

Identifying, Monitoring, and Enhancing Wild Bees on Apple and Blueberry Farms Cooperative Extension Factsheet—DRAFT

Farmer-to-Farmer: Case Studies of Wild Bee Enhancement in Maine



Figure 1. An orange-belted bumblebee (*Bombus ternarius*) visits a sedum flower at Peaked Mountain Farm. Photo by Gail J. VanWart, autumn 2014.

Peaked Mountain Farm and Native Pollinator Sanctuary
Owned and operated by Gail and Dan Van Wart

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Farm history. Gail and Dan VanWart operate Peaked Mountain Farm, a lowbush blueberry farm in Dedham, Maine. Situated amid the beautiful rolling hills of Hancock County, Peaked Mountain Farm has 25 acres of *Maine Organic Farmers and Gardeners Association* (MOFGA) certified organic blueberries surrounded by 150 acres of forest and meadow. Like most farms in Maine, Peaked Mountain Farm has a rich history. The farm was originally purchased by Gail's great-

grandfather in 1868, and the home where Gail grew up was built on the foundation of the old farmhouse where Gail's mother was born and her grandfather and great-grandfather lived. Gail and Dan received the farm from Gail's mother in 2002, and today they continue to grow wild Maine blueberries and run a fresh-pack line and freezer at the very same building where Gail grew up. Inspired by the vibrant local ecosystem, in 2005, Dan and Gail began taking measures to provide a safe haven—or sanctuary—for native bees and other pollinators. In January, 2014, they officially dedicated their farm as the first native pollinator sanctuary in the state of Maine. Peaked Mountain Farm and Native Pollinator Sanctuary, privately funded and operated by the VanWarts, is now registered as pollinator habitat with the *Xerces Society*, certified as providing the elements of healthy wildlife habitat by the *National Wildlife Federation*, and registered with *Monarch Watch* as a Monarch Waystation.

Establishing a native pollinator sanctuary on a blueberry farm. In a sense, Peaked Mountain Farm and Native Pollinator Sanctuary evolved as a happy accident. A few years ago



Figure 2. Peaked Mountain Farm and Native Pollinator Sanctuary is home to several species of rare bees. This bee, commonly known as Rusty Patch bumblebee (*Bombus affinis*), became rare after 1997. Photo by Daniel B. VanWart, June 2015.

Dan and Gail began working off-farm and found themselves with less time for mowing and weed-pulling in and around their blueberry fields. “We started to notice bees and butterflies everywhere,” says Gail. “Now every time I look out on our front field there’s a butterfly floating by. In the field that we didn’t mow all these wildflowers, like milkweed, returned. Now when I go down to that field it’s like going on a bee safari. Wildflowers I hadn’t seen in a long time are coming back. We’ve even spotted Monarch butterflies again, which we hadn’t seen in many years.”

Gail and Dan aspire to soon return to full-time work on the farm. They have already begun to change their management practices to maintain the farm as an ecosystem that

can support both blueberries and a healthy pollinator population. “We want the land to sustain itself and leave something really nice and natural to continue on,” says Dan, “But we want it to be prosperous, something that can actually function as a commercial product. And if we make it work, it can maybe serve as an example for other people who want to work in conjunction with native pollinators.”

Gail and Dan are working toward the goal of supporting a strong and diverse native pollinator population so they can conserve bees and have a strong source of pollination for their blueberry crop. In the near future, Dan and Gail plan to offer farmer-to-farmer demonstrations on how native bees can co-exist with commercial agriculture. Their philosophy is that if they enhance the environment for pollinators, “they’re going to pay us back by pollinating our crops.”

Developing a pollinator habitat enhancement plan. In 2012, the VanWarts worked with Alison Dibble, a certified Technical Assistance Provider for the Natural Resources Conservation Service (NRCS), to become the second farm in the state with an official Pollinator Habitat Enhancement (PHE) plan. The PHE plan focused on open areas including the blueberry fields and buffer zones. At the same time, the VanWarts had a forest management plan done and Alison Dibble worked in conjunction with the forester, Kevin Alcroft, to ensure that the two plans complemented each other. With the plans in hand, the VanWarts began implementing the recommended practices at their own pace. In 2015, they received an Agricultural Development Grant from the Maine Department of Agriculture, Conservation and Forestry to begin commercial propagation of Common Milkweed (*Asclepias syriaca*) and Butterfly Weed (*Asclepias tuberosa*). The grant is helping them fulfill one of their goals, which is to implement practices they can derive income from. “In other words,” says Dan, “by selling [the pollinator plants] we grow, it diversifies our product so we’re not exclusively wild blueberries.”

The PHE plan has helped Dan and Gail rethink their blueberry management in other ways as well. Their blueberries are divided between two fields, one very productive and easily manageable front field, and a hillier, rockier back field. The back field isn't as productive or easy to manage as the front field, so rather than fight the land, they are repurposing it as part of their PHE plan. Gail and Dan are converting the field to grow a diverse range of native plants that provide a continual food source for pollinators, and provide an additional product they can sell to landscapers and local homeowners interested in native plants. "We thought rather than just any flowering plant," says Dan, "we would stick to native flowering plants that would grow and work in the state of Maine. So that's what we're specializing in." In addition to butterfly weed and common milkweed, they're growing aster, lingonberry, bunchberry, wild rose, willow, and a variety of ferns. They are also beginning to harvest and sell four inch plugs of lowbush blueberry sod, and considering adding a small pond to grow water plants that are native to Maine and appeal to the pollinators.

