REPORT TO THE DANE COUNTY BOARD OF SUPERVISORS

Dane County Pollinator Protection Task Force

September 2015

Honeybee (*Apis mellifera*) and Bumble bee (*Bombus impatiens*) on New England aster.
Photo: Susan Carpenter

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EXECUTIVE SUMMARY

In 2014, over concerns about declining pollinator populations, honeybee health issues and the future of honey and crop production, the Dane County Board of Supervisors initiated the Dane County Pollinator Protection Task Force (DCPPTF or "Task Force"). Its charge was to collect information on the local status of pollinators and develop recommendations for future pollinator protection efforts in the county. Between March and September, 2015, DCPPTF met bi-weekly to:

- Review current Dane County department practices that affect pollinator habitat and health;
- Communicate and collaborate with municipalities and other stakeholders in Dane County;
- Develop recommendations for departments to improve habitat for pollinators on county-owned land;
- Develop recommendations for citizens to plant pollinator-friendly habitats and guide pesticide use on private lands;
- Provide guidance for a long-term pollinator health strategy in Dane County.

These meetings included listening sessions with representatives from Dane County departments and municipalities. The Task Force identified four primary goals for pollinator protection:

1. Expand education and outreach efforts
2. Maximize pollinator-friendly land use and management
3. Minimize use of insecticides harmful to pollinators
4. Support long-term research to inform future pollinator protection

This report outlines specific objectives, recommended tasks, evaluation methods, opportunities for future initiatives, and possible barriers to implementation for each goal. The report also documents input from Dane County departments and municipalities on current pollinator protection efforts (Appendix A), details the formation of the Task Force (Appendix B), and provides links to existing resources (Appendix C).

I. INTRODUCTION

A pollinator is any animal that visits flowering plants and transfers pollen from flower to flower, thus aiding plant reproduction. Pollinators include bees, butterflies, flies and other insects, hummingbirds, and in tropical regions, bats. Whereas nectar foraging animals (e.g. butterflies) transport pollen only incidentally, bees forage specifically for pollen as a protein source for their offspring, making them the most efficient pollinators.

The most familiar crop pollinator in North America, the European honeybee (*Apis mellifera*), is only one of over 20,000 bee species in the world, 4,000 in the United States and 500 in Wisconsin. Managed honeybees and wild, native bees are responsible for an estimated 35% of global crop production (Klein, et al. 2007). In Wisconsin, pollinator-dependent crops account for over $55 million in annual production (U.S. Department of Agriculture 2014). These crops include apple, cranberry, cherry, canning peas and beans, pickling cucumber and market fresh fruits (tomato, squash, pea, etc.). Honey and beeswax are also important commodities in Wisconsin, accounting for $3.5 million in annual production (U.S. Department of Agriculture 2014).

Wisconsin is one of several states developing a statewide pollinator plan. These states are concerned about declining pollinator populations, loss of pollination services, honeybee health issues, and honey and crop production. These issues have gained attention at the federal level too, with a National Strategy for Pollinator Protection released in May, 2015 (White House Pollinator Health Task Force 2015).

Pollinator declines may be due to a number of causes: pests, pathogens, habitat loss, nutritional deficiency, insecticide exposure, and extreme weather events (e.g., drought or winter cold). There are several Wisconsin pollinators known to be rare, threatened or in decline, including the monarch butterfly, the Karner blue butterfly, and the rusty-patched bumble bee[1]. For many other native pollinator species, there is a lack of data on population

[1] See full list of state endangered and threatened species here: http://dnr.wi.gov/files/PDF/pubs/er/ER001.pdf

status or trends. While honeybee numbers are not declining globally, high rates of annual colony loss are of concern in Wisconsin and other states. For example, in 2014-15, Wisconsin was among the states suffering an annual honeybee colony loss greater than 60% (Figure 1, Steinhauer et al. 2015). Research indicates a small fraction of native pollinator species have adapted well to agricultural expansion (Kleijn, et al. 2015), but the habitat ranges of many native pollinator species are shrinking due to changes in land use, agronomic practices and climate (Potts, et al. 2010).

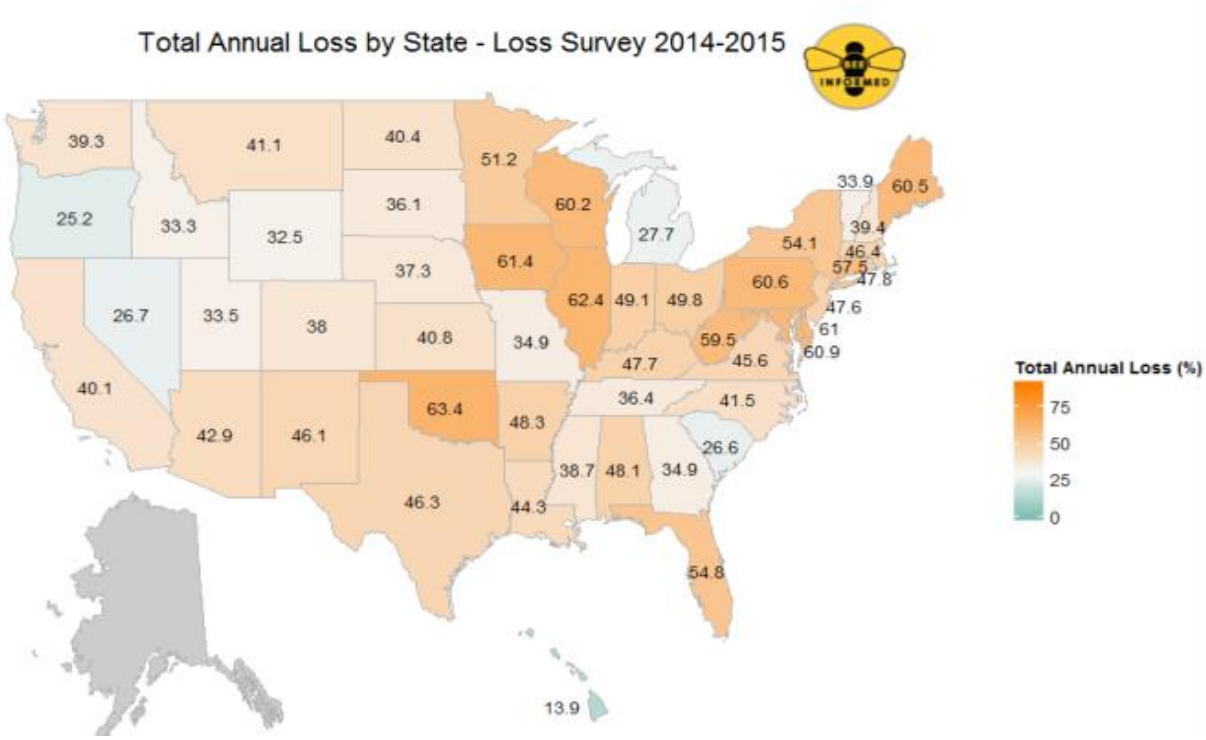


Figure 1. Total annual honeybee colony loss (%) 2014-2015 by state, according to the Bee Informed Partnership survey (Steinhauer et al. 2015).

