CANADA

DEPARTMENT OF FORESTRY

Vol. 21
REPORT
Number 2

BI-MONTHLY PROGRESS REPORT

Mar.-Apr.
1965

Published by Authority of the Hon. Maurice Sauvé, P.C., M.P., Minister of Forestry, Ottawa

New Regional Forest Research Laboratory Opened in B.C.—The Department of Forestry's newest regional research establishment located on a 22-acre site at 506 West Burnside Road, Victoria, will serve as the centre for the Department's forest research program in British Columbia. Occupation of the building began early in January with the move of previously separated research units of the Department from their Government Street locations in downtown Victoria. The new laboratory, erected at a cost of $2,500,000, was opened ceremonially by the Hon. George R. Pearkes, Lieutenant-Governor of British Columbia, at 2:00 p.m., Monday, February 15. During the opening week some 4,000 interested persons visited the laboratory.

A 265-foot main building with three stories, a full basement, and a service penthouse, contains the most modern of laboratory facilities and the research offices. Abutting the research wing at the front is the two-storey administration wing which serves as administrative headquarters for the Department's wide range of activities on the West Coast.

An illustrated brochure giving a full description of the laboratory and an account of its activities has been prepared and copies may be obtained from the Public Information Section, Department of Forestry, Ottawa, or the undersigned.—W. A. Edwards, Public Information Officer, Forest Research Laboratory, Victoria, B.C.

ATLANTIC PROVINCES

An Unusual Increase of Spruce Sawfly Numbers in New Brunswick.—Since the end of the spruce sawfly outbreak in New Brunswick in 1940, populations of this insect have until recently remained at very low levels. On sample plots populations have fluctuated at levels less than 0.5 larvae per tree sample. The termination of the outbreak has been attributed to the introduction of a polyhedrosis virus and the subsequent regulation of the host at endemic levels to the effects of introduced parasites as well as the virus. This parasite-disease complex seemed so effective that it has been speculated that the European spruce sawfly would not again become a pest of economic importance in the forseeable future (Neilson, M. M., and Morris, R. F. Can. Entomol. 96: 773-784. 1964).

Beginning in 1960 two study plots at the Acadia Forest Experiment Station, in which population levels have been measured annually since 1937, were included in the area sprayed with DDT for control of the spruce budworm. Both plots were sprayed in three consecutive years, 1960, 1961, and 1962. Densities of the sawfly during these 3 years were reduced to the lowest levels ever recorded in the 28 years that populations have been sampled; only one larva was collected from 360 trees sampled during 1961 and 1962. Obviously the incidence of parasitism and disease could not be assessed.

In the first generation after cessation of spraying (first generation of 1963) sawfly densities increased on both plots and by the second generation of 1964 reached a level of more than thirteen times that of pre-spray years. Parasitised larvae were not collected until the second generation after spraying. The incidence of parasitism has, however, increased in each of the three subsequent generations, but has yet to reach the levels characteristic of the pre-spray years. No diseased larvae have been collected from either plot since the second generation of 1960 and it is possible that the virus may have been eliminated from the area.

This unusual increase in sawfly numbers is probably not confined to the Acadia Forest Experiment Station but may have occurred in other areas of New Brunswick with similar DDT spray histories. Forest Insect and Disease Survey sampling records for the spruce sawfly do not reveal such increases but this is probably due to the small size and the timing of samples. However, on Grand Manan Island where intensive sampling has been conducted for several years and where no aerial spraying has occurred, there was no indication of a concurrent increase in the density of the sawfly.

Aerial spraying against the spruce budworm apparently severely disrupted the balance that had developed between the spruce sawfly and its enemies. The rapid increase in host numbers is undoubtedly primarily due to the relaxation of the two most important regulating factors, parasites and disease. Spruce sawfly populations at Acadia are rapidly approaching 1938 levels and if the present trend continues defoliation of spruce will be noticeable in 1965. This population will be followed to see if parasites alone or in combination with disease will be capable of once again reducing sawfly numbers to the low levels characteristic of the pre-spray years, 1940 to 1960.—M. M. Neilson and D. E. Elgee.

QUEBEC

Notes on Ants Associated with Neodiprion swainei Midd. in Jack-Pine Stands in Quebec.—The following notes were gathered between May and September of 1963 during studies on ants (Formicidae) in stands of jack pine, *Pinus banksiana* Lamb., near Lac McLean, elevation 1,400 feet, Laviolette County, Que. The studies form part of a program of investigations on population dynamics of the Swaine jack-pine sawfly, *Neodiprion swainei* Midd. The aim was to determine the complex of ant species present in jack pine stands, and to provide a preliminary assessment of their effectiveness as predators on various stages of *N. swainei*.

The notes presented here result mainly from observations conducted in two rectangular 1 × 2 chain sample plots. Plot I was established in a 20-year-old jack pine stand, averaging 12 feet in height and with a mean density of 560 trees per acre. The ground cover consisted mainly of the moss, *Cladonia rangiferina* (L.) Web.; scattered clumps of *Kalmia angustifolia* (L.) and *Vaccinium* sp.; and occasional patches of *Politrichum commune* L. The organic layer was very thin and the soil sandy. Plot II was established approximately 500 feet from Plot I in an older jack pine stand averaging 40 years in age, 30 feet in height, and with a mean density of 1,970 trees per acre. The principal ground vegetation here was the same as in Plot I, but in addition, patches of *Calliergon schreberi* (Willd.) were present near decaying stems and stumps beneath the litter, as well as the occasional clump of *Epigea repens* L., *Gaultheria procumbens* L., and *Dicranum undulatum* Ehrh. The organic layer averaged about two inches thick over a sandy soil base. A number of decayed stems and stumps were scattered about the ground in both plots but were considerably more numerous in Plot II.

The complex of ant species in the plots was determined by a diligent search throughout the areas. The position of all nest entrances were located and permanently marked. Samples of ants from each nest were collected, killed, and mounted, and the identifications were kindly supplied by C. D. Miller, Entomology Research Institute, Department of Agriculture, Ottawa.

A total of ten species of ants were recovered (Table 1), the most common of which was *Formica fusca* L. This species was considerably more abundant in Plot I than in Plot II and the nests were most often located in exposed sandy locations; of the 51 nests of this species found, only three were built in decaying logs or stumps. Next in order of abundance was the minute yellow ant, *Lasiuns flavius* Wheeler, which was far more numerous in Plot II than in Plot I. Nests of this species were most often found in or directly beneath decaying logs or stumps. The nests of all the remaining species listed in Table 1, including four nests of the large carpenter ant, *Camponotus herculeanus* (L.), were restricted to decaying logs or stumps.

TABLE 1

Presence and relative abundance of various ant species recovered from two 1 x 2 chain rectangular sample plots near Lac McLaren, Laviolette County, Que.

Species	Number of nest entrances per plot		
	Plot I (open stand, small trees)	Plot II (dense stand, large trees)	Total
Formica fusca (L.)	40	11	51
Formica subnuda Emery	1	0	1
Formica sp. (*rufa* group)	1	0	1
Formica sp.	1	0	1
Camponotus herculeanus (L.)	1	3	4
Lasius flavius Wheeler	4	24	28
Tapinononia sessile (Say.)	1*	3	4
Myrmica brevinodis Emery	2	0	2
Myrmica lobicornis fracticornis Emery	1	0	1
Leptothorax muscorum (Nyld.)	0	2	2
Total	52	43	95

* 15' outside the border of the plot.