

Pollination Insurance for Massachusetts Cranberries

By Linda Rinta, Plymouth County Conservation District

Knowing what we do about Colony Collapse Disorder and high winter honey bee losses, the vagaries of weather, the question of climate change, and the increase in competition for beekeepers to provide pollination services, would you buy a little pollination insurance if you could?

Indeed, you can. If we open some of our land to pollinator habitat and modify our crop protection strategies a bit, then we can restore some of the baseline pollination that used to exist naturally around cranberry bogs in Massachusetts. Habitat alone in cranberry bogs may not necessarily provide all the pollination needed to grow this spectacular crop. But it's cheap insurance and a bridge toward widening the pollination "window of opportunity."

So Let's Talk Bumble Bees

For insurance purposes among cranberry growers, bumble bees are the key. While other wild bees are also important, bumble bees are the workhorse group for cranberry pollination. Bumble bees evolved with cranberries and actually like cranberry flowers! They are able to "buzz pollinate" these flowers by vibrating the anther to release pollen, which means that—unlike honey bees—they are able to gather both pollen and nectar from cranberry flowers. As a result, cranberry flowers are much more attractive to bumble bees than they are to honey bees.

The formula for re-establishing or enhancing natural populations of bumble bees where they have almost vanished includes restoring nesting areas, supplying floral diversity throughout the growing season, protecting hibernation areas for queens, and adjusting our pest management practices to accommodate bumble bees in an entirely different way than honey bees.

Nesting Areas

Forget about those fancy bumble bee boxes. Bees follow mice. They like rodent holes, brush piles, and stumps. The important thing is: don't mow it, drive over it, dig it up, or drag it off.

Restore Wildflowers

Bumble bees store very little food in their nests, so they need to forage in pesticide-free habitat nearly every day. Even a week without pollen- and nectar-rich flowers within their foraging range can be devastating to a bumble bee colony. The few wildflowers that our farms provide are ephemeral at best: a little bit here and there, now they bloom, now they don't, and then we mow. Moreover, in Massachusetts, our cranberry bogs are typically surrounded by a curtain of privacy trees that provide little value for pollinators.

When working with growers in our community, I recommend that they take a look at their bog edges and non-crop areas every week throughout the season to see where there are missing wildflower resources for bees. Where wildflowers are completely absent, the big opportunity is to create new meadow strips of native wildflowers. As an example of this strategy, after two years of work with the Xerces Society, the Cape Cod Cranberry Growers Association, and the University of Massachusetts Cranberry Station, we jointly identified a group of plants that are fantastic for bumble bees and which cranberry growers didn't immediately perceive as weeds! The list was short, but substantial: wild lupine, wild blue indigo, golden Alexanders, smooth penstemon, blazing star, butterfly milkweed, lavender hyssop, purple coneflower, wild bergamot, and Virginia mountain mint, with a little annual partridge pea thrown in for bloom the first year.

In addition to new upland meadow plantings, we also have learned to consider the brushy edges around the reservoirs that feed into bog systems, and have looked for ways to improve these areas as pollinator habitat. For example, in late summer in Massachusetts, these areas host a lot of natural floral abundance, such as Joe Pye

weed, buttonbush, and sweet-pepper bush. While these summer plants are fantastic for bees, we've been asking ourselves if there isn't also an opportunity to encourage more spring blooming plants in these areas? For example, while most growers hate pussy willow, we've been asking ourselves whether we can learn to tolerate it in places where it won't spread? Similarly, we are having conversations about pushing back our heavy forest edges and adding smaller spring-blooming trees and shrubs such as redbud or beach plum.

Tolerate a Little Goldenrod on the Side

The last hatch of bumble bees at the end of the season is especially important because it includes the new queens for the next year. The number of queens is thought to be determined by the abundance of fall forage resources, which in the New England means goldenrod and aster—beautiful plants that are unfortunately often viewed as weeds. Goldenrod and asters make bumble bees queens fat, and fat queens are those that will most likely survive winter dormancy to start new colonies the following year.

Pest Management and Bumble Bees

Bumble bees make pest management a challenge, because, unlike honey bees, they sometimes sleep outdoors. Similarly, they often begin work at the crack of dawn and can be active until fairly late in the evening. Because of this constant presence in the bogs, we have learned that when a pesticide must be applied during bloom, it is critical to seek out products that are the least-toxic option available. Another trick we've learned is to run bog sprinklers late in the day to help drive off some of the bees, and then conduct the spraying over night. Another critical recommendation we make with our growers is to mow any blooming weeds next to areas that will be sprayed. And, of course, don't spray habitat areas at all.

The Best Insurance Is a Group Policy

As you think about your farm, think about interconnected streams and islands of pollinator habitat that are protected from pesticide drift. If you are successful, bumble bees will prosper, local honey bees stand a better chance of surviving the winter or building up prior to a crop bloom, and other pollinators and beneficial insects will increase. Together, these partners in pollination will ensure abundant harvests.

The final critical step, however, is to engage the other farmers in your community. Recognize that when you link your pollinator habitat to that of your neighbors, you create an entire farm community that ensures abundant crop yields for itself, that is resilient to changes in climate or honey bee availability, and that is a beautiful place to live. Who would have thought that a simple focus on bumble bees could offer so much?

The Innovative Cranberry Grower: Standish Bogs

All the components of good bumble bee habitat have been put into play at Standish Bogs, near Plymouth, Massachusetts. Chet Halunen has worked closely with Linda Rinta and the Xerces Society to create and manage beautiful bumble bee meadows overlooking his bogs (upper right).

These meadows are full of lupine, mountain mint, and dotted mint. They hum with bumble bees and honey bees, as well as other beneficial insects that are attacking pests on the bog. As time goes on, the goldenrod (lower right) is slowly moving in—up and away from the bogs—where it provides late season bee forage, and where Chet is happy to see it bloom.



A mix of native wildflowers, including wild lupine, dotted mint, and marsh blazing star provides continuous forage for bumble bees from early spring through fall. (Photograph by Linda Rinta, Plymouth County Conservation District.)

Goldenrod is an excellent late-season source of forage for new bumble been queens in the fall. Below, goldenrod at Standish Bogs attracts a variety of bees and wasps. (Photograph by Linda Rinta, Plymouth County Conservation District.)

