaster* (common green water snake), *Naja melanoleuca* (forest cobra) and *Crocodylus niloticus* (nile crocodile)).

A further 59 species have been recorded in the adjacent area.

Red data species are:

- Vulnerable - *Crocodylus niloticus* (nile crocodile)
- *Varanus exanthematicus* (veld monitor)
- *V. niloticus* (water monitor)
- *Bradypodion setaroi* (dwarf chamaeleon)
- *Bitis gabonica* (gaboon adder)

- Rare - *Lycophidion semiannule* (eastern wolf snake)
- *Dasypeltis medici medici* (tropical egg-eater)

(4) Birds - 279 bird species have been recorded for the Lake, 62 of which are closely associated with the lake through their breeding, feeding or roosting habits. The most numerous are red and white breasted cormorants (*Phalacrocorax* spp.). Other piscivores are Pied, Giant and Malachite Kingfishers (*Halcyon* sp.), Fish Eagles (*Haliaeetus vocifer*), variety of Herons, Darters and Egrets. Waders include White-fronted Sand Plover (*Vanellus* spp.), Black-winged Stilt (*Himantopus himantopus*), Avocet, Greenshank, Spoonbills and Herons, with Jacana, Crakes, Gallinules and Bitterns in sheltered bays.

Based on the 1984 Red Data Book - 6 species are vulnerable [these are Martial Eagle (*Polemaetus bellicosus*), Bateleur, Stanley's Bustard (*Neotis denhami*), Natal Nightjar (*Caprimulgus natalensis*), African Broadbill (*Smithornis capensis*) and Pinkthroated Longclaw (*Macronyx ameliae*)]; 15 species are rare [these include Little Bittern (*Ixobrychus minutus*), Pygmy Goose (*Nettapus auritus*), Bat Hawk (*Macheiramphus alcinus*), Rufousbellied Heron (*Butorides rufiventris*), Palmnut Vulture (*Gypohierax angolensis*), Ierser Black-winged Plover (*Vanellus melanopterus*), Pel's Fishing-out, and Neergaard's Sunbird (*Nectarinia neergaardi*)]; while 6 species are Indeterminate [these include the Flamingoes, Grass Owl (*Tyto capensis*), Woodward's Batis (*Batis fratrum*), Wattle-eyed Flycatcher (*Platysteria peltata*) and Yellow White-eye (*Zosterops senegalensis*)].

(5) Mammals - 6 mammal species are associated regularly with the Lake; these are white-tailed mongoose (*Ichneumia albicauda*), water mongoose (*Atilax paludinosus*), hippopotamus (*Hippopotamus amphibius*), reedbuck (*Redunca arundinum*), Vlei otomys (*Otomys irroratus*) and African marsh rat (*Dasymys incomtus*)

154 hippo's were in the lake in July 1988, with a 13 % infant composition.

Other mammals associated with the area include

Rare - *Petrodromun tetradactylus* (four-toed elephant shrew)

- *Cercopithecus albogularis* (samango monkey)
- *Cephalophus natalensis* (red duiker)
- *Cephalophus monticola* (blue duiker)

Vulnerable - *Paraxerus palliatus tongensis* (Tona red squirrel)

- *Neotragus moschatus* (Suni)

A further 30 mammal species occur around the system, mostly rodents.

24. NOTEWORTHY FLORA

The aquatic vegetation consists of submerged macrophytes (such as *Ceratophyllum demersum*, and *Myriophyllum spicatum*), semi-emergent plants (such as *Potamogeton schweinfurthii* and *Nymphaea capensis*) and free floating aquatics, *Pistia stratiotes*. Partially inundated, marginal vegetation consists predominantly of sedges (*Scirpus littoralis*, *Cladium mariscus*, *Phynchospora* spp.) with areas of *Typha latifolia* (bulrush) and *Phragmites mauritianus* (reeds).