NRCS Pollinator Habitat Enhancement Plans

Through the Environmental Quality Incentives Program (EQIP), the Natural Resources Conservation Service (NRCS) provides funding support, through contracts with eligible producers, to obtain services of certified Technical Service Providers (TSPs) for development of Pollinator Habitat Enhancement (PHE) Plans. PHE plans are a NRCS prerequisite for cost-share on conservation practices. Practices that are eligible for support are based on priority areas set by NRCS county offices. For more information about PHE plans and funding availability, contact your local NRCS office.



Figure 3. A field of native wildflowers blooming in a mix of aster, clover, milkweed, and goldenrod. Gail and Dan have named this area "Final Haven" as it is the final bloom of the season at Peaked Mountain Farm. Photo by Gail J. VanWart, fall 2014.

The VanWart's habitat enhancement plan extends beyond the field edges. They also plan to utilize the surrounding forest by planting basswood trees. "Basswood flowers are a great pollen and nectar source for bees and other pollinators, and because it's a soft wood, woodpeckers and other animals create holes which provide good nesting sites for some pollinators," says Dan. Dan is also installing nesting blocks for native leafcutter and mason bees. "I had an electric weed whacker that died and I stood it in my woodshed, and the weed whacker has bolts going through it to hold the plastic housing together and there's a gap in the end. Now all the little gaps in the housing of that thing are filled with mud by mason bees that turned it into nest sites. That showed me that they're here and they're looking for places to live. We've just got to provide the housing."

Dan and Gail are also working on identifying bees in their fields so they can tailor their enhancement projects to specific families and species of bees. “Every practice I put in place, I want it to be effective for what's in our fields,” says Dan, “and the only way to know that is to know who's there. If you're trying to build up a bee population, do it so it's intelligent; don't waste effort, because you've only got so much time and effort left in you. There's only so many years left, I don't have time to experiment. I need to know, I've got this bee and she wants these size holes, so I can build the right sized nesting blocks so they're effective.”



Figure 4. A yellow-banded bumble bee (*Bombus terricola*) enjoying the sanctuary of Peaked Mountain Farm. The yellow-banded bumblebee has been declining since the mid-1990s and is now rare in Maine. Photo by Daniel B. VanWart, June 2015.

The VanWarts have found that bee habitat enhancement doesn't necessarily have to require intensive management. A timber harvest on their land in 2010 caused disturbance from logs being dragged across areas of their fields and buffer areas. They noticed that when the areas recovered they came back in a lush diversity of wildflowers and became a sort of bee utopia. “I think it's not just about leaving everything alone,” says Gail, “but about doing the right things at the right time that will cause the landscape to be enhanced. Maybe it isn't always buying seed or bringing things in; it could be just a practice like roughening that soil somehow. In some areas you could set your tiller high and just skip across the top of an area and see if that brings in more flowers.”

“Once upon a time, if you had a healthy ecosystem, bees were just here. We've got to get away from what's normal, what we've got in the habit of doing, and start thinking about what do we really need to do to support a healthy ecosystem.”

– Gail VanWort

Based on data collected over the past six years on Peaked Mountain Farm, the VanWarts estimate it is possible to yield 2,500 to 3,000 pounds of organic wild

blueberries per acre on their farm—without using any commercial honey or bumble bees—if they sustain their commitment to wild pollinator management and enhancement.

Farmer-to-farmer education. Knowledge sharing is important to the VanWarts. As they learn from their experiences and observations on their farm, they want to share their knowledge with children and adults alike. They currently host Pollinator Awareness Walks and participate in Maine's Open Farm Day. Additionally, through an event called “Harvest for the Cure,” they donate a portion of their wild blueberry crop sales to the EMMC Champion the Cure Challenge to support local cancer research in Brewer, Maine—they see it as a gift from the bees! They plan to expand their outreach efforts over the next two years through school programs and on-farm events, tours, and workshops.



Figure 5. Blae, the Peaked Mountain Border Collie, sitting amid wild bee habitat at Peaked Mountain Farm. You can "like" him on his Facebook page. Photo by Daniel B. VanWart, June 2015.

The future of the farm. Like all farmers, the VanWarts are faced with decisions about how to manage their land for the future. Their three sons work off farm or live out-of-state, so, other than a few acres, most of the land might not remain in the family. Establishing Peaked Mountain Farm as a native pollinator sanctuary is allowing Gail and Dan to position the farm so it can more easily support itself as they age and can't do as much manual labor. "Part of our plan to support wild pollinators is also because we would like to go away in the winters. We're getting older, and if we can have the farm set up so it's self-sustaining—because a blueberry doesn't need you all winter long and wild bees don't need you all winter long—then it's easier for us to step away," says Gail.

Furthermore, it allows them to establish a stewardship legacy, leaving the land even healthier than when Gail's great-grandfather first purchased it. "On a small-scale, especially for organic growers, native bee habitat enhancement can work," says Gail. They're proving that through their success at Peaked Mountain Farm and Native Pollinator Sanctuary. Dan and Gail are currently working with *Maine Farmland Trust* on an easement to ensure that their land remains healthy and active farmland into the future.