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# Sea Ice Microalgal Data from the Eskimo Lakes, 1972 to 1974

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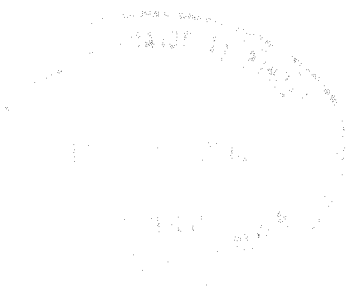
Sea Ice Microalgal Data from the Eskimo Lakes, 1972 to 1974

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ABSTRACT

Hsiao, S. I. C. 1979. Sea ice microalgal data from the Eskimo Lakes, 1972 to 1974. Fish. Mar. Serv. Data Rep. 146: iv + 43 p.

Sea ice microalgal collections, made during the late winter and spring of the years 1972 to 1974 in the Eskimo Lakes, are tabulated quantitatively. Thirty-one genera and 104 species were identified; ice diatoms comprised the largest group with 27 genera and 103 species. The sea ice microalgae were most abundant in late spring on the bottom of the sea ice.

Key words: Sea ice microalgae, ice diatoms, quantitative species composition, vertical distribution, standing stock, Arctic.

RÉSUMÉ

Hsiao, S. I. C. 1979. Sea ice microalgal data from the Eskimo Lakes, 1972 to 1974. Fish. Mar. Serv. Data Rep. 146: iv + 43 p.

Des échantillons d'algues microscopiques de glace marine, prélevés à Eskimo Lakes à la fin de l'hiver et au printemps de 1972 à 1974, sont classés quantitativement. Trente-et-un genres et 104 espèces furent identifiés; les diatomées de glace constituent le groupe le plus important avec 27 genres et 103 espèces. C'est à la fin du printemps que l'on retrouve une plus grande abondance d'algues microscopiques sur la face inférieure de la glace.

## INTRODUCTION

The sea ice microalgae are composed of diatoms, dinoflagellates, green flagellates and chrysophytes. Of these, the diatoms are almost ubiquitous and generally dominant; the other groups are generally rarer, but may occasionally become dominant (Bunt, 1968; Hsiao 1979). Stratified colored bands appear during late winter and spring in the sea ice, especially in the bottom layers (Apollonio, 1961; Bursa, 1961; Bunt and Wood, 1963; Meguro, 1962; Meguro et al., 1966, 1967; McRoy and Goering, 1976). These bands are caused by different proportions of groups of microalgae growing at different levels in the sea ice. Alexander (1974) estimated that the sea ice microalgae contributed from 25% to 30% of the annual primary productivity in the nearshore Beaufort Sea. The sea ice microalgal floras play an important role as primary producers in Arctic marine ecosystems (Meguro et al., 1966, 1967; McRoy and Goering, 1974; Alexander, 1974). They may also provide a potential food source for grazing zooplankton (English, 1961; Apollonio, 1965) and polar cod (Andriashev, 1968).

Most of the earlier investigators (Ehrenberg, 1841, 1853; Dickie, 1878; Cleve, 1898, 1899a, 1900a; Gran, 1900; Kindle, 1909; Seidenfaden, 1947; Usachev, 1938; 1949) listed the species composition and geographical occurrence of sea ice microalgae. The samples were taken from drifting ice-floes and no quantitative distributional analysis of the microalgal flora within the sea ice was made. Recently, Alexander et al. (1974) quantitatively analyzed samples from the bottom of sea ice from Barrow, Alaska for species composition and standing stock.

The purpose of this report is to investigate the quantitative composition, vertical distribution and standing stock of microalgae within the sea ice of the Eskimo Lakes.



## METHODS

The sea ice microalgal samples were collected with a 7.5 cm diameter Siple ice corer from top to the bottom of the sea ice at stations 508 (69°34.8'N, 131°18'W) and 515 (69°32'N, 131°11'W) in the Eskimo Lakes during late winter and spring of the years 1972 to 1974 (Fig. 1). The length of the ice core was measured, and various parts of the core were cut with a fine toothed meat saw. The ice samples were placed in clean plastic containers, and then thawed in the laboratory at room temperature. One set of samples was used for the analyses of salinity, nutrients and pigments (Grainger et al., 1977). The other set of samples was used for species identification and enumeration, and was immediately preserved with formalin at a final concentration of 2%, neutralized with calcium carbonate in Boston round polyethylene bottles.

The preserved samples were quantitatively analyzed for species composition and standing stock. The techniques for preparing permanent slides of cleaned diatoms for species identification were described by Foy and Hsiao (1976). Sea ice microalgae were identified with the aid of a Leitz phase-contrast compound microscope. References used to identify the species were Smith (1853, 1856), Cleve and Grunow (1880), Cleve (1873, 1883, 1884, 1894-1896, 1896, 1899a, b, 1900 a, b), Cupp (1943), Grunow (1884), Oestrup (1895), Van Heurck (1896), Gran (1900, 1904, 1908, 1911), Boyer (1926, 1927), Mann (1925), Heiden and Kolbe (1928), Lebour (1930), Erlandsson (1930), Hustedt (1930, 1959, 1961-1966), Grøntved and Seidenfaden (1938), Seidenfaden (1947), Cleve-Euler (1951-1955), Schmidt et al. (1874-1959), Hendey (1964), Hasle (1964, 1965a, b, 1972) and Van Landingham (1967, 1968, 1969, 1971, 1975) for diatoms; Lebour (1925),

Paulsen (1908, 1949), Schiller (1933), Lemmermann (1908), Graham (1942), Bursa (1961, 1963) and Leedale (1967) for dinoflagellates, chrysophytes and flagellates.

All preserved samples were well agitated to suspend the microalgal cells. Subsamples of 10 mL (except for those taken from the bottom of the ice cores which, because of the dense concentrations of cells there, were only 1 mL) were then pipetted into a Zeiss phytoplankton sedimentation chamber. The cells were allowed to settle for 12-24 hours, and were enumerated with the aid of a Leitz inverted microscope at a magnification of 500 times. The cells in an area equivalent to 89 microscope fields were counted. They were identified to species when possible, otherwise to higher taxonomic levels or groups. Total cell counts were used to estimate the standing stock of sea ice microalgae. Standing stock is given in cells per litre for each species. The results were tabulated. A "+" indicates that the sea ice microalgae were observed at some time during the analysis but not during the count, while a "-" indicates that the sea ice microalgae were not observed at any stage of the analysis. Cell numbers given as "spp." may include individuals of species listed that could not be identified during the count and/or different species.