On drainage lines leading into the lake, remnant swamp forest is found on a few of the streams. The trees are *Ficus trichopoda* (swamp fig), *Voacanga thouarsii* (Wild frangipani), *Syzygium cordatum* (waterberry) and *Macovanga capensis* (Wild poplar). Ferns are common in the swamp forest. The remainder of the drainage lines consist of hydrophilous grasses and sedges; besides those noted earlier, *Cyperus* spp. are common, with patches of *Cyperus papyrus* along a number of streams.

Vegetation on the surrounding coastal sands is markedly diverse and has a number of Red Data species. On the eastern edge are tall dune forest trees, (comprised of *Chrysophyllum viridifolium*) (fluted milkwood), *Chaetachme aristata* (thorny elm), *Drypetes gerrardi* (hairy drypetes) and *Cassine* spp. The main dunes are covered by a shorter dune forest with dominant trees being *Croton gratissimus* (Lavender croton), *Mimusops caffra* (red milkwood), *Balanites maughamii* (torchwood) *Ziziphus mucronata* (buffalo thorn), *Diospyros rotundifolia* (dunejackal-berry),

Drypetes natalensis (Natal drypetes) and *Euclea* spp. The understoney is commonly make up of stands of *Isoglossa woodii* and/or *Acalypha glabrata* (forest false-nettle). Around the remainder of the Lake, other forest patches occur; these being a dry coastal forest type, with species of sand forest and coastal forest mixed. Characteristic species are *Dialium schlechteri* (Zulu pod-berry), *Balanites maughamii* (torchwood), *Manilkara discolor* (forest milkberry), *Cleistanthus schlechteri* (bastard tamboti), *Craibia zimmermannii* (small craibia), *Croton* spp. and *Mimusops caffra* (red milkwood), *Hymenocardia ulmoised* (red heartfruit), *Aloe bainesii* (tree aloe) and *Ficus* spp.

Open and closed woodland covers extensive areas of the surrounding area. Heavy grazing pressure and uncontrolled burning by local people have caused many of the grasslands to be encroached by scrub; common encroacher woody species are *Parinari capensis* (dwarf mobola plum), *Salacia kraussii*, *Eugenia mossambicensis*, *Dichrostachys cinerea* (sickle bush) and *Helichrysum kraussi*. The woodland species consist of many edible types, such as *Strychnos madagascariensis* (black monkey orange), *Strychnos spinosa* (spiny monkey orange), *Sclerocarya birrea* (marula), *Trichitia* (Natal mahogany), *Hyphaene natalensis* (Lala palm), *Syzygium cordatum* (waterberry) and *Gareinia livingstonei* (African-mangosteen). Other common woody species in the woodland are *Albizia adianthifolia* (flat-crown), *Terminalia sericea* (silver terminalia), *Mundulea sericea* (corke bush), *Vangueria infausta* (wild medlar) and *Apodytes dimidiata* (white pear).

Climbers are abundant in the woodlands and at margins of forest patches. The most common are *Landolphia kirkii*, *Landolphia petersiana*, *Smilax kraussiana* and *Rhoicissus digitata*.

As noted earlier, the coastal grasslands are being reduced through poor veld management. Grass species in the coastal grasslands and woodlands are *Tristachya leucothrix*, *Trachypogon spicatus*, *Vrelytrum agropyriodes*, *Themeda triandra*, *Hypartenia filipendula*, *Cymbopogon excavatus*, *Digitavia natalensis*, and *Imperata cylindrica*. A diverse forb component occurs in the grasslands, particularly evident after burning common species include *Polygala sphenoptera*, *Polygala fryticosa*, *Zornia capensis*, *Gazania krebsiana*, *Pentanisia prunelloides*, *Lobelia pinifolia*, a variety of composites, *Wahlenbergia undulata*, *Stylosanthes fruticosa* and *Aeschynomene micrantha*.

In old cultivated areas, the grass component is made up of *Rhynchelytrum repens*, *Eragrostis capensis*, *Eragrostis ciliaris*, *Perotis patens* and *Panicum maximum*.

