2011, 2012年夏季南極海リュツォ・ホルム湾周辺氷海域における浮遊性有孔虫の分布特性

小島本葉[1]，高橋邦夫[1,2]，飯田高大[1,2]，小達恒夫[1,2]，福地光男[1,2]
[1]総合研究大学院大学，[2]国立極地研究所

Distribution patterns of planktonic foraminifera population in sea ice regions of Lützow-Holm Bay, Antarctica, in austral summer of 2011 and 2012

Motoha Ojima[1], Kunio T. Takahashi[1,2], Takahiro Iida[1,2], Tsuneo Odate[1,2], Mitsuo Fukuchi[1,2]
[1]The Graduate University for Advanced Studies(SOKENDAI), [2]National Institute of Polar Research

We investigated the micro- and small meso-zooplankton community structure in relation to different sea ice conditions around Japan's Syowa Station in Lützow-Holm Bay in the summers of 2011 and 2012. Zooplankton samples were collected using a closing net (mouth diameter 0.75 m, mesh size 100 μm) at nine stations with contrasting sea ice environments: fast ice (4 stations: 52A, 52B, 53A and 53B), pack ice (3 stations: 52C, 52D and 53C), and ice-free open ocean (2 stations: 52BP and 53BP). The clusters were clearly separated into three groups at ≥72.2% similarity by the interface between fast ice and pack ice according to the presence or absence of foraminifera (Figure 1 & Table 1). They were in high abundance, comprising 6.6-61.9% of the total zooplankton community at the northern stations (in particular, the pack ice stations). Their shell size distribution indicated that these organisms were possibly released from melting sea ice. Another possibility is that foraminifera, which is known to be omnivorous but to exhibit a strong preference for phytoplankton, tended to occur at northern stations where the Chl. *a* concentration was higher. If their life cycle is dependent on sea ice, changes in sea ice coverage would affect their distribution and as such, there should be further research effort made to understand the structure of foraminifera population in sea ice regions in the future.

南大洋の海氷分布がマイクロおよび小型メソ動物プランクトン群集構造に与える影響を評価するため，2011および2012年の夏季，昭和基地周辺氷海域で動物プランクトンの分布調査を行った。試料採集は，海氷の分布が異なる9測点，すなわち，定着氷域4測点（52A, 52B, 53A, 53B），流氷域3測点（52C, 52D, 53C），開放水面域2測点（52BP, 53BP）において，がまロネット（口径75 cm, 目合い100 μm）を用いて行われた。クラスター解析の結果，氷海域の動物プランクトン群集は浮遊性有孔虫個体群の個体数密度の相違により，定着氷域群集（密度小）と，流氷域・開放水面域群集（密度大）に分かれた。有孔虫の殻サイズ組成を調べた結果，特に流氷域における有孔虫の高密度分布は海氷融解に伴う個体群の流入に起因している可能性が示唆された。ただし南大洋浮遊性有孔虫は植食性嗜好の強い雑食性動物プランクトンであるため，流氷域・開放水面域での高クロロフィル*a*濃度との関係も無視できない。浮遊性有孔虫個体群に対し海氷の変動がいかに影響を及ぼすのかを明らかにするためにも，今後氷海域における浮遊性有孔虫の分布や生活史，他生物群集との相互作用などに関するさらなる研究が必要である。

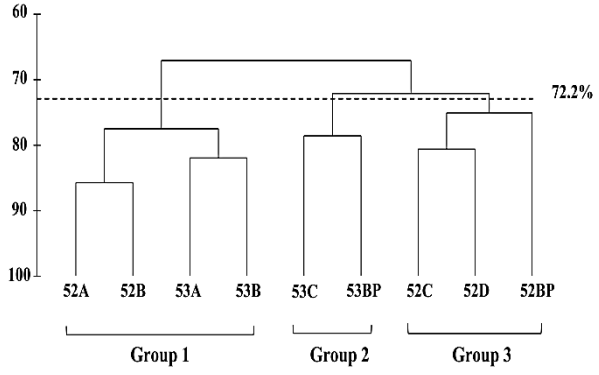

Figure 1. Dendrogram of the cluster analysis based on the Bray-Curtis similarity index with UPGMA linkage.

Table 1. Average abundance (inds.m^3) and contribution (%) between each cluster group as a result of SIMPER.

Species/taxa	Av. Abund	Av. Abund	Contrib. (%)	Cum. (%)
Groups 1 & 3 (Average dissimilarity: 28.75)	Group 1	Group 3		
Foraminifera	5.01	342.89	18.35	18.35
Copepod nauplii	12.69	74.74	8.57	26.92
Fritillaria spp.	0.48	21.43	6.77	33.69
Microcalanus pygmaeus	46.91	47.64	5.56	39.25
Oithona similis	72.30	227.77	4.65	43.90
Echinodermata	2.12	0.00	4.17	48.07
Groups 1 & 2 (Average dissimilarity: 38.94)	Group 1	Group 2		
Limacina spp.	0.93	466.04	14.61	14.61
Foraminifera	5.01	484.16	11.76	26.37
Copepod nauplii	12.69	393.53	9.43	35.80
Calanoides acutus	0.67	42.66	6.44	42.25
Scolecitricella minor	0.53	16.40	6.30	48.54
Groups 2 & 3 (Average dissimilarity: 27.82)	Group 2	Group 3		
Limacina spp.	466.04	1.11	17.89	17.89
Fritillaria spp.	23.44	21.43	7.19	25.08
Calanoides acutus	42.66	2.78	6.16	31.23
Scolecitricella minor	16.40	1.92	5.99	37.23
Copepod nauplii	393.53	74.74	5.58	42.81
Polychaeta	9.49	1.71	4.84	47.64