SOME FRESHWATER ALGAE FROM MATUKU RESERVE

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Introduction

In 1979 the Royal Forest and Bird Protection Society purchased 115 acres of native bush and marshland in the Waitakere Valley and later named it Matuku Reserve. It consists of 80 acres of steep bushland slopes regenerating in kauri, and 30 acres of wetland which heads the Te Henga marsh, the largest remaining freshwater marshland in the Auckland area. Matuku Reserve has recently been selected for a comprehensive study by local natural history groups.

6000 years ago this area was a lake fed by the Waitakere River and boarded by sand dunes. In 1897 logging rights were obtained for the whole Waitakere valley, an area of 38,000 acres. With the clearing of the land by logging, and later for farming, natural erosion increased. More recently the building of the Waitakere Reservoir reduced the flow of water through the valley causing increased vegetation. For a more complete account of the area see W.R.P.S. 1978. Today a few areas of free water are visible amongst thick vegetation which includes Eleocharis sphacelata, Typha, Baumea articulata, Isachne australis, Phormium and Salix, a habitat for fernbird, bittern, pukeko and ducks.

Method

From April 1980 to March 1982 water samples were collected from the marsh at approximately 4 week intervals.

A. Selected samples were collected from around the edge of the marsh where the water was slow moving through much decomposing vegetation. These samples were examined on the day of collection. The genera of algae present were noted, drawn and where possible photographed using Agfachrome 50L film. Identifications from Prescott 1970.

B. Quantitative. An incompleted causeway was used as a convenient sampling site for Station 1 and Station 2. 100 ml samples were collected from the surface of free flowing water. The water temperature was noted at the time of collection. Later in the survey the depth of water beneath the sample site was added to the data. These samples were preserved in 5 ml of Lugol's Iodine, i.e.,10 g iodine and 20 g potassium iodide dissoved in 40 ml acetic acid 200 ml distilled water. Samples were left to sediment in 6 cm columns for 24 hours and then concentrated to 10 ml with a siphoning system using a fine copper capillary tube 0.6 mm i.d. After a further 24 hours sedimentation in a 10 ml measuring cylinder, the samples were again concentrated and the final volume noted. Algal cells were counted in an Improved Neubauer counting chamber at x400 magnification. Since algal counts were low, at least 4 counting chambers (total ruled area) were examined before algal cells per ml were calculated.

Calculation

$$\text{algal cells/ml} = \frac{xz}{9y} \times 10^2$$

where x = total number of cells counted
y = number of counting chambers counted
z = volume in mls of concentrate.

Results

A. The variety of algae around the edges of the marsh indicates the many microenvironments present. Many of these algae were epiphytic on the macrophytes. A genera list appears below.

B. Station 1 and Station 2 are represented in Figure 1. Over the two year period of the survey there was a noticeable encroachment into the free flowing water areas by the macrophytes especially Eleocharis and Typha.

Results of the quantitative analysis are presented in Figures 2 and 3. Phytoplankton counts were predictably low in the free flowing water. During the warmer months, thick mats of filamentous algae, especially Spirogyra, formed near the macrophytic vegetation.

Zooplankton noted in samples included COPEPODA, CLADOCERA, ROTOFORA, NEMATODA and PROTISTA.

Genera List

CHLOROPHYTA
Arthrodesmus
Characium
Chlamydomonas
Chlorogonium
Cladophora
Closterium (3 spp.)
Cosmarium
Draparnaldia
Gonatozygon
Nitella
Oocystis
Sirogonium
Sphaerocystis
Spirogyra
Spondylosium
Staurastrum
Stigeoclonium
Zygnema

EUGLENOPHYTA
Euglena (2 spp.)
Lepocinclis
Phacus
Trachelomonas

PYRRHOPHYTA
Gymnodinium
Peridinium

CRYPTOPHYTA
Cryptomonas (2 spp.)

XANTHOPHYTA
Peroniella

CHRYSOPHYTA
Dinobryon
Mallomonas (2 spp.)
Pseudokephyrion
Synuria

BACILLARIOPHYTA
Cyclotella
Cymbella
Fragillaria
Gomphonema
Navicula
Pinnularia
Pleurosigma
Synedra
Tabellaria

RHODOPHYTA
Batrachospermum
Comsopogon

CYANOPHYTA
Anabaena
Oscillatoria
Tolypothrix

References

Prescott, G.W. 1970. How to know the Freshwater Algae. Iowa, Wm.C. Brown.
W.R.P.S. 1978. Wainamu-Te Henga, a study. Waitakere Ranges Protection Society Inc.