Pollinator health and habitat needs differ by species, but one thing all pollinators require is blooming, nectar-bearing flowers throughout their adult lifetimes. When enhancing floral resources for pollinators, many factors must be considered: the quality of the forage, the abundance of flowers relative to pollinator population, differences in foraging habits, nutritional needs of wild and managed pollinators, flight range of different pollinator species, and the potential that invasive forage plants[2] could displace noninvasive species or hamper

[2] The Wisconsin Department of Natural Resources maintains a list of regulated and unregulated invasive plant species here: http://dnr.wi.gov/topic/Invasives/species.asp?filterBy=Terrestrial&filterVal=Y

restoration efforts. Several plant lists and planting guidelines have been developed to take into account the needs of pollinators (Appendix C).

Unlike flower flies and butterflies, which feed only on nectar, bees consume pollen as a protein source and feed their young a mixture of nectar and pollen. Beekeepers may need to supplement the diet of their honeybees when sufficient forage is unavailable near hives. Native bees require cavities, bare areas of loose soil, dead wood, or hollow stems for female bees to nest and lay eggs (Figure 2). Some species of butterfly require certain plants for egg laying and larval feeding, e.g., lupines (*Lupinus* spp.) for Karner blue butterfly and milkweeds (*Asclepias* spp.) for monarch butterflies.

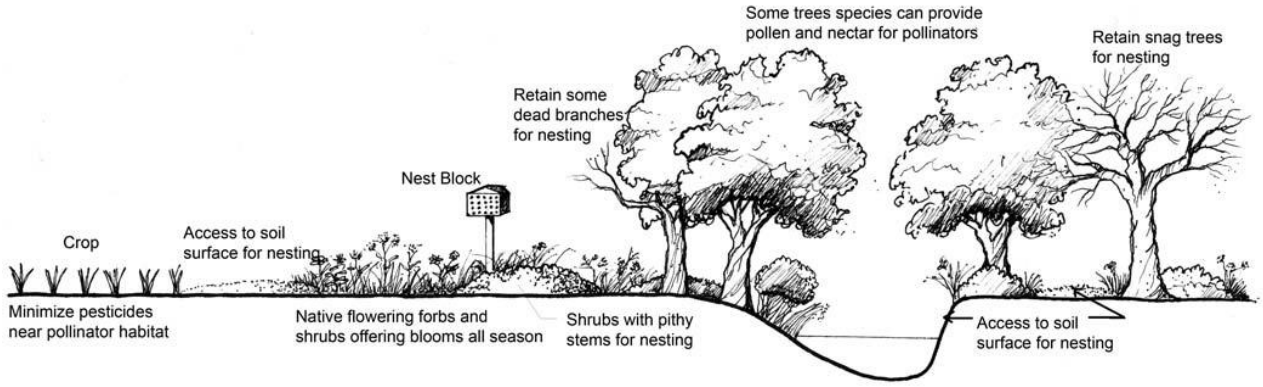


Figure 2. NRCS, 2008. Wisconsin Biology Technical Note 8, Pollinator Biology and Habitat.

Beekeepers manage honeybee health with practices meant to minimize disease, pests and exposure to pesticides. Native bees are susceptible to neonicotinoid pesticides in the form of seed treatments (Rundlöf et al. 2015), but the effects of most other pesticide types and mixes have not been thoroughly tested on native bees or butterflies. Because US Environmental Protection Agency bee-specific pesticide guidelines are based on honeybee testing only, precautions based on pesticide labels should be considered minimum guidelines for ensuring the health of all pollinators.

Honeybee hives in Dane County

ABOUT THE DANE COUNTY POLLINATOR PROTECTION TASK FORCE

Dane County Board resolution 2014 RES-472 (Appendix B) directed the DCPPTF to review current management practices in Dane County as they relate to pollinator health and habitat. Specifically:

- Collaborate with the City of Madison Task Force on Pollinator Health for review of available research on pollinator decline and efficacy of protection strategies;
- Communicate and collaborate with other municipalities in Dane County to invite or assist with development and/or administration of pollinator protection policies;
- Review current county department practices that affect pollinator habitat and health;
- Solicit input from local stakeholders with additional information on the issue;
- Monitor the work of the White House Pollinator Health Task Force and use information and recommendations to supplement its work;
- Explore public-private partnerships to help address the issue;
- Develop recommendations for departments to improve the habitat for pollinators on county-owned land;
- Develop recommendations for citizens to plant pollinator-friendly habitats and provide guidance on pesticide use on private lands;
- Provide guidance for a long-term strategy to departments to promote pollinator health.

The DCPPTF met fourteen times to undertake these tasks (see Appendix B for member and meeting details). DCPPTF members initially reviewed information about other pollinator protection efforts in the United States, including the White House Pollinator Health Task Force, and other literature and reports. The DCPPTF developed an action plan and timeline, and compiled best management practices based on existing policy documents, scientific literature and the group's charge. From these materials the DCPPTF drafted goals and objectives.

Dane County departments that manage public lands were invited to attend meetings, and asked to address the draft DCPPTF goals and objectives. Departments were asked to discuss their current practices and what they see as future opportunities for pollinator protection, including public/private partnerships. The DCPPTF also held an information and input meeting for Dane County municipalities and used the information gathered to further refine the goals and objectives. The detailed information from these presentations can be found in Appendix A of this report.

The work of the DCPPTF followed the example set by the City of Madison Pollinator Protection Task Force, which began meeting shortly before DCPPTF formed and finalized its report to the Madison City Council in August, 2015 (Madison Pollinator Protection Task Force 2015). Representatives of Madison's task force attended some of the DCPPTF meetings, and vice versa, in an effort to collaborate. The final work of the DCPPTF was to structure, edit and add detail to its final report. Its work was completed September 15, 2015.

II. TASK FORCE GOALS, OBJECTIVES & RECOMMENDATIONS

The DCPPTF identified eleven objectives falling into four primary goal areas crucial for pollinator protection. In the table below, objectives are listed from highest to lowest priority within each goal.

