

Gypsy Moth Egg Mass Sampling How to quantify potential defoliation for the following year

Naja Kraus Forest Health Scientist Bureau of Invasive Species and Ecosystem Health Division of Lands and Forests October 21, 2020

Planning

Choose area, management threshold, learn methodology, when to sample



Learn Method for Egg Mass Sampling in NY

- Field Protocol for Sampling Gypsy Moth Egg Masses
 - Based on USDA Forest Service Publication
 - Sequential sampling plans for estimating gypsy moth egg mass density (Fleischer et. al. 1992)
- Objective: to determine if gypsy moth population numbers in sampled stands fall above or below chosen management threshold

FIELD PROTOCOL FOR SAMPLING GYPSY MOTH EGG MASSES

New York State Department of Environmental Conservation- Forest Health & Protection Naja E. Kraus- October 2005

This recommendation is based largely on the following two USDA Forest Service publications: Sequential Sampling Plans for Estimating Gypsy Moth Egg Mass Density (Fleischer et al. 1992) and Gypsy Moth Egg Mass Sampling for Decision Making: a Users' Guide (Liebhold et al. 1994).

OBJECTIVE:

The purpose of this sampling technique is to determine if gypsy moth above or below a chosen management threshold.

SEQUENTIAL SAMPLING METHOD:

Sequential sampling plans help allocate labor when determining if chosen management threshold density for an area. Areas with very low least amount of sampling, as a decision may be reached after sampling vary from 4-9 plots for continually forested habitats and vary from t urban/suburban habitats depending on management threshold.

SURVEY PLANNING

First the areas of concern need to be identified. This may be based boundaries, ecosystems, areas of special concern, areas that have been poor site quality that are more likely to be affected by defoliation Delineate the priority area(s) to be sampled and distribute the sample s

CHOOSE MANAGEMENT THRESHOLD:

- 250 egg masses per acre to prevent
 - > 500 egg masses per acre to prevent Noticeable Defolia
 - > 1000 egg masses per acre to prevent Likely Tree Morta

EQUIPMENT NEEDED:

 Bare essentials: Binoculars or spotting scope (45° angled zoon experied recommended) was tripod, Personal Digital Assistant (i.e. IPAQ, datalogger) or paper data sheets with clipboard &

pencil, gypsy moth sequential sampling table(s), sampling protocol, compass, GPS, site map,

Noticeable Caterp



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Important Links All You Ever Wanted to Know about Gypsy

Gypsy Moth Egg Sampling Protocol (PDF, 229 KB)

Moths (PDF, 1 MB)

Egg Sampling Protocol Presentation (PDF, 478 KB)

Links Leaving DEC's Website

Pest Alert for Gypsy Moth

Sequential sampling method

- A sequential sampling plan helps to allocate labor
 - balance number of samples to increase precision
 with cost of taking additional samples
- Site sample may vary from 4 to 9 plots
- Very low and very high populations require the least sampling
- More sampling is required in areas close to management thresholds
- Different tables for forested and urban/suburban habitats (>1 house per 10 acres)





Choose Survey Area

Identify area of concern

- Geographical boundaries
- Ownership
- Ecosystem
- Areas of Special Concern
 - Previously defoliated
 - Poor site quality
- Personal Choice





Choose Management Objective

USDA Forest Service (Liebhold et al 1994)

Management Objective

To prevent noticeable caterpillars

To prevent noticeable defoliation (>30% defoliation) 500 egg masses/acre or growth loss (>40% defoliation)

To prevent likely mortality (> 60% defoliation)

1000 egg masses/acre

Egg Mass Threshold

250 egg masses/acre



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6

When to sample

- September to mid-April (egg masses present)
- After trees drop their leaves
- Before snow covers the eggs on the ground
- Before new egg masses start to look weathered like old egg masses
- It is easier to see egg masses with good light and under dry conditions
 - Best in good weather conditions when the sky is clear & sun is overhead
 - Try to avoid poor weather conditions with dim lighting, long shadows, precipitation and wet bark.



Egg Mass Sampling Setting up your plots



Choosing Plot Center

- Plot should lie within a forested area
- Contain susceptible host species
- Be more than 100 feet from the forest edge
- 1st plot center
 - Generated random coordinates
 - Or walk 130 ft (40 m, 2 chains) perpendicular from the nearest road or trail in the area you wish to sample.
- Additional plots
 - Walk 100 ft (30 m, 1¹/₂ chains) in direction noted on random direction table.
 - If the direction takes you out of the desired forest type then use the next direction noted in the table instead.