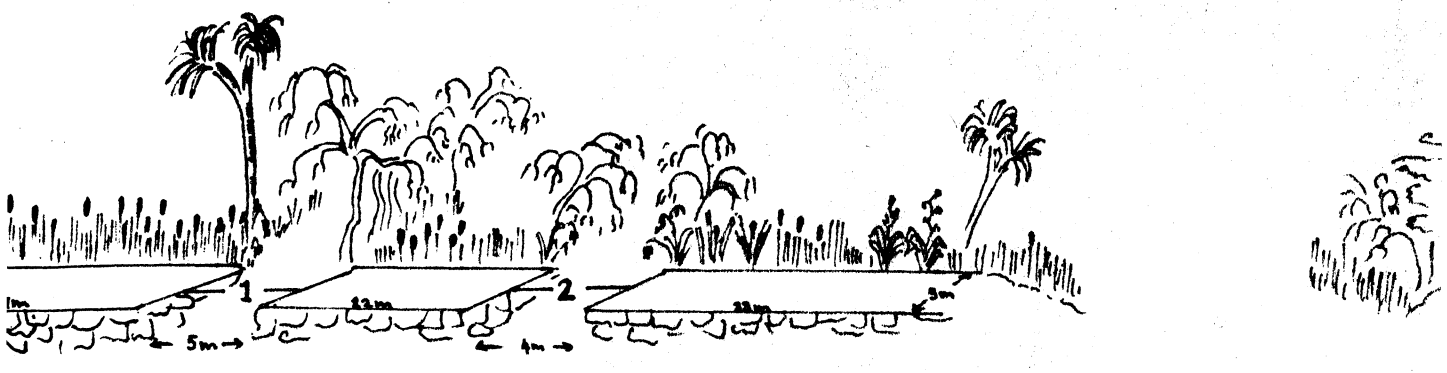

Figure 1. (not to scale) Showing Stations 1 and 2.

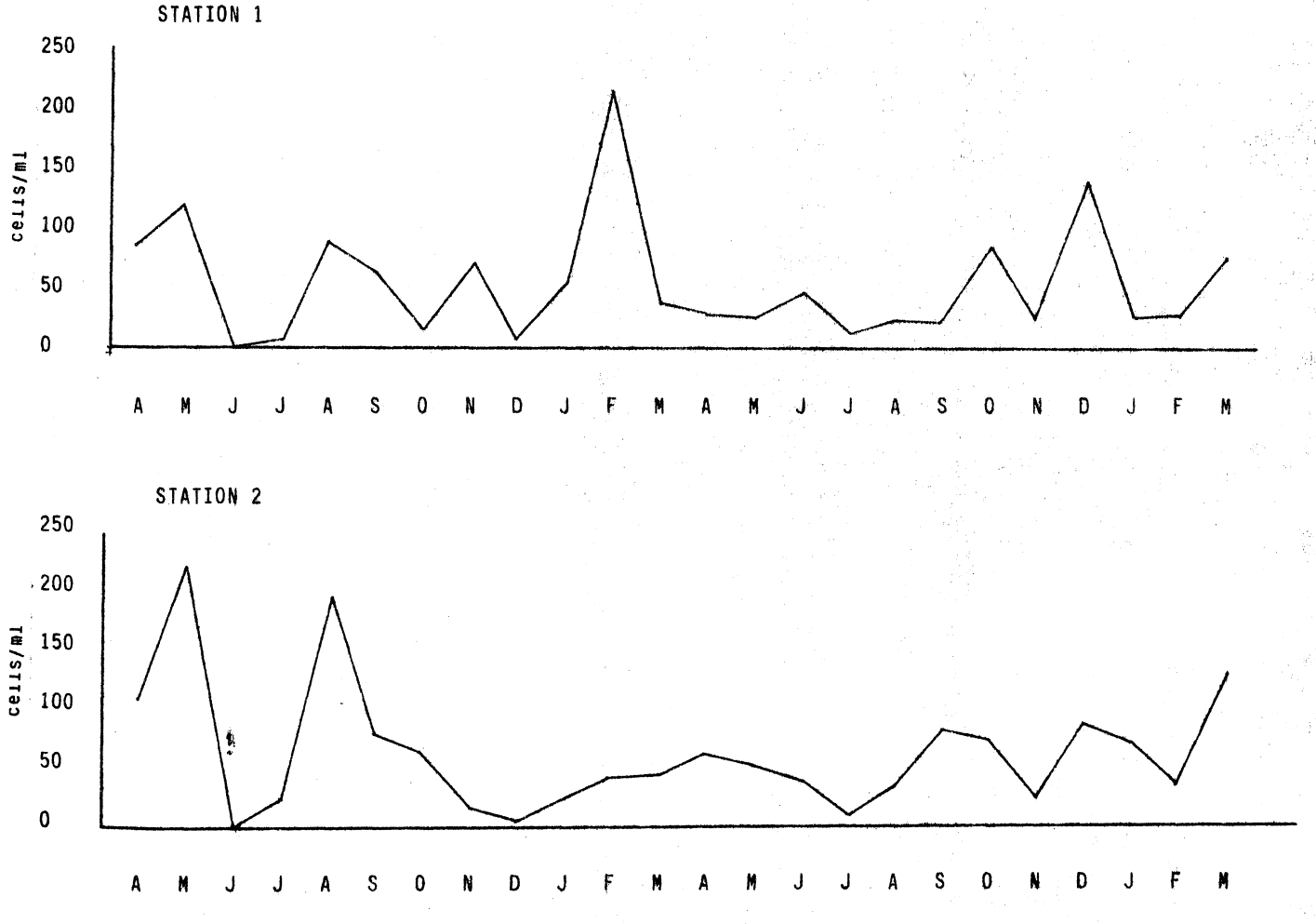

Figure 2. Algal cells/ml at the surface of Te Henga Marsh from April 1980 to March 1982.

