

Comparative Ethology of Solitary Wasps  
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This is part of a continuing study of the comparative nesting behavior of solitary wasps (Hymenoptera Aculeata), with particular reference to the genus Philanthus (Sphecidae). This year most attention was devoted to P. zebratus, a relatively large and showy member of the genus that nests in several places in Jackson Hole. The major study area was below the Snake River Overlook, 9.5 miles south of Moran Junction. About 100 nests were present here between July 10 and August 5, all in an area about 5 x 15 meters in sandy soil near the Snake River. Forty nests were marked and followed until completion. In no case did the females involved make a second nest; they continued to make cells on the original nests until their death. The maximum number of cells found was 14, provisioned each with 4-9 paralyzed bees or wasps (including other species of Philanthus). Observations were also made on male behavior. Males are not territorial, as previously assumed, but rest at various places around the colony, showing little tendency to return to the same perch again. Males also have a "high flight", not previously described, in which they rise slowly in the air to a height of 3-5 meters and then descend obliquely to the ground after 10-60 seconds.

Seven hundred feet of motion picture film (16 mm, color) were taken of the behavior of Philanthus zebratus. This will soon be developed and edited, and it is hoped that it will be possible to prepare a concise film on this reasonably typical member of the genus as a basis for comparison with other species.

In addition, a few notes were taken on Philanthus pulcher and P. pacificus, two species studied earlier in Jackson Hole, as well as on several other ground-nesting wasps.

A secondary project consisted of placing "trap nests" on trees, stumps, fences, and buildings in order to obtain nests of species normally nesting in hollow twigs or holes in timber. These were of two kinds. One consisted of pieces of seasoned pine, 1 inch square and 6 inches long, with a hole bored through one end for most of the length. These were placed in a horizontal position, 1 to 8 feet high, and were accepted by species normally nesting in hollow twigs or in beetle borings in logs. Two boring diameters were used: 4 mm and 6 mm; 100 of each diameter were employed.

The second type of trap nest consisted of 6 inch lengths of Sambucus (elderberry) stem, placed usually in a vertical position and attractive to

wasps that normally nest in the pith of elderberry, rose, sumach, and similar plants. One hundred of these were used. Of the 300 trap nests used altogether, 150 were put out at or near the Research Station, 150 along Pilgrim Creek, in Teton National Forest.

Trap nests of the first type were highly successful, slightly over 75% being accepted by wasps and bees. Filled nests were split with a jackknife and the contents recorded; specimens of prey and larvae were preserved for future study. They were then put together again with elastics and saved for the emergence of the adults and their parasites. The major genera of wasps involved were Symmorphus, Ancistrocerus (Eumenidae), Trypoxylon, and Passaloecus (Sphecidae). (Nests filled by bees were turned over to Stephen Clement, a ranger-naturalist in Yellowstone who is doing a thesis at the University of California, Davis, on solitary bees.)

Nests of the second type (containing pithy centers) were less successful, only 5% being accepted. Presumably this is because few of the wasps in this area are adapted for nesting in this situation; other persons have had much success in areas where there are many brambles, sumach, and other plants having pithy centers.

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