

## What Is Spruce Budworm?

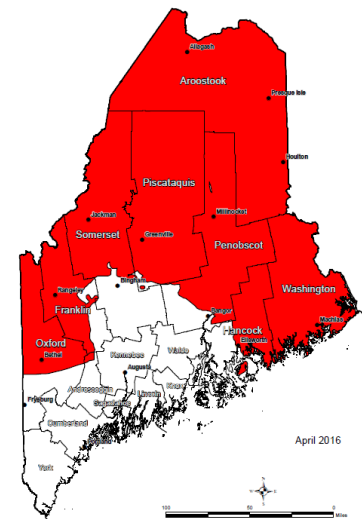
The eastern spruce budworm (*Choristoneura fumiferana*) is a native insect that causes major damage to Maine's spruce-fir forests on a regular cycle. Spruce budworm caterpillars feed on the buds and needles of fir and spruces. Under normal (endemic) conditions populations of this insect are so low that spruce budworm is hard to find. Periodically the budworm undergoes a population outbreak (epidemic) and becomes so abundant that serious feeding damage occurs. During epidemics defoliation is heavy enough that affected trees produce very little wood and many thousands of trees die.

- A native moth
  - Undergoes complete metamorphosis
  - Adult = moth
  - Immature = caterpillar (causes damage)
- Caterpillar eats needles of fir and spruce trees (hosts), eating some within the bud before the needles expand (budworm)
- Spruce budworm is always present in Maine's spruce-fir forests
  - Usually hard to find
  - Every 30-60 years populations outbreak, building to epidemic-levels in sync with maturing hosts
  - Epidemic-level populations persist for many years



## What Happens During a Spruce Budworm Epidemic?

- Caterpillars and moths become abundant.
- Caterpillars eat conifer needles.
  - Favorite foods: **balsam fir, white spruce, red spruce, black spruce**, other conifers
- Feeding by the caterpillars leads to tree damage and death.
  - Damage includes
    - Defoliation
    - Top kill (after several years of heavy feeding)
    - Tree mortality (after about 5 years of heavy feeding)
  - Weakened trees not killed by budworm are more vulnerable to other insects (bark beetles and wood borers) and diseases (root rots). This can cause additional loss of wood and tree mortality.
- Direct impacts to trees and forests are most severe in northern and Downeast Maine.
  - Makeup of the forest is changed (types and ages of trees in the forest)
  - Wildlife is affected (some benefit, some lose)
  - Forest economy impacted (loss of mature timber; less wood produced; more wood available for the market (lower prices); job loss)



**Area in Maine With at least One Year of Heavy Feeding by Spruce Budworm during the Previous Epidemic**