

Pemphredon Wasps

Scientific Name: *Pemphredon* spp.

Order: Hymenoptera (Bees, Wasps, Ants, Sawflies, etc.)

Family: Sphecidae (Hunting Wasps)

Identification and Descriptive Features:

Pemphredon wasps are small (ca. 1 cm) black wasps that are rarely observed. They most often attract attention when they nest in the pith of roses, caneberries and other plants following pruning cuts. Pemphredon wasps, along with small carpenter bees (*Ceratina* spp.) are the most common insects that nest in the pith of garden plants.

When colonized branches are split, a series of cells is usually evident. Each of these may contain aphids, aphid fragments and/or the grubs of developing wasps.



Figure 2. Pair of Pemphredon wasps in bamboo cane.



Figure 1. Pemphredon wasp resting on a sweet pea leaf.

Distribution in Colorado: Several species occur in the state and representatives are likely found statewide.

Life History and Habits: These are hunting wasps that use aphids for prey. Female wasps nest in cavities, usually created excavating the pith from plants. Within the plant a series of nest chambers will be produced, each of which will be provisioned with prey that a single larva will consume. In most plants, particularly those with a small diameter pith, the individual

nest cells are built sequentially on top of each other. However, a system of branching chambers may be made in large diameter twigs. Partitions between nest cells are made of chewed pith material.

Prey are located by the female who grasps a single aphid, paralyzes it by stinging, and returns to the nest. She then repeats this process until the cell is adequately provisioned, usually with about two dozen aphids. She then lays an egg on the aphids she has stored and seals the cell with a plug of chewed pith. A series of cells are subsequently provisioned and sealed off.

Eggs hatch in about three to five days and the developing wasp larva feeds on the aphids for about two weeks before becoming full grown. They then remain in this prepupal stage for a variable amount of time, depending primarily on the season. Late in the year most remain as a prepupa, overwintering before resuming development in spring. However, generations that develop in spring or early summer remain as a prepupa for only a short time and then transform to the pupa. Regardless of the season, pupal stages last about three weeks. Adults then emerge, in reverse order of when eggs were laid, i.e., those reared in the last cells produced are first to exit. Typically there are probably two generations annually produced.



Figure 3. Pemphredon wasp exposed from nest cells in ash twig.

Other insects may be found in the cells and cavities these wasps produce. Several parasites attack the developing wasps. Also, other species of hunting wasps that utilize existing cavities may colonize nests of Pemphredon wasps, sometimes destroying in the process the developing stages of Pemphredon wasps.

Table 1. A checklist of *Pemphredon* species known from Colorado

<i>Pemphredon confertim</i> Fox
<i>Pemphredon fischeri</i> Dollfuss
<i>Pemphredon gennelli</i> (Rohwer)
<i>Pemphredon inornata</i> Say
<i>Pemphredon lethifer</i> (Shuckard)
<i>Pemphredon lugubris</i> (F.)
<i>Pemphredon montana</i> Dahlbom
<i>Pemphredon nearctica</i> Kohl
<i>Pemphredon rileyi</i> Fox
<i>Pemphredon rugifer</i> Dahlbom