Goals	Objectives
1. Expand education and outreach efforts	Develop outreach materials Promote release of DCPPTF report Encourage participation of municipalities in Dane County Develop uniform message to publicly advertise county department pollinator-friendly practices
2. Maximize pollinator- friendly land use and management	Incentivize pollinator-friendly practices on private land Ensure pollinator-friendly management practices on county lands Acquire and restore public county land to provide pollinator habitat
3. Minimize use of insecticides harmful to pollinators	Minimize insecticide use by Dane County departments Minimize insecticide use by private citizens and businesses
4. Support long-term research to inform ongoing pollinator protection initiatives	Document population and habitat gains/losses Develop uniform protocols to evaluate public and public-private initiatives for pollinator protection

For each of the four primary goal areas, DCPPTF identified objectives, recommended tasks, proposed ways to evaluate success in achieving objectives, and identified barriers to implementation, as summarized below.

GOAL 1: EXPAND EDUCATION & OUTREACH EFFORTS

OBJECTIVE 1 - DEVELOP AND DISTRIBUTE OUTREACH MATERIALS

Recommended Actions:

- Organize existing resources on pollinator protection (Appendix C) in a way that is useful to interested groups, and distribute to county departments, municipalities, County UW-Extension, and/or nonprofit organizations.
- Compile locally relevant pollinator plant lists, best management practices (BMPs) for pesticide choice, use and safety, and BMPs for pollinator habitat for: 1) homeowners, gardeners, and businesses, 2) farmers and growers, 3) county departments managing roadsides and natural areas, and 4) municipalities.
- Work with school districts and Henry Vilas Zoo to develop and share pollinator resources and curricula, e.g., Great Lakes Bioenergy Research Center "bug biodiversity" project[3]
- Provide plant materials (seeds and plants) to residents to support pollinators.
- Provide "Bee Friendly" lawn signs for residents who put in pollinator-friendly lawns.
- Maintain and provide a list of existing landowner programs that incentivize prairie plantings: EQIP, CREP, CRP, CSP.

Evaluation:

- Poll recipients of outreach materials on pesticide use and other practices before/after engagement. Assess outreach to municipalities and determine if and how materials are being used.
- Count number of lawn signs given out to homeowners.
- Track enrollment in landowner programs over time.

Barriers:

- Lack of funding
- Resistance to reduced use/elimination of pesticides

Possible Leaders:

- Dane County UW-Extension, Parks, Henry Vilas Zoo, UW Arboretum

[3] Found online here: https://www.glbrc.org/education/classroom-materials/field-investigations-bug-biodiversity-and-ecosystem-benefits

OBJECTIVE 2 - PROMOTE RELEASE OF DCPPTF REPORT

Evaluation:

- Record number of printed PP guides given out.

Possible Leaders:

- Dane County Board, County Executive Office, Dane County Beekeepers Assoc.

OBJECTIVE 3 - ENCOURAGE PARTICIPATION OF MUNICIPALITIES IN DANE CO.

Recommended Actions:

- Hold event(s) for municipalities such as the information and listening session held on August 6, 2015.
- Continue ongoing dialogue among County and mayors, Towns Assoc., school districts, MMSD, garden and food groups, and Friends groups.

Evaluation:

- Record participation.

Possible Leaders:

- Dane County Environment, Agriculture and Natural Resources (EANR) Committee, or other council/committee.

OBJECTIVE 4 - DEVELOP UNIFORM MESSAGE TO PUBLICLY ADVERTISE COUNTY DEPT. POLLINATOR-FRIENDLY PRACTICES

Recommended Actions:

- Henry Vilas Zoo: Develop and install a pollinator exhibit, day camp materials, signs explaining mowing practices and butterfly habitat, and website information.
- County Parks: Develop a uniform marketing effort across parks (including signage) highlighting mowing/planting/pesticide practices that are pollinator-friendly.

Barriers:

- Lack of staff time, ways to coordinate efforts and track progress.

Possible Leaders:

- County staff in cooperation with pollinator experts.

GOAL 2: MAXIMIZE POLLINATOR FRIENDLY LAND USE AND MANAGEMENT

OBJECTIVE 1 - INCENTIVIZE THE CREATION AND MAINTENANCE OF POLLINATOR HABITAT ON PRIVATE LAND

Recommended Actions:

- Provide incentives for pollinator-friendly practices and habitat management for: 1) homeowners and businesses, 2) farmers and growers, and 3) schools (garden projects), or provide funding for already existing programs. One example would be a pollinator-friendly designation or certification program for businesses or others.

Evaluation:

- Track enrollment in existing landowner programs over time: EQIP, CREP, CRP, CSP, etc.
- Assess ability to create incentive programs and how popular they are. Assess the impact of pollinator-friendly practices that result.

Barriers:

- Responsible parties, financial support and personnel, agency and department cooperation and buy-in, dissemination of possible incentives to the public or farmers.

Possible Leaders:

- Dane County Board, NRCS, county or municipal departments

OBJECTIVE 2 - ENSURE POLLINATOR-FRIENDLY MANAGEMENT PRACTICES ON COUNTY LANDS

Recommended Actions (see department-specific recommendations in Section III):

- Establish new pollinator-friendly plantings (forbs and trees) in degraded areas like roadsides, medians and turf grass areas
- Allow pollinator nesting habitat to remain: dead wood, open sandy soils, hollow stems
- Modify mowing practices to maximize bloom time

Evaluation:

- Compare plantings to established list of species diversity.
- Evaluate mowing timing to allow dandelion, clover and other pollinator plants to bloom before mowing.

- Assess county landscaping for inclusion of pollinator plants including nectar-bearing trees.
- Assess highway right-of-way areas for inclusion of pollinator forage plants.

Barriers:

- Mowing schedules may not be flexible enough to permit long bloom times at all locations.

Possible Leaders:

- County Departments

OBJECTIVE 3- ACQUIRE AND RESTORE PUBLIC LAND

Recommended Actions:

- Designate parcels of county land to be pollinator protection areas.
- Create pollinator protection protocol for newly acquired county lands to be incorporated into management plans and lease agreements.
- Approach Friends groups interested in putting in more prairies or pollinator gardens.

Evaluation:

- Count the available acreage and the amount of that acreage that has been designated as pollinator-friendly habitat. Monitor over time.
- Measure habitat acreage lost or restored over time.

Barriers:

- Financial needs

Possible Leaders:

- Dane County Board, local land conservancies, Friends groups, Wisconsin Dept. of Natural Resources (WDNR), Ice Age Trail

GOAL 3: MINIMIZE USE OF INSECTICIDES HARMFUL TO POLLINATORS

OBJECTIVE 1 - MINIMIZE THE USE OF INSECTICIDES BY COUNTY DEPARTMENTS

Recommended Actions:

- Assess each department's pest problems, pesticide use and alternative management options.
- Research Integrated Pest Management (IPM) approaches where pest problems exist.

