THE SADDLED PROMINENT COMPLEX IN MAINE

with special consideration of

Eastern Maine conditions

1974-1977

by

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ENTOMOLOGY DIVISION

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Bureau of Forestry
Augusta, Maine

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Abstract

Both aesthetically and economically, hardwood stands form a very important resource within the State of Maine. When a large, severe and unprecedented series of outbreaks of the saddled prominent and its allies began their rise in 1969 the concern of forest entomologists was drawn to the problem. Attempts to define the problem were divided into two categories. The first involved establishing a series of plots to measure the impact of the insect on the host resource. The second involved general field surveys and studies on the insects involved and their relationships to each other and the hosts. This report deals primarily with this second phase. Comments and observations included are intended to provide a tool for use in identifying the various aspects of the problem and in helping to provide direction for further studies.

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Although one usually pictures Maine's forests as an extensive "sea" of spruce-fir or of the noble white pine, hardwoods also make up a very important component both economically and aesthetically. The northern hardwood forest (Maple, beech and birch) is the second most abundant forest type in the State. It is the typical northern hardwood stand that is subject to attack from the group of insects herein referred to as the saddled prominent complex.

Hardwood defoliators have often been "pooh-poohed" in the past as unimportant, "after all, most hardwood trees will refoliate after defoliation" or will they? - and even if they do will they be as sound as before? It now becomes increasingly evident that trees which are moderately to heavily defoliated for one or more years may suffer long-range effects in the form of increased internal decay, reduced growth and even death. Trees, like people, suffer from stress and trees under stress become more susceptible to other problems. For example, beech on a ridge, with rocky, droughty, soil and a past history of beech scale - nectria might not be able to withstand even a single year of severe defoliation in a dry year, before mortality becomes extensive. Such was the case in the Public Lot in Silver Ridge Twp. and in T1R6 where heavy saddled prominent defoliation during the dry 1975 season resulted in the death of about 75% of the beech on 150 and 50 acres respectively (Beech made up about 80% of the stands by volume). Beech in this case were on a poor site and may actually have died as a result of excessive heating of the roots following complete defoliation by the prominent and its associates.

The volume of hardwood harvested in Maine is increasing rapidly and may soon, if it has not already, exceed growth. Many areas are logged severely, leaving only saplings, sprouts or poor quality trees. Other areas are opened up too much thus creating stress especially on sensitive species such as yellow birch. These factors coupled with, or added to damage caused by insect defoliation have placed Maine's hardwood resource in jeopardy. In 1974, hardwood made up 30% of the total timber cut in Maine with a finished product value estimated to be about $486,532,200. In 1975 hardwood made up approximately 26% of the total timber cut with a total estimated product value of $379,950,730 (1975 figures are the latest available). Although the cut dropped in 1975, hardwood still forms a very large portion of the total timber cut in eastern Maine where the saddled prominent was a problem. In terms of both jobs and revenue this is certainly an important resource to the State.

The destructive cycles of the saddled prominent and its allies seem to be increasing in frequency and severity and in view of the increasing demands on our hardwood resource, all such factors should be studied with hopes of minimizing their impact. We may have more frequent recurrences of these outbreaks and we should learn to minimize possible losses in an effective manner.

The Complex

The saddled prominent complex is herein defined as that group of insects associated with the saddled prominent, Heterocampa guttivitta Wlkr., which develop into outbreak populations on northern hardwood hosts under similar conditions. Because these associated insects occur at the same time on different hosts, defoliation is often widespread and severe.

The following is a list of the primary (most abundant) and secondary (least abundant) species in the complex as we have found them in Maine.

A. Primary Species
   1. Heterocampa guttivitta Wlkr. The saddled prominent
   2. H. biundata Wlk. No common name
   3. Anisota rubicunda Fab. The green-striped mapleworm or rosy maple moth

B. Secondary Species
   1. Symmerista leucitys Franc. The orange-humped mapleworm
   2. S. canicosta Franc. The red-humped oakworm
   3. Heterocampa umbrata Wlkr. No common name
   4. Heterocampa manteo Dbld. The variable oak leaf caterpillar
   5. Fentonia marthesia. No common name
   6. Anisota virginiensis Drury. The pink-striped oakworm
   7. Datana ministra Drury. The yellow-necked caterpillar

Additional information on these insects, associated parasites and predators, hosts, identification and control may be found in the appendices.

The Hosts

Insects in this complex feed on many tree hosts especially under epidemic conditions but the primary hosts (those most heavily defoliated) in our recent outbreak were: American beech, Fagus grandifolia Ehrh; White Birch, Betula papyrifera Marsh; Yellow Birch, Betula alleghaniensis Britton; Sugar Maple, Acer saccharum Marsh; Red Maple, Acer rubrum L.; and Eastern hop-hornbeam, Ostrya virginiana (Mill.) K. Koch.

Historical Background

"Prominent" outbreaks have been known to occur periodically since 1907 but no records are known prior to this. Both of our more important species, Heterocampa guttivitta and H. biundata, are native to the U.S. but were not described until 1855 by Francis Walker. Until 1907 both species were reported to be rather scarce in the Northeast. The first known outbreak in 1907 occurred simultaneously in hardwood stands throughout much of the northeastern U.S. from New York to Maine. In Maine this early outbreak was almost entirely restricted to western and southwestern sections of the State and was caused primarily by H. guttivitta accompanied by moderate populations of Anisota rubicunda (Patch 1908).