Random Direction Table

Random Direction Table¹

The first plot should be chosen by walking 130 ft (40 m, 2 chains) perpendicular from the nearest road in the area you wish to sample. If random coordinates were generated for sampling then that should be your first plot location. For the next plot, locate today's date on the table below and walk 100 ft (30 m,1½ chains) in the direction noted and place a flag there as plot center. Today's date is the starting point; continue down the table to choose the walking direction for each additional plot sampled. If the direction takes you out of the desired forest type (i.e. into a conifer stand, cliff edge, road or swamp) then use the next direction instead.

Date	Direction	Date	Direction	Date	Direction	Date	Direction
1	NE	15	SE	25	Е	-	N
2	SE	16	NE	26	SE	-	SW
3	N	17	E	27	NE	-	W
4	NW	18	N	28	SE	-	NW
5	SW	19	NW	29	NE	-	SW
6	S	20	N	30	Е	-	W
7	S	21	W	31	N	-	SE
8	SE	22	S	-	N	-	S
9	SW	23	W	-	SW	-	E
10	W	24	W	-	W	-	S
11	S	Data	to 1 for	-	SW	Detawa	to 25 for
12	Е	Return	1 to 1 10r	-	NW	Return	litional
13	E	dira	ations	-	NW	auto din	
14	NE	ane	cuons	-	NE		ecuons



Semi-random Cardinal Path

Developed by Scott Costa, University of VT, Entomology Research Lab



Layout your plot

- 18.6 ft (5.7 m) radius circular plot
- Plot area = 1/40 acre (0.01 ha)
- Set up flags at center and 4 cardinal directions





Equipment

Bare essentials & helpful extras



Gather Survey Equipment

- Binoculars or spotting scope & tripod
- Data collector or paper data sheets with clipboard & pencil
- Sequential sampling table(s), random direction table & sampling protocol
- GPS, compass & site map
- 18.6 ft. (5.7 m) tape/string
- 5 bright color stake flags
- Small ruler to measure egg masses







Survey Equipment - Helpful Extras

- Tally counters
- Plastic ground cloth (using binoculars)
- Camp chair (using spotting scope)
- For Safety:
 - First aid kit
 - Cell phone or radio
 - Orange vest
 - Hardhat





How to Count Egg Masses

All egg masses within each circular plot must be counted



Egg Masses

- Eggs laid in late summer
 - Female covers eggs with abdominal hairs
 - Size depends on health of female
 - $\sim 25 \text{ mm}$ long for healthy egg mass
 - \sim 600-700 eggs per egg mass
- Usually deposited in a slightly sheltered location (NOT necessarily host trees)
- Embryos develop within 4-6 weeks to fully formed pharate larvae & overwinter in this stage
- CAUTION: Some people have allergic respiratory and skin reactions to gypsy moth parts





New vs. Old Egg Masses

New Egg Masses Old Egg Masses Firm to touch Soft to touch (feel soft & spongy) (feel hard and full) Usually darker Usually dull or bleached beige, buff colored coloration Clearer eggs Opaque to dark (no larvae inside) colored eggs No holes or small Exit holes present parasitoid exit holes present



Counting Egg Masses- below 6 feet

- 1st count all egg masses on the ground & below
 6 ft. on trees
 - Count old & new <u>separately</u>
 - May be helpful to separate into quadrants
 - Examine all objects on the ground (i.e. on fallen branches or rocks).
 - You may need to move objects so all surfaces can be seen.











Eggs can be found



almost anywhere





Counting Egg Masses- above 6 feet

- 2nd count all egg masses above 6 feet
 - Count old & new <u>combined</u>
 - Use binoculars or spotting scope
 - Count only egg masses on portions of trees within plot circle
 - Count up to 50 then estimate in groups of 25
 - View trees from multiple vantage points
 - (bigger trees = more vantage points)
 - Egg masses may be on trunks or under branches
 - Avoid double counting



What data to collect & lots of Calculations!