High water-table grasslands and hygrophilous grasslands are found adjacent the lake and in depression in the surrounding area. Common grasses include *Ischaemum arcualtum*, *Acrocera macrum*,

Stenotaphum secundatum and *Dactyloctenium geminatum*. Sedges are present in these communities; these include *Cyperus* spp., *Fuirena* spp., *Pycreus* spp and *Scleria* spp. Associated with the Lake environment are freshwater pans in the coastal plain. Plant species are similar to those found in the sheltered bays of the Lake e.g. *Potamogeton schweinfurthii*, *Nymphaea capensis*, *Nympoides indica* and *Utricularia* spp. *Ludwigia octovalvis* and *Polygonum* spp. are common marginal forbs, while *Typha latifolia*, *Echinochloa pyramidalis*, *Phragmites mauritianus* and *Cyperus papyrus* are common. *Wolffia arrhiza* and *Lemma minor* are floating species in the pans.

Red data species in the area include:

Vulnerable - *Diospyros rotundifolia* (dune jackal-berry),
Encephalarios ferox (Tongoland cycad),
Warburgia salutaris (pepper-bark tree).

Rare - *Ancylanthus monteiroi* (dune false medlar), *Blighia unijugata* (triangle tops), *Bridelia cathartica* (knobby bridelia), *Coffea racemosa* (wild coffee), *Commiphora zanzibarica* (Zanzibar commiphora), *Craibia zimmermannii* (small craibia), *Dialium schlehteri* (Zulu pod-berry), *Lasiodiscus mildbraedii* (Lasiodiscus), *Morus mesoaygia* (African mulberry), *Pavetta barbetonensis*, *Pavetta gertneri* (Zulu bride's bush), *Suregada zanzibariensis* (woodland suregada) and *Tapura fischeri* (leaf-berry tree).

In addition the only population of *Vanilla roscheri* occurs near Lake Sibaya, while another orchid, *Oecevelades decaryanum* was collected at the Lake for the first time in the country and an unknown *Oecevelades* sp. occurs near Sibaya.

25. SCIENTIFIC RESEARCH FACILITIES

Since a Research Station was established at the Lake during the 1970's, hundreds of articles were written on a wide range of studies carried out in this time. Work was carried out on productivity, food chains, plant and animal surveys, fish dynamics, hydrological surveys, and general limnological research.

Animals collections have taken place around the lake since 1905 when the earliest fish collection were made.

Besides fish collections, a survey was carried out on aspects of the ecology of the lake by Tinley in 1958; he concentrated on the hippopotamus.

The highest lake level was experienced in 1943, many local roads were inundated and the flooding was serious enough to warrant evacuation of the Rhodes University research station. Since the research station was abandoned, research has focused on the hippo

and crocodile populations, plant surveys in the surrounding areas, grazing impact of herbivores and annual aerial surveys (since 1984). Use of plant material is partly monitored. Utilization of the fish resource has been considered and a project is underway.

Research into health hazards has taken place, aimed at Mseleni joint disease and schistosomiasis. Geophysical and geological surveys have been undertaken.

26. CONSERVATION EDUCATION

The area would be most useful for extension programmes as it is accessible and thousands of people live in the surrounding area. Extension staff are involved continuously in the community and a conservation area would be most useful for demonstrating conservation principles in this rural area.

Once proper veld management and burning programmes can be implemented, the difference between the conserved area and adjacent land will be apparent and a valuable example for education.

Sustained use of natural resources can be implemented and used in educating the people on resource exploitation.

The re-introduction of game around the lake would provide an area for people to visit to see and learn about wild animals which used to occur in their area.

27. RECREATION AND TOURISM

The lake and surrounding area lends itself to development of small wilderness-type camps. Boat trips on the lake are feasible, while trails through the relatively undisturbed shore vegetation are most rewarding.