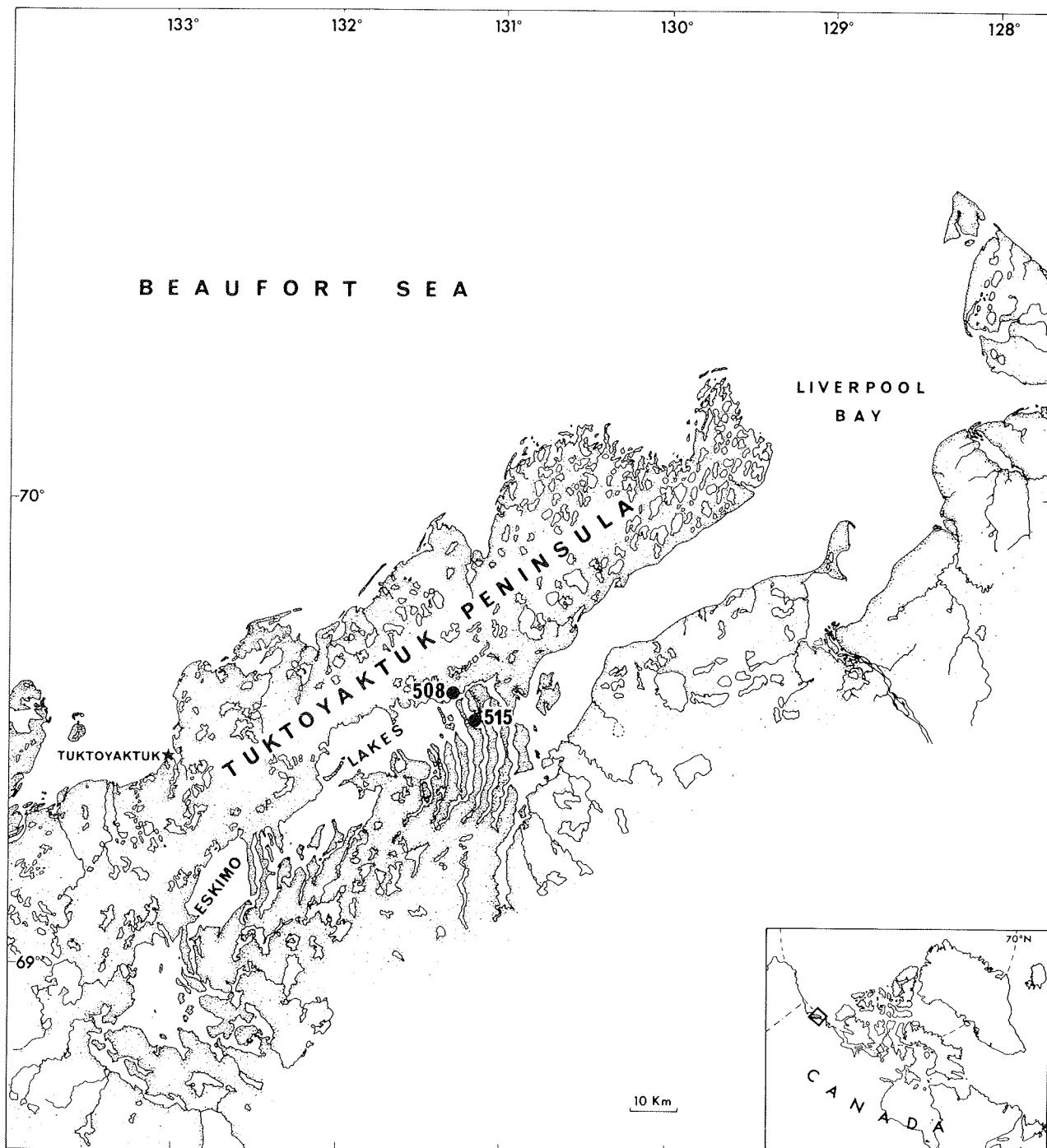


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Table 1. Genera and species of sea ice microalgae from the Eskimo Lakes.

## Bacillariophyta

## Centrales

- Chaetoceros* Ehrenberg
  - C. borealis* Bailey
  - C. septentrionalis* Oestrup
- Coccinodiscus* Ehrenberg
  - C. kuetzingii* var. *glacialis* Grunow
- Melosira* Agardh
  - M. arctica* (Ehrenberg) Dickie in Pritchard
- Rhizosolenia* Ehrenberg
- Thalassiosira* Cleve
  - T. bioculata* var. *exigua* (Grunow) Hustedt
  - T. gravida* Cleve
  - T. nordenskioldii* Cleve
- Triceratium* Ehrenberg
  - T. nobile* Witt
- Trigonium* Cleve
  - T. arcticum* (Brightwell) Cleve

## Pennales

- Achnanthes* Bory
  - A. delicatula* (Kuetzing) Grunow in Cleve and Grunow
  - A. minutissima* Kuetzing
  - A. taeniata* Grunow in Cleve and Grunow
- Amphipleura* Kuetzing
  - A. rutilans* (Trentepohl) Cleve
- Amphiprora* Ehrenberg
  - A. concilians* Cleve
  - A. kjellmanii* Cleve in Cleve and Grunow
  - A. kjellmanii* var. *kariana* (Grunow in Cleve and Grunow) Cleve
  - A. kjellmanii* var. *striolata* (Grunow in Cleve and Grunow) Cleve
  - A. kryophila* Cleve
- Amphora* Ehrenberg
  - A. laevis* var. *laevissima* (Gregory) Cleve
  - A. laevissima* var. *minuta* Cleve
  - A. proteus* Gregory
- Bacillaria* Gmelin
  - B. paradoxa* Gmelin in Linnaeus
- Caloneis* Cleve
  - C. kryophila* (Cleve) Cleve
  - C. liber* (Wm. Smith) Cleve
- Cocconeis* Ehrenberg
- Diploneis* Ehrenberg
  - D. lineata* (Donkin) Cleve
  - D. litoralis* var. *arctica* Cleve
  - D. smithii* (Brébisson in Wm. Smith) Cleve
- Fragilaria*
  - F. pinnata* Ehrenberg

Table 1 (Continued)

- Gomphonema* Agardh  
*G. exiguum* Kuetzing  
*G. exiguum* var. *pachycladum* (Brébisson in Brébisson and Godey) Cleve
- Gyrosigma* Hassall  
*G. fasciola* (Ehrenberg) Cleve
- Licmophora* Agardh  
*L. dalmatica* (Kuetzing) Grunow  
*L. gracilis* (Ehrenberg) Grunow
- Navicula* Bory  
*N. algida* Grunow  
*N. cancellata* Donkin  
*N. cluthensis* var. *pagophila* Grunow  
*N. crassirostris* Grunow in Cleve and Grunow  
*N. crucigeroides* Hustedt  
*N. decipiens* O'Meara  
*N. directa* (Wm. Smith) Ralfs in Pritchard  
*N. forcipata* Greville  
*N. gelida* Grunow  
*N. glacialis* (Cleve) Grunow  
*N. kariana* Grunow in Cleve and Grunow  
*N. kjellmanii* (Cleve in Cleve and Grunow) Cleve  
*N. lineola* Grunow  
*N. marina* Ralfs in Pritchard  
*N. novadecipiens* Hustedt  
*N. oestrupi* Cleve  
*N. perlucens* Oestrup  
*N. quadripedis* Cleve-Euler  
*N. recurvata* Gran  
*N. solitaria* Cleve  
*N. spicula* (Hickie) Cleve  
*N. stuxbergii* var. *subglabra* Oestrup  
*N. subinflata* Grunow in Cleve and Moeller  
*N. superba* Cleve  
*N. transitans* Cleve  
*N. transitans* var. *derasa* (Grunow in Cleve and Grunow) Cleve  
*N. transitans* var. *erosa* (Cleve) Cleve  
*N. transitans* var. *incudiformis* (Grunow in Cleve) Cleve  
*N. trigonocephala* Cleve  
*N. trigonocephala* var. *depressa* Oestrup  
*N. valida* Cleve and Grunow  
*N. valida* var. *minuta* Cleve
- Nitzschia* Hassall  
*N. acuminata* (Wm. Smith) Grunow  
*N. closterium* (Ehrenberg) Wm. Smith  
*N. cylindrus* (Grunow) Hasle  
*N. diaphana* Cleve  
*N. distans* var. *erratica* Cleve  
*N. frigida* Grunow

Table 1 (Continued)

- N. gelida* Cleve and Grunow  
*N. gruendleri* Grunow  
*N. hybrida* Grunow  
*N. laevissima* Grunow  
*N. lecointei* Heurck  
*N. linearis* (Agardh) Wm. Smith  
*N. linearis* var. *tenuis* (Wm. Smith) Grunow  
*N. polaris* Grunow  
*N. seriata* Cleve  
*Pinnularia* Ehrenberg  
*P. ambigua* Cleve  
*P. quadratarea* (Schmidt) Cleve  
*P. quadratarea* var. *bicontracta* Oestrup  
*P. quadratarea* var. *bicuneata* Heiden and Kolbe  
*P. quadratarea* var. *constricta* Oestrup  
*P. quadratarea* var. *densestriata* Cleve  
*P. quadratarea* var. *leptostauron* Cleve  
*P. quadratarea* var. *maxima* Oestrup  
*P. quadratarea* var. *minima* Oestrup  
*P. quadratarea* var. *stuxbergii* (Cleve in Cleve and Grunow) Cleve  
*P. quadratarea* var. *subconstricta* Oestrup  
*P. quadratarea* var. *subcontinua* (Grunow) Cleve  
*P. semiinflata* var. *decipiens* (Cleve) Gran  
*Pleurosigma* Wm. Smith  
*P. antarcticum* Heiden and Kolbe  
*P. clevei* Grunow  
*P. stuxbergii* Cleve and Grunow  
*P. stuxbergii* var. *minor* Grunow  
*Stenoneis* Cleve  
*S. inconspicua* var. *baculus* (Cleve) Cleve  
*Surirella* Turpin  
*S. japonica* A. Schmidt  
*S. oestrupi* Gran  
*Synedra* Ehrenberg  
*S. tabulata* (Agardh) Kuetzing  
*S. tabulata* var. *obtusa* Pantocsek  
*Tropidoneis* Cleve  
*T. maxima* (Gregory) Cleve

## Chlorophyta

Unidentified green flagellates

## Euglenophyta

*Euglena* Ehrenberg

## Pyrrophyta

*Goniaulax* Diesing  
*G. catenata* Kofoid  
*Gymnodinium* Stein  
*Peridinium* Ehrenberg

Table 2. Quantitative composition and vertical distribution of sea ice microalgae in the Eskimo Lakes at Station 508, 17 March 1972.

