

# Outbreaks of bdelloid rotifers in and at adjacent wetland of a marine relict lake, Mago Ike on Soya Coast, East Antarctica: climate and limnological conditions.

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Outbreaks of bdelloid rotifers have been sometimes reported by Antarctic researchers, but almost all cases lack scientific description of environmental condition. We found spotty congregation of red-colored rotifers in a wetland adjacent to a lake, Mago Ike in December 2013, and started limnological surveys to 27 January 2014. The congregated rotifers were recognized visually during our study period at the wetland, and another congregated outbreak was noticed on the biofilms at rocky littoral zone of the west coast of the lake on 27 January. In December, the wetland was already fed by seepage of snow melt and a small stream, and rusty colored biofilms and microbial mat had been developed on the floors of the wetland and stream (Plate 1). However, the lake was covered by ice during in December, the ice disappeared during twice windy days in late December. Water temperature rose gradually from *ca.* 1°C up to 12°C in mid-Jan, and decreased to 6°C in late Jan. Water of the stream and the wetland contained relatively higher inorganic nutrients such as nitrate and silicate than the lake water, while the lake water contained higher chlorophyll *a* and organic matters. Disturbance by the ice cover which scraped shallow bottom of the lake occurred when it develops, breaks and moves, may affect and delay the development of microbes such as bacteria and autotrophs which can be expressed chlorophyll *a* standing stock on shallow lake floors; it was *ca* 5 times smaller at lake littoral zone than in the stream. By late Jan. biofilm developed and it covered on shallow rocky littoral zone, and the second outbreak of rotifers was noticed on the biofilm surface at western shore of the lake (Plate 1). In this stage, we cannot directly evaluate why the rotifer could proliferate on the wetland and the lake in this summer, however, we expect further studies on growth and life cycle property of rotiferes against on the present environmental features might give answers.



Plate 1 Biofilms developed in wetland (left), congregation of red-colored rotifers in a shallow paddle (middle), and on epilithic biofilm (right)

Table 1 Weather features of several summer seasons at Kizahashi Hama, Skarvsnes, Soya Coast.

The first day appeared above 0°C in each summer, number of days above 0°C, and the integrated temperature above 0°C

	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015
JARE* term	52nd	53rd	54th	55th (present study)	56th
The first day >0°C	2010/11/6	2011/12/12	2012/11/10	2013/11/10	2014/12/3
Days >0°C	49	34	68	58	38
Integrated temperature >0°C	110.8	60.1	158.9	92.5	61.7

## References

Wada et al., Abundance and biomass of bdelloid rotifers in the microbial mats from East Antarctica; the ecological relations between microscopic phototrophs and invertebrates Ecological Research, *in press*, 2022.