

No 569

JACQUES H. G. BELABIE

BIRD PREDATION ON RED WOOD ANTS IN QUEBEC IN 1971.

In May, 1971 BIRD PREDATION ON RED WOOD ANTS IN QUEBEC
(*Formica lugubris* Zett. from north IN 1971 and *F. obscuripes* Forel
from southern Manitoba), was made to Quebec as a means of biological
control of forest insect pests. Over four million ants (workers and
soldiers) were liberated. Information Report Prepared by
R.J. Finnegan
The *F. lugubris* were placed in a mixed, stand of about 35 years
of age, while the *F. obscuripes* were placed in a ten-year-old jack
pine and spruce plantation. The ants soon became established and by
November, 1971, they had built 33 natural nests (*F. lugubris* - 19,
F. obscuripes - 14), in which they overwintered.

It was noted during the early months of establishment
(June to September, 1971), many birds from outside territories entered

Research Project CRFL - 29,
Study - 031

Both species of ants were attacked while they foraged on the ground
September 1, 1980.

Laurentian Forest Research Center,
Environment Canada,
1080 route du Vallon,
Ste-Foy, Que.
G1V 4C7

for ant rearing. The results of the examination is presented in Tables
2 and 3. Since the digestive process in birds is very rapid, the dead
birds were deep-frozen to -15°C within an hour after killing, and
preserved in this state until the time of dissection.

BIRD PREDATION ON RED WOOD ANTS IN QUEBEC IN 1971.

In May, 1971 an introduction of two species of red wood ants (Formica lugubris Zett. from northern Italy and F. obscuripes Forel from southern Manitoba), was made to Quebec as a means of biological control of forest insect pests. Over four million ants (workers and sexuals) were liberated about 30 km north of Quebec city. The F. lugubris were placed in a mixed, second-growth stand of about 35 years of age, while the F. obscuripes were placed in a ten-year-old jack pine and spruce plantation. The ants soon became established, and by November, 1971, they had built 33 natural nests (F. lugubris - 14, F. obscuripes - 19), in which they overwintered.

It was noted that during the early months of establishment (June to September, 1971), many birds from outside territories entered the ant areas, either from curiosity or to actually prey on the ants. Both species of ants were attacked while they foraged on the ground and on the trunks and foliage of trees. To determine the effect that the birds had on the ant population, a total of 47 birds, in 16 species (Table 1), were shot and their digestive tracts dissected and examined for ant remains. The results of the examination is presented in Tables 2 and 3. Since the digestive process in birds is very rapid, the dead birds were deep-frozen to -15° C within an hour after killing, and preserved in this state until the time of dissection.

The large influx of birds into the ant area that was observed in 1971 was not seen again during the following years. It would seem that the sudden inundation of the forest stands with ants in 1971 had stimulated the surrounding bird population for the first summer, and that during the following years they had returned to normal territories.

Table 2 shows the number and kind of birds found in the F. lugubris area, and their stomach contents at the time of kill. It can be seen that the bulk of the insects preyed upon by most birds were other than Formica ants, although the ants were by far the most numerous insects found in the area. In all instances the stomach contents of the birds consisted of only a few insects (one or two ants) at the most.

Table 3 shows the number and kind of birds found in the F. obscuripes area, and their stomach contents at the time of kill. It can be seen that the degree of predation was similar to that found in the F. lugubris area both in the species of birds involved and in the kind of prey taken. It can be noted that all of the hermit thrushes killed (two in each ant area) had fed on Formica ants, and two out of five white-crowned sparrows. However, the significant point to note is that none of the birds were important predators of the newly-introduced ant species.

The long-term effect on the bird population of an area by a massive introduction of red wood ants has been investigated, and an interim report is now in an advanced state of preparation.

Table 2 : Birds associated with and/or preying on Formica lugubris
in Quebec in 1971

| Species number | Date killed | Stomach content | | | |
|-------------------|----------------|--------------------|-------------------|--------------------|---------------|
| | | <u>Formica</u> sp. | <u>Lasius</u> sp. | <u>Myrmica</u> sp. | Other insects |
| 1 | 17-IX-71 | X | | | X |
| 2 | 21-IX-71 | | | | X |
| | 13-X -71 | | | | X |
| | 15-X -71 | | | | X |
| | 27-X -71 | | | | |
| 3 | 17-IX-71 | | | | X |
| | 13-X -71 | | | | X |
| | 13-X -71 | | | | |
| | 15-X -71 | | | | X |
| 5 | 15-X -71 | X | | | |
| | 27-X -71 | | | | X |
| 6 | 27-IX-71 | X | | X | X |
| | 4-X -71 | X | | | X |
| 7 | 16-IX-71 | | | | X |
| | 17-IX-71 | | | | X |
| | 17-IX-71 | | | | X |
| | 2-XI-71 | | | | X |
| 8 | 16-IX-71 | | | | X |
| | 13-X -71 | | | | X |
| | 13-X -71 | | | | X |
| 10 | 16-IX-71 | | | | X |
| 11 | 16-IX-71 | X | | | X |
| 12 | 22-IX-71 | X | | X | X |
| | 4-X -71 | | X | X | X |
| 15 | 19-X -71 | | | X | X |

Table 3 : Birds associated with and/or preying on Formica obscuripes in Quebec in 1971.

| Species number | Date killed | Stomach content | | | |
|-------------------|----------------|--------------------|-------------------|--------------------|---------------------|
| | | <u>Formica sp.</u> | <u>Lasius sp.</u> | <u>Myrmica sp.</u> | <u>Other insect</u> |
| 3 | 15- X-71 | | | | X |
| 4 | 15- X-71 | | | | X |
| 6 | 16- X-71 | X | | X | X |
| | 1- X-71 | X | | X | X |
| 8 | 22-IX-71 | | | | X |
| 9 | 21-IX-71 | | | | X |
| | 21-IX-71 | | | | X |
| | 21-IX-71 | | X | | X |
| | 22-IX-71 | | | | X |
| | 22-IX-71 | | | | X |
| | 22-IX-71 | | | | X |
| 12 | 22-IX-71 | X | | X | X |
| | 13- X-71 | | | X | X |
| | 15- X-71 | | | X | X |
| 13 | 16-IX-71 | | | X | X |
| 14 | 5- X-71 | | | X | X |
| | 5- X-71 | | | | X |
| | 5- X-71 | | X | | X |
| | 8- X-71 | | | | X |
| | 8- X-71 | | | X | X |
| 15 | 8- X-71 | | | | X |
| | 13- X-71 | | | | X |