Evaluation:

- Track the use of neonicotinoids and other insecticides by County departments over time (DCPPTF's initial review indicates that insecticides are very rarely used by County departments currently).

Possible Leaders:

- County departments, DATCP

OBJECTIVE 2 - MINIMIZE INSECTICIDE USE BY PRIVATE CITIZENS AND BUSINESSES

(Note: EPA and DATCP regulate pesticide registration, retail, and use by private entities, not to be superseded by local law.)

Recommended Actions:

- Provide outreach to homeowners, growers and businesses (see Goal 1: Education and Outreach) on differences in toxicity among commonly used insecticides (see Appendix C for existing outreach materials on pesticides)
- Pressure retailers to voluntarily label products or stop carrying certain products (several cases of success: Home Depot, Lowe's, Whole Foods, BJ's).
- Support change in state law to restrict retail sale of harmful insecticides for home use.

Barriers:

- Needed authority, political backing, legal issues, research, and lack of alternative pesticides for certain uses

Evaluation:

- Number of retailers that label or stop providing insecticides harmful to pollinators
- Reports of voluntary reduction of insecticide use by private residents and businesses

Possible Leaders:

- Dane County UW-Extension, private landowners and businesses

GOAL 4: SUPPORT LONG-TERM RESEARCH TO INFORM ONGOING POLLINATOR PROTECTION INITIATIVES

OBJECTIVE 1 - DEVELOP UNIFORM PROTOCOLS TO EVALUATE PUBLIC AND PUBLIC-PRIVATE INITIATIVES FOR POLLINATOR PROTECTION

Recommended Actions:

- Evaluate the progress of pollinator initiatives.
- Designate champion(s) to monitor progress and encourage long-term action

- Create a pollinator health and habitat scoring system with score card, grade or other metric
- Develop a periodic "State of the Pollinators" report
- Develop a feedback loop where findings provide guidance into future funding allocations and land management decisions by county depts., and public education efforts.
- Bring together stakeholders periodically to evaluate progress and share best practices.

Evaluation:

- Determine which pollinator initiatives work better than others and what are the pros and cons of pollinator initiatives.
- Assess public-private partnerships: how many organizations become actively involved and what progress they make over time.

Barriers:

- Lack of financial support, staff, baseline data

Possible Leaders:

- UW-Madison, UW-Extension, nonprofit groups, private partners, WDNR

OBJECTIVE 2 - DEVELOP UNIFORM PROTOCOLS TO DOCUMENT CHANGES IN POLLINATOR POPULATIONS AND HABITAT LOSSES/GAINS OVER TIME

Recommended Actions:

- Establish a long-term pollinator monitoring program aimed at answering these questions:
  - Which pollinator species are of concern?
  - Which county lands have what pollinators?
  - Where and how much habitat is in Dane Co.?
  - What makes good or poor habitat?

Evaluation:

- Research objectives achieved.

Barriers:

- Lack of financial support, staff, baseline data

Possible Leaders:

- UW-Madison, UW-Extension, nonprofit groups, county and municipal depts., citizen scientists, schools, WDNR

III. SPECIFIC TASK FORCE RECOMMENDATIONS FOR DANE COUNTY DEPARTMENTS

The Task Force found that County department's management policies already do much to support pollinator health (see Appendix A). For example:

- The County Parks Division manages about 1000 acres of prairie, emphasizing forbs (100 species) with volunteers gathering and processing 800-1000lbs of prairie seed per year to plant an additional 30-60 acres of prairie each year. Use of insecticides is very limited, and targeted to specific occurrences of insect pests.
- Highways uses native plant mixes on roadsides adjacent to natural areas.
- Henry Vilas Zoo has reduced mowing by two-thirds, uses native species where it can, and maintains a monarch garden.

The following task force recommendations for County departments build on these practices to further enhance public appreciation for pollinators, and improved pollinator health on county lands.

DANE COUNTY LAND & WATER RESOURCES DEPARTMENT, COUNTY PARKS DIVISION

- Establish pollinator habitat on new land acquired or managed by the Parks Department.
- Support Friends groups in:
    - Creating, expanding, and maintaining pollinator habitat
    - Monitoring pollinator presence and diversity.
- Allow pollinator nesting habitat to remain on property: dead wood, open sandy soils, hollow stems
- Develop a uniform marketing effort across parks (including signage) highlighting mowing/planting/pesticide practices that are pollinator-friendly.
- Provide planting advice to other Dane County departments pursuing pollinator habitat restoration.

DANE COUNTY REGIONAL AIRPORT

- Add white clover (*Trifolium repens*) to the turf mix to provide pollinator forage.
- Work with managers of leased land to minimize use of detrimental pesticides.
- Evaluate and enhance horticultural areas at terminal, and provide educational signs.
- Incorporate and implement pollinator protection strategies in the Airport's Sustainability Plan.
- Continue discussing the feasibility of locating an apiary on airport property.

DEPARTMENT OF PUBLIC WORKS, HIGHWAY AND TRANSPORTATION

- Consider pollinator needs in roadside management.
    - Include nectar plants in right-of-way seed mixes. Planting the 900 miles of Dane County highway roadsides would yield about 4,000 acres of pollinator forage habitat.
    - Choice of plant species for roadways should reflect the needs of both managed and native pollinators (see Appendix C for pollinator plant lists), the requirements for roadway safety and maintenance, and the character of adjoining lands.
    - Avoid mowing flowering plants when this will not interfere with invasive plant species management and roadway safety.
- Manage county landfills for increased pollinator forage and habitat.
    - Consider native, pollinator-friendly plants for any new plantings, including potential new plantings on cap area of landfill.
    - Choose nectar-bearing tree species for planting a perimeter screening around the active landfill.
    - Allow nesting habitat (dead wood, etc.) to remain in wooded areas near landfill.
    - Contact beekeeper groups to gauge interest in keeping hives at the Rodefeld landfill site.

DANE COUNTY HENRY VILAS ZOO

- Develop and install a pollinator exhibit, day camp materials, signs explaining mowing practices and butterfly habitat, and website information.
- Work with local beekeepers to maintain honeybee observation hive.

COUNTY FACILITIES MANAGEMENT

- Allow dandelions and clover to bloom in lawn areas.
- Plant nectar and pollen-bearing trees and perennials.

