

Bruce Spanworm *Operophtera bruceata*, Larvae Surveys

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I. Historical records of Bruce spanworm in Vermont¹

Bruce spanworm outbreaks have been observed to last approximately 2 years, after which the population crashes. The first recorded Bruce spanworm outbreak in Vermont began in 1933, primarily in sugar maple orchards in the north and northeast regions of the state. This original outbreak lasted until 1935.

Populations again increased in 1950 in Vermont, and also in Alberta and Wisconsin. They remained at high levels through the 1954 growing season, although damage was considered to be low because a forest tent caterpillar outbreak, causing considerable damage, was occurring also. This forest defoliator was not a problem again until 1981, when populations began to increase and damage was observed in Vermont sugarbushes. Damage at that time was limited to the understory vegetation.

Of interest is that spanworm damage was frequently observed to occur in areas previously damaged by other insects. The outbreak of 1981 continued until 1983. Concurrent damage occurred in Maine. In 1983, 12,240 ha (30,000 acres) received light to moderate defoliation, the heaviest being in the Northeast Kingdom. In 1986 and 1987, no appreciable defoliation was mapped. However, in 1988 in Moretown and Cabot, larvae were found and very light defoliation was observed.

(To see the complete excerpt from the original document, go to Y:\FPR_Forestry\ForestResourceProtection\Forest Biology Lab Databases\Bruce_Spanworm_for_VMC_Library\Files Common to Egg, Larvae and Moth Surveys\BSW Outbreaks.pdf)

II. Vermont Pest Alert²

A pest alert entitled BRUCE SPANWORM – ANOTHER SUGAR MAPLE PEST FOR VERMONT was prepared by Ron Kelley in 1983 with the following information:

This inchworm was abundant in Vermont sugarbushes in 1983 but did not cause the heavy defoliation that occurred in Maine and New Hampshire where 338,000 and 18,000 acres, respectively, were defoliated. This insect defoliated northern Vermont sugarbushes in the 1930's and appears to be on the increase for 1984 in northern Vermont.

¹ Direct excerpt from Parker, B.L., K.E. McGrath, S. Moulton and H.B. Teillon. 1989. *History of the major forest insect pests in Vermont*. A joint VT Agr. Exp. Station and State of VT publication. RR 57. Univ. VT, Burlington. 32 pp.

² Kelley, R.S., 1983. Bruce Spanworm – Another sugar maple pest for Vermont. Pest Alert, VT. Dept. of Forests, Parks and Recreation, Agency of Environmental Conservation. 1 p.

What to Look For – the grayish-brown moths were abundant during November, 1983. Female moths lay eggs which are orange and extremely small, about the diameter of the needle portion of a common pin. There are laid singly under lichens and in bark crevices on tree trunk and branches.

Larvae hatch shortly after bud burst in the spring. Their favorite hosts are sugar maple and beech. Newly hatched larvae are pale yellow and 1/8” long. Older larvae become more greenish with narrow, yellowish-white stripes. Full-grown larvae vary in color from light green to olive and are about 3/4” long (Figure 1). They attain full growth by the first week in June.

What to Do – Start looking for larvae as soon as small sugar maple leaves begin to form. There is no established sampling procedure for predicting future numbers of this insect but if careful searching of maple leaves in the understory or lower tree crown reveals an average of close to one or more larvae per leaf, heavy defoliation (Figure 2) can probably be expected. If you find large numbers of insects and desire an evaluation of the situation, contact your county forestry or Forest Protection Specialist Ron Kelley (888-5733).



Figure 1. Bruce spanworm larva.



Figure 2. Typical pattern of defoliation.

For more information about Bruce spanworm, see the USFS Pest Leaflet:
http://www.na.fs.fed.us/spfo/pubs/pest_al/bruce_spanworm/pa.htm

(For the original copy of this pest leaflet, see Y:\FPR_Forestry\ForestResourceProtection\Forest Biology Lab Databases\Bruce_Spanworm_for_VMC_Library\Files Common to Egg, Larvae and Moth Surveys\BSW Leaflet VT.pdf)
For more images of the Bruce spanworm by Ron Kelley, see
Y:\FPR_Forestry\ForestResourceProtection\Forest Biology Lab
Databases\Bruce_Spanworm_for_VMC_Library\ Files Common to Egg, Larvae and
Moth Surveys\Bruce Spanworm Photos.

III. Vermont Surveys for Bruce Spanworm

Surveys for Bruce spanworm have included eggs, larvae and adults. The protocol and data provided here include only surveys for larvae. Surveys for Bruce Spanworm eggs and moths are reported separately in the VMC Data Library. See **Bruce Spanworm Egg Survey** and **Bruce Spanworm and Winter Moth Pheromone Trap Survey**.

In 1994, surveys for Bruce spanworm larvae were conducted at two sites in late May when sugar maple leaves were not quite fully expanded larvae were predominantly in the second instar. The protocol for the larval study can be found at http://sal.snr.uvm.edu/vmc/reports/related/181__pdf_BruceSpanwormLarvaeSurvey.pdf

Results of surveys for Bruce spanworm larvae can be found at:
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Databases\Bruce_Spanworm_for_VMC_Library\Bruce spanworm larval survey data forms\

Notes:

Here are links to the protocols and data mentioned above.

Outbreak history:

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Bruce spanworm leaflet:

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Ron's photos of Bruce spanworm:

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Protocol for Larval Survey:

http://sal.snr.uvm.edu/vmc/reports/related/181__pdf_BruceSpanwormLarvaeSurvey.pdf
(Note: This also includes the egg survey protocol. It follows the larvae survey description.)

Results of Larval Surveys:

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