Sea ice thickness (cm)	157	
Ice section from top to bottom (cm)	0-10	147-157
Total sea ice microalgae (cells/litre)	373,492	3,952,558
Bacillariophyta	130,538	2,937,222
Centrales	43,513	435,144
<i>Chaetoceros</i>	32,635	181,310
<i>C. borealis</i>	-	72,524
<i>C. spp.</i>	32,635	108,786
<i>Rhizosolenia</i>	3,626	-
<i>R. spp.</i>	3,626	-
<i>Thalassiosira</i>	7,252	+
<i>T. nordenskioldii</i>	3,626	+
<i>T. spp.</i>	3,626	-
Unidentified	-	253,834
Pennales	87,025	2,502,078
<i>Achnanthes</i>	-	145,048
<i>A. delicatula</i>	-	+
<i>A. spp.</i>	-	145,048
<i>Amphiprora</i>	7,252	72,524
<i>A. concilians</i>	-	+
<i>A. kjellmanii</i> var. <i>kariana</i>	-	+
<i>A. kjellmanii</i> var. <i>striolata</i>	3,626	+
<i>A. kryophila</i>	-	36,262
<i>A. spp.</i>	3,626	36,262
<i>Amphora</i>	-	+
<i>A. laevis</i> var. <i>laevissima</i>	-	+
<i>Caloneis</i>	-	+
<i>C. kryophila</i>	-	+
<i>Diploneis</i>	+	+
<i>D. litoralis</i> var. <i>arctica</i>	+	+
<i>Gomphonema</i>	-	36,262
<i>G. exiguum</i> var. <i>pachycladum</i>	-	36,262
<i>Gyrosigma</i>	+	-
<i>G. fasciola</i>	+	-
<i>Licmophora</i>	+	-
<i>L. dalmatica</i>	+	-
<i>Navicula</i>	3,626	471,406
<i>N. crassirostris</i>	-	36,262
<i>N. crucigeroides</i>	-	36,262
<i>N. directa</i>	+	72,524
<i>N. forcipata</i>	+	36,262
<i>N. kariana</i>	-	+
<i>N. oestrupi</i>	-	+
<i>N. perlucens</i>	-	+
<i>N. recurvata</i>	+	-



Table 2. (Continued)

Ice section from top to bottom (cm)	0-10	147-157
<i>N. spicula</i>	-	+
<i>N. stuxbergii</i> var. <i>subglabra</i>	-	36,262
<i>N. subinflata</i>	-	+
<i>N. superba</i> var. <i>crassa</i>	+	-
<i>N. transitans</i> var. <i>derasa</i>	-	+
<i>N. trigonocephala</i> var. <i>depressa</i>	-	+
<i>N. valida</i> var. <i>minuta</i>	-	+
<i>N. spp.</i>	3,626	253,834
<i>Nitzschia</i>	36,260	507,668
<i>N. closterium</i>	3,626	-
<i>N. cylindrus</i>	7,252	217,572
<i>N. gelida</i>	-	+
<i>N. laevissima</i>	-	+
<i>N. polaris</i>	10,878	+
<i>N. spp.</i>	14,504	290,096
<i>Pinnularia</i>	+	+
<i>P. ambigua</i>	-	+
<i>P. quadratarea</i>	-	+
<i>P. quadratarea</i> var. <i>bicontracta</i>	+	+
<i>P. quadratarea</i> var. <i>constricta</i>	-	+
<i>P. quadratarea</i> var. <i>minima</i>	-	+
<i>P. quadratarea</i> var. <i>stuxbergii</i>	+	+
<i>P. quadratarea</i> var. <i>subcontinua</i>	+	+
<i>P. spp.</i>	-	+
<i>Pleurosigma</i>	3,626	72,524
<i>P. antarcticum</i>	-	36,262
<i>P. clevei</i>	-	+
<i>P. stuxbergii</i> var. <i>minor</i>	-	+
<i>P. spp.</i>	3,626	36,262
<i>Stenoneis</i>	-	+
<i>S. inconspicua</i> var. <i>baculus</i>	-	+
<i>Synedra</i>	3,626	36,262
<i>S. tabulata</i>	3,626	36,262
<i>Tropidoneis</i>	-	36,262
<i>T. maxima</i>	-	36,262
Unidentified	32,635	1,124,122
Chlorophyta	-	+
Unidentified green flagellates	-	+
Pyrrophyta	242,954	1,015,336
<i>Goniaulax</i>	32,635	652,716
<i>G. catenata</i>	-	652,716
<i>G. spp.</i>	32,635	-
<i>Peridinium</i>	54,393	-
<i>P. spp.</i>	54,393	-
Unidentified	155,926	362,620

Table 3. Quantitative composition and vertical distribution of sea ice microalgae in the Eskimo Lakes at Station 508, 18 May 1972.

Sea ice thickness (cm)	191					
	0-10	35-45	70-80	105-115	140-150	181-191
Ice section from top to bottom (cm)	0-10	35-45	70-80	105-115	140-150	181-191
Total sea ice microalgae (cells/litre)	58,017	119,662	250,200	340,856	319,101	41,157,370
Bacillariophyta	25,382	68,896	206,686	319,099	304,597	39,054,174
Centrales	7,252	7,252	10,878	-	10,878	1,958,148
<i>Chaetoceros</i>	3,626	-	-	-	-	108,786
<i>C. septentrionalis</i>	-	-	-	-	-	108,786
<i>C. spp.</i>	3,626	-	-	-	-	-
<i>Rhizosolenia</i>	-	3,626	7,252	-	+	36,262
<i>R. spp.</i>	-	3,626	7,252	-	+	36,262
<i>Thalassiosira</i>	-	-	-	-	-	435,144
<i>T. bioculata</i> var. <i>exigua</i>	-	-	-	-	-	+
<i>T. nordenskioldii</i>	-	-	-	-	-	145,048
<i>T. spp.</i>	-	-	-	-	-	290,096
<i>Trigonium</i>	-	3,626	-	-	3,626	-
<i>T. arcticum</i>	-	3,626	-	-	3,626	-
Unidentified	3,626	-	3,626	-	7,252	1,377,956
Pennales	18,130	61,644	195,808	319,099	293,719	37,096,026
<i>Achnanthes</i>	-	+	-	7,252	-	3,299,842
<i>A. delicatula</i>	-	-	-	-	-	+
<i>A. minutissima</i>	-	+	-	+	-	-
<i>A. taeniata</i>	-	-	-	-	-	507,668
<i>A. spp.</i>	-	-	-	7,252	-	2,792,174
<i>Amphiprora</i>	-	7,252	18,130	14,504	18,130	688,978
<i>A. kjellmanii</i> var. <i>kariana</i>	-	-	-	-	-	+
<i>A. kjellmanii</i> var. <i>striolata</i>	-	3,626	-	7,252	7,252	217,572
<i>A. kryophila</i>	-	-	3,626	-	-	-
<i>A. spp.</i>	-	3,626	14,504	7,252	10,878	471,406
<i>Amphora</i>	-	-	14,504	-	+	471,406
<i>A. laevis</i> var. <i>laevissima</i>	-	-	-	-	-	181,310
<i>A. spp.</i>	-	-	14,504	-	+	290,096

