Effects of pollination interaction on mating system evolution of Phyllodoce species

2007 Fiscal Year Final Research Report Summary

Effects of pollination interaction on mating system evolution of Phyllodoce species

Research Project

Project/Area Number

18570015

Research Category

Grant-in-Aid for Scientific Research (C)

Allocation Type

Single-year Grants

Section

一般

Research Field

Ecology/Environment

Research Institution

Kanazawa University

Principal Investigator

KASAGI Tetsuya Kanazawa University, Institute of Nature and Environmental Technology, Researcher (10401887)

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alpine plants / pollinator / pollination / plant reproductive ecology / Phyllodoce / bumblebee / mating system / evolution

Research Abstract

I studied the effects of interaction between closely related Phyllodoce species and bumblebee pollinators on the evolution of plant mating systems. Phyllodoce aleutica, P. nipponica, and the hybrid coexist in Tateyama Mts., central Japan. Phyllodoce nipponica is much less dominant than R aleutica in Tateyama Mts. Therefore we expected that P. nipponica in Tateyama Mts. suffered from severe pollination competition. In contrast, only P. nipponica grow in Mt. Akaishi, western Japan. I discussed 1) whether the mating system of P. nipponica in Tateyama Mts. evolved to avoid the pollination competition? 2) is it possible to infer the production process of the hybrids in Tateyama Mts.? Fruit set of P nipponica was high in both Mt Tateyama and Mt Akaishi, and no significant difference was detected between the mountains. This indicated that R nipponica was self-compatible in both mountains. Phyllodoce nipponica

could set fruits by R aleutica pollen in Tateyama Mts. Phyllodoce aleutica scarcely received bumblebees visitation by interspecific movement, however, most of bumblebees that visited on R nipponica was moved from R aleutica. These suggested that the hybrids in Tateyama Mts. might be produced by crossing P. aleutica pollen to R nipponica. I summarized that mating systems of R nipponica did not evolve by pollination interaction with R aleutica. High selfing ability of R nipponica was not caused by pollination competition with R aleutica, but might be derived from inherent low attractiveness. A lack of heterospecific-incompatibility to P. aleutica pollen in P. nipponica should accelerate the production of the hybrids.

Research Products (8 results)

All | 2008 | 2007 | 2006

All | Journal Article (4 results) (of which Peer Reviewed: 2 results) | Presentation (4 results)

[Journal Article] A hybrid zone dominated by fertile Fls of two alpine shrub species, Phyllodoce and Phyllodoce aleutica, along a snowmelt gradient 2008

[Journal Article] A hybrid zone dominated by fertile Fls of two alpine shrub species, Phyllodoce caerulea and Phyllodoce aleutica, along a snowmelt gradient 2008

[Journal Article] Eight microsatellite markers for sympatric alpine shrubs, Phyllodoce aleutica and P. caerulea(Ericaceae). 2006

[Journal Article] Eight microsatellite markers for sympatric alpine shrubs, Phyllodoce aleutica and P caerulea (Ericaceae) 2006

[Presentation] 立山の雪渓を舞台とした高山植物の雑種形成と地球温暖化 2007

[Presentation] Effects of global warming on hybridization of alpine snowbed plants in Tateyama Mountains 2007

[Presentation] ツガザクラ属植物を巡る送粉系相互作用と繁殖システムの関係 2006

[Presentation] Effects of pollination interaction on mating systems of Phyllodoce species 2006

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