

北海道阿寒湖におけるマリモの内部環境

小川麻里¹、三田肇²、若菜勇³

¹ 安田女子大学

² 福岡工業大学

³ 阿寒湖畔エコミュージアムセンター

The Micro Environment in Algae Aggregations, Marimo, in Lake Akan, Hokkaido.

Mari OGAWA¹, Hajime MITA² and Isamu WAKANA²

¹Yasuda Women's Univ.

²Fukuoka Inst. Technols.

³Lake Akan Eco-museum Center

Marimo, the spherical aggregates of freshwater green algae, *Aegagropila linnaei*, grew over 30cm in diameter with a cavity inside in Lake Akan, Hokkaido. The aggregation starts to develop from a small lump composed of algal filaments, and grows in size as a result of radial growth stimulated by rolling movement induced by wind-driven currents. When the aggregation sizes up to 8-10cm in diameter, the filament structure in the central part is decomposed and a cavity is formed (ref. 1).

Because of the smell of hydrogen sulfide and the dark color of central part of big Marimo, it has been considered that the inside might be reductive and corrupted. This suggests that there are the different kinds of bacteria between the inside, such as a group of anaerobic bacteria, and the surface, such as a group of aerobic bacteria. That is, a spherical Marimo makes the ecosystem of microbes by making environment different from the surface to the inner side. However, there have been no actual measurement of internal microenvironment.

To know internal environmental condition of Marimo, water was extracted from the central part of Marimo at the time of the highest photosynthesis activity, the daytime of summer, in the habitat, in Lake Akan, and measured temperature, OD (Dissolved Oxygen), ORP (Oxidation-Reduction Potential), pH (potential Hydrogen), and EC (Electrical Conductivity) immediately.

There is a little oxygen in the central part of Marimo compared with the surface of Marimo. This result resembles the former result obtained by measuring a Marimo grown indoors and aggregates of microorganisms in Antarctic Lake, Skallen Ôike (ref. 2).

References

1) Wakana, I. et al., Processes of sustentation and collapse of algal aggregations of the Marimo (*Aegagropila linnaei*) in Lake Akan, Japan, and Lake Mývatn, Iceland. The 3rd Symposium on Polar Science, 2012.

2) Ogawa, M. et al., Antarctic MARIMO as ecosystem. - Structure, microorganisms and organic matter in a mass of algae -. Xth SCAR International Biology Symposium, 2009.