POLLINATOR PROTECTION BUDGET RECOMMENDATIONS

The Task Force requested that the following budget items be included in the 2016 Dane County budget, to begin addressing pollinator protection objectives:

2016 Budget Request Items	**Est. Cost**
1) Educational materials – brochures	$500
2) Brochure racks for county buildings	$250
3) Educational signage for 2-3 key locations	$1,500
4) Wildflower seeds for demo pollinator gardens (2 acre total coverage)	$2,000
5) Nectar forage seeds for County highway right-of -way demo	$3,000
6) Annual pollinator meeting & workshop	$1,500
Total	$8,750

Budget recommendation detail:

1) Educational materials - brochures

Organize existing resources on pollinator protection in a way that is useful to interested groups, and distribute to county departments, municipalities, County UW-Extension, and nonprofit organizations. Provide locally relevant pollinator plant lists; best management practices for pollinator habitat and pesticide choice, use and safety to:

a) homeowners, gardeners, and businesses;
b) farmers and growers;
c) departments managing roadsides and natural areas;
d) municipalities.

2) Brochure racks for county buildings

Provide accessibility of pollinator educational materials and management resources to the public.

3) Educational signage for 2-3 key locations

Promote Dane County as “pollinator friendly”, raise awareness of the need for pollinator protection efforts, and market the availability of educational resources. Key locations include the Dane County Regional Airport, Dane County Parks or Henry Vilas Zoo.

4) Wildflower seeds for pollinator gardens (2 acre total coverage)

Install several pollinator demonstration gardens on county land, as examples of how private land owners can promote pollinator health.

5) Nectar forage seeds for county highway right-of -way demo

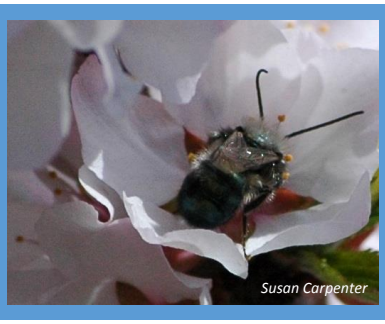
Designate and plant short sections of Dane County's 900 miles of highway with forage that provides abundant nectar for honeybees and native pollinators. Demonstrate the feasibility of establishing about 4,000 acres of forage along Dane County highways.

6) Annual pollinator meeting & workshop

Support evaluation of, and progress in, achieving Task Force goals. At annual meetings, county department personnel, municipal representatives, scientists and the public will share lessons learned and plan future pollinator protection initiatives.

Middleton Parks Dept. notice of ground-nesting bees at Parisi Park, adjacent to Pheasant Branch Conservancy. Ground-nesting bees are not aggressive and are active as adult bees for only a few weeks of the year. Photo: Michael Murray.

IV. TASK FORCE CONCLUSIONS



The Dane County Pollinator Protection Task Force identified four goal areas for pollinator protection including education/outreach, land management, pesticide use, and research. For each of these goal areas, the Task Force recommended actions that can be taken by public and private groups broadly (Section II) and by county departments specifically (Section III). Through meetings with Dane County departmental and municipal representatives (Appendix A), the Task Force identified existing pollinator protection efforts and opportunities for future initiatives and partnerships to protect pollinators. The Task Force concluded that:

- Many educational opportunities exist to highlight pollinator-friendly practices already underway in the county, such as prairie plantings at county parks and landscaping practices at Henry Vilas Zoo.
- There is opportunity for new land management initiatives along roadsides, at the Dane County Airport and landfills, and in private lawns and gardens.
- Insecticides are rarely used on county lands, and in most cases herbicide use is limited to spot treatment for nuisance plant species.
- Research opportunities abound and partnerships among county departments, the University of Wisconsin, County Extension, and state agencies like the Department of Natural Resources could address knowledge gaps concerning pollinator populations and health in Dane County and elsewhere in Wisconsin.

Task Force recommendations include the following:

- Communication among county and municipal staff to address pollinator issues;
- Allocation of funding to establish model pollinator gardens at locations frequently used by the public;
- Creation and distribution of informational documents with a county-wide uniform message to publicize economic and other benefits to communities and individuals;
- Development of a tracking system to monitor pollinator population and habitat changes.

APPENDIX A. POLLINATOR PROTECTION PRACTICES AND OPPORTUNITIES - DANE CO. DEPARTMENTS & MUNICIPALITIES

The Task Force invited representatives from Parks, Airport, Public Works (both highway and landfill maintenance), and Henry Vilas Zoo to address a series of questions concerning pollinator health. Summaries of their responses are given below.

SUMMARIES FROM COUNTY DEPARTMENT BRIEFINGS

Questions for County departments included:

- What guidelines are used in land management and pesticide use?
- What efforts are already in place for pollinator protection?
- What opportunities exist to establish pollinator protection efforts in the future?

DANE COUNTY LAND & WATER RESOURCES DEPARTMENT, COUNTY PARKS DIVISION

Representative: Darren Marsh, Parks Director

Land management:

- Parks manages 12,000 acres, more than any other department; also operates a disc golf course that contain prairie and land surrounding county landfill
- Prairie land heavily dependent on volunteer management, 14 Friends groups with some county staff guidance
- Volunteers gather and process 800-1000 lbs of prairie seed per year

Pesticide use:

- Herbicides confined to doing basal bark treatment and spot treatment for invasive plants
- Only insecticide use is for emerald ash borer on county land

Current efforts benefitting pollinators:

- 1000 acres of prairie, emphasizing forbs (100 species); 30-60 acres of prairie added each year
- Hives allowed in some county parks; no policy guides this
- The county usually goes from either agricultural cropping systems or a pasture mix and tries to keep invasive or problematic species out of these mixes in the transition to prairie

Opportunities for future efforts:

- Most of the Friends groups would be interested in putting in more prairies or pollinator-friendly gardens

DANE COUNTY REGIONAL AIRPORT

Representative: David Jensen, Deputy Airport Director - Facilities and Operations

Land management:

- 3,000 acres of land
- Airport operation areas are regulated as wildlife prevention areas to lessen the chance of any interference with aircraft; military regulations are also present on some of this land. Voles, mice and birds (in particular geese and hawks) are discouraged.
- Land is seeded in a fescue grass and mowed to 8" height.
- At the landing end of the runway a safety area 1000' long of compacted ground is mandated.
- The airport charges a fee for land rental on its approach or buffer areas.
- Renk Seed Company grows seed corn on about 300 acres.
- Some of the airport buffer area is within the Cherokee Marsh
- The airport runs a water treatment plant to handle the glycol (deicer) runoff

Pesticide use:

- No pesticides are used in airport operation areas
- Pesticides may be used on land leased to Renk Seed

Current efforts benefitting pollinators:

- Considering establishing an apiary with consultant help

Opportunities for future efforts:

- Possible sites for apiary habitat may include the following non-air operation areas:
    - Prairie Restoration around terminal and entrance drive: 1-2 acres
    - Golf Course in one of the approach areas
    - Fen restoration area: 40 – 80 acres
    - Box Farm near Starkweather Creek: about 80 acres
    - North end Messerschmidt farm where land is currently managed by the WDNR

- The airport has a Sustainability plan to which pollinator protection strategies could potentially be added

DEPARTMENT OF PUBLIC WORKS, HIGHWAY AND TRANSPORTATION

DANE COUNTY HIGHWAYS

Representative: Dale Austin, Highway Maintenance

Land management:

- The County maintains County and State roads; towns maintain their own roads
- Management is done following DOT Guidance. Only grasses are planted, no forbs on the roadsides by the county.
- Mowing is done twice a year in summer and fall. Timing depends on the location and the mowing schedule.
- Only in the fall does the county crews mow out to the fence lines about 15' if possible.
- Invasive plants, in particular wild parsnip, have been a growing problem in roadside plant management.