Maine did not really experience another outbreak until 1956 although localized outbreaks did occur in other parts of the northeast in 1916-1920, 1930-1931 and 1940-1941. In 1956 a complex dominated by H. biundata severely defoliated approximately 4,600 acres of northern hardwoods in the Millinocket-Schoodic

region of central Maine (Nash 1957). This outbreak also remained rather localized and short lived. It died out in 1957.

Recent Outbreak

Beginning in 1969, Maine began experiencing a rise in populations of the saddled prominent which has continued with some variation through the present. The problem first appeared in the Brownfield-Porter area in 1969 and there expanded to cover about 26,000 acres by 1971 (See App. A). By 1973 these populations had died out but populations were increasing throughout much of the northern hardwood belt of central, northern and eastern Maine. Populations then continued to increase in these new areas but especially in eastern sections. Outbreak proportions were reached in some areas by 1974 although defoliation was still generally light. Areas of locally moderate-severe defoliation were reported in 1974 and 1975 in the Tomah Mtn. area of Topsfield, on Fox Pt. (Twp. 14) and on scattered ridge tops such as Silver Ridge (see Map App. B). These areas were apparently epicenters for the impending outbreak. This was the first time that such populations were observed in eastern Maine. The predominant species in this current outbreak has been H. guttivitta with locally heavy populations of A. rubicunda, although all of the species in the complex have been active in varying numbers. From 1974 to 1976 H. biundata did seem to be somewhat more abundant than usual in the more lightly defoliated portion of the hardwood belt of central Maine from Millinocket to Greenville.

The current outbreak in the Northeast appears to have developed first in Pennsylvania and New York and moved generally eastward. The chronology of events developed as follows:

Table 1. Chronology of Saddled Prominent Outbreaks with special reference to Maine conditions.

Year	Pennsylvania	New York	Vermont	Massachusetts	New Hampshire	Maine	New Brunswick (Canada)
1967	X	X					
1968		X	X	X			
1969		X	X	X	40,000 acres	Light SW.	
1970		Decline	X	X	400,000 acres	10,000 acres SW.	
1971					Decline	26,000 acres SW.	
1972			General	Collapse		Decline SW.	
1973						Light in E.	
1974						Light defoliation; some hot spots. E. & Central	
1975						35,000 acres E. & Central	Light SW.
1976						700,000 acres E. & No. Central	Increasing SW.
1977		Trace				35,000 acres ± S.E. Maine Declining	SW.

* X = Defoliation noticeable but to varying degrees. Acreage figures in this table apply only to moderate and severely defoliated stands.

The distinct but consistent west to east flow of population buildup during this outbreak into previously uninfested areas is certainly worthy of note here. There appears to be no evidence of moth flights having influenced this eastward movement but rather it is felt that eastward shifting weather patterns may have favored release of endemic (native) populations in these areas. Although this flow continued in 1976 from the 1975 area, the rate of spread eastward seemed to fall off and a more general population buildup occurred in 1976 in all susceptible hardwood stands on all sides of the 1975 area but especially to the north and west. A map of the 1976 infestation (App. C) is included in the appendix (many beech ridge tops were also infested, especially in northern Maine but acreage was small and these were not included on this map). Populations of H. guttivitta seemed to be quite generally unhealthy in 1976 with starvation and disease causing collapse in many areas both old and new. In the Tomah Mtn. area of Topsfield where the population had been high for several years, many larvae of H. guttivitta never developed much beyond the third instar.

Predators (especially Calosoma spp.) and to a lesser extent, parasites had also built up and were taking their toll. Movement of Calosoma beetles was especially striking as they went in search of new food sources. This phenomenon was most notable in areas along the fringe of the older outbreak and especially at Silver Ridge and near East Musquash Lake (Topsfield) and West Musquash Lake (Talmadge).

Light trap collections from Marion yielded high numbers (as many as 30 per night) of the hymenopterous pupal parasite Cratichneumon sublatus in early July 1976, the first time this had been noted in our traps. Smaller numbers of this parasite were present in light trap catches again in 1977.

Pupae of Heterocampa were difficult to find in late season checks in 1976 in spite of severe defoliation that year and in many stands none were found. The healthier populations seemed to be to the west where H. biundata predominated and here defoliation ranged from trace to very light in 1976. Populations of A. rubicunda, however, were still high in 1977 especially in Beddington and in susceptible stands from Old Town to Enfield where 1976 defoliation of red maple ran as high as 100%. Late season checks revealed overwintering pupae of this species to be fairly abundant in these areas in 1977. This trend is not surprising in view of the fact that in previous outbreaks A. rubicunda populations tended to hang on for a year or two after the Heterocampa populations had collapsed.

In 1977 a series of 15 damage assessment plots were established in "epicenter" and secondarily infested stands in southern Aroostook County and in Washington County, Maine. Designation of "epicenter" and secondary infestations was based on the year of infestation. Epicenter applies to those areas where defoliation was first apparent. Secondary refers to those areas with subsequent defoliation. In Aroostook County the initial defoliation was in 1974 on Silver Ridge; additional areas were defoliated in 1975 and 1976. In Washington County the initial defoliation was noted in 1974 with additional areas defoliated in 1976.

The data show that mortality was confined to beech in Aroostook County. In Washington County mortality was confined to beech and hophornbeam (a minor coponent of some of the plots). No correlation between mortality and DBH or crown class was apparent. All stands were somewhat stressed due to poor site. In all cases the larger trees had been exposed to the beech scale-nectria complex

although not all trees showed incidence of scale and nectria. Active scale colonies were not noted in all plots.

