Preliminary report on the tardigrade diversity of coastal Syowa Station and inland Sør Rondane Mountains, Dronning Maud Land, East Antarctica

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The tardigrades (phylum Tardigrada) are microscopic animals that are important members of the simple faunal assemblages found in extreme Antarctic environments. While the tardigrade communities of the sub-Antarctic and the maritime Antarctic regions has been reasonably well documented, the tardigrade literature for continental Antarctic Sør Rondane Mountains comprises two papers and Syowa Station is limited to three publications with the latest dating to 1989. Recent molecular based studies on the eukaryotic phylotypes in aquatic moss pillars in Hotoke-Ike Lake, Skarvsnes (69°20'S, 39°36'E) found tardigrade 18S rRNA sequences with close homology to known *Acutuncus antarcticus* (Richters 1904) and *Diphascon* (*Diphascon*) *pingue* (Marcus 1936) sequences, and a molecular and morphological study on *A. antarcticus* from terrestrial mosses in the vicinity of Syowa Station has also just been published. Similarly, recent paper for the Sør Rondane Mountains used molecular operational taxonomic units to explore cryptic meiofauna biodiversity that indicated the presence of two tardigrade species (*Acutuncus* sp. and *Macrobiotus* sp.)

The tardigrade diversity around coastal Syowa Station (six species in the literature) and the neighbouring inland sites at Sør Rondane Mountains (three species in the literature) is assumed to be under-reported and also needs to be updated in line with current taxonomic classification. This preliminary study was conducted to gain a basic understanding of the current status of tardigrade species diversity within the terrestrial and fresh water environments of these areas. During the 49th Japanese Antarctic Research Expedition (JARE) summer operation (January and February in 2008) twelve terrestrial moss samples were collected from Sinnan Iwa (67°57'S, 44°35'E), Langhovde (69°15'S, 39°44'E), Skarvsnes (69°28′S 39°39′E), and Skallen (69°40′S 39°25′E), and stored in sealed plastic containers at 4°C. Twenty-four phytobenthos samples were also collected from five lakes at Skarvsnes using a gravity core sampler. These cores were sliced into thin layers, placed into 2.5ml tubes, stored at -70 °C and brought back frozen to Japan. During the 53rd JARE summer operation (January 2012) we were able to obtain additional terrestrial moss samples collected from the Sør Rondane Mountains, Dronning Maud Land (72°05'S, 25°00'E), for comparative studies.

The extracts of each sample were examined under the dissection microscope, the tardigrades isolated, mounted on slides in Faure's solution and identified under the phase-contrast microscope. The results of our study revealed six species: *Echiniscus pseudowendii*; Dastych 1984, *A. antarcticus*, and *Hebesuncus ryani* Dastych and Harris 1994, which were obtained from the terrestrial moss samples of Sinnan Iwa, Langhovde, and Sør Rondane Mountains respectively; *A. antarcticus*, *Diphascon (Diphascon)* cfr. *langhovdense* (Sudzuki 1964), and *Pseudechinisucus* n. sp. were obtained from the lake phytobenthos samples.

While this preliminary survey has revealed that the species diversity of tardigrades in the vicinity of Syowa Station and Sør Rondane Mountains was very low, which was comparable to the earlier studies, we have augmented the total tardigrade biodiversity by correcting some of the literature data, adding to the number of genera present and increasing the number of species to nine. In addition, three tardigrades species obtained from our study, *Echiniscus pseudowendii*, *Hebesuncus ryani* and *Pseudechiniscus* n. sp. were not previously reported from this area. Further, more detailed studies covering larger areas and with larger sample numbers are required to understand the species diversity and distribution patterns of tardigrades in the coastal Syowa Station locale and neighbouring inland Sør Rondane Mountains.