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Summary of Ecological Effects of Pest Control Programmes in New Brunswick in 1976

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SUMMARY OF ECOLOGICAL EFFECTS OF PEST CONTROL PROGRAMMES IN NEW BRUNSWICK IN 1976

by

B.B. McLeod

Experimental and operational treatments of 6 chemical insecticides applied at varying dosage rates were monitored for short-term environmental disturbances to various components of the forest ecosystem in New Brunswick in 1976 (Table I).

Table I

Insecticides and dosage rates monitored in New Brunswick in 1976

Insecticide	Dosage Rate	Component monitored
Dimecron^{R}-larvacide	0.140 kg/ha (2oz/ac)	birds
	*0.210 kg/ha (3oz/ac)	birds, aquatic
	0.280 kg/ha (4oz/ac)	birds, mammals
Dimecron^{R}-adulticide	0.070 kg/ha (1oz/ac)	birds, aquatic
Orthene^{R}-larvacide	0.560 kg/ha (8oz/ac)	birds
	0.280 kg/ha x 2 (4oz/ac)	birds
Sevin^{R}-4-Oil	1.121 kg/ha (16oz/ac)	birds
	0.560 kg/ha x 2(8oz/ac)	birds
Matacil^{R}-adulticide	0.070 kg/ha x 3(1oz/ac)	birds
	0.070 kg/ha x 2(1oz/ac)	birds, aquatic
Dylox^{R}-larvacide	0.560 kg/ha x 2(8oz/ac)	honey bees
fenitrothion-larvacide	*0.210 kg/ha x 2(3oz/ac)	birds, mammals, aquatic

* Small mammal populations were assessed and monitored on a plot treated with Dimecron (0.210 kg/ha) followed by 2 applications of fenitrothion (0.210 kg/ha).

RESULTS

Birds: Dimecron®, when applied at rates in excess of 0.140 kg/ha caused a measurable reduction in the populations of such species as the kinglets, warblers and certain members of the sparrow-finch families. Moderate reductions were recorded on plots treated with 0.210 kg/ha and populations of ruby-crowned kinglets on plots receiving 0.280 kg/ha were severely affected. Dimecron when applied at 0.070 kg/ha as an adulticide did not result in any measurable reduction in populations. Birds on plots treated with Sevin®-4-Oil, Orthene® or fenitrothion were not affected. Matacil® in multiple treatments of 0.070 kg/ha did not cause a reduction in populations but a stressed juvenile purple finch was observed.

Small Mammals: Small mammal populations were trapped from 4 plots; Dimecron® at 0.280 kg/ha, fenitrothion at 0.210 kg/ha x 2, a plot treated with 1 application of Dimecron® (0.210 kg/ha) followed by 2 treatments of fenitrothion (0.210 kg/ha) and an untreated check plot. The small mammal complex on these plots were not affected by the various treatments. A large portion of the population were young of the year and a very high percentage (50 - 100%) of the adult females were either pregnant or contained placental scars indicating the recent birth of a litter.

Honeybees: Colonies of honeybees were monitored adjacent to an area treated with Dylox® at the rate of 0.560 kg/ha x 2. Adult bee mortality at the hive indicated a light but measurable impact. Other parameters usually measured such a pollen collection, brood production and activity at the hive entrance could not be utilized on this occassion. The

indication of an impact on the honeybee field force must be tentative due to the pest control programs being carried out in the near by apple orchards.

Aquatics: Samples of aquatic insect and bottom fauna collected from streams treated with applications of Dimecron, fenitrothion and Matacil have not as yet been identified and analyzed and will be reported when completed.