Tabulation of data from five prism plots within each of the 15 effected stands shows the following results:

Epicenters (areas given in Appendix A - Map)

Aroostook County - Silver Ridge
Mean total basal area = 126 sq. ft./acre
Percent of total basal area which was beech = 78%
Percent of total basal area which was dead[1] beech = 55%

Washington County - T6R1NBPP, Topsfield (2)
Mean total basal area = 106 sq. ft./acre
Percent of total basal area which was beech = 59%
Percent of total basal area which was dead beech = 37%

Secondary Infestations (areas other then epicenters - see maps (Appendix A & B)

Aroostook County
Mean total basal area = 123 sq. ft./acre
Percent of total basal area which was beech = 76%
Percent of total basal area which was dead beech = 29%

Washington County
Mean total basal area = 108 sq. ft./acre
Percent of total basal area which was beech = 78%
Percent of total basal area which was dead beech = 12%

These stands will be monitored for at least five more years to determine the pattern of mortality over time. In addition to these 15 stands four permanent growth loss and mortality plots were established in Washington County in an attempt to correlate individual tree defoliation and growth loss.

There is at present another publication in press (LaBonte 1978); a study of the saddled prominent complex infestation in southwestern Maine from 1969-1972. Results of intensive monitoring of the growth loss and mortality during that infestation are contained therein.

Monitoring Prominent Populations (Surveys)

Various techniques were used in monitoring populations of the saddled prominent in Maine during the 1974-1977 outbreak but most were of a general nature. Routine field collections as a part of the Forest Insect Survey (F.I.S.) and light trap collections served to detect the presence of this insect complex and indicate distribution and abundance. Specific field surveys were then conducted in areas where a problem was indicated to determine where heavy defoliation could be expected.

The Maine Forest Service (M.F.S.) has conducted a general Forest Insect Survey since 1921 to monitor forest insect populations (Brower, 1953). Routine

[1] Trees were classified as dead if they failed to leaf-out in 1977

field collections as a component of this survey were expanded in 1941 and were aimed primarily at the spruce-fir resource although collectors were encouraged to make at least a portion of their assigned collections each season from hardwoods. The F.I.S. collections; which are made through tree beatings, jarrings or hand picking of insects from the foliage, provided the first indication of rising prominent, and green striped mapleworm populations in central and eastern Maine in 1974. Emphasis was then placed on hardwoods in these areas to provide an increased flow of information.

Since 1943, the M.F.S. has also conducted a light trap survey (Brower, 1953) to supplement the F.I.S. field collections. Between 20 and 25 light traps distributed over the State have provided us with a good indication of moth activity. When unusual moth activity was detected in one or more traps, then field collections in these areas were stepped up to determine whether or not an insect problem was imminent. Three of these trap stations (see Map App. B) were very important in detecting and monitoring our prominent outbreak in eastern Maine (see Table. App. G). As the prominent (Heterocampa spp.) is not highly attracted to light, small numbers (3-5 per night) of moths have been shown to indicate significant field populations of larvae.

Specific survey methods for population levels were not perfected to a point where a definite correlation to defoliation could be made although an approximate relationship was established. The best indicator of population levels prior to defoliation involves the numbers of eggs present on the foliage. In areas where a significant population of Heterocampa was indicated, egg counts were made in mid June (15-20). Several points were arbitrarily selected in each stand and a series of leaf clusters collected from the mid crown of five trees (lower crown in the case of tall trees). A total of 25 leaves were then randomly chosen to represent each sample point and the eggs on each counted. From 1-2 eggs per leaf on the average indicated potential moderate to severe defoliation during the current season (July). An average of over 2 eggs per leaf indicated a severe to complete defoliation potential for the current season. Our experience seemed to show that the higher counts were often less indicative of a problem than those in the 1-2 category because at the higher levels, populations frequently died out before defoliation became complete (through parasitism, disease, etc.). The only other survey used to indicate infestation levels was the pupal survey taken in August or September but this survey did not work out well for our purpose. Pupal surveys which were used consisted of a random search for pupae in the duff beneath trees infested that season. Finding pupae was often difficult. Where healthy pupae were found a potential problem was indicated for the next season but even where pupae were not found a problem sometimes developed. The reason for this discrepancy may be that pupae occur only in certain pockets which were not sampled or an influx of moths into the area the next season changed conditions. This method needs further study.

Determination of the Age of Infestation

A checklist of steps used to determine how long a prominent outbreak was present in a new area is as follows:

1. Forest Insect Survey collection records for the area were checked.
2. A survey was made of woods operators in the area. These workers were frequently more aware of insect conditions than thought. They were

frequently helpful in pointing out when the "bugs" or "worms" first appeared and how many years ago the trees were first stripped.

3. Checking fallen leaves to see if last year's leaves were fed on. The presence of frass (granular, corn meal-barley sized greenish insect waste) accumulation should also be evident if defoliation was heavy.
4. Use of an increment borer. Reduced growth indicated stress which might have been due to insect defoliation.

Infestations usually last 1-3 years-rarely more.

