

標高変化に沿ったシモフリゴケの繁殖状況

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Reproductive modes of *Racomitrium lanuginosum* along an altitudinal gradient

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Flowering plant populations located at the margins of species' distribution often display reduced sexual reproduction and an increased reliance on asexual reproduction. This trend has been confirmed also in the bryophyte. One of the hypothesis to explain this phenomenon is the declining sexual reproduction at the margins of species' distribution in connection with environmental depression. However previous studies did not test about this hypothesis along an environmental gradient at the marginal area. In this study, we tried to clarify the reproduction modes of *Racomitrium lanuginosum* (Hedw.) Brid. (Grimmiaceae, dioicous) along an environmental gradient, especially on the temperature, at the margin of their distribution area.

We conducted this study at alpine zone (2400 to 3700 m) of Mt.Fuji in Japan. Annual mean air temperature at 3776 (top) and 2400 m are -6.1 °C and +2.3 °C, respectively. The study sites were placed every 100 m alt. in this zone. We investigated frequency of sporophyte and gametangia, sex ratio and size of gametangia in *R. lanuginosum*.

Male and female inflorescences were found at every sites. Frequency of male inflorescence per shoot and antheridium per male inflorescence decreased with increasing altitude. There was little change in frequency of female inflorescence per shoot and archegonium per female inflorescence. Size of antheridium and archegonium shows no difference between each site. Sexual reproduction (production of sporophyte) was observed only at lower altitudes.

Our results support that sexual reproduction of *R. lanuginosum* is changes along the altitudinal gradient. It is suggested that the decrease in frequency of male reproductive organs along temperature gradient could be the cause of the limitation of sporophyte production at lower altitudes.