Table 3. (Continued)

Ice section from top to bottom (cm)	0-10	35-45	70-80	105-115	140-150	181-191
<i>Caloneis</i>	-	-	-	-	-	36,262
<i>C. kryophila</i>	-	-	-	-	-	36,262
<i>Cocconeis</i>	+	-	-	-	-	-
<i>C. spp.</i>	+	-	-	-	-	-
<i>Diploneis</i>	-	+	14,504	21,756	54,393	-
<i>D. lineata</i>	-	-	-	3,626	-	-
<i>D. litoralis</i> var. <i>arctica</i>	-	+	14,504	14,504	54,393	-
<i>D. spp.</i>	-	-	-	3,626	-	-
<i>Gomphonema</i>	3,626	+	-	3,626	+	290,096
<i>G. exiguum</i> var. <i>pachycladum</i>	-	+	-	3,626	+	290,096
<i>G. spp.</i>	3,626	-	-	-	-	-
<i>Navicula</i>	+	3,626	7,252	14,504	32,635	5,257,990
<i>N. crassirostris</i>	+	-	-	-	+	72,524
<i>N. crucigeroides</i>	-	-	-	-	-	72,524
<i>N. decipiens</i>	-	-	-	-	-	72,524
<i>N. directa</i>	+	3,626	+	-	+	108,786
<i>N. gelida</i>	-	-	-	-	3,626	72,524
<i>N. kjellmanii</i>	-	-	-	-	-	181,310
<i>N. novadecipiens</i>	-	-	-	-	+	+
<i>N. oestrupi</i>	-	-	-	-	-	+
<i>N. quadripedis</i>	-	-	-	-	-	1,885,624
<i>N. recurvata</i>	-	-	-	-	-	+
<i>N. solitaria</i>	-	-	-	-	-	+
<i>N. stuxbergii</i> var. <i>subglabra</i>	-	-	-	-	-	+
<i>N. superba</i>	-	-	-	-	-	72,524
<i>N. transitans</i>	-	-	-	-	-	72,524
<i>N. transitans</i> var. <i>derasa</i>	-	-	-	-	10,878	+
<i>N. transitans</i> var. <i>incudiiformis</i>	-	-	-	-	-	+
<i>N. valida</i> var. <i>minuta</i>	-	-	-	-	-	36,262
<i>N. spp.</i>	-	+	7,252	14,504	18,131	2,610,864

Table 3. (Continued)

Ice section from top to bottom (cm)	0-10	35-45	70-80	105-115	140-150	181-191
<i>Nitzschia</i>	+	+	72,522	145,046	108,785	16,172,852
<i>N. closterium</i>	-	-	-	7,252	-	181,310
<i>N. cylindrus</i>	-	29,009	32,635	25,383	36,262	2,465,816
<i>N. frigida</i>	-	-	50,766	97,907	-	652,716
<i>N. gelida</i>	-	-	-	3,626	+	326,358
<i>N. hybrida</i>	-	-	-	+	+	253,834
<i>N. laevissima</i>	-	-	-	-	-	290,096
<i>N. lecointei</i>	-	-	-	-	-	36,262
<i>N. linearis</i>	-	-	-	-	-	761,502
<i>N. polaris</i>	-	+	7,252	10,878	10,878	5,330,514
<i>N. spp.</i>	+	-	14,504	25,383	97,907	5,874,444
<i>Pinnularia</i>	-	3,626	+	-	+	435,144
<i>P. quadratarea</i> var. <i>bicontracta</i>	-	-	+	-	+	217,572
<i>P. quadratarea</i> var. <i>constricta</i>	-	-	-	-	-	72,524
<i>P. quadratarea</i> var. <i>densestriata</i>	-	-	-	-	-	+
<i>P. quadratarea</i> var. <i>leptostauron</i>	-	-	+	-	-	-
<i>P. quadratarea</i> var. <i>maxima</i>	-	-	-	-	-	+
<i>P. quadratarea</i> var. <i>stuxbergii</i>	-	3,626	-	-	+	72,524
<i>P. seminflata</i>	-	-	-	-	-	72,524
<i>Pleurosigma</i>	-	-	3,626	-	+	36,262
<i>P. antarcticum</i>	-	-	-	-	-	36,262
<i>P. stuxbergii</i>	-	-	-	-	-	+
<i>P. stuxbergii</i> var. <i>minor</i>	-	-	-	-	+	-
<i>P. spp.</i>	-	-	3,626	-	+	-
<i>Stenoneis</i>	-	-	-	-	-	+
<i>S. inconspicua</i> var. <i>baculus</i>	-	-	-	-	-	+
<i>Synedra</i>	-	-	-	-	-	+
<i>S. tabulata</i>	-	-	-	-	-	+
<i>Tropidoneis</i>	-	-	3,626	-	-	-
<i>T. maxima</i>	-	-	3,626	-	-	-
Unidentified	14,504	18,131	29,009	87,028	43,514	10,407,194

Table 3. (Continued)

Ice section from top to bottom (cm)	0-10	35-45	70-80	105-115	140-150	181-191
Chlorophyta	-	-	-	-	-	217,572
Unidentified green flagellates	-	-	-	-	-	217,572
Euglenophyta	-	-	-	-	-	36,262
<i>Euglena</i>	-	-	-	-	-	36,262
<i>E. spp.</i>	-	-	-	-	-	36,262
Pyrrophyta	32,635	50,766	43,514	21,757	14,504	1,849,362
<i>Goniaulax</i>	-	-	-	-	-	1,124,122
<i>G. catenata</i>	-	-	-	-	-	1,124,122
Unidentified	32,635	50,766	43,514	21,757	14,504	725,240

Table 4. Quantitative composition and vertical distribution of sea ice microalgae in the Eskimo Lakes at Station 508, 24 November 1972.

Sea ice thickness (cm)	50	
Ice section from top to bottom (cm)	0-10	40-50
Total sea ice microalgae (cells/litre)	39,887	485,906
Bacillariophyta	29,009	471,402
Centrales	3,626	7,252
<i>Rhizosolenia</i>	3,626	-
<i>R. spp.</i>	3,626	-
<i>Thalassiosira</i>	-	3,626
<i>T. nordenskioldii</i>	-	3,626
Unidentified	-	3,626
Pennales	25,383	464,150
<i>Amphiprora</i>	-	10,878
<i>A. kjellmanii</i> var. <i>striolata</i>	-	7,252
<i>A. kryophila</i>	-	+
<i>A. spp.</i>	-	3,626
<i>Amphora</i>	-	3,626
<i>A. laevissima</i> var. <i>minuta</i>	-	3,626
<i>A. spp.</i>	-	+
<i>Gomphonema</i>	+	25,383
<i>G. exiguum</i> var. <i>pachycladum</i>	+	25,383
<i>Navicula</i>	+	21,757
<i>N. crassirostris</i>	-	+
<i>N. directa</i>	-	+
<i>N. forcipata</i>	-	3,626
<i>N. spp.</i>	+	18,131
<i>Nitzschia</i>	3,626	355,366
<i>N. closterium</i>	-	18,131
<i>N. cylindrus</i>	-	43,514
<i>N. hybrida</i>	-	7,252
<i>N. laevissima</i>	-	3,626
<i>N. polaris</i>	3,626	163,179
<i>N. spp.</i>	-	119,664
<i>Pinnularia</i>	-	7,252
<i>P. quadratarea</i> var. <i>bicontracta</i>	-	+
<i>P. quadratarea</i> var. <i>stuxbergii</i>	-	+
<i>P. semiinflata</i>	-	+
<i>P. spp.</i>	-	7,252
Unidentified	21,757	39,888
Pyrrophyta		
Unidentified	10,878	14,504

Table 5. Quantitative composition and vertical distribution of sea ice microalgae in the Eskimo Lakes at Station 508, 23 February 1973.