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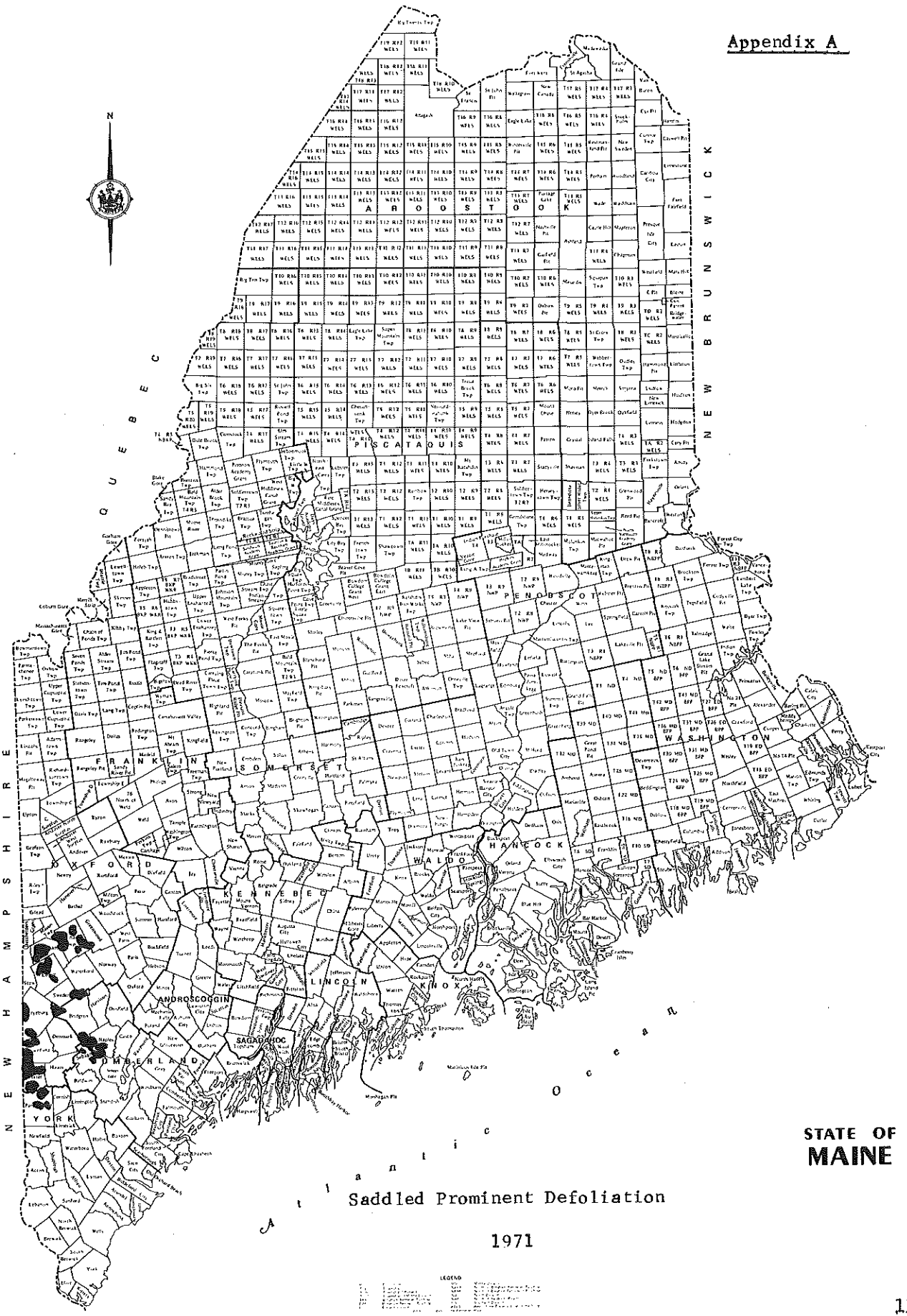
APPENDICES

