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Title	Mammal-depending pollination system of <i>Mucuna macrocarpa</i> (Fabaceae)(Abstract_論文要旨)
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論 文 要 旨

論 文 題 目

Mammal-dependent pollination system of *Mucuna macrocarpa* (Fabaceae)

It has been suggested that the particular floral structure and pollination mechanism of a plant is the result of evolutionary selection based on pollination by a specific animal. Therefore, the floral traits of a plant should change in accordance with pollinator changes or if the distribution of the plant is altered. The objective of this study was to clarify the pollination system of *Mucuna macrocarpa* (Fabaceae), which has a special pollination mechanism and is widely distributed throughout tropical and temperate zones.

The study area was the northern limit of Kyushu, Okinawa-jima Island, and Taiwan, where the fauna is different. The effective pollinators differed significantly between the regions; Japanese macaques (*Macaca fuscata*), Ryukyu flying foxes (*Pteropus dasymallus*), and red-bellied squirrels (*Callosciurus erythraeus*) served as pollinators in Kyushu, Okinawa, and Taiwan, respectively. These results demonstrated the following two points: (1) *M. macrocarpa* exhibited a shift in pollinator, and (2) the *M. macrocarpa* floral structure is adapted to a mammalian pollinator because all its pollinators are mammals regardless of the plant location. Among the effective pollinators, several attributes were similar between Ryukyu flying foxes and red-bellied squirrels, namely flower visiting behavior, the relative size of flowers and pollinators, and habitat flexibility that allowed survival in urban areas. However, activity patterns, home range, and flying ability differed between these two pollinators. The difference in flying ability of the effective pollinator affected the above ground height of fruit positioning in the plant. Conversely, the flower size and nectar secretion, which were considered traits that attracted pollinators, did not change in accordance with the nature of each effective pollinator.

These results demonstrated that *M. macrocarpa* interacts with various mammals for successful pollination, and thus, although the species depends on specific mammals for pollination in each region, it exhibits a generalist-like pollination system. There are no other reports of this pollination system in other zones, such as in the Neotropics, where mammal-pollinated plants are relatively characterized. Thus, this pollination system may reflect the characteristics of the fauna in Asia. In addition, the ability of this flower structure to interact with various mammals for pollination, despite its peculiar shape and the presence of a floral mechanism, allows *M. macrocarpa* to have a wide distribution.

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