Sea ice thickness (cm)	141				
Ice section from top to bottom (cm)	0-10	35-45	70-80	105-115	131-141
Total sea ice microalgae (cells/litre)	58,017	108,784	108,784	170,427	333,604
Bacillariophyta	43,513	39,887	65,270	152,297	264,708
Centrales	7,252	3,626	7,252	10,878	83,401
<i>Chaetoceros</i>	+	-	-	-	50,766
<i>C. borealis</i>	-	-	-	-	43,514
<i>C. spp.</i>	+	-	-	-	7,252
<i>Coscinodiscus</i>	-	-	-	-	+
<i>C. spp.</i>	-	-	-	-	+
<i>Melosira</i>	-	-	-	-	+
<i>M. spp.</i>	-	-	-	-	+
<i>Rhizosolenia</i>	+	+	-	+	-
<i>R. spp.</i>	+	+	-	+	-
<i>Thalassiosira</i>	-	-	-	-	3,626
<i>T. gravida</i>	-	-	-	-	+
<i>T. nordenskioldii</i>	-	-	-	-	3,626
<i>Trigonium</i>	3,626	-	7,252	7,252	-
<i>T. arcticum</i>	3,626	-	7,252	7,252	-
Unidentified	3,626	3,626	-	3,626	29,009
Pennales	36,261	36,261	58,018	141,419	181,307
<i>Amphiprora</i>	-	-	21,757	10,878	3,626
<i>A. kjellmani</i> var. <i>kariana</i>	-	-	-	+	-
<i>A. kjellmani</i> var. <i>striolata</i>	-	-	3,626	3,626	3,626
<i>A. kryophila</i>	-	-	+	-	-
<i>A. spp.</i>	-	-	18,131	7,252	-
<i>Amphora</i>	-	-	-	-	3,626
<i>A. spp.</i>	-	-	-	-	3,626
<i>Caloneis</i>	-	-	-	+	-
<i>C. liber</i>	-	-	-	+	-

Table 5. (Continued)

Ice section from top to bottom (cm)	0-10	35-45	70-80	105-115	131-141
<i>Diploneis</i>	-	-	3,626	7,252	-
<i>D. litoralis</i> var. <i>arctica</i>	-	-	3,626	7,252	-
<i>Gomphonema</i>	-	+	3,626	3,626	7,252
<i>G. exiguum</i> var. <i>pachycladum</i>	-	+	3,626	3,626	7,252
<i>Licmophora</i>	+	-	-	-	-
<i>L. gracilis</i>	+	-	-	-	-
<i>Navicula</i>	+	3,626	+	+	3,626
<i>N. crassirostris</i>	-	-	+	-	-
<i>N. directa</i>	-	-	-	+	+
<i>N. gelida</i>	-	-	+	-	-
<i>N. oestrupi</i>	-	-	-	+	+
<i>N. recurvata</i>	-	-	-	-	+
<i>N. solitaria</i>	-	-	-	+	-
<i>N. transitans</i> var. <i>derasa</i>	-	-	-	+	-
<i>N. valida</i>	-	-	-	-	+
<i>N. spp.</i>	+	3,626	+	+	3,626
<i>Nitzschia</i>	10,878	14,504	10,878	94,280	94,280
<i>N. closterium</i>	3,626	-	-	-	-
<i>N. cylindrus</i>	+	+	+	3,626	10,878
<i>N. hybrida</i>	-	-	+	+	+
<i>N. polaris</i>	+	10,878	7,252	29,009	29,009
<i>N. spp.</i>	7,252	3,626	3,626	61,645	54,393
<i>Pinnularia</i>	+	+	-	-	+
<i>P. quadratarea</i> var. <i>bicontracta</i>	-	+	-	-	+
<i>P. quadratarea</i> var. <i>densestriata</i>	-	-	-	-	+
<i>P. quadratarea</i> var. <i>minima</i>	-	-	-	-	+
<i>P. quadratarea</i> var. <i>stuxbergii</i>	+	-	-	-	+
<i>Pleurosigma</i>	-	+	-	+	3,626
<i>P. clevei</i>	-	-	-	+	3,626
<i>P. stuxbergii</i> var. <i>minor</i>	-	+	-	-	-



Table 5. (Continued)

Ice section from top to bottom (cm)	0-10	35-45	70-80	105-115	131-141
<i>Synedra</i>	3,626	-	+	-	-
<i>S. tabulata</i>	3,626	-	+	-	-
<i>S. tabulata</i> var. <i>obtusa</i>	+	-	-	-	-
<i>S. spp.</i>	+	-	+	-	-
<i>Tropidoneis</i>	-	-	-	+	-
<i>T. maxima</i>	-	-	-	+	-
Unidentified	21,757	18,131	18,131	25,383	65,271
Chlorophyta	-	-	7,252	3,626	7,252
Unidentified green flagellates	-	-	7,252	3,626	7,252
Euglenophyta	3,626	-	-	-	-
<i>Euglena</i>	3,626	-	-	-	-
<i>E. spp.</i>	3,626	-	-	-	-
Pyrrophyta	10,878	68,897	36,262	14,504	61,644
<i>Goniaulax</i>	-	68,897	36,262	14,504	10,878
<i>G. catenata</i>	-	-	-	-	10,878
Unidentified	10,878	68,897	36,262	14,504	50,766

Table 6. Quantitative composition and vertical distribution of sea ice microalgae in the Eskimo Lakes at Station 508, 19 May 1973.

Sea ice thickness (cm)	169				
Ice section from top to bottom (cm)	0-10	35-45	70-80	105-115	159-169
Total sea ice microalgae (cells/litre)	616,442	268,333	504,035	504,031	35,174,140
Bacillariophyta	594,685	253,829	482,278	456,891	34,884,044
Centrales	152,298	14,504	3,626	21,756	1,486,742
<i>Chaetoceros</i>	126,916	3,626	3,626	-	-
<i>C. septentrionalis</i>	7,252	-	3,626	-	-
<i>C. spp.</i>	119,664	3,626	-	-	-
<i>Coscinodiscus</i>	-	+	-	-	-
<i>C. spp.</i>	-	+	-	-	-
<i>Melosira</i>	10,878	-	-	-	-
<i>M. spp.</i>	10,878	-	-	-	-
<i>Rhizosolenia</i>	-	-	-	-	36,262
<i>R. spp.</i>	-	-	-	-	36,262
<i>Thalassiosira</i>	3,626	+	+	14,504	145,048
<i>T. gravida</i>	-	-	-	14,504	+
<i>T. nordenskioldii</i>	3,626	+	-	+	145,048
<i>T. spp.</i>	-	-	+	+	-
<i>Triceratium</i>	+	-	-	-	-
<i>T. nobile</i>	+	-	-	-	-
<i>Trigonium</i>	3,626	3,626	-	-	-
<i>T. arcticum</i>	3,626	3,626	-	-	-
Unidentified	7,252	7,252	-	7,252	1,305,432
Pennales	442,387	239,325	478,652	435,135	33,397,302
<i>Achnanthes</i>	+	-	10,878	10,878	290,096
<i>A. delicatula</i>	-	-	-	-	+
<i>A. spp.</i>	+	-	10,878	10,878	290,096
<i>Amphipleura</i>	+	-	-	-	-
<i>A. rutilans</i>	+	-	-	-	-

Table 6. (Continued)