Pesticide use:

- Highways does not use any chemicals except for stump treatment herbicides.

Current efforts benefitting pollinators:

- Uses native plant mix on roadsides adjacent to natural areas (according to Greg Petersen, Dane County Highway Engineer)

Opportunities for future efforts:

- Open to discuss use of seed mixes with favorable characteristics (pollinator-friendly, salt tolerant, mow tolerant, non-invasive, etc.)

DANE COUNTY LANDFILL

Representative: John Welch, Solid Waste Manager

Land management:

- Landfill includes a Clean Sweep Facility, a small compost operations that is scaling down, a construction demolition disposal site that is moving to more recycling of materials, a closed landfill near Verona on 60 acres of land, an active landfill (Rodefeld) east of Madison on about 200 acres of land, and two "borrow" land holdings one in Westport of about 80 acres and one south of the beltline of about 120 acres. Two latter sites are leased to farmers and used by the county to "borrow" clay for the liner and cap of landfills. This is a one-time excavation procedure for the land.
- At the active landfill, about 100 acres are wetland, some in woods and the landfill cap area is tightly regulated by the WDNR as to what can be planted on the clay cap.

- About 69 acres will be capped with 35 acres already capped. Currently the methane is collected for electricity (enough to power 4000 homes) and generates compressed natural gas for county operated vehicles.
- County landfills need essentially perpetual monitoring for methane leaks, burrowing animal damage, etc.
- No woody vegetation allowed on the landfills
- Sod covering landfills mowed once/year to 8-10" height

Pesticide use:

- None to report.

Current efforts benefitting pollinators:

- Welch is planning to have a study done on capping options including potential use of native plants, an evapo-transpiration cap, and solar panels for the active landfill.

Opportunities for future efforts:

- Currently use a DOT Right-of-Way seed mix per code, but could get WDNR approval for other seed mixes
- Looking at La Crosse County landfill example of native forb plantings; requires careful management including controlled burns in areas with methane

DANE COUNTY HENRY VILAS ZOO

Representative: Jeff Stafford, Zoo Curator

Public outreach focus:

- About 750,000 people visit the zoo annually. Public education is key to the zoo's mission.
- Education is a key focus of the zoo. Currently up to 5,000 children attend Summer Zoo School each year. Additional 10-20,000 children attend partial day bleacher educational programs each year.
- The zoo also has a van for outreach education that goes to special events, nursing homes, and other venues.
- Zoo has one paid educator on staff, but this may change in the future.

Pesticide use:

- Only herbicide use is for spot treatment with Roundup
- Some insecticide use for mosquitoes around tent area for special events, and must abide by Federal and AZA standards within buildings for pest control. Wasps such as yellow jackets are killed only if they cause problems for visitors.

Current efforts benefitting pollinators:

- Planted wildflowers in new Arctic Passage exhibit
- Has reduced mowing by 2/3rds and is attempting to eliminate it if possible (This provides cost savings with reduction in staff time in mowing, trimming, weeding)
- Zoo tries to use native species where it can.
- Maintains a monarch garden and on the monarch registry. Will be putting up signage on this garden soon.
- Zoo mantra is that it has “weeds for a reason.”

Opportunities for future efforts:

- Zoo no longer has a honeybee hive exhibit as bee loss was an issue. People and especially kids loved this exhibit so would like to bring it back but need assistance with colony health. The Task Force agreed to offer assistance in this venture and suggested only having the hive exhibit operational from May – October of each year.
- Zoo staff would be open to planting more native pollinator friendly plants on its grounds which reside within the fenced area. Zoo does not maintain the parking lots or surrounding park or open space land.
- Would consider planting nectar-bearing trees to favor pollinators as long as they also provide good shade and have no toxicity to animals, and no nuts or large hard seed pods.
- Have a vegetable garden at the zoo but currently no pollinator garden. Locating one near or with the vegetable garden or arctic exhibit may be appropriate.
- The zoo also assists the Humane Society with animal care and education. If the Pollinator Protection task force had curriculum developed, that may potentially be used by zoo educational staff for outreach.

SUMMARIES FROM MUNICIPALITIES

The Task Force held a listening session for municipalities on August 6, 2015. Two municipalities participated in this event, the Town of Verona and the City of Middleton. The City of Sun Prairie representative participated as an observer during most Task Force meetings.

Questions for municipal representatives included:

- What pollinator issues concern you, or are of concern in your municipality?
- What opportunities exist in your municipality for pollinator friendly management practices?
- Who are the key players (public or private) involved in land management or other actions influencing pollinator health?
- How can your municipality engage the public on pollinator issues?
- What obstacles might prevent your municipality from taking steps toward pollinator protection?
- How could Dane County support municipalities in pollinator protection efforts?

TOWN OF VERONA

Representative: Tom Mathies, Town Citizen Representative, Open Space & Parks

Pollinator issues of concern:

- None to report. There have been no complaints from residents about beekeeping or other pollinator concerns.

Opportunities for pollinator friendly management:

- Town Hall has purchased new site that could accommodate 1-2 acres of prairie plantings. Also opportunity to allow white clover in the grassy areas to be used for overflow parking. Town Hall serves as the town's main gathering place and event space, and serves as a model for the rest of the town.

Key players in land management:

- The Upper Sugar River Watershed Association working on bank erosion and other projects.
- Town has no park land, and is not interested in managing parks.

Public engagement:

- It's common for landowners to mow their own roadside. Mowing guidelines would be an avenue for public outreach.

Obstacles:

- Farmers are busy; recommendations must make economic sense

How can Dane County support your municipality?

- Dane County could encourage businesses like Home Depot and Menards to stock native plants.
- Dane County could persuade real estate listers to highlight native plantings.

CITY OF MIDDLETON

Representative: Abby Attoun, Assistant Director of Community Development, Planning Department, Sustainability Committee

Pollinator issues of concern:

- None to report. There have been no complaints from residents about beekeeping or other pollinator concerns.

