植生や環境要因がオサムシ科昆虫群集組成へ与える影響
The influence of vegetation types and microhabitats on carabid beetle community composition

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Global warming would alter equilibrium states of mountain vegetation as well as accelerate non-equilibrium successional vegetation change. We studied the preference by carabid beetles on vegetation types and micro-habitats toward predicting response of animal communities to environmental changes such as global warming. In and around Sugadaira Montane Research Center, University of Tsukuba in central Japan, pitfall traps were set in four vegetation types: grassland, natural evergreen coniferous forest (largely dominated by *Pinus densiflora*), natural deciduous broad-leaved forest and deciduous coniferous plantation (almost purely dominated by *Larix kaempferi*). All collected carabid beetles (order Coleoptera, family Carabidae) were identified into species. Every species was classified into categories of rare species (only one individual was collected), specialist species of each vegetation (>1 individuals were collected and all were from each particular vegetation), forest species (>1 individuals were collected and all were from forest vegetation) and generalist species (collected in plural vegetation).

Species compositions were largely different between grasslands and the other forest vegetation. In grasslands, number of specialist species and abundance of winged species were highest, whilst mean individual weight was lowest, indicating grassland's characteristic fauna including winged and mobile carabids. In contrast, number of rare species was highest in broad-leaved forest, indicating its major contribution to the regional species diversity. Carabid species compositions were different between broad-leaved forests and evergreen coniferous forests, reflecting the difference in abundance of three species, whilst coniferous plantations did not have characteristic species composition distinguishable to other vegetation. Abundance of 12 among 43 species was affected by either of six measured environmental factors. Soil porosity, canopy gaps, soil hardness and soil water content had negative effects on total nine species. Depths of soil A horizon affected total five species either positively or negatively. Coverage of dwarf bamboo had positive effects on total three species. Five of those environmental factors were associated with vegetation type. This study indicates that many carabid species prefer to specific vegetation and/or micro-habitats, suggesting that change in vegetation composition and micro-environment would certainly alter carabid species composition and diversity in mountain region prone to climate change.