The-Pach Bulldozer:

GypsyMoth Larvae Host Preference

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Why Should You Care?

MORE SUSCEPTIBLE TO...



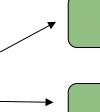
Leopold Trouvelot imported gypsy moth eggs from Europe in 1869.



They escaped his backyard and by the late 1880s, serious defoliation was being caused.



Defoliated trees use their energy to replace leaves, rather than photosynthesis.



disease

environmental stresses (drought)

reduced rates of growth



Name: *Lymantria* dispar dispar

Size: 2.2 inches

Time: May & June



second-growth leaves:

nutrient cycling is disrupted

Why Should You Care

Despite their size, gypsy moth caterpillars have the potential to wipe out a forest, especially in oak - dominant contiguous forest areas.

Trees would lean/fall over due to weakness.

hazards on roadways

unwanted obstacles around private properties

Repeated defoliation can kill a tree.

reduced oxygen

disruption of food chains

Does human disturbance affect them?

loss of food and habitat for animals

TIMBER HARVESTING

no forest = no timber harvesting

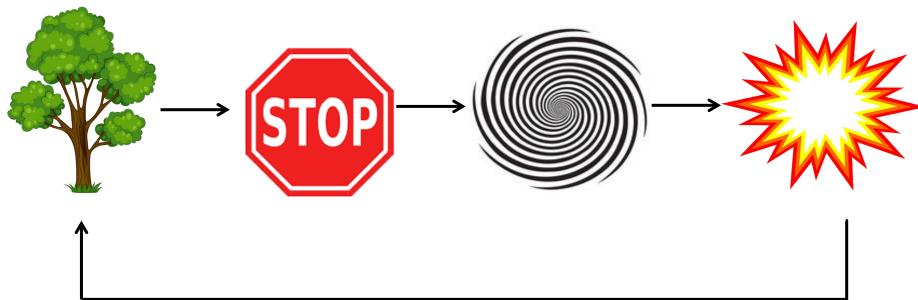
- Effects the economy negatively
- Logging provides for human needs
 (exceeds US\$20 billion per year)
- Paper products, furniture, structure and support for homes, buildings, etc.



Baculoviczonie Virus) (Lymantria dispar multicapsid nuclear polyhedrosis virus)

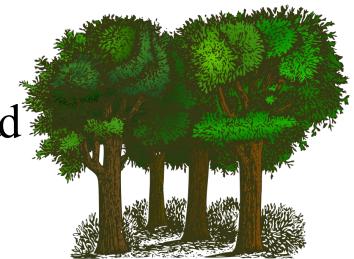






MY RESEARCH QUESTION:

Of trees infected with the baculovirus (Zombie Virus), do the numbers of dead caterpillars correlate with caterpillar host preference and/ or human use patterns?



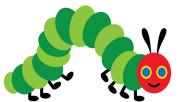
HYPC112-FSFS:

If the host is preferred the host is in by the caterpillar, then there will be a greater number of dead gypsy moth caterpillars on that tree.

location of lower h disturbance, there a greater number of gypsy moth catery on that tree.

if a host is preferred by a certain insect

the insect is bound to be found upon that certain host.



living organistray from human disturbance

destroyed homes, noise pollution, and pollutants.



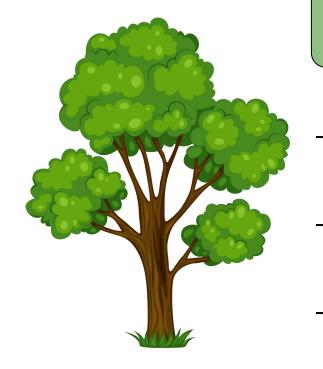


gypsy moth caterpillars' host preference

understand other potential hosts to monitor for gypsy moth damage.

