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FLESHY BRACTS ELICIT AVIAN ENDOZOOCHORY IN A DRY-FRUITED NON-PHOTOSYNTHETIC PLANT

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Study Description

The biological oddities of non-photosynthetic plants have long attracted the attention of naturalists. The genus *Balanophora* comprises non-photosynthetic plants with extremely reduced morphological features. As *Balanophora* fruits are some of the smallest among those of angiosperms, the question arises as to what mode of seed dispersal occurs in these plants. Here I document a previously unnoticed seed dispersal mutualism between the dry-fruited *Balanophora yakushimensis* and its avian visitors. The avian visitors obtain nutrients from claviform bodies considered to be transformed bracts, and the *B. yakushimensis* parent plant benefits from the seed dispersal.

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Photo 1. Natural population of non-photosynthetic *Balanophora yakushimensis* in Yakushima Island, Japan, with a motion-activated digital camera. *B. yakushimensis* plants are indicated by arrows. Most fleshy bracts and dry fruits had already been consumed by the time the plants were photographed. Photo credit: Toshihiro Saito.



Photo 2. The mushroom-like *B. yakushimensis* plant. Due to the morphological similarities of *Balanophora* infructescences and many mushrooms, it had been believed that mycophagous rodents were its main seed dispersers. However, since mycophagous rodents were not involved in fruit consumption, the mushroom-mimicry hypothesis is probably invalid at least in *B. yakushimensis*. Photo credit: Kenji Suetsugu.



Photo 3. Red-flanked bluetail *Tarsiger cyanurus* simultaneously consuming both fleshy bracts and dry fruits of *B. yakushimensis*. In contrast to well-studied fleshy-fruited plants, the dry-fruited *Balanophora* species adopt avian seed dispersal mutualism by fleshy bracts that function as both visual attractants and nutritional rewards. Photo credit: Kenji Suetsugu.



Photos 4. Longitudinal section of infructescences, showing dry fruits clustered at the base of fleshy bracts (both fruits and bracts are indicated by arrows). *B. yakushimensis* fleshy bracts are much larger than the fruits and probably function as the primary visual attractants for birds. Photo credit: Kenji Suetsugu.



Photo 5. Seeds extracted from the fecal pellets of red-flanked bluetail *T. cyanurus*. The embryo of viable seeds was stained dark pink with triphenyl tetrazolium chloride. Photo credit: Kenji Suetsugu.

These photographs illustrate the article "A specialized avian seed dispersal system in a dry-fruited non-photosynthetic plant, *Balanophora yakushimensis*" by Suetsugu published in *Ecology*. https://doi.org/10.1002/ecy.3129