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## A Nesting Anomaly of *Vespula maculifrons* (Buysson) (Hymenoptera: Vespidae)

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Observations of a nesting anomaly were made in *V. maculifrons*. An aerial nest was found in the basement of an unoccupied house.  
INDEX DESCRIPTORS: *Vespula maculifrons* (Buysson), Hymenoptera, Nesting.

Wasps in the genus *Vespula* (s. str.) are characterized as building subterranean nests (Bequaert 1931, Duncan 1939, Miller 1961). These wasps usually enlarge a subterranean cavity and construct nests consisting of a series of vertically suspended horizontal combs surrounded by an envelope. Published reports indicate that some aerial nests have been constructed above ground. Such nests are considered aberrations of normal nesting behavior.

*V. maculifrons* has been reported by Bequaert (1931) as building aerial nests inside decayed stumps or hollow logs. Rau (1931) observed a nest inside a little-used tool closet. Simon and Benton (1968) reported nests of this species in a stack of honey bee supers in a barn loft. Green *et al.* (1970) reported *V. maculifrons* nests in a barn loft, under house siding and in the foundations of buildings. In such situations, the nests are nearly always protected from the environment.

Green *et al.* (1970) reported exposed aerial nests of *V. maculifrons*. Exposed nests lack the scalloped sculpturing of the envelope that is associated with subterranean nests. Green *et al.* (1970) suggested that exposed, incipient aerial nests may be common and often fail to develop due to environmental stress.

The envelope around the brood combs serves a thermoregulatory function (Gibo *et al.* 1974a, 1974b and 1977) by forming a small incubator that accelerates the development of immature stages insuring their maturation in a restricted time period. Potter (1965) suggested that thermoregulation is a function of colony size and that small nests have proportionally thicker envelopes than larger colonies due to differences in surface to volume ratios. Spadbury (1973) indicated that exposed nests stimulate the construction of thicker envelopes. Potter (1973) illustrated a subterranean nest of *V. germanica* (L.) with an envelope 2 cm thick and an aerial nest of the same species with an envelope 6 cm thick.

On 12 July 1977, the authors collected a nest of *V. maculifrons* suspended between two joists in the basement beneath the first floor of an unoccupied house in Council Bluffs, Iowa in Pottawattamie Co. The nest was an unexposed aerial nest located 25 cm above ground level. The entrance of the nest was a small hole on the south side of the foundation. The nest was well-developed containing six horizontal combs with a total of over 9000 cells. Only a few dead workers were found associated with the nest. The nest had the texture and sculpturing associated with subterranean nests. The envelope of the nest was 6.5 cm thick.

The specific factors involved in nest site selection of *V. maculifrons* are not known. In natural habitats, subterranean cavities apparently

offer the bulk of optimal nesting habitats. In disturbed areas, such nesting sites may not be as readily available. Seldom used buildings may afford new nesting opportunities and may account for the increased reports of aerial nest records.

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