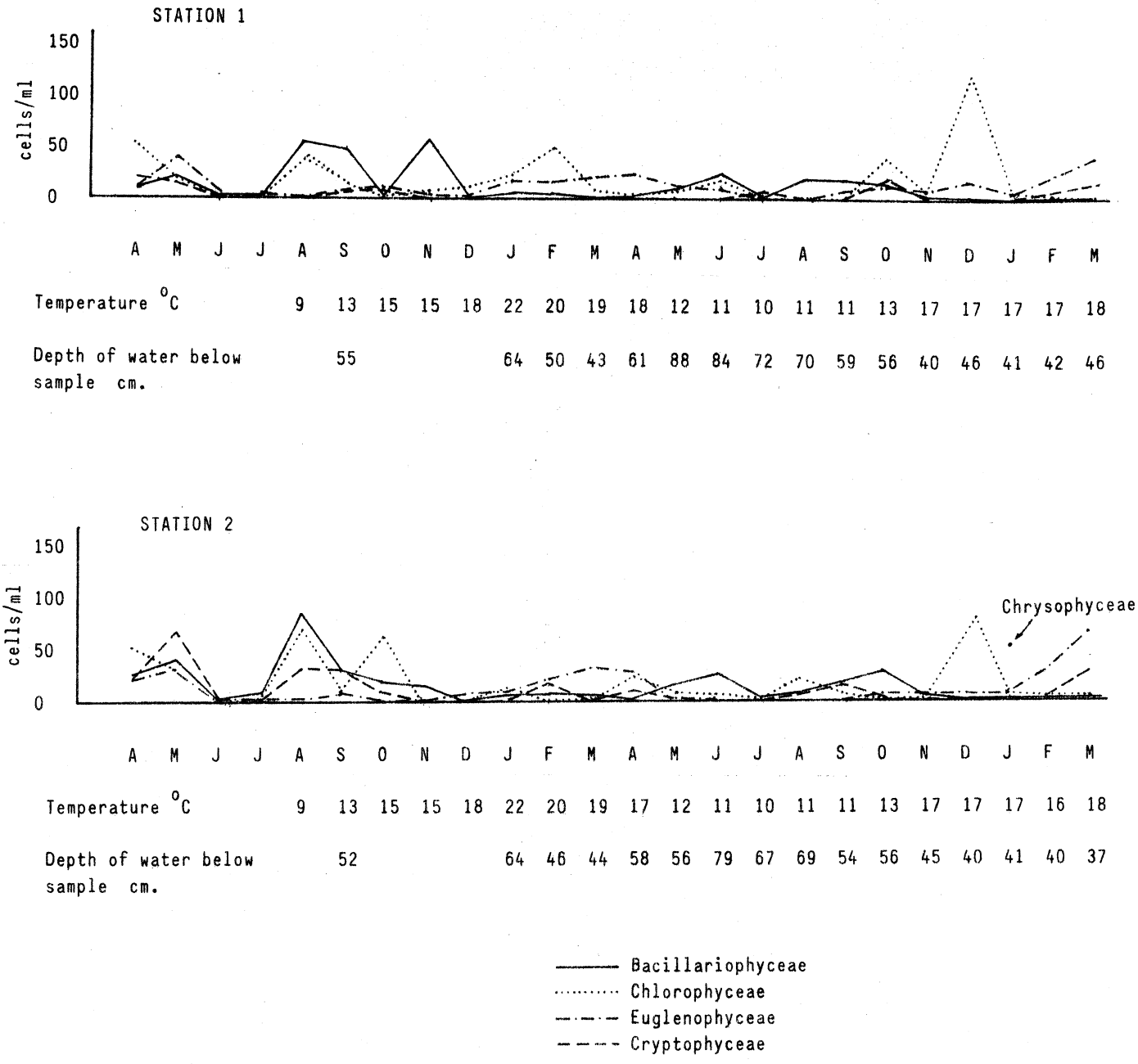

Figure 3. Major families occurring on the surface of Te Henga Marsh from April 1980 to March 1982.

Name change in Leptospermum

In Telopea 2: (4) 1983, p.379, Joy Thompson takes our kanuka out of Leptospermum and puts it into Kunzea Reichb. as Kunzea ericoides (A. Rich) J. Thompson comb. nov.

Kunzea however is a nomen generis conservato propositum and may never be accepted by the Code, or alternatively since it is a matter of opinion, may never be accepted by our DSIR. Can it be that I don't like the idea?

E.D. Hatch