Observer Name(s): NAJA KRAUS 11/15/2005 Date: THURMAN Site #: 1 County: WARREN Town: Forest Type: MIXED HARDWOODS GPS coordinates*: <u>18 589475E</u>, <u>4823612N</u> Elev: <u>1300 feet</u> * DEC uses UTM NAD 83 Management Threshold (egg masses/acre): $\Box 250$ \Box 500 **1**000 Habitat: ✓ continually forested \Box urban/suburban (≥ 1 house per 10 acres) (minimum: 4 plots, maximum: 10 plots) (minimum: 6 or 7 plots, maximum: 15, 22 or 25 plots)

Gypsy Moth Sequential Sampling Data Form

	Actual egg mass counts			Formulas to estimate % new			Cumulative # of egg
Plot	Egg masses o	on ground and	A11 egg	% new egg	# of new crown	Total # of new egg	masses [sum of egg
(1/40	lower portion	on of trunks	masses in	masses (D)	egg masses (E)	masses per plot (F)	masses found at all plots]
-acre)	Old (A)	New (B)	Crown (C)	B/(B+A)	C * D	B+E	F+F+F
1							
2							
3							
4							
5							
			<u> </u>	•			
25	~				~		~
Total ‡	# of egg mass	ses found:	Total	npled: Average # of egg masses/acre: [(total # egg masses/total # plots)*40]			
Above	Above management threshold? □ Yes □ No □ Undetermined						
Avera	ge egg mass l	ength (<i>meası</i>	ure 5 typical	egg masses):	□ small (< 20 mm)	□ average (20-30 mm)	□ large (> 30 mm)

Data Sheet (1) Basic Site Information

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Comments:

	Gypsy Moth Sequential Sampling Data Form								
Observ	ver Name(s):	NAJA K	RAUS			Date: 1	1/15/2005		
Site #: 1 County: WARREN					Town:	THURMAN			
Forest	Type: <u>MIX</u>	ED HARDW	OODS GP	S coordinates*	: <u>18 589475E</u> * DEC uses U	, <u>4823612N</u> JTM NAD 83	Elev: <u>1300 feet</u>		
Manag	gement Thres	hold (egg ma	sses/acre):	□ 250	□ 500	☑ 1000			
Habita	t: 🗹 c (mini	continually for mum: 4 plots, m	rested haximum: 10 pl	□ urba lots) (minim	.n/suburban (≥ 1 num: 6 or 7 plots, n	house per 10 acre naximum: 15, 22 or 23	es) 5 plots)		
Plot (1/40 -acre)	Actual egg mass counts Egg masses on ground and lower portion of trunks All egg masses in		Formulas to e % new egg masses (D)	# of new crown egg masses (E)	Total # of new egg masses per plot (F)	Cumulative # of egg masses [sum of egg masses found at all plots]			
1	8	10	28	B/(B+A)	C * D	B+E	F+F+F		
2	0	17	20						
3									
4									
5									
25			↓		Ų				
25									
Total #	Total # of egg masses found: Total # of plots sampled: Average # of egg masses/acre: [(total # egg masses/total # plots)*40]								
Above	Above management threshold? \Box Yes \Box No \Box Undetermined								
Averag	ge egg mass l 	ength (<i>measu</i>	ere 5 typical	egg masses):	□ small (< 20 mm)	□ average (20-30 mm)	□ large (> 30 mm)		

Comments:

Data Sheet (2) Count egg masses



23

Calculations (1)

- Determine % of new egg masses
 - Divide number of <u>new</u> ground egg masses by number of <u>all</u> (new & old) ground egg masses

	Actu	al egg mass cou	ints	Formulas to e	estimate % new		Cumulative # of egg
Plot	Egg masses c	on ground and	All egg	% new egg	# of new crown	Total # of new egg	masses [sum of egg
(1/40 -acre)	lower portion of trunks		masses in	masses (D)	egg masses (E)	masses per piot (r)	masses found at all plots
uere)	Old (A)	New (B)	Crown (C)	B/(B+A)	C * D	B+E	F+F+F
1		19	28	19/(19+8)			
1	°		20	= 0.70			

- If there are no egg masses in the understory you will need to go outside the plot to find egg masses to determine this percentage. Do not use these counts for the total egg mass count.
- If there are no egg masses in the understory outside the plot you will need to carefully count only NEW egg masses in the crown.