Appendix A

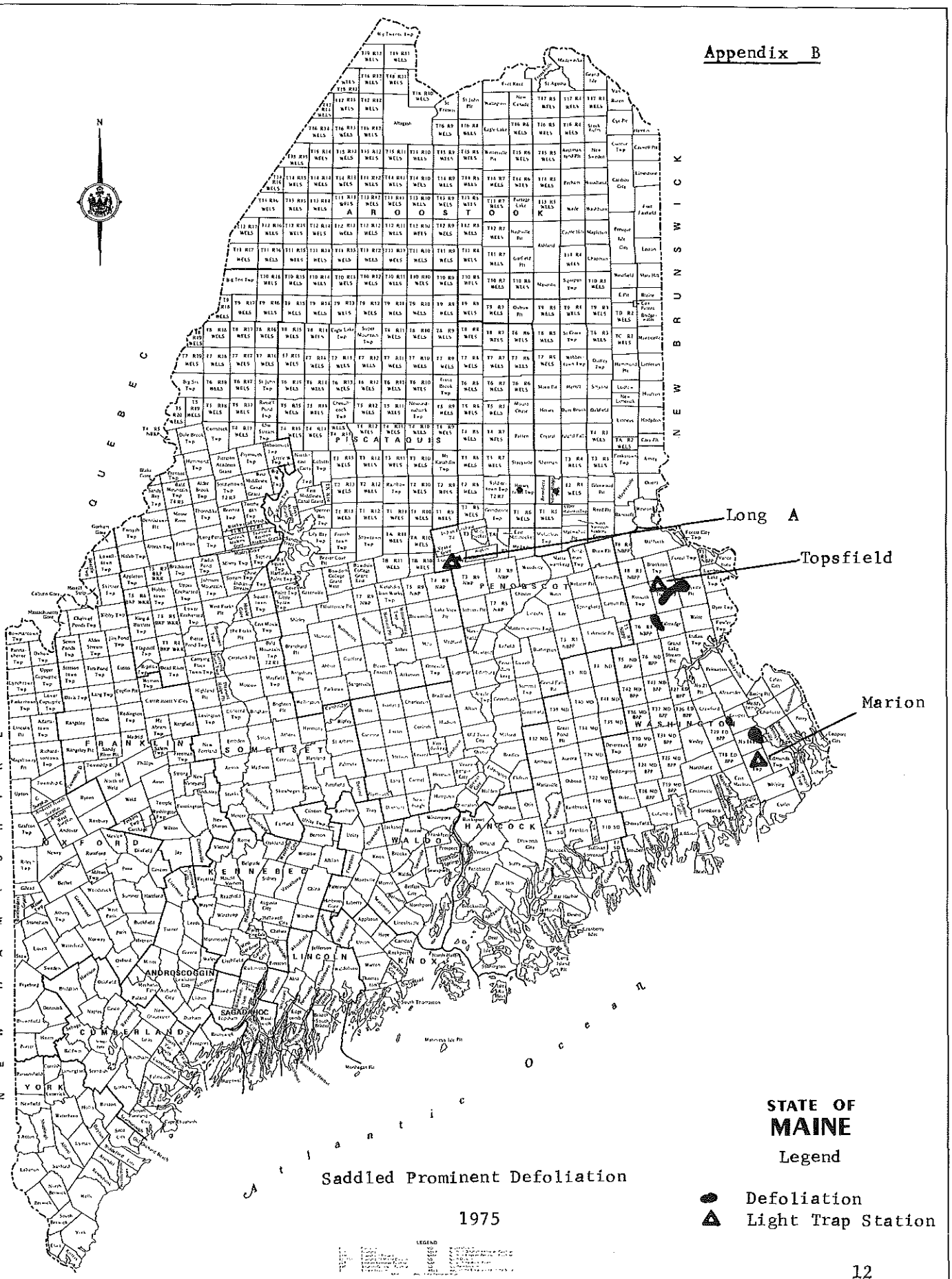


STATE OF
MAINE

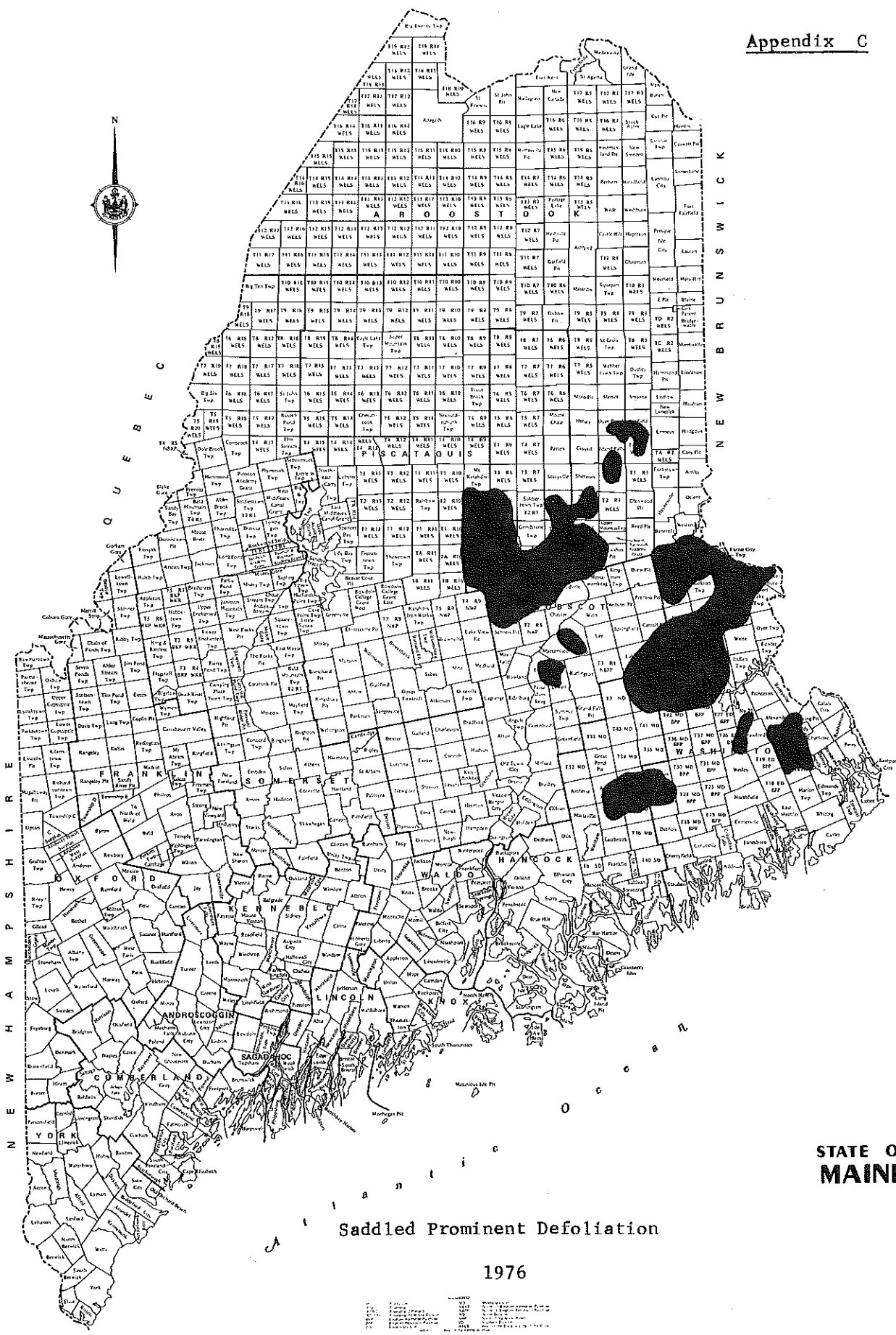
Saddled Prominent Defoliation

1971

Appendix B


Long A
Topsfield
Marion
STATE OF
MAINE
Legend
Defoliation
Light Trap Station
Saddled Prominent Defoliation
1975
QUEBEC
NEW BRUNSWICK
NEW HAMPSHIRE
PISCATAQUIS
AROOSTOOK
PENOBSCOT
WASHINGTON
HANCOCK
WALDO
KNOX
LINCOLN
SAGADAHOC
ANDROSCOGGIN
KENNEBEC
SOMERSET
FRANKLIN
OXFORD
CUMBERLAND
YORK

Appendix C



STATE OF MAINE

Saddled Prominent Defoliation

1976

APPENDIX D

THE SADDLED PROMINENT COMPLEX
Identification of Full Grown Caterpillars

Large (1-1 1/2" long) free living 5th Instar (= Full grown) larvae.

1. Larvae with less than 3 pairs of prolegs* - Move by looping or humping action
   Geometridae such as Lambdina sp.
1. Larvae with more than 3 pairs of prolegs - Lay and move flat against surface. 2
   2. Caterpillars with horns or prominent spines. 3
      3. Pale green body tinged with white and with 7 darker green longitudinal lines and a coral red or orange head. Anisota rubicunda
      3. Body with a more brownish hue, two longitudinal pinkish lines on each side, head yellow, green or brown. Anisota virginiensis
   2. Caterpillar without horns or prominent spines. 4
      4. Hairy caterpillars with jet black heads, yellow or orange neck band, longitudinal black and yellow striping. Datana ministra
      4. Non hairy caterpillars - not as above. 5
         5. Brightly colored larvae with a solid yellow-brown head and a red hump on the 8th abdominal segment and a series of longitudinal dark lines, gregarious. 6
            6. 3 narrow black dorsal lines. Symmerista leucitys
            6. 5 narrow black dorsal lines. S. caniscosta
         5. Generally greenish or yellow brown larvae with a system of dorsal markings but no longitudinal dark lines. Solitary feeders. 7
            7. Head normally dark brown, notched on top, body green with blush white dorsal markings and variable dark brown lateral patches. Heterocampa biundata
            7. Not as above, Head not notched. 8
               8. Head grey, small but noticeable spines or tubercles which are the remains of the antlers, just behind the head. Body green with orange and other markings. Heterocampa umbrata
               8. Head green with darker vertical lines. 9
                  9. Yellow line on each side at or below the spiracles,** reddish markings more extensive, continuous and pronounced on the dorsal side Heterocampa manteo
                  9. Yellow or white lines, if present, on side above the spiracles. Dorsal surface a mixture of white and red of varying degrees but reddish color is seldom continuous. Some larvae of this species may be basically yellow brown - most are green. Heterocampa guttivitta