Ice section from top to bottom (cm)	0-10	35-45	70-80	105-115	159-169
<i>Amphiprora</i>	3,626	3,626	39,887	29,008	870,288
<i>A. kjellmani</i> var. <i>kariana</i>	-	-	3,626	+	145,048
<i>A. kjellmani</i> var. <i>striolata</i>	3,626	+	18,131	10,878	362,620
<i>A. kryophila</i>	-	-	10,878	3,626	72,524
<i>A. spp.</i>	-	3,626	7,252	14,504	290,096
<i>Amphora</i>	14,504	10,878	-	-	616,454
<i>A. laevis</i> var. <i>laevissima</i>	-	-	-	-	+
<i>A. proteus</i>	+	-	-	-	-
<i>A. spp.</i>	14,504	10,878	-	-	616,454
<i>Bacillaria</i>	-	-	-	-	72,524
<i>B. paradoxa</i>	-	-	-	-	72,524
<i>Caloneis</i>	-	-	+	-	72,524
<i>C. kryophila</i>	-	-	+	-	72,524
<i>Cocconeis</i>	+	-	-	-	-
<i>C. spp.</i>	+	-	-	-	-
<i>Diploneis</i>	+	3,626	18,130	29,008	290,096
<i>D. litoralis</i> var. <i>arctica</i>	-	3,626	10,878	14,504	217,572
<i>D. smithii</i>	+	-	-	-	-
<i>D. spp.</i>	-	-	7,252	14,504	72,524
<i>Fragilaria</i>	+	-	-	-	-
<i>F. pinnata</i>	+	-	-	-	-
<i>Gomphonema</i>	18,130	43,514	18,131	47,140	290,096
<i>G. exiguum</i>	-	3,626	-	-	-
<i>G. exiguum</i> var. <i>pachycladum</i>	14,504	39,888	18,131	39,888	290,096
<i>G. spp.</i>	3,626	-	-	7,252	-
<i>Gyrosigma</i>	3,626	-	-	-	-
<i>G. fasciola</i>	3,626	-	-	-	-
<i>Liemophora</i>	7,252	-	-	-	+
<i>L. dalmatica</i>	-	-	-	-	+
<i>L. gracilis</i>	7,252	-	-	-	-

Table 6. (Continued)

Ice section from top to bottom (cm)	0-10	35-45	70-80	105-115	159-169
<i>Navicula</i>	43,513	3,626	10,878	36,260	2,502,078
<i>N. algida</i>	-	-	-	-	+
<i>N. cancellata</i>	+	-	-	-	-
<i>N. cluthensis</i> var. <i>pagophila</i>	-	-	+	+	+
<i>N. crucigeroides</i>	-	-	-	-	+
<i>N. decipiens</i>	+	-	+	-	72,524
<i>N. directa</i>	3,626	+	+	3,626	72,524
<i>N. forcipata</i>	-	-	-	+	36,262
<i>N. gelida</i>	+	+	-	+	+
<i>N. glacialis</i>	-	-	-	-	36,262
<i>N. kariana</i>	+	+	-	-	145,048
<i>N. Kjellmanii</i>	-	-	-	-	72,524
<i>N. marina</i>	-	-	+	+	72,524
<i>N. oestrupi</i>	+	-	-	-	36,262
<i>N. recurvata</i>	-	-	-	3,626	+
<i>N. solitaria</i>	-	-	-	-	+
<i>N. stuxbergii</i> var. <i>subglabra</i>	-	-	+	-	+
<i>N. subinflata</i>	+	+	-	-	-
<i>N. superba</i>	-	-	-	-	+
<i>N. transitans</i>	7,252	+	3,626	10,878	+
<i>N. transitans</i> var. <i>derasa</i>	-	-	-	+	36,262
<i>N. transitans</i> var. <i>erosa</i>	-	-	-	-	+
<i>N. transitans</i> var. <i>incudiformis</i>	-	-	-	+	72,524
<i>N. trigonocephala</i> var. <i>depressa</i>	-	-	-	-	36,262
<i>N. valida</i>	+	-	+	3,626	+
<i>N. valida</i> var. <i>minuta</i>	-	-	-	-	+
<i>N. spp.</i>	32,635	3,626	7,252	14,504	1,813,100
<i>Nitzschia</i>	170,429	116,037	261,084	148,673	16,354,162
<i>N. acuminata</i>	-	-	-	-	+
<i>N. closterium</i>	10,878	-	25,383	-	145,048
<i>N. cylindrus</i>	3,626	25,383	36,262	7,252	2,103,196

Table 6. (Continued)

Ice section from top to bottom (cm)	0-10	35-45	70-80	105-115	159-169
<i>N. diaphana</i>	+	+	10,878	+	181,310
<i>N. distans</i> var. <i>erratica</i>	-	-	-	-	+
<i>N. frigida</i>	-	-	-	-	1,087,860
<i>N. gelida</i>	-	-	-	-	362,620
<i>N. gruendleri</i>	-	-	7,252	-	471,406
<i>N. hybrida</i>	3,626	-	-	-	217,572
<i>N. laevissima</i>	10,878	-	+	+	181,310
<i>N. linearis</i> var. <i>tenuis</i>	-	-	-	-	362,620
<i>N. polaris</i>	29,009	39,888	87,028	50,766	2,502,078
<i>N. spp.</i>	112,412	50,766	94,281	90,655	8,739,142
<i>Pinnularia</i>	3,626	7,252	3,626	7,252	1,631,790
<i>P. quadratarea</i>	-	-	-	+	-
<i>P. quadratarea</i> var. <i>bicontracta</i>	+	3,626	+	+	580,192
<i>P. quadratarea</i> var. <i>bicuneata</i>	-	-	+	-	-
<i>P. quadratarea</i> var. <i>constricta</i>	+	-	+	+	217,572
<i>P. quadratarea</i> var. <i>densestriata</i>	-	-	-	-	+
<i>P. quadratarea</i> var. <i>minima</i>	-	+	-	+	+
<i>P. quadratarea</i> var. <i>stuxbergii</i>	+	3,626	-	+	217,572
<i>P. semiinflata</i>	-	-	-	-	+
<i>P. semiinflata</i> var. <i>decipiens</i>	-	-	-	-	+
<i>P. spp.</i>	3,626	-	3,626	7,252	616,454
<i>Pleurosigma</i>	7,252	+	7,252	14,504	543,930
<i>P. antarcticum</i>	-	-	-	-	72,524
<i>P. clevei</i>	-	-	+	-	145,048
<i>P. stuxbergii</i>	-	-	3,626	+	181,310
<i>P. spp.</i>	7,252	+	3,626	14,504	145,048
<i>Stenoneis</i>	-	+	+	-	+
<i>S. inconspicua</i> var. <i>baculus</i>	-	+	+	-	+
<i>Surirella</i>	14,504	-	-	-	+
<i>S. japonica</i>	-	-	-	-	+
<i>S. ostrupi</i>	14,504	-	-	-	-

Table 6. (Continued)

Ice section from top to bottom (cm)	0-10	35-45	70-80	105-115	159-169
<i>Synedra</i>	14,504	+	-	-	+
<i>S. tabulata</i>	7,252	-	-	-	+
<i>S. spp.</i>	7,252	+	-	-	-
<i>Tropidoneis</i>	-	-	-	+	+
<i>T. maxima</i>	-	-	-	+	+
Unidentified	141,421	50,766	108,786	112,412	9,863,264
Euglenophyta	-	-	3,626	-	-
<i>Euglena</i>	-	-	3,626	-	-
<i>E. spp.</i>	-	-	3,626	-	-
Pyrrophyta	21,757	14,504	18,131	47,140	290,096
Unidentified	21,757	14,504	18,131	47,140	290,096

Table 7. Quantitative composition and vertical distribution of sea ice microalgae in the Eskimo Lakes at Station 508, 2 March 1974.