Calculations (2)

 Determine % of new egg masses in the crown
 Multiply number of all crown egg masses with % new egg masses (from ground count)

	Actu	al egg mass cou	ints	Formulas to e	estimate % new		Cumulative # of egg
Plot	Egg masses on ground and		All egg % new egg		# of new crown	Total # of new egg	masses [sum of egg
(1/40 -acre)	lower portion of trunks		masses in	masses (D)	egg masses (E)	masses per plot (F)	masses found at all plots]
	Old (A)	New (B)	Crown (C)	B/(B+A)	C * D	B+E	F+F+F
1	8	19	28	19/(19+8) = 0.70	28 * 0.70 = 20		
2							



Calculations (3)

Determine total number of new egg masses Sum new ground egg masses & new crown egg masses

	Actı	ual egg mass cou	ints	Formulas to e	estimate % new		Cumulative # of egg
Plot	Egg masses on ground and		A 11 a a a	% new egg	# of new crown	Total # of new egg	masses [sum of egg
(1/40	lower porti	on of trunks	All egg	All egg masses (D)		masses per plot (F)	masses found at all plots]
-acre)	$Old(\mathbf{A})$	Now (D)	$C_{rown}(C)$				
	Old (A)	New (B)	Clowin (C)	B/(B+A)	C * D	B+E	F+F+F
1	0		20	19/(19+8)	28 * 0.70	19 + 20	20
1	8		28	= 0.70	=20	= 39	39
2							



Gypsy Moth Sequential Sampling Data Form Observer Name(s): NAJA KRAUS Date: 11/15/2005 Site #: 1 County: WARREN Town: THURMAN Forest Type: MIXED HARDWOODS GPS coordinates*: 18 589475E , 4823612N Elev: 1300 feet * DEC uses UTM NAD 83 Management Threshold (egg masses/acre): $\Box 250$ \Box 500 **1000** Habitat: \square continually forested \Box urban/suburban (≥ 1 house per 10 acres) (minimum: 4 plots, maximum: 10 plots) (minimum: 6 or 7 plots, maximum: 15, 22 or 25 plots) Actual egg mass counts Formulas to estimate % new Cumulative # of egg Plot Egg masses on ground and % new egg # of new crown Total # of new egg masses [sum of egg All egg masses found at all plots] (1/40)lower portion of trunks masses (D) egg masses (E) masses per plot (F) masses in -acre) Old (A) New **(B)** Crown (C) F+F+F...B/(B+A)C * D B+E 39 19 28 0.70 20 39 8 1 2 24 30 47 86 8 0.75 23 3 20 25 0.83 21 41 127 4 7 21 20 0.75 15 36 163 4 5 25 Average # of egg masses/acre: Total # of plots sampled: Total *#* of egg masses found: [(total # egg masses/total # plots)*40] □ Yes \square No □ Undetermined Above management threshold?

Data Sheet $(\mathbf{3})$ Sample 4 plots & sum total # of new egg mases



Consult Sequential Sampling Table

- Consult sequential sampling table to determine if the stand falls above or below the chosen threshold.
- Continue sampling additional plots until a result is determined.





Sequential sampling table for Gypsy Moth egg masses at three management thresholds in continuously forested eastern hardwoods

Management	# of plots	Total nu	mber of new egg mass	es counted
Threshold	(1/40 acre)	Below threshold	Continuo comulina	Above threshold
(egg masses/acre)	sampled	STOP sampling	Continue sampling	STOP sampling
250	4	< 7	7 - 42	> 42
250 egg	5	< 13	13 - 48	> 48
masses/acre	6	< 19	19-54	> 54
"Noticeable	7	< 25	25 - 60	> 60
Cotornillors"	8	< 31	31 - 66	> 66
Caterphiars	9	< 37	37 -73	> 73
500	4	< 16	16 - 81	> 81
500 egg	5	< 28	28 - 94	> 94
masses/acre	6	< 40	40 - 106	> 106
"Noticeable	7	< 53	53-118	> 118
Defoliation"	8	< 65	65 - 130	> 130
Defonation	9	< 77	77 – 143	> 143
1000	4	< 19	19 – 178	> 178
1000 egg	5	< 44	44 -202	> 202
masses/acre	6	< 68	68-227	> 227
"Likely	7	< 93	93 - 252	> 252
Mortality"	8	< 117	117 - 276	> 276
Wortanty	9	< 142	142 - 301	> 301

Sample guide showing minimum numbers of plots (1/40 acre) that must be examined in an egg mass survey to permit site classification with respect to expected gypsy moth defoliation.



