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**SOCIAL WASPS OF THE HURON MOUNTAINS, MICHIGAN
(HYMENOPTERA: VESPIDAE)**

Mark F. O'Brien¹

ABSTRACT

Ten species of social wasps were collected from the Huron Mountains area, Marquette County, Michigan, during the summers of 1983–1985. Factors affecting the distribution and abundance of some species are discussed.

The Aculeate Hymenoptera of the Upper Peninsula (UP) of Michigan and adjacent regions have not been extensively studied. The only published records of Vespidae from this area were given by Dreisbach (1943), Miller (1961), and Akre et al. (1981). Only Miller (1961) showed discrete localities on distribution maps; Akre et al. (1981) gave generalized distributions, perhaps extrapolated from new collections records and Miller's maps. Because Vespidae are habitat specific, occurrence of a species may be locally determined by habitat variations and the influence of human activities. Fourteen species of Vespidae are currently known from Michigan (Akre et al. 1981, Krombein 1979). So few records were from the UP that it was felt a survey from an area such as the Huron Mountains would reveal new information.

The Huron Mountains are granitic hills, ranging from 274 to 463 m in height, largely contained within the Huron Mountain Club, a private preserve in northwestern Marquette County about 4.8 km NW of Big Bay. The habitats are varied, ranging from small pockets of boreal spruce forest to xeric red oak-red pine mountain slopes, from sandy jack-pine plains to several types of bogs. Maple hardwood forest is the most widespread vegetation type. A description of the habitats and flora was given by Wells and Thompson (1976). Some areas have been disturbed by selective logging while others have been left in a pristine state.

The following list is a result of Malaise trapping at the Huron Mountain Club during the summers of 1983–1985. The Malaise traps were placed at the edges of meadows bordering ecotonal areas, in the middle of a recently cleared powerline right-of-way bordered on each side by woods, and at the edges of open, sandy areas bordered by low, herbaceous growth. A few wasps were also hand collected.

The earliest and latest collection dates and, in parentheses, the total number of wasps captured, are given for each species. The actual period of activity of each species undoubtedly extends both before and after the dates recorded here.

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Family VESPIDAE
Subfamily POLISTINAE

Polistes fuscatus (Fabricius). 21 June–4 August (14). Several nests were found in small rock crevices and under talus “cul-de-sacs” on the exposed south face of Huron Mountain. Two old combs from a previous year were seen where some rocks had collapsed. Three workers and one male were collected on *Solidago hispida* Muhl. on Breakfast Roll Mountain (4-VIII). A female and male were also found on *Solidago* sp. at the base of Breakfast Roll.

Two small active combs were found on buildings at Ives Lake in late June 1986. One, under an eastward-facing gable, had at least two foundresses. A second nest (P86-17), adjacent to a beam under a south-facing porch roof, harbored three foundresses when it was collected on 28 June. The comb was comprised of 7 capped cells at the center, 11 late instar larvae, 13 early instar larvae, 20 cells with eggs, and four empty, partially completed cells. Two cells contained two eggs, indicative of some remaining competition among the cofoundresses. Dominant queens usually eat the subordinate foundresses' eggs soon after they are laid (Eberhard 1969). Nest formation by several cofoundresses of *P. fuscatus* is common (Eberhard 1969), providing a quicker expansion of the nest and, hence, a shorter period before workers emerge, a decided benefit in northern areas where shorter growing seasons prevail.

Subfamily VESPINAE

Dolichovespula arctica (Rohwer). 21 June–4 August (10).

Dolichovespula arenaria (Fabricius). 14 June–7 August (64). Some workers were collected in early August as they foraged for nectar of *Symphoricarpos albus* (L.) Blake (Caprifoliaceae) between 7200–9200 h at an air temperature of 16°C, and at *Daucus carota* L., *Solidago* sp., and *Spirea tomentosa* L. between 1800–2030 h at 23°C.