Sea ice thickness (cm)	143				
Ice section from top to bottom (cm)	0-10	35-45	70-80	105-115	133-143
Total sea ice microalgae (cells/litre)	130,539	130,540	116,035	181,306	217,566
Bacillariophyta	119,661	101,531	101,531	163,175	195,809
Centrales	25,383	+	+	3,626	14,504
<i>Chaetoceros</i>	-	-	-	-	10,878
<i>C. borealis</i>	-	-	-	-	7,252
<i>C. septentrionalis</i>	-	-	-	-	3,626
<i>C. spp.</i>	-	-	-	-	+
<i>Coscinodiscus</i>	3,626	-	-	-	-
<i>C. spp.</i>	3,626	-	-	-	-
<i>Thalassiosira</i>	-	-	-	-	3,626
<i>T. nordenskioldii</i>	-	-	-	-	3,626
Unidentified	21,757	+	+	3,626	-
Pennales	94,278	101,531	101,531	159,549	181,305
<i>Achnanthes</i>	+	-	-	-	-
<i>A. spp.</i>	+	-	-	-	-
<i>Amphiprora</i>	10,878	3,626	10,878	10,878	10,878
<i>A. kjellmani</i>	-	-	3,626	-	-
<i>A. kjellmani</i> var. <i>kariana</i>	3,626	-	-	-	-
<i>A. kjellmani</i> var. <i>striolata</i>	3,626	3,626	+	-	10,878
<i>A. spp.</i>	3,626	-	7,252	10,878	-
<i>Amphora</i>	+	-	-	3,626	3,626
<i>A. proteus</i>	+	-	-	-	-
<i>A. spp.</i>	-	-	-	3,626	3,626
<i>Caloneis</i>	+	-	-	-	-
<i>C. kryophila</i>	+	-	-	-	-
<i>Diploneis</i>	-	+	+	47,140	10,878
<i>D. litoralis</i> var. <i>arctica</i>	-	+	+	47,140	10,878

Table 7. (Continued)

Ice section from top to bottom (cm)	0-10	35-45	70-80	105-115	133-143
<i>Gomphonema</i>	10,878	+	7,252	+	18,131
<i>G. exiguum</i> var. <i>pachycladum</i>	10,878	+	7,252	+	18,131
<i>Navicula</i>	7,252	3,626	7,252	7,252	7,252
<i>N. crucigeroides</i>	-	-	-	-	+
<i>N. decipiens</i>	-	-	-	+	-
<i>N. directa</i>	+	+	-	-	-
<i>N. gelida</i>	-	-	+	-	-
<i>N. kjellmani</i>	-	-	-	3,626	-
<i>N. marina</i>	-	+	-	-	-
<i>N. quadripedis</i>	-	-	7,252	-	-
<i>N. transitans</i>	-	-	-	+	-
<i>N. transitans</i> var. <i>incudiformis</i>	-	-	-	-	3,626
<i>N. trigonocephala</i>	+	-	-	-	-
<i>N. spp.</i>	7,252	3,626	+	3,626	3,626
<i>Nitzschia</i>	39,887	47,139	50,766	43,513	65,270
<i>N. cylindrus</i>	10,878	7,252	+	3,626	7,252
<i>N. laevissima</i>	-	-	-	-	+
<i>N. linearis</i> var. <i>tenuis</i>	-	-	-	-	7,252
<i>N. polaris</i>	7,252	29,009	25,383	14,504	18,131
<i>N. seriata</i>	3,626	-	-	-	-
<i>N. spp.</i>	18,131	10,878	25,383	25,383	32,635
<i>Pinnularia</i>	-	+	-	3,626	10,878
<i>P. quadratarea</i> var. <i>bicontracta</i>	-	-	-	3,626	10,878
<i>P. quadratarea</i> var. <i>constricta</i>	-	+	-	-	-
<i>P. quadratarea</i> var. <i>stuxbergii</i>	-	-	-	-	+
<i>P. spp.</i>	-	-	-	+	-
<i>Pleurosigma</i>	3,626	+	+	-	3,626
<i>P. clevei</i>	-	+	-	-	3,626
<i>P. stuxbergii</i> var. <i>minor</i>	-	-	+	-	-
<i>P. spp.</i>	3,626	-	+	-	-



Table 7. (Continued)

Ice section from top to bottom (cm)	0-10	35-35	70-80	105-115	133-143
<i>Tropidoneis</i>	-	-	-	-	3,626
<i>T. maxima</i>	-	-	-	-	3,626
Unidentified	21,757	18,131	25,383	43,514	47,140
Pyrrophyta	10,878	29,009	14,504	18,131	21,757
Unidentified	10,878	29,009	14,504	18,131	21,757

Table 8. Quantitative composition and vertical distribution of sea ice microalgae in the Eskimo Lakes at Station 508, 24 May 1974.

Sea ice thickness (cm)	203						
Ice section from top to bottom (cm)	0-35	35-70	70-105	105-140	140-175	175-193	193-203
Total sea ice microalgae (cells/litre)	112,408	145,044	232,073	203,064	250,203	591,060	29,491,884
Bacillariophyta	72,521	105,157	145,045	137,793	213,942	551,173	28,222,714
Centrales	14,504	7,252	10,878	7,252	39,887	47,140	1,816,726
<i>Chaetoceros</i>	-	-	-	-	-	-	36,262
<i>C. spp.</i>	-	-	-	-	-	-	36,262
<i>Coscinodiscus</i>	+	-	-	-	-	-	-
<i>C. spp.</i>	+	-	-	-	-	-	-
<i>Melosira</i>	+	-	-	-	-	-	36,262
<i>M. arctica</i>	-	-	-	-	-	-	36,262
<i>M. spp.</i>	+	-	-	-	-	-	-
<i>Thalassiosira</i>	-	-	+	-	7,252	25,383	979,074
<i>T. gravida</i>	-	-	-	-	-	-	435,144
<i>T. nordenskioldii</i>	-	-	+	-	7,252	3,626	+
<i>T. spp.</i>	-	-	-	-	-	21,757	543,930
<i>Trigonium</i>	3,626	3,626	3,626	3,626	+	3,626	-
<i>T. arcticum</i>	3,626	3,626	3,626	3,626	+	3,626	-
Unidentified	10,878	3,626	7,252	3,626	32,635	18,131	797,764
Pennales	58,017	97,905	134,167	130,541	174,055	504,033	26,405,988
<i>Achnanthes</i>	-	+	-	-	21,757	7,252	-
<i>A. spp.</i>	-	+	-	-	21,757	7,252	-
<i>Amphiprora</i>	+	+	18,131	+	32,635	10,878	-
<i>A. kjellmani</i> var. <i>kariana</i>	-	-	-	-	+	-	-
<i>A. kjellmani</i> var. <i>striolata</i>	+	+	-	-	+	+	-
<i>A. kryophila</i>	-	-	-	-	3,626	-	-
<i>A. spp.</i>	-	+	18,131	+	29,009	10,878	-
<i>Amphora</i>	-	3,626	-	-	3,626	3,626	761,502
<i>A. laevis</i> var. <i>laevissima</i>	-	-	-	-	3,626	-	-
<i>A. laevissima</i> var. <i>minuta</i>	-	-	-	-	-	3,626	-
<i>A. spp.</i>	-	3,626	-	-	-	-	761,502

Table 8. (Continued)

Ice section from top to bottom (cm)	0-35	35-70	70-105	105-140	140-175	175-193	193-203
<i>Caloneis</i>	+	-	-	-	+	3,626	+
<i>C. kryophila</i>	+	-	-	-	-	3,626	+
<i>C. liber</i>	-	-	-	-	+	+	+
<i>Cocconeis</i>	-	-	25,383	-	-	3,626	-
<i>C. spp.</i>	-	-	25,383	-	-	3,626	-
<i>Diploneis</i>	+	+	3,626	68,897	14,504	+	+
<i>D. litoralis</i> var. <i>arctica</i>	-	+	3,626	65,271	14,504	+	+
<i>D. smithii</i>	+	+	-	-	-	-	+
<i>D. spp.</i>	-	-	-	3,626	-	-	-
<i>Gomphonema</i>	+	+	-	-	14,504	7,252	761,502
<i>G. exiguum</i> var. <i>pachycladum</i>	+	+	-	-	14,504	7,252	761,502
<i>Navicula</i>	14,504	14,504	+	3,626	72,521	130,541	6,635,946
<i>N. algida</i>	-	-	-	-	-	-	+
<i>N. cluthensis</i> var. <i>pagophila</i>	-	-	-	-	3,626	10,878	-
<i>N. crassirostris</i>	-	-	-	-	10,878	18,131	145,048
<i>N. crucigeroides</i>	-	-	-	-	+	+	+
<i>N. decipiens</i>	-	-	-	-	+	3,626	72,524
<i>N. directa</i>	-	-	-	-	7,252	10,878	72,524
<i>N. forcipata</i>	-	-	-	-	-	-	+
<i>N. gelida</i>	-	-	-	-	3,626	+	-
<i>N. glacialis</i>	-	-	-	-	3,626	-	-
<i>N. kariana</i>	-	-	-	-	-	7,252	-
<i>N. lineola</i>	-	-	-	-	+	-	-
<i>N. marina</i>	-	-	-	-	-	-	+
<i>N. oestrupi</i>	-	-	-	-	3,626	-	36,262
<i>N. quadripedis</i>	10,878	7,252	-	-	3,626	-	4,387,702
<i>N. recurvata</i>	-	+	-	-	+	-	+
<i>N. stuxbergii</i> var. <i>subglabra</i>	-	-	-	-	-	3,626	+
<i>N. superba</i>	-	-	-	-	3,626	-	+
<i>N. transitans</i> var. <i>derasa</i>	-	-	-	-	+	-	-
<i>N. trigonocephala</i> var. <i>depressa</i>	-	-	-	-	+	-	-
<i>N. valida</i>	-	-	-	-	-	+	+
<i>N. spp.</i>	3,626	7,252	+	3,626	32,635	76,150	1,921,886

