

UPSALQUITCH SPRAY PROJECT

G.F. Boyer

1952

DATA FILE

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On the afternoon of June 30, 1952, Scott W. Little and I returned from the Upsalquitch Spray Project.

During the course of our work on this project an attempt was made to ascertain the effects of the DDT spray on vertebrate populations other than fish. The main emphasis was placed on birds. A brief outline of our work is listed below:-

1. Bird Populations Studies.

(a) Two 25 acre plots were laid out and bird populations were studied. One of these plots was in the spray area and the other, acting as a control, outside.

(b) Three bird census lines were measured for bird populations at various points in the spray area. A roughly equal distance was measured outside.

(c) Bird nests were located and the progress and condition of these nests were noted throughout the operation.

(d) A small number of birds was collected for stomach analysis at various dates before and after the operation.

(e) Through co-operation with other organizations dead birds were picked up on the spray area. These birds were examined to determine the cause of death.

2. Mammal Populations.

(a) An attempt was made to determine small mammal populations by means of snap trapping on $\frac{1}{2}$ acre plots both inside and outside the spray area. Trap lines were also run. The small mammal population was so small that this project was given up as no significant data could be obtained. It was felt that time spent on this could be better employed on other phases of the work.

(b) Notes were kept on all mammal observations in the area.

(c) Through co-operation with other organizations dead mammals were brought in for our examination.

3. Amphibians.

Observations were made on the effect of the spray on larval and adult amphibians. Other organizations also furnished information.

4. Invertebrates.

An attempt was made to determine the effect of the spray on insects other than the spruce budworm. Information was collected by Scott Little and myself. In this phase we were kindly assisted by Dr. Brown of (I think) Queen's University, Mr. Frank Webb of the Entomological Service, Canadian Department of Agriculture, and Mr. William Waters of the U.S. Department of Agriculture.

Effects of Spraying.

On the birds - At this time, in view of the pressure of other work, I am not in a position to make a complete analysis of my findings. I would tentatively say that the effects of this operation did not differ materially from previous forest sprayings in which the same concentration of DDT and solvent were used. In these other projects the workers felt that there were no "apparent" and no "noticeable" effects. I feel that in a study of this kind, made by such a limited number of personnel and in such a short time that it is very difficult to make positive statements. There appeared to be no significant difference in bird populations before and after the spraying. Incubating birds eggs and young birds did not appear to be affected in the nests under observation.

The following birds were found dead after spraying:

<u>Species</u>	<u>Sex</u>	<u>AGE</u>	<u>Date found</u>	<u>Spraying date</u>
Myrtle Warbler	M	A	June 20	June 17
Magnolia "	M	A	June 23	June 17
" "	M	A	June 24	June 17
B.T. Green "	M	A	June 27	June 23
Blackburnian "	M	A	June 28	June 22
Magnolia "	F	A	June 28	June 22 (brood patches)
" "	M	A	June 28	June 25 (dying when found)

The finding of these birds is not, in itself, evidence of wide spread mortality from spraying. These birds were examined and it is felt that, at least some of them were killed by the oil or solvent rather than the DDT itself. It is reasonable to assume that all were killed as a result of the spraying. It must be remembered that there were at least 50 people ~~spraying~~ co-operating and much of the spray area was visited in picking up these birds. This co-operation, of course, was incidental to other work. It is difficult, from the foregoing evidence, to state whether some species are more susceptible to spray than others. All the birds listed above are very conspicuous and would be picked up more easily than sombre coloured species.

Mammals

Three dead immature white-footed mice were brought in for examination. These were found in a dying condition but the condition of the skull of one of the specimens pointed to mechanical injury. The other two specimens have been preserved in formalin for further examination if possible. It is thought that these mice may have been accidentally stepped on by the field party finding them.

There was no other evidence of adverse effects of DDT spray on mammal populations.

Amphibians

Larval amphibians appeared to be seriously affected by the spray. Effects were not so severe in the case of adults although dead American toads, green frogs and wood frogs were found. American toads were observed laying eggs in ponds where

the larval population had been wiped out previously by spray.

Insects

In an endeavour to ascertain the effects of the spray on the food supply of birds a collection was made of insects other than spruce budworms. Affected insects were collected and kept to determine recovery from the spray.

As soon as time is available for the completion of a more thorough analysis of the data a full report will be submitted.

Comments

From an examination of the literature it would seem that most studies of this nature have been very incomplete at least in relation to birds. From my interviews with authorities while on the project I would say that very little concrete knowledge is now available on the physiological effects of DDT spray on such vertebrates as birds and mammals.

It would seem that the physiological effect could occur either immediately (within a few days or a week) or delayed. The latter depending on the action of the latent DDT stored in the body fats. Apparently when fat is lost this latent DDT becomes effective. This could happen during moult later in the year.

The immediate physiological effect was studied by the bird population counts and nest observations with the results already noted.

The ecological effect is more complicated and would entail a study of available food supply through insect collections and stomach analysis of birds collected. This was attempted.

Further studies of the ecological effects should if possible be carried out in subsequent years in sprayed areas. This would include population and food supply studies.

It seems to me that in much of the work carried out in this connection by ornithologists and wildlife workers the samples taken are much too small for the accurate figures quoted in the resultant reports. I am referring in particular to the bird population studies. In our case it was not possible to lay out more than one 25 acre plot in the sprayed area and one outside for control. A random 25 acre plot laid out in 300 square miles (1,920,000 acres) is, in my opinion, not enough. With this in mind I felt it necessary to support my work as much as possible with general observations.

These observations are being tabulated and analysed as time permits. I hope to be able to make a good start on this during the last 20 days of August when I will be doing local waterfowl banding in the Sackville area and will have office and library facilities to carry out this work efficiently.