

Pollinator Working Group Meeting

Date: Thursday December 8, 2016

Time: 4:00 p.m. – 7:00 p.m.

Location: DEM Room 300
235 Promenade St, Providence RI

DRAFT Meeting Minutes

Working Group Members in attendance: Meg Kerr, Joel Tirrell, Shannon Brawley, David Brunetti, Gary Casabona, David Gregg, Rafael Nightingale (Absent), Don Joslin, Robert Mann, Lyn Spinella, Ken Payne, Lisa Tewksbury, Ken Ayars

Guests: Howard Ginsburg, URI; Jim Lawson, RIDEM; Brianna O'Connor, Golden Root Gardening; Nyssa Sky, Golden Root Gardening; Amanda Freitas, RINHS/RIDEM; Tom Rosa, State Parks – RI DEM; Terry Meyer, ASRI and the Master Gardeners; Christie Milligan, Organic Gardening – Wild and Scenic; Catherine Sparks RI DEM Forestry, Fish and Wildlife

Chair brought the meeting to order at 4:10 PM.

Minutes from Nov. 10. David Gregg asked for clarification (page 2 item #5) on when the state is notified about bees coming into the state. Pursuant to state law, the state is notified when bees on comb (hives) are brought in, but not when bees are delivered in packages for individuals to use in their own hives. With that amendment, Bob Mann moved approval, second by Dave Brunetti and Lynn Spinella, all approved.

Group reflection – what have we learned? What are our recommendations?

- We should consider recommendations targeted at different sectors (farmers, nursery, etc.)
- DEM needs more resources
 - State apiary program
 - Training
 - Research
- We have limited data to base our recommendations on
- We believe that conditions in RI are not bad for pollinators – better than many other areas. We should amplify our strengths and look for opportunities for incremental improvements -
- An increase of habitat is always going to be helpful (diversity of plants).
- Farmers are increasingly aware of their dependence on bees and aware that spraying pesticides can have negative impacts on pollinators.
- Farmers have seen how increasing the number of bees can have an impact on production. In the 1980s, we had more abundant native bees. Dame Farm brought in hives and saw a substantial increase in production.

Presentation : Bees, Pollination and Agriculture by Frank Drummond, University of Maine

Frank Drummond has worked on pollination for Maine's low bush wild blueberries. This crop, nationally, is worth about \$15.1 billion in 2009 US dollars and the blueberries require bee pollination. California is the #1 importer of honeybees, ME is #2.

From an agricultural perspective, pollination is mostly performed by bees and there is a lot we don't know. For example, we know that some of the "best practices" for protecting bees actually don't work.

For example, EPA recommends spraying at night to avoid killing bees. But in Maine, bees are on and live in the flowers/plants at night so will be affected by nighttime spraying.

Bee diversity: about 15 – 20 % of bee species are parasites (cuckoo bees). These bees do some pollination. Diversity is important and different types of bees have different habitat requirements. Soil nesting bees do well in burned fields. Leaf cutter bees nest in hollow stems and do well in the forested edges of farm fields. Some farmers drill holes or create nest blocks and studies have shown that providing nesting sites increases the number of bees. Some bees are associated with specific crops. And bees work together to increase pollination – for example, bumble bees buzz and release pollen which visiting honey bees can pick up.

Wild bees: We don't know how many we have as they are difficult to measure.

Trends: In the Northeast, 27% of bee species have increased, 44% have stayed the same and 29% have declined. For 4 of 187 species studied, the decline is drastic. There is lots of fluctuation year to year. Is there a natural oscillation of bee species numbers instead of decline? The orange banded bumble bee has always been very abundant in Maine. Actually these are brought in commercially every year; possibly that is the feedstock for the species to help keep the numbers high.

Maine has a volunteer citizen science program looking at bumble bee populations across the state. The collected data show that *Bombus impatiens*, the common eastern bumble bee is increasing in numbers, perhaps due to increasing temperatures. *Bombus affinis*, the rusty patched bumblebee is in decline, perhaps due to climate change or perhaps due to pesticides like neonics.

Factors affecting bee declines include:

- Climate change
- Habitat fragmentation and reduced floral habitats
- Pesticides
- Pathogens/parasites
- Reduced genetic diversity (with bees purchased from a small number of breeders)
- Exotic bees competing with native species

Pesticides: In blueberry fields, *B. impatiens* show high levels of imidacloprid. The larvae pick up the imidacloprid and show high levels when they grow into workers. Imidacloprid is also stored in the wax. The Maine blueberry bee, *Osmia atriventris*, does not show the impacts of pesticides.

Using the volunteer monitoring network, pollen traps have been established and the pollen has been analyzed for pesticides. Of the 25 pesticides that the bees were exposed to, only 1 was a neonic. The majority were fungicides, herbicides. The treatment for verroa mites exposes the bees to pesticides.