At this stage only 1 camp is in operation but a further 2 are envisaged. They would be linked by walking trails and the possibility exists for canoe trails.

A limited amount of recreational fishing is done but the size of fish in the system does not encourage most tourists to fish.

28. MANAGEMENT AUTHORITY

KwaZulu Bureau of Natural Resources

29. JURISDICTION

KwaZulu Government

30. REFERENCES

Two books should be consulted as they list most of the pertinent reference, they are:

ALLANSON, B.R. (Ed) 1979. Lake Sibaya. Monographiae Biologicae 36: 1-364, W. Junk, The Hague.

BRUTON, M.N. & COOPER, K.H. (Ed) 1980. Studies on the Ecology of Maputaland. Rhodes University and Natal Branch of the Wildlife Society of Southern Africa.

Since publication of these 2 books, reports have been compiled on aspects of the system by MC Ward for Bureau of Natural Resources from 1983 to 1991.

Other reports include:

MEYER, R. DE BEER, H.J. & BLUME, J. 1982. A geophysical-geohydrological study of an area around Lake Sibayi, northern Zululand. CSIR Geophysics Division Report, 32 pp.

WALTER, G.J. & CRAIG, A.J. 1983. List of birds seen in the Mkuze Game Reserve and at Lake Sibaya and at Manzengwenya in Tongaland. Unpublished list.

WRIGHT, C.I. 1957. Sedimentation of Lake Sibaya and surrounding areas. Submitted for Geology Hons. course, University of Natal, Durban.

Other books and reports:

BRANCH, W.R. (Ed.) 1988. South African Red Data Book - Reptiles and Amphibians. South African National Scientific Programmes Report no. 151.

BROOKE R. K. 1984. South African Red Data Book - Birds. South African National Scientific Programmes Report no. 97.

DE MOORE, I.J. & BRUTON M.N. 1988. Atlas of translocated indigenous aquatic animals in Southern Africa. South African National Scientific Programmes Report no. 144.

HALL, A.V., DE WINTER, M., & OOSTERHOUT, S.A.M. 1980. South African National Scientific Programme Report no. 45.

MACLEAN, G.L. 1985. Roberts' Birds of Southern Africa. The Trustees of the John Voelcker Bird Book Fund. Cape Town.

SKELTON, P.H. 1987. South African Red Data Book - Fishes. South African National Scientific Programmes Report no. 137.

SMITHERS, R.H.N. 1986. Red Data Book - Terrestrial Mammals. South African National Scientific Programmes Report no. 125.

1. Lake Sibaya contains the second largest population of hippopotamus (*Hippopotamus amphibius*) and crocodile (*Crocodylus niloticus*) in KwaZulu. It is the largest, natural freshwater lake in the country. The diversity of biota associated with the system is noted in section 10 & 11. The Lake is representative of flora and fauna in the coastal Lake Zone.

2. A freshwater goby (*Silhouetta sibayi*) is almost endemic to the system. Numerous other Red Data species occur in the system, their presence would be affected if the wetland was not preserved. The only known population of *Vanilla roscheri* (a climbing orchid) occurs on the Lake shore; the community would be threatened by destruction of the lake.

3. Lake Sibaya and environs has the capacity to support almost 250 hippo, hundreds of crocodile, other larger mammals presently extinct from the shores. The present natural area supports a wide diversity of flora and fauna with a range of habitats being incorporated in the area to allow for more variability and resilience. The wetland supports rural people of the region who, in many cases, are totally dependant on the water resource and associated flora and fauna.

4. Breeding population of hippopotamus (*Hippopotamus amphibius*), crocodile (*Crocodylus niloticus*), Fish Eagles (*Haliaeetus vocifer*), Reed and Whitebreasted Cormorant (*Phalacrocorax africanus* and *P. carbo*), Herons (*Ardea spp.*), Kingfishes (*Halcyon sp.*), Weavers and a variety of other waterbirds are found on the Lake. This wetland is an important link between Kosi Bay and St Lucia Bay, allowing for extension of tropical elements down the east coast.