Study Design

OBSERVATIONAL



favored

oak

beech

avoided

unfavored

yellow -poplar

VARIABLES

Human
Disturbance in
Area

Tree Species +
Level of
Preferability

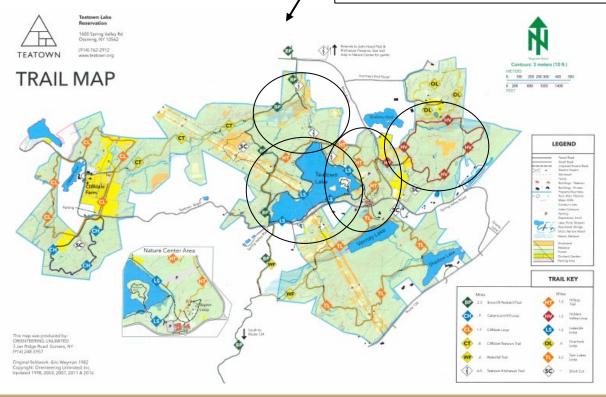
Surface Area of Tree

Distance from Caterpillars to Ground

Study Design Hidden Valley Loop - Low / Hilltop Trail - High Activity

Lakeside Loop - High Activity
Hidden Valley Loop - Low Activity

Briarcliff -Peekskill Trail - Low Activity







DBH = diameter at breast height

standardize counts on trees measured

Walked through all four trails:

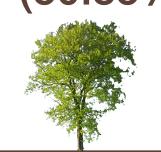
- Each species of tree was identified by leaves and bark.
- Caterpillars were accounted for with binoculars and a 360 view of tree.
- The diameter of the tree was measured with a DBH tape.



RESULTS: Prevalence Infect

44/59 30/59 1/43 OAK TREES INFECTEDECH TREES INFECTED WITH VIRUS (NF TREES INFECTED WITH VIRUS (F) (74.58%)

WITH VIRUS (NF (50.85%)



VIRUS (A) (2.33%)

RESULTS: Susceptibility



629 163

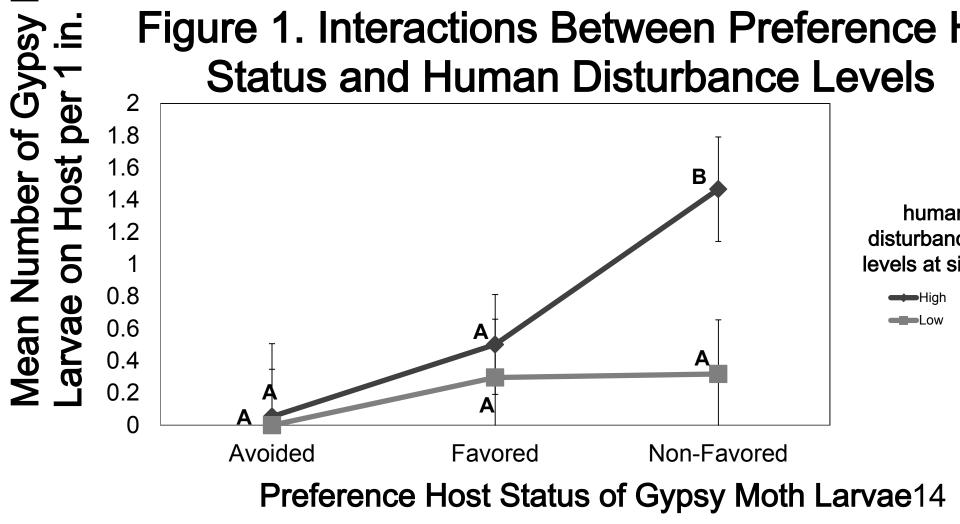
CATERPILLARSTERPILLARS IN HIGH **IN LOW** DISTURBANCE (79.42%) (20.58%)