Pathogens/parasites: Bees can be heavily parasitized. *Nosema bombi* is a unicellular parasite recently reclassified as a fungus that affects bumble bees. Different bees have variable sensitivity, and the rare native bumble bee *Bombus terricola* is in the very susceptible range. There is a concern about spill over from honey bees to native bees.

Climate Change: We are seeing increased precipitation and increased extreme precipitation especially along the coast. Pollination days depend on wind, temperature and wetness. You see decreased in

pollination during rain. Blueberry growers in ME are increasing the number of trucked in bees – reflecting some of these changes.

Citizen science program: The program has been underway for 5 years looking at bumblebees and 3 exotic bees. They do not do a comprehensive survey because of confusion. To get a species ID, the volunteers need to kill the bee. They have 170 volunteers who can do either a qualitative or quantitative study (estimate relative abundance of flowers and bees). The program has been successful with only a 30% dropout rate. There are schools involved and they are developing interactive maps showing the collected data. The landscape is important - there is a need to provide baseline data on bee diversity and baseline pesticide exposure rates.

Presentation : Characteristics of Urban Spaces that Promote Pollinator Conservation and Health by Rebecca Waterworth, University of Maryland

There are a wide range of pollinators from vertebrates like birds and bats to invertebrates like beetles, flies, ants etc. This presentation focuses on bees.

There are about 4,000 species of bees in the US and Canada. Social bees include honey bees and bumble bees. Solitary bees include mason bees and leafcutter bees. All bees build nests and stock them with nutritious mixtures of pollen, nectar and saliva before laying eggs. Some bees are specialists, collecting pollen from a single plant family or genus and others are generalists, collecting pollen from multiple plant families.

About 75% of flowering plants need pollinators, 30% of our food comes from these plants. In the US, more than 100 species of plants require pollinators. The estimated value of pollinated crops is \$24 billion dollars and pollination is necessary for obtaining fully formed fruit.

Urbanization impacts pollinators and the US landscape is increasingly urbanized. Impacts include pesticide exposure, pathogens and parasites, climate change, reduced or degraded nesting habitat and limited or poor quality floral resources.

Lawn dominated yards with no fertilizer, watering or pesticide use can support pollinators. Increasing impervious surfaces favor the honeybee, and result in decreased numbers of bumblebees.

Recommendations: avoid pesticides, fertilizer, and water (low input lawn). Incorporate weed diversity. White clover is better suited for bees than dandelions.

Treated lawns recommendations: adjust application timing and avoid seasonal activity of adults, do not apply to blooming, pollen shedding or nectar producing parts of plants, control spring flowering weeds by mowing to remove flower heads before or immediately after the application of pesticides or wait until after weeds have finished blooming, use granular formulations, use target selective insecticides. Bumble bees do much better with lower density of hardscapes. Honey bees do much better with a higher density of hardscape.

Residential flower gardens: suburban gardens have a high diversity of bees with a low number of specialist bees.

Urban community gardens: Bee species richness was reduced in very urban areas. Native bees are limited.

Neighborhood gardens: native bees visit non-native plants. Using targeted ornamental plants, predictable groups of native bees can be expected.

Roadsides: roadside in KS restored with native prairie forbs and grasses supported greater bee richness than weedy roadsides. The road sides don't need to be wide and can be adjacent to busy roads. The bee community is similar to remnant prairie.

Restoration efforts: research project involved planting conservation strips in production nurseries to enhance pollinator abundance and diversity. Used a seed mix of annual and perennial flowers (19 spp.), commercially available seeds with something blooming throughout the season. Strips enhanced pollinators, establishing seven new county records of bees in the two counties where studies take place.

Plant lists available from Xerces, Michigan State University

(<http://nativeplants.msu.edu/uploads/files/E2973.pdf>),

(<https://www.extension.umn.edu/garden/insects/docs/protect-pollinators-in-landscape.pdf>)

Monitoring for bees: Rebecca used colored bowls – blue, yellow and white. Bowls can be elevated or placed on the ground, filled with soapy water and remain in the field for 24 hours. The bowl collection is supplemented with sweep/hand netting. Bees are rinsed in water and transferred to 70% ethanol for long term storage. They are washed, rinsed, dried before identification.

Cathy Sparks, DEM Forestry and Fish & Wildlife

DEM has a suite of programs addressing pollinators:

- In state management areas they shifted plantings to enhance pollinator habitats.
- F&W is hiring an outreach coordinator and a volunteer coordinator and pollinators will be included in the work program. They are also developing a monarch plan. The effort will include citizen science and outreach.
- DEM Forestry is working to enhance cottontail habitat and pollinator habitat.

Group reflection

What are some of the common themes?

- Data
- Habitat (RI has an advantage)
- Useful information on residential lawn and roadsides as habitat.
- When writing our recommendations we need to frame it in a positive way - language, photos, etc. hold meaning for Rhode Island(ers).

Meeting adjourned at 7:05 PM