Table 8. (Continued)

Ice section from top to bottom (cm)	0-35	35-70	70-105	105-140	140-175	175-193	193-203
<i>Nitzschia</i>	14,504	43,513	47,139	18,130	126,913	123,289	8,303,998
<i>N. closterium</i>	-	-	14,504	-	7,252	25,383	-
<i>N. cylindrus</i>	-	7,252	3,626	+	32,635	18,131	-
<i>N. diaphana</i>	-	-	-	-	+	-	-
<i>N. frigida</i>	-	-	-	-	-	-	435,144
<i>N. gelida</i>	-	-	-	-	14,504	-	145,048
<i>N. hybrida</i>	-	-	-	-	7,252	3,626	+
<i>N. laevissima</i>	-	-	-	3,626	3,626	-	+
<i>N. lecointei</i>	-	-	-	-	-	3,626	-
<i>N. polaris</i>	-	25,383	18,131	-	32,635	7,252	1,232,908
<i>N. seriata</i>	7,252	-	-	-	-	-	36,262
<i>N. spp.</i>	7,252	10,878	10,878	14,504	29,009	65,271	6,454,636
<i>Pinnularia</i>	-	-	-	+	36,261	87,027	362,620
<i>P. quadratarea</i>	-	-	-	-	-	+	-
<i>P. quadratarea</i> var. <i>bicontracta</i>	-	-	-	+	7,252	39,888	217,572
<i>P. quadratarea</i> var. <i>bicuneata</i>	-	-	-	-	+	-	-
<i>P. quadratarea</i> var. <i>constricta</i>	-	-	-	+	-	3,626	+
<i>P. quadratarea</i> var. <i>leptostauron</i>	-	-	-	-	+	-	+
<i>P. quadratarea</i> var. <i>minima</i>	-	-	-	-	18,131	3,626	+
<i>P. quadratarea</i> var. <i>subconstricta</i>	-	-	-	-	-	-	+
<i>P. quadratarea</i> var. <i>subcontinua</i>	-	-	-	-	3,626	7,252	+
<i>P. quadratarea</i> var. <i>stuxbergii</i>	-	-	-	-	-	7,252	+
<i>P. spp.</i>	-	-	-	-	7,252	25,383	145,048
<i>Pleurosigma</i>	-	-	-	-	3,626	-	7,252
<i>P. antarcticum</i>	-	-	-	-	+	-	-
<i>P. clevei</i>	-	-	-	-	+	-	-
<i>P. stuxbergii</i> var. <i>minor</i>	-	-	-	-	3,626	-	-
<i>P. spp.</i>	-	-	-	-	-	-	7,252
<i>Synedra</i>	-	-	+	-	-	-	36,262
<i>S. tabulata</i>	-	-	+	-	-	-	-
<i>S. spp.</i>	-	-	-	-	-	-	36,262

Table 8. (Continued)

Ice section from top to bottom (cm)	0-35	35-70	70-105	105-140	140-175	175-193	193-203
<i>Tropidoneis</i>	-	-	-	3,626	7,252	3,626	-
<i>T. maxima</i>	-	-	-	3,626	7,252	3,626	-
Unidentified	29,009	36,262	39,888	36,262	90,655	123,290	9,536,906
Chlorophyta	14,504	10,878	39,888	-	3,626	3,626	507,668
Unidentified green flagellates	14,504	10,878	39,888	-	3,626	3,626	507,668
Euglenophyta	-	-	-	-	-	-	36,262
<i>Euglena</i>	-	-	-	-	-	-	36,262
<i>E. spp.</i>	-	-	-	-	-	-	36,262
Pyrrophyta	25,383	29,009	47,140	65,271	32,635	36,261	725,240
<i>Goniaulax</i>	3,626	3,626	7,252	-	-	3,626	181,310
<i>G. catenata</i>	3,626	3,626	7,252	-	-	3,626	181,310
<i>Gymnodinium</i>	-	-	-	-	-	-	36,262
<i>G. spp.</i>	-	-	-	-	-	-	36,262
Unidentified	21,757	25,383	39,888	65,271	32,635	32,635	507,668

Table 9. Quantitative composition of sea ice microalgae in the Eskimo Lakes at Station 515 during 1974.

Date	1 March	25 May
Sea ice thickness (cm)	144	186
Sea ice bottom (cm)	5	5
Total sea ice microalgae (cells/litre)	112,408	29,154,648
Bacillariophyta	97,904	28,465,670
Centrales	25,382	797,764
<i>Chaetoceros</i>	7,252	-
<i>C. borealis</i>	+	-
<i>C. spp.</i>	7,252	-
<i>Coscinodiscus</i>	+	-
<i>C. kuetzingii</i> var. <i>glacialis</i>	+	-
<i>Rhizosolenia</i>	3,626	145,048
<i>R. spp.</i>	3,626	145,048
<i>Thalassiosira</i>	+	36,262
<i>T. spp.</i>	+	36,262
<i>Trigonium</i>	-	36,262
<i>T. arcticum</i>	-	36,262
Unidentified	14,504	580,192
Pennales	72,522	27,667,906
<i>Amphiprora</i>	3,626	72,524
<i>A. kjellmanii</i> var. <i>striolata</i>	+	-
<i>A. spp.</i>	3,626	72,524
<i>Amphora</i>	+	435,144
<i>A. spp.</i>	+	435,144
<i>Caloneis</i>	-	108,786
<i>C. kryophila</i>	-	108,786
<i>Diploneis</i>	+	+
<i>D. litoralis</i> var. <i>arctica</i>	+	+
<i>Gomphonema</i>	+	108,786
<i>G. exiguum</i> var. <i>pachycladum</i>	+	108,786
<i>Navicula</i>	3,626	1,232,908
<i>N. algida</i>	-	+
<i>N. cluthensis</i> var. <i>pagophila</i>	-	+
<i>N. decipiens</i>	-	+
<i>N. directa</i>	+	-
<i>N. kjellmanii</i>	+	-
<i>N. valida</i>	-	+
<i>N. spp.</i>	3,626	1,232,908
<i>Nitzschia</i>	43,514	10,624,766
<i>N. cylindrus</i>	21,757	-
<i>N. hybrida</i>	+	-
<i>N. lecointei</i>	+	-
<i>N. polaris</i>	21,757	1,160,384
<i>N. spp.</i>	-	9,464,382

Table 9. (Continued)

Date	1 March	25 May
<i>Pinnularia</i>	7,252	1,087,860
<i>P. quadratarea</i> var. <i>bicontracta</i>	+	507,668
<i>P. quadratarea</i> var. <i>constricta</i>	-	108,786
<i>P. quadratarea</i> var. <i>densestriata</i>	-	+
<i>P. quadratarea</i> var. <i>minima</i>	-	36,262
<i>P. quadratarea</i> var. <i>stuxbergii</i>	7,252	72,524
<i>P. quadratarea</i> var. <i>subcontinua</i>	-	+
<i>P. spp.</i>	+	362,620
<i>Pleurosigma</i>	+	-
<i>P. clevei</i>	+	-
<i>P. spp.</i>	+	-
Unidentified	14,504	13,997,132
Chlorophyta	-	290,096
Unidentified green flagellates	-	290,096
Pyrrrophyta	14,504	398,882
<i>Goniaulax</i>	7,252	72,524
<i>G. catenata</i>	7,252	72,524
Unidentified	7,252	326,358

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