

# **Proceedings of the NIPR Symposium**

**on**

## **Polar Biology**

**No. 8**

Papers presented at the “16th Symposium on Polar Biology” held at the National Institute of Polar Research, Tokyo, December 1–3, 1993.

### **CONTENTS**

Summary of the SARES project as a part of the Japan-Canada Complementarity Study .....	Mitsuo FUKUCHI, Masayuki TAKAHASHI, Takao HOSHIAI and Louis LEGENDRE....	1
The microbial food web: Comparative study under first-year ice at low and high latitudes in the Northern Hemisphere .....	Serge DEMERS, Patrick MONFORT, Isabelle LAURION, Télesphore SIME-NGANDO, Brigitte ROBINEAU and Louis FORTIER....	5
Zooplankton and larval fish community development: Comparative study under first-year sea ice at low and high latitudes in the Northern Hemisphere .....	Louis FORTIER, Martin FORTIER and Serge DEMERS....	11
Comparative study of oceanographic characteristics above/under first-year sea ice at low and high latitudes .....	Kunio SHIRASAWA and R. Grant INGRAM....	20
Vertical distribution of photosynthetic pigments characterized by HPLC under the ice of Saroma Ko lagoon .....	Hiroaki SAKOH, Osamu MATSUDA, Christine MICHEL, Louis LEGENDRE, Narasimmalu RAJENDRAN and Tamiji YAMAMOTO....	29
Comparison of microbial community structure in surface sediments of Saroma Ko lagoon with Seto Inland Sea in winter .....	Narasimmalu RAJENDRAN, Osamu MATSUDA and Hiroaki SAKOH....	37
Effect of salinity and silicate on ice algal growth in Saroma Ko lagoon, Hokkaido, Japan (extended abstract) ....	Satoru TAGUCHI, Ralph E. H. SMITH and Kunio SHIRASAWA....	48

Effect of nitrogen enrichment under different concentrations of silicate on the relative growth of ice algae in Resolute Passage, Canadian Arctic (extended abstract)	.....	Satoru TAGUCHI and Ralph E. H. SMITH....	51
Characteristics of sea ice algal community and the primary production in Saroma Ko lagoon and Resolute Passage, 1992 (extended abstract)	.....	Sakae KUDOH....	54
Photosynthesis characteristics of ice algae with special emphases on temperature and light conditions (extended abstract)	.....	Yoshihiro SUZUKI, Sakae KUDOH and Masayuki TAKAHASHI....	57
Species composition of ice algal assemblages in Saroma Ko lagoon and Resolute Passage, 1992 (extended abstract)	.....	Kyoko KIKUCHI-KAWANOBE and Sakae KUDOH....	59
Why do heterotrophic flagellates proliferate under bacteria-limiting conditions in sea-ice communities? (abstract)	.....	Télesphore SIME-NGANDO, Kim JUNIPER and Ralph E. H. SMITH....	64
Bacterial and viral dynamics in Arctic sea ice during the spring near Resolute, N.W.T. (abstract)	.....	Roxane MARANGER, David F. BIRD and Kim JUNIPER....	65
Dissolved organic carbon in sea ice and seawater of Saroma Ko lagoon and Resolute Passage (abstract)	.....	Ralph E. H. SMITH, Sakae KUDOH, Michel GOSSELIN, Brigitte ROBINEAU and Satoru TAGUCHI....	66
Biomass and bacterial grazing activity of nanoprotozoan at the ice- water interface in Resolute Passage (abstract)	.....	Isabelle LAURION, Serge DEMERS and Alain VÉZINA....	67
Microalgae in first-year sea-ice of Saroma Ko lagoon: Spatial heterogeneity and estimation of biomass by an irradiance index (abstract)	.....	Brigitte ROBINEAU, Motoaki KISHINO and Louis LEGENDRE....	68
Diel changes in the vertical distribution and feeding activity of copepods in ice-covered Resolute Passage, Canadian Arctic (extended abstract)	.....	Hiroshi HATTORI and Hiroaki SAITO....	69
Diel vertical migration and feeding rhythm of copepods under sea ice in Saroma Ko lagoon (abstract)	.....	Hiroaki SAITO and Hiroshi HATTORI....	74
Tidal transport and recruitment of marine fish larvae to ice-covered Saroma Ko lagoon (Hokkaido, Japan) (abstract)	.....	Martin FORTIER and Louis FORTIER....	75

