

# From tree-killing infestation arises hope for diverse forest

Private landowners on Lake Superior's North Shore tap Lake SWCD expertise as they reduce the fire hazard brought on by spruce budworm, replace stands of dead balsam with species conducive to controlling erosion, improving water quality



**TWO HARBORS** — As the ongoing spruce budworm outbreak turns dense, single-species stands of trees into fire hazards in Lake County and beyond, it gives landowners who clear the dead timber an opportunity to nurture a more diverse forest.

A Clean Water Fund pilot project in Lake County was designed to reset pockets of forest to pre-



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logging days. It would curb erosion, improve water quality and produce

healthy seed trees capable of jump-starting regrowth after a fire, infestation or other disaster.

The \$114,000 Clean Water Fund grant from the Minnesota Board of Water and Soil Resources paid for a four-person Conservation Corps Minnesota & Iowa crew to

**Above:** Penny and Jamie Juenemann's property borders the Little Stewart River, a trout stream where steelhead go to spawn. In July 2017, they spoke about wildfire mitigation on 3 acres, which they'd recently cleared of dead balsam fir with the help of a four-person Conservation Corps Minnesota & Iowa crew. **Below:** The cleared area, at right, contrasts with the untouched forest. The Juenemanns were among 21 landowners who signed up for the pilot project funded by a Clean Water Fund grant from BWSR. **Photo Credits:** Ann Wessel, BWSR



clear dead trees, plant new ones, and remove invasive buckthorn and Japanese barberry.

The initial sign-up drew 21 private landowners, who were responsible for 25 percent of the cost. In some cases, other programs helped pay for fencing or supplied free trees. Environmental Quality Incentives Program assistance

from the USDA's Natural Resources Conservation Service.

More than \$1.3 million in EQIP funds from NRCS was available for wildfire hazard mitigation-related practices from 2017 through 2019. With that assistance, more than 100 landowners treated about 1,500 acres in Lake and bordering counties.



[A pilot project funded by a \\$114,000 Clean Water Fund grant](#) from BWSR allowed Lake SWCD to hire a four-person CCMi crew to clear dead trees.





**Left:** Clearing dead balsam trees left a 3-acre stand of stunted birch, quaking aspen and big-toothed aspen. **Middle:** The Juenemanns built 5-foot-tall wire cages to keep deer from browsing the 800 trees and shrubs they planted. **Right:** The Little Stewart is where 40 percent of the steelhead in all of Lake Superior spawn. It will benefit from the forestry pilot project.

More than 90% of those EQIP funds related directly to the outbreak.

“Where you have dense stands of balsam fir, it kills them all and it’s quite the tinderbox,” said Jon Sellnow, the Duluth-based NRCS district conservationist who now works at BWSR. “The treatment is to reduce the fire hazard, but at the same time open up that dead canopy for regeneration and, if needed, re-establishment in the understory.”

Lake County is at the epicenter of an outbreak that extends to northern St. Louis County, the southern edge of Cook County and the Duluth area. Outbreaks generally occur on a 30-year cycle.

Spruce budworm outbreaks occur naturally. Dense stands of balsam fir do not. They filled in — unmanaged — in the decades after wildfires were suppressed and mature white pines were harvested. Spruce budworm does the most damage to balsam fir.

Those dense stands shade out other trees, shrubs and plants that help to curb erosion — and how much sediment is carried into North Shore trout streams. EQIP assistance has allowed landowners such as

**“ We really like the end result, and are really excited to see it spring up over the next however many years we’re around. ... We tried to do it in a way that people won’t know it’s planted. ”**

— Jamie Juenemann, Lake County landowner

Jamie and Penny Juenemann to augment their efforts to reset the forest.

By January 2020, the Juenemanns had planted 800 trees and shrubs on 3 acres bordering the Little Stewart River. In summer 2017, with NRCS assistance and help from a CCMI crew, they cleared the balsams and salvaged everything else on that land.

“Spruce will have some tolerance, but balsam fir, when they get to a certain age, it’s nearly 100% mortality,” Sellnow said. Balsam fir’s lower branches act like a ladder that allows small ground fires to quickly move into the canopy causing larger, more destructive fires.

The Minnesota Department of Natural Resources identified 201,700 acres affected by spruce budworm within the Arrowhead region in 2019.

“The amount of dead balsam is not going to go away on its

own. The forest will decline,” said Tim Byrns, a Lake Soil & Water Conservation District forester based in Two Harbors.

“In addition to the fire hazard and reduced forest productivity, there is no value in dead or declining balsam fir, and a very limited market for balsam fir in general,” Byrns explained. “So cutting and treating the woody residue on site is often the only management option.”

When the program launched in 2016, Byrns’ efforts to inform landowners extended to hand-delivering paperwork. Interest grew as more people could see how practices worked for neighbors.

Depending upon the practice, EQIP assistance ranged from \$660 to \$1,300 an acre.

“On these sites, it’s kind of an easy sell. Even a layperson can look at a forest and determine that it’s dead. This balsam fir comes in so thick, (with)

spruce budworm anything over 40 years is basically 100% mortality,” Sellnow said.

With nearly \$690,820 allocated and 55 new contracts, 2019 saw the most sign-ups in a single year. Of those, 21 originated from landowners working through Lake SWCD, resulting in 14 management plans affecting 192 acres in Lake County.

Most management plans also protect houses in the Two Harbors area from wildfires.

“The benefits kind of expand from there. You have a healthy forest, and it provides tremendous water quality benefits — both for slowing runoff and for filtering water,” Sellnow said. “Definitely clean air. Carbon sequestration. Wildlife habitat’s a big one.”

Thinning the forest makes way for larger, older, healthier trees.

The Juenemanns worked 30 to 40 hours a week to clear remaining balsams, plant trees and build 5-foot-tall wire cages to keep the deer out.

“I’d still do it the same way. I like the fact that it’s filtered sunlight hitting those trees. It’s more drought-resistant as a result,” Jamie Juenemann said.



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