

Food choices of the Japanese squirrel living in different habitats

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Japanese squirrels (*Sciurus lis*) are distributed in various types of forests such as broad-leaved evergreen forests in lowland areas, mixed-deciduous forests in mountain areas, and coniferous forests in sub-alpine areas, and are thought to consume different food types depending on their habitats. Previous observational studies found that Japanese squirrels seldom eat acorns of oaks (*Quercus serrata* and *Q. crispula*) in lowland and mountain forests (Kato 1985, Yatake et al. 1999). Japanese deciduous oaks are known to include more tannin and less fat and protein than North American oak species such as *Q. alba* and *Q. rubra* (Shimada & Saito 2006). The present study compared the selection of acorns as food among seven different study sites in central Honshu Island, Japan.

Ten feeding stands were set and pre-baited with unshelled walnuts in each study site (Takao, Tanzawa as lowland forests; Kiyosato, Daibosatsu, Fujiyoshida as mountain forests, and Yatsugatake and Mt. Fuji as alpine forests). From October to December in 2008–2011, ten seeds of Konara oak (*Q. serrata*), Mizunara oak (*Q. crispula*), walnut (*Juglans ailanthifolia*), and red pine (*Pinus densiflora*) were placed in the feeding cage and monitored by automatic cameras. The number of seeds

remaining in the feeding cage was counted after 6 days.

In all feeding stands set at the seven study sites, squirrels carried away all ten walnuts. The mean number of red pine cones taken out by squirrels ranged from 9.6 to 10.0 in the mountain and sub-alpine forests, but from 0.7 to 5.7 in the lowland forests. The number of Konara oak seeds removed by squirrels ranged from 0.3 to 3.1 in the lowland forests, 6.4 to 10.0 in the mountain forests, and 5.0 to 10.0 in the sub-alpine forests. Mizunara oak seeds removed by squirrels ranged from 1.5 to 6.1 in the lowland forests, 7.0 to 9.1 in the mountain forests, and 4.8 to 10.0 in the sub-alpine forests.

In the lowland forests with various tree species including walnuts, squirrels seldom select deciduous oak seeds as food items. In mountain or sub-alpine forests dominated by pines and Mizunara oaks, they are more likely to consume deciduous oak seeds as food items especially if the pine crop fails.