Springtime sedimentation of ice algae under first-year ice: A comparative study (abstract)	Christine MICHEL and Louis LEGENDRE....	76
Physical and chemical properties of surface water in the Southern Ocean in summer 1991/92	Tsuneo ODATE and Mitsuo FUKUCHI....	77
Distribution and community structure of picophytoplankton in the Southern Ocean during the late austral summer of 1992	Tsuneo ODATE and Mitsuo FUKUCHI....	86
Flow of matter in the Admiralty Bay area, King George Island, Maritime Antarctic	Stanislaw RAKUSA-SUSZCZEWSKI....	101
Distributions of free amino acids in sea and lake ice cores from Antarctica with special reference to ice biota	Hefu YANG....	114
Under-ice zooplankton of the western Weddell Sea	Larisa L. MENSHENINA and Igor A. MELNIKOV....	126
Species composition of copepods related to surface water masses in squid fishing grounds off Argentina	Nobuhiro SAITO and Tadashi KUBOTA....	139
Radiocarbon ages of molluscan shell fossils in raised beach deposits along the east coast of Lützow-Holm Bay, Antarctica, determined by accelerator mass-spectrometry	Atsuo IGARASHI, Hideki NUMANAMI, Yasutaka TSUCHIYA, Naomi HARADA, Mitsuo FUKUCHI and Tsunemasa SAITO....	154
Hydrocarbon record of a marine sediment core from Lützow-Holm Bay, Antarctica	Naomi HARADA, Nobuhiko HANDA, Mitsuo FUKUCHI and Ryoshi ISHIWATARI....	163
Seasonal difference of the plasma osmolalities of some teleosts in high-latitude cold water in Japan	Mizuho OGAWA, Yoko WADA, Yoko MATSUURA and Mitsuo FUKUCHI....	177
Vertical distributions of temperature, salinity and geostrophic flow along 60°W in the Southern Ocean in January 1988 (extended abstract)	Mikio NAGANOBU, Mituru HISANAGA and Yasuhiko SHIMADZU....	182
Distribution of salps near the South Shetland Islands during austral summer, 1990–1991 with special reference to krill distribution (abstract)	Jun NISHIKAWA, Mikio NAGANOBU, Taro ICHII,	

<i>Haruto ISHII, Makoto TERAZAKI and Kouichi KAWAGUCHI</i> . . . . .	186
Population structure of Antarctic krill in the Atlantic sector of the Antarctic Ocean in the austral summer of 1987/88 (abstract)	
..... <i>Yoshinari ENDO and Takashi ODA</i> . . . . .	187
A preliminary report on terrestrial invertebrates in the Asuka Station area, Antarctica	
..... <i>Shin-ichi HIRUTA and Yoshikuni OHYAMA</i> . . . . .	188
Temperature acclimation and the fatty acid composition of an Antarctic green alga <i>Chlorella</i>	
..... <i>Hideyuki NAGASHIMA, Genki I. MATSUMOTO, Shuji OHTANI and Haruo MOMOSE</i> . . . . .	194
Distribution and cold hardiness of <i>Chymomyza costata</i> (abstract)	
..... <i>Kimio SHIMADA</i> . . . . .	200
Studies of terrestrial nematodes in the vicinity of Syowa Station, An- tarctica (abstract)	
..... <i>Kenji KITO, Yoshikuni OHYAMA, Yukio SHISHIDA and Hiromi FUKUDA</i> . . . . .	201
Vacuum tolerance of tardigrades (abstract)	
..... <i>Kazuo UTSUGI and Hirokuni NODA</i> . . . . .	202
Terrestrial tardigrades around Syowa Station (abstract)	
..... <i>Kazuo UTSUGI and Yoshikuni OHYAMA</i> . . . . .	203
The diversity of bacteria isolated from the McMurdo Dry Valleys region, Antarctica (abstract)	
..... <i>Jiro NISHIKAWA</i> . . . . .	204
Temperature characteristics of photobionts isolated from alpine lichens (abstract)	
..... <i>Taka-aki IHDA and Takeo NAKANO</i> . . . . .	205
Program of the 16th Symposium on Polar Biology held at the National Institute of Polar Research, Tokyo, December 1–3, 1993	
.....	207
Author index	211