Gypsy Moth Sequential Sampling Data Form

Observ	ver Name(s):	NAJA K	RAUS			Date: 1	1/15/2005	
Site #:	<u>1</u> Cor	unty: <u>W</u>	ARREN		Town:	THURMAN		
Forest	Type: <u>MIX</u>	ED HARDW	OODS GP	S coordinates*	t: <u>18 589475E</u> * DEC uses U	, <u>4823612N</u> JTM NAD 83	Elev: <u>1300 feet</u>	
Manag	gement Thres	hold (egg ma	sses/acre):	□ 250	□ 500	☑ 1000		
Habita	t: 🗹 c (mini	continually fo mum: 4 plots, n	rested naximum: 10 pl	□ urba lots) (minin	nn/suburban (≥ 1 num: 6 or 7 plots, n	house per 10 acro naximum: 15, 22 or 2	es) 5 plots)	
	Actu	al egg mass cou	unts	Formulas to e	estimate % new		Cumulative # of egg	
Plot (1/40	Egg masses o lower portio	Egg masses on ground and lower portion of trunks		% new egg masses (D)	# of new crown egg masses (E)	Total # of new egg masses per plot (F)	masses [sum of egg masses found at all plots]	
-acre)	Old (A)	New (B)	Crown (C)	B/(B+A)	C * D	B+E	F+F+F	
1	8	19	28	0.70	20	39	39	
2	8	24	30	0.75	23	47	86	
3	4	20	25	0.83	21	41	127	
4	7	21	20	0.75	15	36	163	
5	6	22	31	0.79	24	46	209	
							, [
25	*		Ť		·		· ·	
Total #	# of egg mass	es found:	Total	# of plots sam	pled: Average # of egg masses/acre: [(total # egg masses/total # plots)*40]			
Above	management	t threshold?	□ Yes	□ No	□ Undetermine	ed		
Average egg mass length (measure 5 typical egg masses): \Box small \Box average \Box large(< 20 mm)								
Comm	ents:							

Data Sheet (5) Sample 1 more plot, sum total # of new egg masses & check sequential sampling table



Sequential sampling table for Gypsy Moth egg masses at three management thresholds in continuously forested eastern hardwoods

Management	# of plots	Total nu	mber of new egg masse	es counted
Threshold	(1/40 acre)	Below threshold	Continue constitue	Above threshold
(egg masses/acre)	sampled	STOP sampling	Continue sampling	STOP sampling
250	4	< 7	7 - 42	> 42
masses/acre	5	< 13	13 - 48	> 48
	6	< 19	19 - 54	> 54
"Noticeable	7	< 25	25 - 60	> 60
Caternillars"	8	< 31	31-66	> 66
Caterpinais	9	< 37	37 -73	> 73
500	4	< 16	16 - 81	> 81
500 egg	5	< 28	28 - 94	> 94
masses/acre	6	< 40	40 - 106	> 106
"Noticeable	7	< 53	53 - 118	> 118
Defoliation"	8	< 65	65-130	> 130
Defonation	9	< 77	77 - 143	> 143
1000	4	< 19	19 - 178	> 178
1000 egg	5	< 44	44 -202	> 202
masses/acre	6	< 68	68 - 227	> 227
"Likoly	7	< 93	93 - 252	> 252
Mortality"	8	< 117	117 - 276	> 276
Wortanty	9	< 142	142 - 301	> 301

Sample guide showing minimum numbers of plots (1/40 acre) that must be examined in an egg mass survey to permit site classification with respect to expected gypsy moth defoliation.



	Gypsy Moth Sequential Sampling Data Form									
Observ	ver Name(s):	NAJA K	RAUS			Date:1	1/15/2005			
Site #:	<u>1</u> Cou	unty: W	ARREN		Town:	THURMAN				
Forest	Type: <u>MIX</u>	ED HARDW	<u>OODS</u> GPS	S coordinates*	: <u>18 589475E</u> * DEC uses U	, <u>4823612N</u> JTM NAD 83	Elev: <u>1300 feet</u>			
Manag	gement Thres	hold (egg ma	sses/acre):	□ 250	□ 500	☑ 1000				
Habita	t: 🗹 c (mini	ontinually for mum: 4 plots, m	rested aximum: 10 pl	□ urba lots) (minim	n/suburban (≥ 1 num: 6 or 7 plots, n	house per 10 acre naximum: 15, 22 or 2;	es) 5 plots)			
	Actu	al egg mass cou	ints	Formulas to e	estimate % new	Cumulative # of egg				
Plot (1/40	Egg masses on ground and		All egg	% new egg	# of new crown	Total # of new egg	masses [sum of egg			
-acre)			masses in	masses (D)	egg masses (E)		masses found at an plots]			
· · ·	Old (A)	New (B)	Crown (C)	B/(B+A)	C * D	B+E	F+F+F			
1	8	19	28	0.70	20	39	39			
2	8	24	30	0.75	23	47	86			
3	4	20	25	0.83	21	41	127			
4	7	21	20	0.75	15	36	163			
5	6	22	31	0.79	24	46	209			
			J							
25	\sim		~		\sim					
Total #	Total # of egg masses found: 209 Total # of plots sampled: 5 Average # of egg masses/acre: [(total # egg masses/total # plots)*40] 1672									
Above	Above management threshold? Ves Do Undetermined									
Averaş	ge egg mass l	ength (<i>measu</i>	ere 5 typical	egg masses): 	□ small (< 20 mm)	□ average (20-30 mm)	□ large (> 30 mm)			

