

# ECONOMIC ANALYSIS

## Cooperative Eradication Gypsy Moth Project For Indiana – 2024

The benefit/cost ratio for this project is estimated to be **53:1** if the site is treated.

The benefit/cost ratio for this project is estimated to be **1:56** if the site is not treated.

### Assumptions

Economic analysis of the Slow-The-Spread (STS) strategy has been done by Leuschner 1991 and Leuschner et al. 1996. In the 1991 analysis, impacts were assumed on the first year of infestation only. In the 1996 analysis, impacts were assumed during every year of the infestation. Jeff Mayo (Forest Biometrics and Forest Economist, North Carolina) converted the output of the Leuschner analysis, so benefits are stated in “dollars per mile of Transition Line”. Thus, calculations of benefits can be made for specific STS projects. For each mile that the rate of spread is reduced, the annual value of benefits that accrue are \$3,775 (1991 analysis) or \$29,315 (1996 analysis) per mile along the Transition Line (communication with Donna Leonard - STS Program Coordinator, 2000-2019). The Transition Line is estimated to be the 10-moth line calculated by the STS Program. For this project in Indiana, assumptions are that the rate of spread will be reduced by 60% (from 12.1 miles/year to 4.8 miles/year) (communication with Donna Leonard – STS Program Coordinator, 2000-2019), and impacts will be for the first year of infestation only (a conservative estimate). Indiana’s average rate of spread is 3.68 miles per year for the last 4 years - Source: [Slow The Spread, Decision Support System \(http://yt.ento.vt.edu/da/\)](http://yt.ento.vt.edu/da/), go to Reports Tab, Spread Rate Detail.

Although the treatment site is located south of the Slow-The-Spread Action Zone and is proposed for eradication, the economic analysis of the STS strategy will be used for this site’s economic analysis. If the site is not treated, the Transition Line (or 10-moth line) would move southward, and the overall length of the Transition Line would increase, and the rate of spread would increase. This would result in reduced benefits that would be accrued.

### Benefits If Treated

- \$27,558 per mile of Transition Line (\$3,775/mile of reduced spread rate x 7.3 miles of reduced spread rate)
- 150.4 miles of Transition Line based on the 10-moth line.
- \$4,144,723 Total benefits

### Costs If Treated

- \$43,542 = Mating disruption treatment (6,124 acres x 1 application (6 g) @ \$7.11/acre/application)
- \$34,834 = Administrative costs (80.0% of treatment costs)
- \$78,376 = Total cost

### **Benefit to Cost Ratio If Treated = 53:1**

### Benefits If Not Treated

- \$78,376 saved in 2024 for treatment costs.

### Costs If Not Treated

- \$4,389,438 = If the Transition Line moved south to the Wayne County infestation, the resulting Transition Line for Indiana would be approximately 309.68 miles (See Map 1). This increase of 159.28 miles in the length of the line would result in an increased rate of spread of gypsy moth and the loss of \$4,389,438 in benefits (\$27, 558 per mile of Transition Line x 159.28 miles).
- Unknown costs = Wayne County would be quarantined, impact to citizens and business.

### **Benefit to Cost (Loss of Benefits) Ratio If Not Treated = \$78,376: \$4,389,438 = 1:56**

References:

Leuschner, William A. 1991. Gypsy moth containment program economic assessment. Final Report. USDA Forest Service, Northeastern Area. 114 pp.

Leuschner, William A., John A. Young, and F. William Ravlin. 1996. Potential benefits of slowing the gypsy moth's spread. Southern Journal of Applied Forestry 20:65-73.

Map 1. Comparison of the 2023 10-moth line to the potential 10-moth line without treatment of the Wayne County site.