Dolichovespula maculata (L.). 21 June–21 August (61). At the same time that *D. arenaria* workers were getting nectar, *D. maculata* workers were searching for arthropod prey amongst 1–3 m-high bushes.

Dolichovespula norvegicoides (Sladen). 30 June–7 August (18). Workers were also collected at *Symphoricarpos albus* in the mornings and *D. carota* and *Spirea* sp. in later afternoon.

Vespula acadica (Sladen). 23 June–29 July (8).

Vespula austriaca (Panzer). 6 July (2).

Vespula consobrina (Saussure). 21 June–21 August (87).

Vespula flavopilosa Jacobson. 23 June (1).

Vespula vulgaris (L.). 21 June–3 August (12).

Three species of vespids were predominant, perhaps reflecting their actual abundance or the result of better capture success by the Malaise traps of these species. *V. consobrina*, the “black jacket,” was the most abundant in the samples and is a common woodland species. Akre et al. (1982) found this species nesting in rodent burrows, primarily in open woodlands with no closed canopy. Workers usually forage for live prey by flying at shrub level, which also happens to be the height of the Malaise traps.

D. arenaria and *D. maculata* were about equally represented in the samples, but were less numerous than *V. consobrina*. Perhaps *D. arenaria* and *D. maculata* are less common because they are aerial nesters, or because they forage for prey at higher levels above the Malaise traps. It could be that the habitat is more favorable to subterranean *Vespula* nests, or that they are less likely to be affected by adverse weather, with the result that the colonies are either larger or more numerous than those of the arboreal-nesting *Dolichovespula* spp.

Although only a single *V. flavopilosa* queen was collected, they may be more common than this. This species tends to have smaller colonies than other yellowjackets (Akre et al. 1981), which may be a contributing factor to its paucity in the Malaise samples. Jacobson et al. (1978) previously listed a record from Marquette County.

Not surprisingly, the social parasites *D. arctica* and *V. austriaca* were rarely encountered. *D. arctica* is an obligate social parasite in nests of *D. arenaria* and *D. norvegicoides* (Greene et al. 1978), and *V. austriaca* parasitizes nests of the *V. rufa* group. A Holarctic species, its only known North American host is *V. acadica* (Reed et al. 1979).

Two species that may occur in Marquette County, but have not been collected at the Huron Mountain Club, are *Vespula maculifrons* (Buysson) and *V. vidua* (Sassure). A generalized distribution map in Akre et al. (1981) showed these species as being present in the UP, but no specific localities were given. *V. maculifrons*, a ubiquitous yellowjacket in most parts of the eastern U.S., was not found at the Huron Mountain Club, although Driesbach (1943) recorded it from Dickinson, Alger, and Chippewa counties. Unlike *V. consobrina*, it is often a scavenger and is abundant in residential areas where it is often a nuisance. Due to the scattered residences and largely uninterrupted tracts of forest, it is doubtful that *V. maculifrons* will be found at the Huron Mountain area.

It is noteworthy that *P. fuscatus* has been found mostly in the proximity of talus slopes and exposed rock outcrops of the Huron Mountains. Even though there are several buildings around Ives Lake, only two *P. fuscatus* nests have been found there over the three-year study period. In the wild, *P. fuscatus* is encountered in the UP where there are rocky outcrops, talus slopes, or frost-splintered cliffs. Most sightings are on S, SE, or SW-facing outcrops (Mike Arduser, in litt.). Of course, in residential areas of the UP, *P. fuscatus* nests around structures as it does elsewhere. The south slopes of Huron Mountain and Breakfast Roll are drier and warmer than north-facing slopes, and this may play a role in maintaining higher temperatures around the nest sites. This, coupled with multiple foundresses, certainly facilitates colony growth in an area with such a short growing season. Rau (1931) found *P. fuscatus* nests under overhanging rocks and pockets in dirt banks. These types of situations were probably the usual ones until man-made structures provided even better nest shelters.

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