

短 報 (Note)

Photographic evidence of predation by martens (*Martes melampus*) on vespine wasp nests

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Abstract

While monitoring wildlife with camera traps in Higashi-Jozankei National Forest (Sapporo, Hokkaido, Japan), we obtained two photographs of a marten carrying a comb of a vespine wasp nest in its mouth. The photos demonstrate the behavior that martens may assume after attacking a wasp nest and suggest that martens are capable of successfully attacking mature wasp nests.

Key words : marten, vespine wasp, nest predation, camera trapping

Introduction

Mammals are considered important predators of wasp nests (Edwards, 1980; Matsuura, 1998). However, direct observations of attack behavior are rare, and the species responsible for the attack and destruction of wasp nests are often unknown. While monitoring wildlife with camera traps, we obtained two photographs that show a Japanese marten (*Martes melampus*) carrying a comb of a vespine wasp nest in its mouth. As far as we know, this is the second piece of evidence, following one obtained by Miyano and Ochiai (2000), suggesting that martens attack and prey upon wasp nests. In this note, we describe the observation and discuss its implications.

Methods

Wildlife monitoring surveys were conducted in 2002 (from 12 June to 30 October) and in 2004 (from 3 to 17 September) in Higashi-Jozankei National Forest (42° 52' N, 141° 10' E, about 400 m above sea level), Sapporo, Hokkaido, Japan, with 20 automatic cameras. The cameras were set on tree trunks standing along forest roads so that the cameras would detect and photograph wildlife moving along the roads.

Results and discussion

We obtained a total of 264 photographs of the Japanese marten; of these, two showed a marten carrying a comb of a wasp nest (Photo1). These photographs were taken



Photo1. Japanese martens each carrying a comb of vespine wasp nest in Higashi-Jozankei National Forest, Sapporo, Hokkaido, Japan. a) taken at 4:53 on 5 August 2002 and b) taken at 22:51 on 10 September 2004.

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at 4:53 on 5 August 2002 and at 22:51 on 10 September 2004. Of all marten photographs, only these two showed martens carrying prey of any kind.

The attacked nests were likely those of yellowjackets, but they could not be identified specifically as one of the nine species (five *Vespula* spp. and four *Dolichovespula* spp.) present in Hokkaido (Matsuura & Yamane, 1984). The size (estimated at approximately 20 cm in diameter) and shape of the comb in Photo1b, however, suggest that it was likely either *Vespula flaviceps* or *V. shidai*. The size of both combs indicates that the attacked nests were in their mature stage with a substantial number of defensive workers.

The reason that the martens carried the combs is unclear. It is possible that they were bringing the combs to their offspring to feed them, but the timing of family breakup in martens is not well known (Tatara, 1994; Mead, 1994). Hence, it is not certain whether, at these times of the year, offspring born in spring still remain with their parents. The martens might simply have been carrying the combs to avoid the wasps' defensive attack and feed on pupae and larvae elsewhere in safety. However, the calm steps of the martens suggest that they were not escaping from a wasp counterattack.

Vespine wasp nests are an attractive prey for some mammals and birds, and the ability of wasps to sting and poison is assumed to have evolved partly to protect their nests from these vertebrate predators (Starr, 1985; Matsuura, 1998). However, it is not well known how predators cope with the defensive aggressiveness of wasps during an attack. Direct observations on attack behavior are rare and only documented for the American black bear *Ursus americanus* (Bigelow, 1922), the honey buzzard *Pernis apivorus* (Trap-Lind, 1962; Cobb, 1979), and the Pallas squirrel *Callosciurus erythraeus* (Shimizu & Nakamura, 2003). An American black bear and a honey buzzard were observed to be stung while attacking the nests. On the other hand, a Pallas squirrel was twice observed attacking the nest of a hornet *Vespa simillima* and feeding on something without being stung. However, the two attacks were short in duration and took place at a time when adult hornets did not fly around the nest, suggesting that the squirrel adopted a hit-and-run strategy to avoid a counterattack. Predators are thus at high risk of being stung during an attack, and those who can manage to avoid the counterattack or endure the injuries get the reward.

Because of the difficulty in identifying predators responsible for nest destruction, only a limited number of species have been documented as vespine wasp nest predators: the American black bear, the coyote *Canis latrans*, the raccoon *Procyon lotor*, the striped skunk *Mephitis mephitis*, and moles (Akre & Reed, 1984) in North America; the honey buzzard, the badger *Meles meles*, and moles (Spradbery, 1973; Edwards, 1980) in Britain and Europe. Spradbery (1973) also suspects that the stoat *Mustela erminea*, the weasel *Mustela nivalis*, and field mice are predators of wasp nests in their incipient stage.

In Japan, information on vespine wasp nest predators is also limited with exception of that on the honey buzzard (Ono, 1997). In addition to the recent observation of the Pallas squirrel by Shimizu and Nakamura (2003), nest predation has been suggested by the presence of vespine larvae and pupae in the feces or digestive tract contents of the Asian black bear *Ursus thibetanus* (Nozaki et al., 1983), the brown bear *Ursus arctos* (Aoi, 1985; Ohdachi & Aoi, 1987), the Japanese marten (Miyano & Ochiai, 2000), and the raccoon (Hori & Matoba, 2001). Pupae of *Vespula* sp. have also been found in the stomach of a sable *Martes zibellina* in Hokkaido (Takahiro Murakami, pers. comm.).

Miyano and Ochiai (2000) found pupae and larvae of *Vespula flaviceps* in the stomach of a Japanese marten found dead in Chiba Prefecture, which is probably the first documented evidence suggesting that martens prey upon wasp nests. The comb-carrying behavior of martens in our photographs suggests that martens are actually capable of successfully attacking mature wasp nests, although how they managed to avoid wasp aggression during the attacks remains unknown.

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テン *Martes melampus* によるスズメバチ巣の捕食記録

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要 旨

北海道札幌市にある東定山溪国有林で行った自動撮影による野生生物調査において、テンがスズメバチの巣盤をくわえて歩いている写真が2枚得られた。これらは、テンがスズメバチに刺されてひどく傷害を受けることなく、スズメバチの巣を襲うことができることを示す有力な証拠である。

キーワード：テン、スズメバチ、巣、捕食、自動撮影

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