                  9. Yellow lines on sides slanting down toward rear. Anal prolegs held straight back like tails. Pink (or red) dorsal markings and lateral spots and pink (or red) markings on head. Fentonia marthesia (Cram.)

* Proleg = Unjointed leg-like appendage on the abdomen of larvae - Not true legs

** Spiracle = A breathing pore or opening. Usually visible as a tiny circle or spot about half way down on the side of each body segment.

APPENDIX E

HARDWOOD DEFOLIATORS

MISCELLANEOUS NOTES

	On oak	On R. maple	On other hardwoods *	Gregarious feeders	Eggs in clusters	Eggs single	Major component of outbreaks in Maine	Minor component	Common name
Anisota rubicunda		X	X	X	X		X		Rosy Maple Moth or Green-striped mapleworm
A. virginiensis	X		X		X			X	Pink-striped Oakworm
Datana ministra			X	X	X			X	Yellow-necked caterpillar
Symmerista leucitys			X	X	X			X	Orange-humped Mapleworm
S. canicosta	X			X	X			X	Red-humped Oakworm
Heterocampa umbrata	X		X			X		X	
H. manteo	X					X		X	Variable Oak Leaf Caterpillar
H. biundata			X			X		X	
H. guttivitta	X		X			X	X		Saddled Prominent
Fentonia marthesia		X	X						

* Beech, Sugar Maple and Yellow birch primarily.
Checks in this table refer to most common records only.

Notes

Anisota spp. - Pupa much more spiny than others. Rings of spines around body giving it a rough feeling. Moths (males) highly attracted to light.

Anisota rubicunda - Moths pink and yellow - males most active and may fly some distance, females do not fly far. Mostly males in light trap collections. Eggs in clusters of from 8-40, yellow at first, then darkening to grey before hatching. Average egg cluster from 10-12. Larvae as in key except that in the 1st and 2nd instars their head is black. The red head appears in the 3rd instar. Few eggs and no larvae were found on sugar maple and no feeding was noted.

Heterocampa spp. - Moths nondescript grey to grey-green for the most part with white and dark markings. Eggs pale green at first then darkening to grey before hatching, laid singly. All larvae with

Heterocampa spp. (cont'd.) - antlers behind the head in at least the first instar and also with spines on the dorsal surface of abdominal segments at this state. First instar larvae of all species more brownish with a brown head. Pupa without rings of spines - smoother. Moths (males only) moderately attracted to light. Larvae of these species apparently produce a caustic chemical which can cause the skin to slough off from the fingers of anyone handling excessive numbers. Did not feed on red maple and only an occasional egg was found. Beech seems to be the favored host. Generally feed heaviest on hill tops first and then down the hillside to lower stands.

