

Tree Savers

Save Your Hemlock Trees - NOW!

Hemlock Woolly Adelgid (HWA)

HWA is an invasive pest native to Asia which poses a serious threat to Eastern and Carolina Hemlock trees. This region has no native predator to HWA, so critical ecosystems are under attack.

HWA is identified by the presence of white cottony egg sacs on the underside of hemlock twigs between needles. These form in winter and weather away each summer. In almost all cases of hemlock decline, HWA is the primary cause.



Nature has the CURE for HWA

The cure for HWA lies in the food chain. HWA leads to death of hemlocks when there is no predator to keep populations in check. In the natural world pests and hosts coexist but when that balance is disrupted, chaos ensues.

To rectify this problem, Tree Savers offers a unique solution by rearing and distributing *Sasajiscymnus tsugae* (St) Beetles.

Introduced to the U.S. in 1995, St Beetles are the most common and effective biological control agent used to combat HWA. Having undergone rigorous testing and documentation, they have proven to be the most environmentally friendly and economic way to control HWA long-term.



The value of your property and the diversity of our ecosystems are threatened by the alien insect: Hemlock Woolly Adelgid (HWA).

Consider the following:

- ▶ You may only have 3-5 years from initial infestation to functional death of a tree.
- ▶ Eastern and Carolina hemlocks have no natural resistance to HWA.
- ▶ Shenandoah National Park lost 75% of its hemlocks and the state of New Jersey lost over half of its hemlock forest in just 11 years!
- ▶ In the Mid-Atlantic States, trout require cool water provided by hemlock canopy.
- ▶ Eastern hemlocks have a unique fibrous root system that ties streambeds together and reduces erosion, evaporation, and flooding.
- ▶ 47 species of mammals and 96 species of birds utilize hemlock forests in some critical part of their life cycle.*

* Yamasaki et. al. 2000 Wildlife Habitat Associations in Eastern Hemlock In: Proceedings: Symposium on Sustainable Management of Hemlock Ecosystems in Eastern North America June 22-24, 1999, Durham, New Hampshire. USDA Forest Service General Technical Report NE-267 p. 135-141

Sasajiscymnus tsugae (St) Beetles...

Natural Predators

- ▶ St Beetles are specialized predators and require HWA to develop and reproduce. ¹
- ▶ St Beetles' life cycle is synchronized with HWA and produce two generations per year. ²
- ▶ St Adults and larvae are highly mobile and feed on all life stages of HWA. ¹
- ▶ St larvae can consume up to 500 HWA eggs or 50-100 HWA nymphs each to mature to adult. Adults eat at least 50 HWA nymphs per week. ³



Forest Establishment

- ▶ St Beetles have a high searching efficiency and dispersal ability. ⁴
- ▶ St Adults overwinter to produce offspring the following spring. ²
- ▶ St Beetles can live over a year in the wild and can produce up to 300 offspring. ^{1,2}
- ▶ St Beetles carry out their entire life cycle on hemlock trees continually consuming HWA. ²
- ▶ St Beetles have been established from the coasts of Maine through the forests of Northern Georgia at various elevations demonstrating excellent adaptation skills regarding climate.



Relative Effectiveness

- ▶ In their native Japan, St Beetles consume 86-99% of HWA found in the wild. ⁵
- ▶ Studies have shown that releasing St Beetles reduced HWA by 47-87% on release branches in just 5 months. ⁶
- ▶ St Beetles significantly decreased the number of nymphs per centimeters of new growth on release trees ⁶
- ▶ Field monitoring indicated St Beetles reduced the amount of HWA on all branches despite small release numbers of 2,000-3,000 in CT and VA. ⁶
- ▶ *See next page for references



Tree Savers (Lake Savers LLC)
www.treesaverspa.com
570-871-0088

Works Cited

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St Adults, Photos by: Carole Cheah, PhD



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