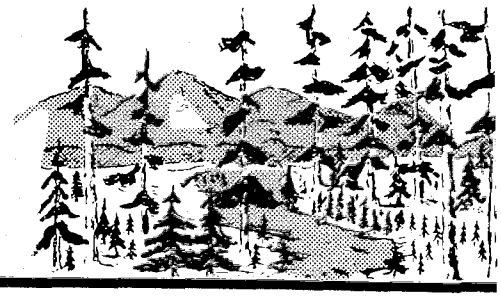
DEPARTMENT OF FORESTRY CANADA

Timber Talks



Prepared by V. H. Phelps, Forest Research Laboratory, 506 W. Burnside Road, Victoria, B.C.

INSECT BEHAVIOR No. 45

Different behaviorisms related to population development have been observed in many species of insects. Some that are winged display a summit-frequenting habit and congregate on mountain or hill-tops. It is conjectured that this characteristic facilitates mating. Flight orientation associated with such behavior was investigated by studying winged individuals of two species of ants.

Swarms of ants were captured by net at a hill-top fire lookout cabin tower near Cowichan Lake, B. C., in 1966 and 1967. The captured insects were released from different locations after they had been marked with paint. Number of insects released in 1966 was estimated visually; in 1967 the ants were anesthetized with CO_2, measured volumetrically and the number estimated from previous records of known volume. Traps containing water and ethylene glycol were placed at the four corners of the cabin walkway and catches examined under ultraviolet light.

In 1966, the insects were released from two sites, one being 90 metres and the other 400 metres distant from the lookout. Marked ants were first captured at the lookout from the closer site 4 minutes after release; first recovery from the farther release point was after 18 minutes. Return to the lookout continued in succeeding days and during weather conditions that necessitated flying both against and across the wind.

In 1967, ants were released from additional locations. Shortly after release from a site southeast of the summit under conditions of a gentle S to W wind, ants were captured at the summit. Individuals from a collection of the stronger flying species, released 530 metres W of the summit and during a N to NW wind that ranged from 50 to 250 metres/min., were captured at the summit within 30 minutes. Others were released from two locations on a level road. One was 750 metres distant at the base of the lookout hill. Many ants from both locations were found at the summit.

Initially the released ants flew upwards at about a 30-80^{o} angle, with no preferred direction, then leveled off above the treetops and flew in the direction of the summit. During swarming, a black cardboard box positioned on a pole on the cabin rooftop immediately became a concentration centre for the insects.

The tests confirm previous assumptions that summit aggregations of winged ants result from an oriented flight toward high points. This behavior is dependent on visual ability to detect summits from a distance or to distinguish the direction of slope.

REPORT: Winged Ants Return after removal from a summit swarming site. J. Chapman, Forest Research Laboratory, Victoria, B. C.