H. biundata - Horns or antlers retained prominently up to and through the 3rd instar but not distinct from the 4th instar on. This is the only species which retains prominent antlers beyond the tiny 1st instar stage. 1st instar larvae with light markings (yellow & green) on back. The head becomes deeply notched in the 4th instar for the first time.

H. umbrata - Antlers reduced to tubercles but distinct through the last larval stage. Much more orange on this species than others. Moth generally marked with more white than other species and may be confused with *Fentonia marthesia*.

GENERAL - Applies to all species included.

Eggs - Laid mostly on underside of leaves - Black eggs are diseased or parasitized.

Larvae - Do not feed on moose maple, ash or poplars. Pass through 5 instars (molt 4 times) before reaching maturity. Feed first as skeletonizers on underside of leaves and in later instars (3rd on) chew all but leaf veins. Many leaves chewed off and fall before entirely eaten - Messy eaters. Generally feed from tops of trees down.

Pupae - Formed in loose cells in the leaf litter or top 2-4" of soil. More abundant in and around small depressions beneath infested trees. No cocoons formed.

Moths - Males more active fliers than females. Males have a pectinate (comb like) antenna, females nearly simple and filament like.

Natural Enemies

Disease - Prevalent in starved populations - Larvae first restless (move aimlessly) then listless, bloat - then

Disease (cont'd.) - rupture and collapse. Remains of larvae can be seen drooping from twigs and branches or plastered on stones, etc. This is the most common cause of population collapse (starvation followed by disease).

Parasites -

Egg - Trichogramma minutum Riley - many parasites from each egg.

Telenomus coelodasidis Ashm. - single parasite from each egg.

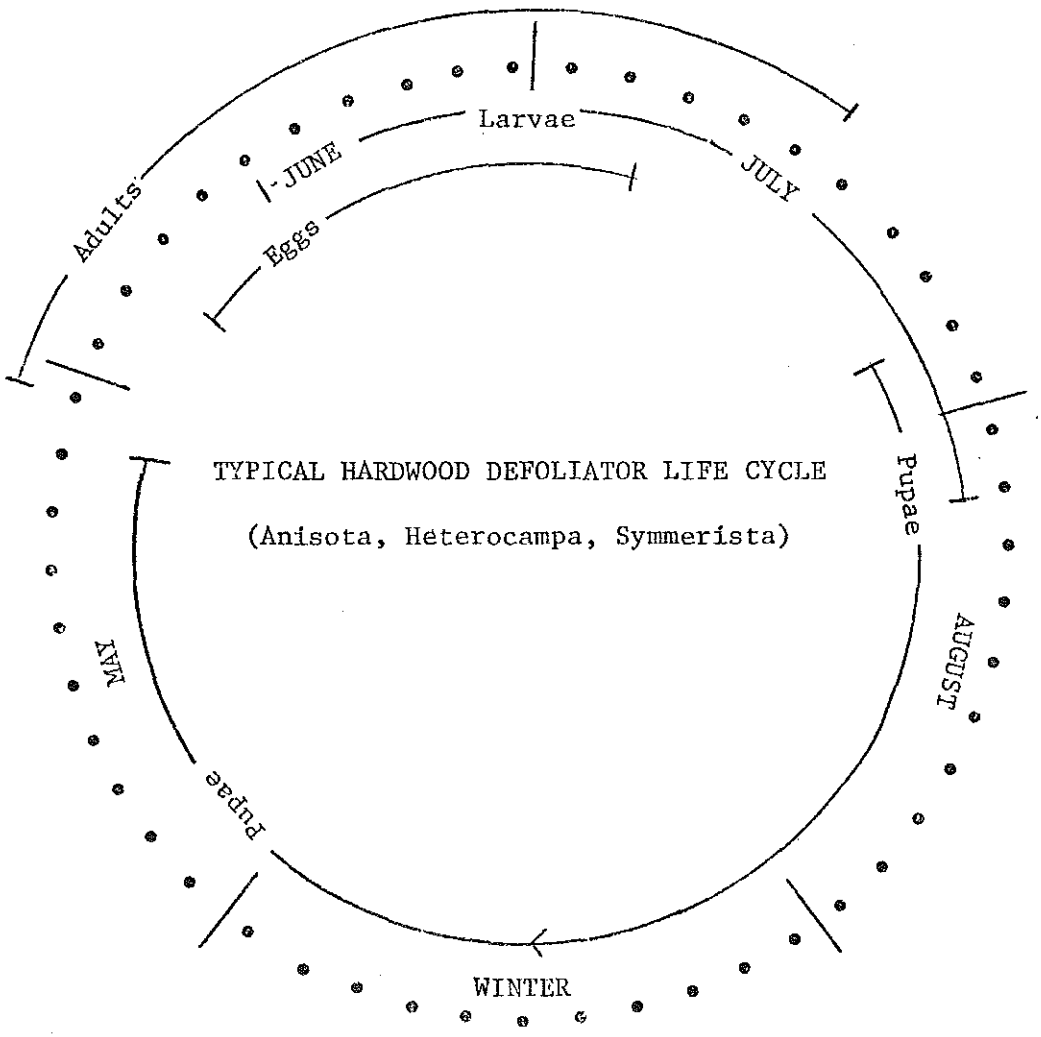
Pupa - Cratichneumon sublatus (Cress.) - very common in Maine. Large numbers seen flying in infested areas. Caught in light traps & Malaise traps.