Opportunities for pollinator friendly management:

- A regional forester could give a talk to all municipal foresters to educate them on good tree choices for pollinators.
- Review processes for new housing developments could include a score for "wildlife trees" or other pollinator-friendly landscaping.
- Plantings for stormwater basins could include pollinator-friendly plants (purview of water resources department)
- Willy West Coop considering keeping honeybees on its roof; working through issues with landlord.
- Middleton is considering applying to become a "Bee City USA"
- Key players in land management:
- Middleton land management decisions are guided by a sustainability plan adopted in 2010
- Public Lands Manager Penni Klein has been instrumental in planting native plants at city hall, the library, and in medians
- Aware of at least 27 beekeepers in Middleton (listed members of the Dane County Beekeepers Association)
- Middleton has a number of community gardens. Bock Community Garden is considering allowing commercial honeybee hives.

Public engagement:

- Public outreach materials would be useful for when people approach the City with questions about pollinators.
- Seed libraries could denote native plants with stickers or signage.

Obstacles:

- None to report.

How can Dane County support your municipality?

- Having the Task Force report will be the most useful thing. Report could have ranking system municipalities can use to self-rank each year on how they are doing on pollinator protection.
- Dane County can reach out to municipalities through Friends groups and other environmental organizations; get the Task Force report to those groups.
- Providing model or template beekeeping and natural lawn ordinances would be helpful for municipalities considering adopting one.
- Dane County could provide public outreach materials for residents.
- Dane County could provide stickers denoting native plants for seed libraries (several other municipalities in Dane County also have seed libraries).

CITY OF SUN PRAIRIE

Representative: George Frank, City Council

Pollinator issues or concerns:

- Sun Prairie is considering ordinance language that would permit keeping bees in the city. The Mayor's main concern is the safety of the residents. Mr. Frank believes safety concerns can be addressed with educational outreach to residents.
- Other pollinators like butterflies, hummingbirds and bumble bees, have not been an issue. Sun Prairie has not had any complaints from residents about beekeeping or other pollinator concerns.

Opportunities for pollinator-friendly management:

- Sun Prairie has forty three neighborhood parks, and parts of these parks could be turned into pollinator habit as well educational opportunities about prairies, wildflowers and the benefit of pollinator habit to neighborhoods.
- School yards would lend themselves for both habitat and education. There is opportunity to team up with the "Feed a Bee" program.

- City Recycle Center, Wastewater Treatment Facility, the Sun Prairie Dog Park and stormwater retention ponds are just a few opportunities where habitat can be incorporated.
- Commercial and residential developers could be encouraged to use pollinator plantings in their developments. Mr. Frank has spoken with a major developer in Sun Prairie that is currently implementing pollinator habitat in his development's landscapes.
- Department of Public Works is looking into replacing diseased ash trees with nectar producing trees, helping to diversify Sun Prairie's urban forest.
- Residents can learn how they can take part in helping pollinators through programs such as Feed a Bee (and other pollinators) or by simply planting wildflowers for pollinators in their gardens.

Key players in land management:

- City Council, Mayor, Department of Public Works (Parks & Forestry Dept. and Planning Department.
- Sun Prairie Community Gardens (would like to have hives located at their garden), Sun Prairie Schools.

Public engagement:

- Sun Prairie has several vehicles for outreach: TV, Radio and Newspaper. Starting in the schools outdoor programs to show what plants benefit from the pollinators (vegetable gardens and the like).
- Giving out seed packs to students to take home and plant.
- Those who are familiar with this topic to explain the process in developing prairie, wildflower and pollinator gardens.
- The city could produce a guide of where these planting are located on their web site.

Obstacles:

- Educating residents.

How can Dane County support your municipality?

- Dane County could encourage retailers to advertise more environmentally friendly herbicides and pesticides in the same area where the pollinator seeds and plants are located.
- The Task Force report will show cities what can be done to help.

- Dane County could show the commercial and residential developers the benefits of planting prairies wild flowers and pollinator gardens on lands waiting to be developed.
- Dane County could also promote the benefits of having a natural lawn along with signs to let the general public know that this is a natural lawn.
- Advertise County-wide contests for natural lawns in city subdivisions.

APPENDIX B. FORMATION OF THE DANE COUNTY POLLINATOR PROTECTION TASK FORCE

PURPOSE

The Dane County Board resolution 2014 RES-472 (below) directed the DCPPTF to review current management practices in Dane County as they relate to pollinator health and habitat. It also directed DCPPTF to solicit input from local stakeholders and municipalities in developing recommendations and long-term strategies for county departments, private citizens, and private-public partnerships.

TASK FORCE MEMBERS

As directed by its resolution, DCPPTF contained representatives from the Dane County Environmental Council and the Dane County Food Council. Other appointed members include citizen experts, beekeepers, Dane County Extension, and UW scientists.

Members	**Interests Represented**
Christina Locke, Chair UW Entomology Dept.	Scientific research, ecology and land use
Susan Carpenter, Vice Chair UW Arboretum	Education/outreach, native plant gardening, native bees
Mindy Habecker, Staff Support Dane County UW-Extension	Rural landowner and natural resource educator
Joseph Bessetti Dane County Beekeepers Assn.	Scientific research, organic beekeeping
David S. Liebl UW-Cooperative Extension	Education/outreach, beekeeping
Ace Lynn-Miller Dane County Food Council	Farmer, common good
Dale Marsden Dane County Beekeepers Assn.	Beekeeper
Lakshmi Sridharan Dane County Environmental Council	Common good

The DCPPTF: Sridharan, Lynn-Miller, Marsden, Liebl, Habecker, Locke, Bessetti, Carpenter

TASK FORCE MEETINGS

The Task Force met fourteen times, approximately every two weeks from March 13 to September 8, 2015. Over this time, the Task Force heard from Dane County department representatives, making note of current practices affecting pollinators and potential avenues for future pollinator protection efforts. The Task Force also participated in a facilitated workshop to generate goals internally, and held a listening session to gather input from municipal staff.

