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ДОГОВОР ОБ АНТАРКТИКЕ
XXI КОНСУЛЬТАТИВНОЕ СОВЕЩАНИЕ

27

ENVIRONMENTAL MONITORING AT THE KOREAN
STATION *KING SEJONG* ON KING GEORGE ISLAND

KOPRI

극지연구소

Agenda item 14

Submitted by Republic of Korea

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Information Paper**Environmental Monitoring at the Korean Station, *King Sejong* on King George Island**

(Agenda 14 : Submitted by Republic of Korea)

Coastal environment on King George Island is likely to be subject to human impacts, because several countries have been operating their stations for many years. Long-term monitoring on human impacts has recently been initiated in coastal areas around the station. Phytoplankton in the Marian Cove are being studied at the community level, and some key organisms including marine bivalves are being used as indicator species for heavy metal and some other pollutant contamination. In addition, experimental studies on variations in morphology and physiology of marine microalgae in response to regional and global environmental changes will be conducted as a part of the long-term monitoring program.

A. *Nearshore marine ecosystem monitoring*

Focused mainly on phytoplankton communities in the Marian Cove, seasonal variations in species composition, abundance and productivity of phytoplankton are being investigated in order to understand the dynamics and furthermore to clarify the relationships with environmental changes. Related oceanographic and meteorological parameters, such as ice cover, seawater and air temperature, salinity, wind speed and direction, and UV radiation are also being routinely measured. This work, which began in the 1993/1994 season, and amended and expanded year after year, is now being carried out year round at the station. In the 1997/1998, a Brewer Ozone Spectrophotometer will be set up at the station, and stratospheric ozone level will be monitored on a regular time interval in relation to the marine ecosystem monitoring.

B. Sewage outfall monitoring

The first work was carried out by Korean Antarctic Summer Research Party during the 1996/1997 Season. Seawater samples were collected near the sewage outfall; chemical elements such as nitrate, phosphate, pH are being analyzed and bacterial number being counted. Changes in chemical and microbial characteristics will be monitored on a regular time interval. In addition, long-term monitoring on seaweed and epifaunal benthic communities near the outfall will be initiated in the 1997/1998.

C. Heavy metal accumulation monitoring around the station

Baseline heavy metal concentrations were determined in the tissues of the Antarctic clam *Laternula elliptica*, one of the common marine benthic organisms in the Antarctic nearshore waters. Results showed that *L. elliptica* tends to strongly accumulate most of heavy metals with tissue concentrations being comparable to those of mussels and oysters in temperate waters. It suggests that this bivalve species could be used as a suitable biomonitor for metal pollution in the Antarctic coastal waters. Soil and fresh water, nearshore marine sediment and other marine organisms and lichens have also been collected and are being assessed for heavy metal contamination. Metal accumulation will be monitored every two or three years.

D. Others

In 1996 we completed a topographic map of the Barton Peninsula, King George Island (The map is available from the Polar Research Center, KORDI). We are also working on a geologic map of the same area, to be completed in a few years. As a collaborative work with scientists of Chile, we are planning to construct a biological map for the distributions of lichen, moss, birds, seals etc..

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