Predators -

Mammals - Skunks and other rodents - Feed mostly on pupae - Some areas beneath infested trees are worked up so much that they look as though rototilled.

Birds - Ravens, crows (scratch in duff) feed on pupae. Many others which feed on larvae.

Insects - Ground Beetles, especially the large species Calosoma frigidum (most common) & C. calidum. Stink Bugs (Podisus spp. primarily) P. modestus.



TYPICAL HARDWOOD DEFOLIATOR LIFE CYCLE

(Anisota, Heterocampa, Symmerista)

SADDLED PROMINENT CATERPILLAR
Heterocampa guttivitta (Walker)

Description

Adults of the saddled prominent caterpillar are brownish-gray moths, with a wing spread of 1-1/2 to 2 inches. They emerge through most of June from pupae that passed the winter within the upper 2 inches of soil and leaf litter.

Eggs are laid individually and mostly on the underside of hardwood leaves from mid-June to early July. Hatching takes place after 9-10 days. The majority of the eggs usually have hatched by the last part of June in Maine.

Larvae, at first, appear as very tiny reddish-brown "antlered", spiny caterpillars. When the larvae molt for the second stage they lose the "antlers" and are smooth-skinned, except for 2 small horns behind the head. During later stages they lose these horns and are generally of a yellowish-green color. The last stages have a prominent saddle-shaped patch of contrasting red to brown colors on the mid-back. At maturity, some 5 weeks after hatching when the larvae are about 1-1/2 inches long, they drop or crawl to the ground to pupate.

Habits and Damage

Stripping of hardwood stands appears to take place suddenly during the latter part of July and in August. However, feeding by the first few stages of the caterpillars usually goes unnoticed. Upon hatching, the tiny larvae are found feeding on the underside of the leaves where they merely skeletonize small patches. The second & third stages then start feeding along the leaf margins and start to consume entire leaves except for the larger veins and stems. As they grow larger the larvae accelerate their consumption of food with much wasteful feeding, and when present in large numbers cause rapid defoliation.

Beech and sugar maple are the preferred hosts, but birches and oaks are also severly defoliated. Poplar, red maple and ash are completely avoided by the caterpillars. During the western Maine outbreaks of 1970 and 1971 yellow birch suffered the most damage, especially on recently logged areas. The eastern outbreaks of 1974 to 1976 seem to have caused more severe damage to beech, especially where the beech scale-Nectria complex had previously weakened the trees. Two successive years of severe defoliation may cause some die-back or tree mortality of already weakened trees on poor sites. Heavy defoliation is also believed to be responsible for lowering the sap yield in sugar maple orchards. In resort or recreational areas large numbers of caterpillars and their droppings can be a real nuisance.

Outbreaks seem to appear suddenly. However, heavy infestations usually subside after one or two years in any one location. NATURAL CONTROL factors such as starvation, disease, parasitism, and predation combine to bring about a sudden collapse of these outbreaks.

Control (Chemical)

Sevin 4-Oil and Sevin 80S are registered and recommended for the control of the saddled prominent. Ground-sprayer applications which would cover the underside of the foliage should be started sometime during the latter part of June after the majority of the eggs have hatched. Aerial applications to be most effective, should be made after the larvae have moved their feeding sites from the underside to the margin of the leaves where they will be exposed to the spray deposit. The majority of the larvae will usually be feeding along the leaf margins after the first week of July.

Caution

Sevin (carbaryl) should be used strictly according to label directions and precautions for your own protection.

Department of Conservation
Bureau of Forestry
(100)

State Entomologist's Office
Augusta, Maine
September 1976

APPENDIX G

LIGHT TRAP DATA (MOTHS)*

Heterocampa guttivitta only

Date	1973			1974			1975			1976			1977	
	Long	Tops.	Mar.	Long	Tops.	Mar.	Long	Tops.	Mar.	Long	Tops.	Mar.	Tops.	Mar.
Prior to June 10													16(5)	53(8)**
10										19			3	3
11													5	4
12													5	11
13													5	3
14										11				31
15										34			1	73
16										20				72
17														33
18										27				2
19													1	5
20													1	38
21														20
22											35		2	4
23										90	4	42		9
24										2	3	70	2	66
25										7	46	61	1	44
26							4	9	23		4	4		26
27							14	2	5		2	7		9
28							16	2	8	13	1	11		3
29							11	13	4	11	17	14		11
30							8	3	2	12	20	8		
July 1				7			9	9	6		2	6		18
2					3		5	3	7		3	1		1
3				3			1	3	6			13		3
4					1		2	6	7	1	1	4		6
5									14		2	2		10
6									6	5				12
7			1	1			2		2	2				9
8				1			2	1	4		2	2		
9				3					4		1			
10								2			1	1		
After July 10			1	4	4		27	3	6					
Totals			2	19	8		101	55	104	254	144	246	42	479
Annual Totals (Av. per night)	2(1)			27(2.4)			260(13.6)			644(26.9)			521(14.9)	

* Data from only 3 of our operational light traps either within or near the infested area are included. Those traps were located in Long A Twp., Topsfield and Marion (see Map, Appendix B). The Long A trap was not operated in 1977.

** The number in ( ) refers to the number of nights represented.