Meeting	Topics Addressed
March 13, 2015	● Introductions ● Election of Chair
March 23, 2015	● Develop action plan and timeline ● Develop county department invitee list and questions for invitees
April 7, 2015	● Review timeline ● Discuss best management practices (BMPs) for pollinator protection
April 21, 2015	● Presentations from Dave Jensen (Airport) and Dale Austin (Highway) ● Clarify questions for future presenters ● Discuss communication with municipalities
May 5, 2015	● Presentation from John Welsh (Landfill) ● Review Task Force goals ● Discuss appropriate plants for pollinators (native vs. non-native) ● Discuss public outreach opportunities
May 19, 2015	● Task Force workshop to generate goals and objectives
June 2, 2015	● Presentation from Jeff Stafford (Henry Vilas Zoo) ● Review summary from Task Force goal generation workshop
June 16, 2015	● Review Task Force goals and objectives document
June 30, 2015	● Review Task Force goals and objectives document (cont'd) ● Design meeting with municipalities
July 14, 2015	● Design meeting with municipalities (cont'd) ● Review compiled report outline ● Discuss Farm Tech Days booth for outreach
July 28, 2015	● Final planning details for meeting with municipalities ● Plan for editing and content decisions for final report
August 6, 2015	● Listening session for municipalities
August 11, 2015	● Debriefing following meeting with municipalities ● Plan for editing and content decisions for final report (cont'd) ● Discuss 2016 budget items
August 24, 2015	● Work on final report
September 8, 2015	● Work on final report

DANE COUNTY BOARD RESOLUTION 2014 RES-472

ESTABLISHING A DANE COUNTY POLLINATOR PROTECTION TASK FORCE

There has been a severe loss of pollinators, including honey bees, native bees, bats, birds, and butterflies in recent decades. This has had a dramatic impact on food production, particularly fruit, nut, and vegetable production.

Factors affecting the loss of pollinators include a loss of native habitat, exposure to pesticides, and a lack of adequate diet. These factors can be addressed at the local level.

Earlier this year, the White House created a federal Pollinator Health Task Force, directing agencies to review current practices and prepare to implement strategies to improve pollinator health. More recently, the City of Madison directed the Madison Food Policy Council to convene a task force on pollinator health.

The Dane County Food Council and Environmental Council share these concerns and believe Dane County government and other municipal governments can take steps to restore bee, bat, bird, and butterfly populations.

NOW, THEREFORE, BE IT RESOLVED that the Dane County Board of Supervisors hereby establishes the Dane County Pollinator Protection Task Force which shall consist of the chairs of the Dane County Environmental Council and the Dane County Food Council, and seven other members jointly appointed by those chairs. Members may include other local government officials, citizen experts, and staff from the Land and Water Resources, Public Works and Highway, and Dane County UW-Extension departments, and Madison-Dane Public Health.

BE IT FURTHER RESOLVED that the Task Force shall:

1) Collaborate with the City of Madison Task Force on Pollinator Health for review of available research on pollinator decline and efficacy of protection strategies
2) Communicate and collaborate with other municipalities in Dane County to invite or assist with development and/or administration of pollinator protection policies
3) Review current County department practices that affect pollinator habitat and health
4) Solicit input from local stakeholders with additional information on the issue
5) Monitor the work of the White House Pollinator Health Task Force and use information and recommendations to supplement its work
6) Explore public-private partnerships to help address the issue
7) Develop recommendations for departments to improve the habitat for pollinators on county-owned land
8) Develop recommendations for citizens to plant pollinator-friendly habitats and guidance on pesticide use around their house
9) Provide guidance for a long-term strategy to departments to promote pollinator health

BE IT FURTHER RESOLVED that Dane County UW-Extension provide staff support to the Task Force.

BE IT FINALLY RESOLVED that the Dane County Task Force on Pollinators complete its review within nine months and make recommendations to the Environment, Agriculture, and Natural Resources Committee, and to the County Board by September 15, 2015. The task force shall officially dissolve upon delivery of its report to the Board.

APPENDIX C. POLLINATOR INFORMATION AND EDUCATIONAL MATERIALS

PLANT LISTS & PLANTING GUIDELINES

- Pollinator Partnership plant list, includes trees, shrubs, forbs, and crops: http://pollinator.org/PDFs/Guides/EBFContinentalrx13FINAL.pdf
- Xerces Society for Invertebrate Conservation planting guidelines for homes, farms, roadsides: http://www.xerces.org/pollinator-conservation/
- NRCS Wisconsin Biology Technical Note 8 (2008), Pollinator Biology and Habitat. Includes pollinator plant lists with a variety of salt and drought tolerant plants: ftp://ftp.tx.nrcs.usda.gov/WI/technotes/biology-tn8.pdf
- Pellett, F.C., *American Honey Plants, 5th ed*., 1976. 476 pages. Hamilton, IL. A definitive list of plants for horticultural and urban forestry purposes that produce abundant nectar flows to support honey crops. (Note: Cross-check the Wisconsin DNR list of invasive species before planting any non-native horticultural plant.)
- WDNR list of regulated and unregulated invasive plant species: http://dnr.wi.gov/topic/Invasives/species.asp?filterBy=Terrestrial&filterVal=Y

LISTS OF NATIVE PLANT NURSERIES & SEED SOURCES

- Native seed mixes for roadsides: http://www.shootingstarnativeseed.com/DOT-seed-mixes.htm
- Wisconsin native pollinator plants: http://www.steingg.com/explore/annuals-perennials/true-wisconsin-natives.html

  http://findnativeplants.com/midwest/wisconsin-native-plants/

  http://www.reneesgarden.com/hm-gardnr/resource/bee-list.htm

PESTICIDE TOXICITY COMPARISON & PRODUCT INFORMATION

- University of Florida pesticide toxicity profiles: http://edis.ifas.ufl.edu/topic_series_pesticide_toxicity_profiles
- Seed treatment product information from UW-Madison and UW-Extension: http://ipcm.wisc.edu/download/pubspm/whats_on_your_seed_final_4.pdf

- List of home and garden products containing neonicotinoids from Beyond Pesticides & Center for Food Safety: http://www.centerforfoodsafety.org/files/pesticide_list_final_update-june-2014_13089.pdf

COST-SHARE PROGRAM FOR LANDOWNERS

- Wisconsin Landowner Incentive Program: http://dnr.wi.gov/topic/endangeredresources/lip.html
- NRCS Environmental Quality Incentives Program (EQIP): http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/
- NRCS Conservation Reserve Program (CRP) and Conservation Reserve Enhancement Program (CREP): http://www.nrcs.usda.gov/wps/portal/nrcs/detail/md/programs/?cid=nrcs144p2_025631
- NRCS Conservation Stewardship Program (CSP): http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/csp/
- US Fish and Wildlife Service Partners for Fish and Wildlife http://www.fws.gov/midwest/partners/

CITIZEN SCIENCE & OUTREACH PROJECTS

- Million Pollinator Garden Challenge: http://millionpollinatorgardens.org/
- Bumble Bee Watch: http://www.bumblebeewatch.org/
- Monarch projects: http://monarchjointventure.org/get-involved/study-monarchs-citizen-science-opportunities
- The Great Sunflower Project:
- https://www.greatsunflower.org/
- K-16 educational materials for insect biodiversity from UW-Madison: https://www.glbrc.org/education/classroom-materials/field-investigations-bug-biodiversity-and-ecosystem-benefits

APPENDIX D. REFERENCES

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