5. Red Data species are noted in section 11. The whole lake is an important area for the endemic goby noted under 2. Water in the surrounding coastal plain often dries up completely during dry years, Lake Sibaya is then the only source of permanent water for birds and mammals.

6. Rhodes University established a research on the lake during the 1970's. Extensive investigations were carried out on the ecological features of the system with much valuable data being gathered. The area is used to illustrate sustained resource use and improved veld management. Biological studies are still underway, while outside organizations still apply to visit the area for research purposes. The establishment of a more formal conservation area around the lake will greatly assist educational programmes where field classes can be undertaken. Access for thousands of local people is easy; the range of habitats and species allows for more educational opportunities.

7. The lake and surrounding area is already being marketed for its tourist potential and has received favourable comments. The area is definitely scenic and has great recreation potential. When the Rhodes research station was in operation, the research opportunities attracted visiting scientists.

32. **OUTLINE MAP OF SITE**
(To be appended)

Sibaya

Location 27°15'S - 27°25'S, 32°32'E - 32°44'E Richards Bay - 165 km south

Area 7750 ha

Degree of Protection The entire area is state land. A start has been made on fencing the area, with an electric fence being erected around a third of the lake. In the long term, it is expected that the whole lake will be fenced and managed as a formally protected area.

Site Description Lake Sibaya is a freshwater coastal lake situated on the on the seaward margin of the low-lying Mozambique Plain in eastern Maputaland. The lake is bedded on Tertiary marine deposits overlying Cretaceous to Palaeocene sediments and is narrowly separated from the sea by a range of high afforested coastal dunes. Marine canyons offshore of Lake Sibaya suggest that the lake was previously connected to the sea by a large river, possibly the Pongolo which is presently diverted northwards to Delagoa Bay.

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Mean figure 1030 mm

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Table with 4 columns: State, Minimum, Average, Maximum. Rows include Level (m above M.S.L.), Area (km²), Volume (10⁶ m³), and Mean depth (m).

International and National Importance 1. Lake Sibaya contains the second largest population of hippopotamus (Hippopotamus amphibius) and crocodile (Crocodylus niloticus) in KwaZulu. It is the largest, natural freshwater lake in the country. The Lake is representative of flora and fauna in the coastal Lake Zone.

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3. Lake Sibaya and environs has the capacity to support almost 250 hippo, hundreds of crocodile, other larger mammals presently extinct from the shores. The present natural area supports a wide diversity of flora and fauna with a range of habitats being incorporated in the area to allow for more variability and resilience. The wetland supports rural people of the region who, in many cases, are totally dependant on the water resource and associated flora and fauna.

4. Breeding populations of hippopotamus (*Hippopotamus amphibius*), crocodile (*Crocodylus niloticus*), Fish Eagles (*Haliaeetus vocifer*), Reed and Whitebreasted Cormorant (*Phalacrocorax africanus* and *P. carbo*), Herons (*Ardea spp.*), Kingfishers (*Halcyon sp.*), Weavers and a variety of other waterbirds are found on the Lake. This wetland is an important link between Kosi Bay and St Lucia Bay, allowing for extension of tropical elements down the east coast.

5. The whole lake is an important area for the endemic goby noted under 2. Water in the surrounding coastal plain often dries up completely during dry years, Lake Sibaya is then the only source of permanent water for birds and mammals.

6. Rhodes University established a research on the lake during the 1970's. Extensive investigations were carried out on the ecological features of the system with much valuable data being gathered. The area is used to illustrate sustained resource use and improved veld management. Biological studies are still underway, while outside organizations still apply to visit the area for research purposes. The establishment of a more formal conservation area around the lake will greatly assist educational programmes where field classes can be undertaken. Access for thousands of local people is easy; the range of habitats and species allows for more educational opportunities.