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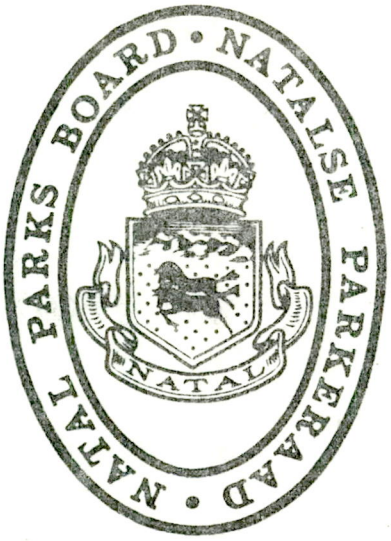

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Title WETLAND AND AQUATIC HABITATS AT LAKE ST LUCIA BASED PRIMARILY ON VEGETATION AND SUBSTRATE CHARACTERISTICS. JULY 1976 - MARCH 1978

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Keywords VEGETATION*WETLANDS*

3. Deep open water

This area is devoid of of emergent and submergent plants, and comprises the central parts of the lake north of Mitchell Island and Makakatana peninsula, including the North Lake and False Bay.

A permanently inundated area covered by water deeper than 50 cm at msl. The substrate is fine, although areas of sand occur along the Eastern Shore. Water movement, depth and turbidity are substantially affected by the wind. Salinity ranges from oligohaline to hypersaline.

4. Vascular and algal aquatic plants

Extensive pe1manently, or semi-permanently flooded beds of vascular emergents, sometimes with large amounts of epiphytic algae, occurring within the main body of the lake. The occurrence of this habitat is controlled by salinity. The dominant vascular submergent plant species and their preferred salinity ranges are Ruppia spiralis (15-35 ‰), Zostera capensis (15 - 35 ‰) and Potamogeton pectinatus (less than 20‰). The extent of this habitat depends on salinity and hydrological regimes, and has varied greatly in extent. It was entirely absent in 1968 - 71, whereas in 1064-65, it covered half of South Lake and the entire Southern Shallows. These plants Apparently prefer coarser substrates and usually grow in water less than 40 cm deep. The same area can be classified as 'open, deep Water' or 'vascular and algal beds according to the presence or absence of aquatic plants at different times.

The adjacent shoreline is included in this habita Isolated patches of submergents , which may be fairly large, occur elsewhere. Althoughthese change the characteristics of an area, such isolated patches are not considered as part of this major grouping.

Wind-reduced water-mixing is greatly reduced, resulting in very reduced turbidity. Salinity ranges from fresh to euhaline. Water movement may become so restricted that areas of anaerobic decay develop with production of H_2S. Thermoclines occur over distances of a few metres.

5. Mainland and island wetlands

This major habitat grouping forms a gradient of habitat types characterised by one or more plant species and substrate types. These are listed below. The vegetation is influenced by the length and severity of hypersaline

conditions, with considerable local influences of freshwater seepage substrate type and depth, length and periodicity of inundation. Scirpus littoralis is an indicator of freshwater conditions, and areas which are inundated for much of the year. These areas are subject to considerable and irregular water level and salinity fluctuations, which exclude woody plants. Phragmites is more tolerant of drier and more saline conditions, but is absent from areas subject to high salt stress and which are dry for most of the year.. The halophytic plants Arthrocnemum, Salicornia and Atriplex are indicators of high salt content in the soil. These plants do not withstand prologed drought or inundation. The substrates vary from fine (most areas) to coarse (primarily Eastern Shores but local throughout) to rocky bottom (sandstone with shallow fine deposits less than 10 cm deep.

Salinities are poikilohaline. Some areas are flooded freshwater of riverine originand may have little subsequent water exchange with the main lake. Salinities in these areas are low. In areas wher water exchange with the Rake is restricted, freshwater seepage may considerably depress the salinities of such areas rapidly.

(a) Phragmites - pond

An extensive area (greater than 50 ha) of tall (greater than 2m), of emergent Phragmites surrounding permanent to semi-permanent ponds, which contain submerged vascular plants at low salinities. There are a few channels. Particle size is unknown. Water turbidity is low, and water exchange with the lake is restricted. Wind-driven currents mantain the channels, but water -level changes due to wind are unimportant. Salinity ranges in this area are not known.

(b) Mixed emergent

These heterogenous areas comprise a mixture of emergent plants (notably Phragmites and Scirpus) and grasses, and unvegetated flats and beaches.

1. Flats. Semi-permanently flooded areas in which vegetation (Phragmites and Scirpus) is interspersed with ponds. Vegetation less than 2m high. Submergent algae and vascular plants may be present. Burning, prolonged drought and inundation may substantiall alter species composition of the area. Freshwater seepage occurs in some areas

2. SAndy beaches

A linear habitat on a sloping shoreline. Sandy beaches are interspersed with stands of Phragmites and Juncus

Grasses occur behind the beach. Freshwater seepage may considerably alter the groundwater environment. There is unrestricted water exchange with the lake. Shore is exposed to wind action

(c) Phragmites - grasses

Habitats dominated almost entirely by grasses Sporobolus virginicus, Paspalum vaginatum and Stenotaphrum secundatum.

1. Flats. Seasonally to semi-permanently flooded areas. Broad flat areas subject to a degree of salt and drought stress. At lower lake levels, water exchange with the lake is restricted to a few channels resulting from wind-induced water level changes. The occurrence of Scirpus and submergents is greatly reduced by increased salt and drought stress.

2. Banks. Linear habitats along sloping shorelines, banks or peninsulas, which are narrow, usually widening in area with increasing water levels. There is unrestricted water exchange with the lake, and the habiat is exposed to wave action. Submergents are unimportant.

(d) Grass-halophyte mudflats

Broad flat areas subject to severe salt stress and drought stress. Grasses are interspersed with fine muddy areas, which when dry, may become covered with halophytes such as Salicornia, Atriplex and Arthrocnemum. There is restrictedwater exchange with the lake at lower levels and freshwater runoff or rain may considerably alter salinities Channels are mantained by wind-driven water level fluctuations, and wavw action is slight.

(e) Sandstone shoreline

Sandstone substrate overlaid with thin clay or mud deposits, with marginal grasses. Occasionally interspers with stands of Phragmites and sandy beaches. Emergents and submergents usually of little importance. Unrestricted water exchange with the lake, ans subject to wave action. A linear ha habitat not significantly altered by water level changes. Freshwate seepage unimportant.