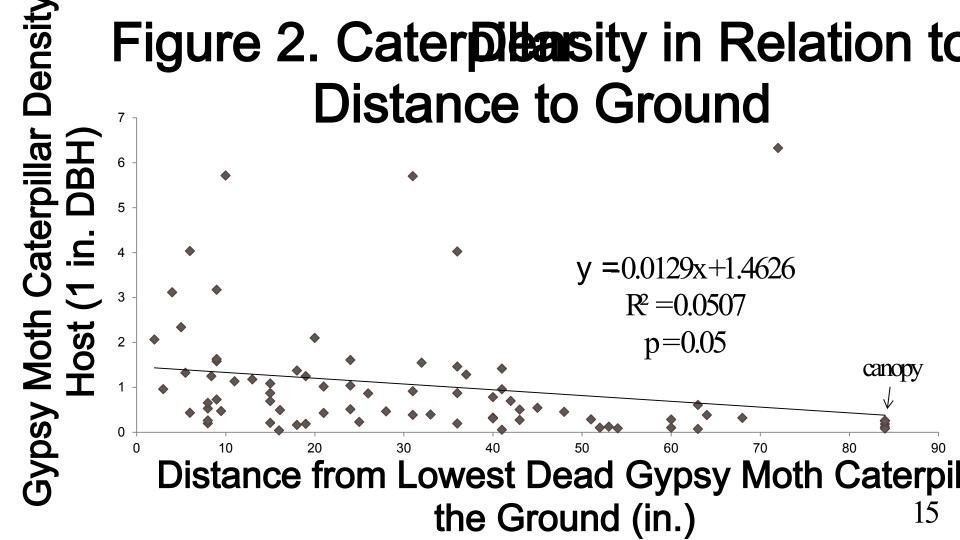
792 ATERPILLARS 301 480

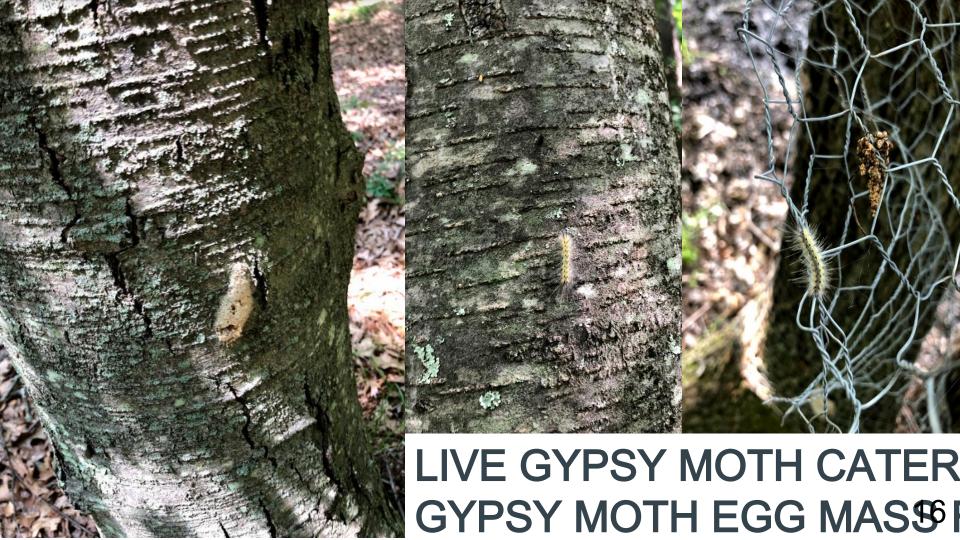
CATERPILLA SERPILLON OAK TREES AMERI (38.01%)^{BEECH TR} (60.61%

> YELLONOPLAR **TREES**

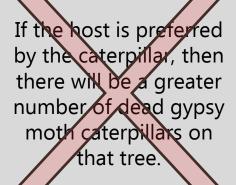
> > (1.38%)











Greater number of oak trees infected

Larger total of larvae on American
Beech trees than Yellow-Poplar and
Oak combined

DISCUSSI

location of lower human disturbance, there will be a greater number of dead gypsy moth caterpillars on that tree.

FALSE

Higher numbers of larvae in areas of high disturbance

Vines on trees in low disturbance = less surface area on the tree for larvae to crawl on

18



CONCLUSION

Maybe it isn't just about

TYPE the tree, but also the

SHARE the tree

YES	NO
Low branches	Vines on tree

need to travel less to get to leaves



CONCLUSION

HIGHER HUMAN DISTURBANCE

STRESS ON THE TREES

WEAKENS THE TREES

MORE SUSPECTIBLE TO CATERPILLARS

SOURCES OF E

- 1. Caterpillars that had fallen off of the tree
- 2. Caterpillars that were hidden due to branches and intertwining trees
 - 3. Not finding any yellow-poplar trees in one of the four trails





FUTURE STUD

1. Test infected caterpillars by seeing which leaves they prefer (oak or beech)

2. Create an artificial tree structure with DBH, height, and species as a control, and with branch heights as a variable to test if they have a preference in structure



ACKNOWLEDGEN



MyParents



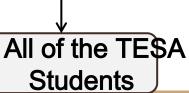
Dr. Danielle Begle**M**iller

Dr. Michaelbbo









ANY QUEST

