Comparative Study of Mycophagous Flies Communities between Two Difference Altitude Zones in Ishikawa, Japan

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Introduction

The fruit bodies of mushrooms are used by many mycophagous flies such as Drosophilae, Muscidae, Phoridae and Mycetophilidae. The previous researches revealed that *Muscina angustifrons* (Muscidae, Diptera) was most common species among mycophagous fly community in a broad-leaved secondary forest in Kanazawa, Ishikawa (Akaishi & Nakamura, 2005). The last instar larva of *M. angustifrons* preyed on drosophilid larva in mushroom fruit body and *M. angustifrons* and drosophilid flies did not emerge from same fruit body. The impact of predation by *M. angustifrons* on drosophilid flies is probably big and the impact may cause the reduction of drosophilid guild size (decrease the number of drosophilid fly species). *M. angustifrons* distributed from lowland to subalpine zone but the population size decreases with increase of altitude (Beppu, 1987; Beppu, & Ookuma, 1989). The altitude of Ishikawa Prefecture is from 0m to 2700m and its environment comprises many kinds of habitats. The aims of this study are as follows, (1) to compare the macrofungal flora and mycophagous fly communities between different altitude zones, and (2) to assess the impact of *M. angustifrons* on the guild size (the number of species) of mycophagous drosophilid fly.

Materials and Methods

Two different altitude sites were selected to compare mycophagous fly communities between two sites.

Site 1: Broad-leaved secondary forest predominated with two oak species, *Quercus serata* and *Q. variabilis*, surrounding the campus of Kanazawa University, Kanazawa city, Ishikawa Prefecture, Japan. The site is located on an altitude of 50m to 150m above sea level.

Site 2: Broad-leaved secondary forest predominated with two oak species, *Quercus serata* and *Q. cripula*. The Site is Located on an altitude of 500m to 650m above sea level of the hillside of Mt. Iouzen. The distance between Site 1 and Site 2 is 6km, and the difference in an altitude varies from 350m to 600m.

Route census method (census route: 1km) was conducted to collect mushroom fruit bodies. The census was conducted 8 times in Site 1 and 6 times in Site 2

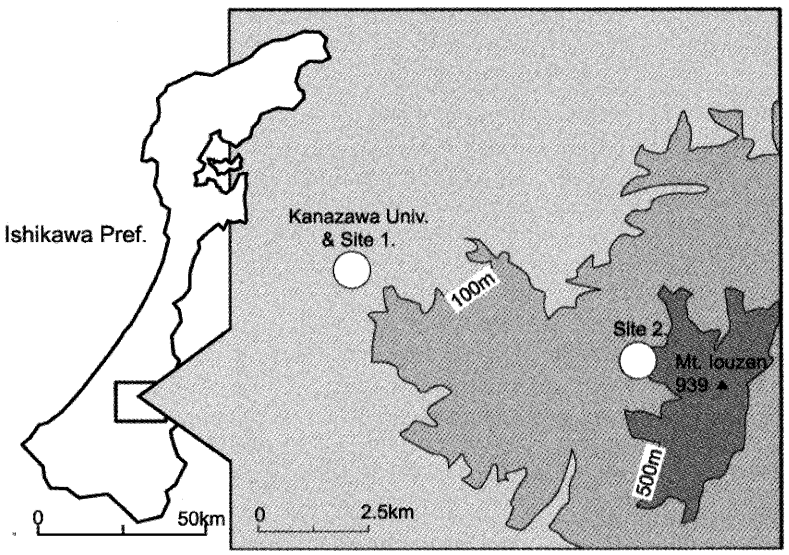

Figure 1 The location of two research sites in Kanazawa city, Ishikawa Prefecture.

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from 21 July to 22 September in 2005. Macrofungal fruit-bodies collected in the census route were brought to the laboratory and were set on vermiculite in translucent plastic vials (1,000 cc) plugged with cotton. The vials were set in the temperate-controlled room (25°C, B:L=12h:12h) two moths to rear the mycophagous flies inhabit in a fruit body. Misted with water every two days to prevent desiccation.

Results and Discussion

1) Macrofungal flora

A total macrofungal fruit bodies collected was 28 species in 70 patches in Site 1, where as 24 species and 56 patches in Site 2. The species composition was different between two sites (only 5 species were collected in both site), but family Russulaceae, Amanitaceae and Boletaceae dominated in both site.

2) Mycophagous fly community

Muscina angustifrons emerged from fruit bodies collected from both site. The frequency of emergence of *M. angustifrons* from fruit bodies was higher in Site 1 than that of Site 2. Conversely, the frequency of emergence of drosophilid flies from fruit bodies was lower in Site 1 than that of Site 2.

The species composition of drosophilid flies in two sites will be compared, and the impact of the predation of *M. angustifrons* to mycophagous drosophilid fly communities will also be assessed.

References

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