Comments:

Data Sheet (6) total # of egg masses, # of plots, average # of egg masses/acre, above mgmt. threshold?



Egg Mass Size

- Measure the length of 5 egg masses
- Determine if the average length is
 - > < 20 mm (small)</p>
 - > 20 30 mm (normal)
 - > > 30 mm (large)

- Small egg masses may indicate decreasing population
- Large egg masses may indicate increasing population



Gypsy Moth Sequential Sampling Data Form

Obser	ver Name(s):	NAJA K	RAUS			Date:1	1/15/2005			
Site #:	<u> 1 Co</u>	unty: <u>W</u>	ARREN		Town:	THURMAN				
Forest	Type: <u>MIX</u>	ED HARDW	OODS GP	S coordinates*	: <u>18 589475E</u> * DEC uses U	, <u>4823612N</u> JTM NAD 83	Elev: <u>1300 feet</u>			
Manag	Management Threshold (egg masses/acre): $\Box 250 \Box 500 \square 1000$									
Habita	Habitat: \square continually forested (minimum: 4 plots, maximum: 10 plots) \square urban/suburban (≥ 1 house per 10 acres) (minimum: 6 or 7 plots, maximum: 15, 22 or 25 plots)									
	Actu	al egg mass cou	ints	Formulas to e	estimate % new		Cumulative # of egg			
Plot (1/40	Egg masses of lower portion	n ground and on of trunks	All egg	% new egg masses (D)	# of new crown egg masses (E)	Total # of new egg masses per plot (F)	masses [sum of egg masses found at all plots]			
-acre)	Old (A)	New (B)	Crown (C)	B/(B+A)	C * D	B+E	F+F+F			
1	8	19	28	0.70	20	39	39			
2	8	24	30	0.75	23	47	86			
3	4	20	25	0.83	21	41	127			
4	7	21	20	0.75	15	36	163			
5	6	22	31	0.79	24	46	209			
25	~		~		~		~			
Total 7	Total # of egg masses found: 209 Total # of plots sampled: 5 Average # of egg masses/acre: [(total # egg masses/total # plots)*40] 1672									
Above	Above management threshold? ves No Undetermined									
Avera	Average egg mass length (<i>measure 5 typical egg masses</i>): □ small □ average ☑ large									
29	34	33	31	33	(< 20 mm)	(20-30 mm)	(> 30 mm)			

Comments: THIS SITE WAS MODERATELY DEFOLIATED IN 2004.

Data Sheet (7) Egg mass size



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34

Qualifiers

- This is not a 100% accurate method
- Weather, low spring temperatures, parasites, pathogens and other factors may cause significant egg and larval mortality
- Other factors to consider
 - levels of defoliation from previous years
 - number of years of previous defoliation (heavy defoliation rarely occurs more than 2 years in a row)
 - extent of defoliation in adjacent areas
 - length of egg masses
 - percentage of old vs. new egg masses



35



Departme

Submit your data

- Please email or mail your egg mass sampling results to NYSDEC Forest Health so that your data can contribute to our understanding of gypsy moth population levels throughout New York State.
 - NYSDEC Div. of Lands & Forests Forest Health 625 Broadway Albany, NY 12233-4253

Telephone: 518-402-9425 Fax: 518-402-9028 Email: foresthealth@dec.ny.gov

- An outcome where no defoliation is predicted is also of interest to us.
- Contact your local NYSDEC foresters or the NYSDEC Forest Health staff if you have any questions about this protocol.
- Thank you for your interest in our state forests!



Thank You

- Naja Kraus
- Forest Health Scientist
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- New Paltz NY 12561
- naja.kraus@dec.ny.gov
- •845-256-3001

For more gypsy moth information: https://www.dec.ny.gov/animals/83118.html Go to DEC website & search gypsy moth

Connect with us:

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