Environmental INITIATIVE

Powerful Partnerships, Effective Solutions

Minnesota Department of Agriculture Pollinators Summit

Summit Outcomes Report

IN THIS REPORT:

Presentations from the Summit can be accessed at http://www.environmental-initiative.org/our-work/environmental-policy/pollinators-summit.

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Pollinators Summit Overview and Purpose

Pollinators are an irreplaceable public resource. Insect pollinators, such as bees, butterflies, wasps, flies, and beetles, are critical for the pollination and production of crops and the health of native flora and landscapes. Some are especially valued for their beauty and place in our culture, like the monarch butterfly and the honeybee.

On February 12, 2016 Environmental Initiative, on behalf of the Minnesota Department of Agriculture (MDA), convened the full spectrum of Minnesota's insect pollinator experts and interested stakeholders—from beekeepers to landscapers to farmers—for a day of collaboration to identify solutions that will protect and support Minnesota's insect pollinators. The goal of this summit was to identify challenges and propose broadly supported solutions, particularly strategies that could be implemented by state agencies in the near term. Participants came prepared to discuss current efforts and offer specific policy and program ideas to protect and support Minnesota's insect pollinators.

Following a series of expert presentations, participants provided input to the MDA via a set of small group discussions designed to generate constructive ideas and solutions to address the needs of pollinators in Minnesota. Input was gathered during two 60-minute breakout sessions. Participants were able to choose from five breakout topics during each session. Topics included management of agricultural landscapes, management of public lands, management of roadsides and rights-of-way, management of residential landscapes, and management of commercial landscapes. During each session, multiple small group conversations were facilitated on each topic. Groups varied in size from eight to 17 people, were multi-sector and designed to include a diverse range of perspectives.

Each discussion was facilitated by a state employee with some expertise in land management and included a dedicated note taker. Groups were asked to select up to three broadly supported strategies/solutions from each conversation to share with all attendees. Broadly supported ideas from each group were posted for all participants to read, and participants were given the opportunity to show support for three strategies by placing dot stickers on the strategies of their choice, regardless of the topic.

This document, which contains the input gathered from the Pollinators Summit, is organized by the five breakout session topics: agricultural lands, public lands, roadsides and rights-of-way, commercial landscapes, and residential landscapes. Each section of this report begins with discussion themes, which are a synthesis of the small group discussion notes. Each section also includes a full list of the broadly supported strategies from each discussion group, ranked by the number of dot stickers participants placed on each strategy. Finally, detailed comments from each breakout session have been organized into broad themes. Many groups touched separately on similar ideas, and these comments have been grouped together to identify topics of particular interest and to show how different groups approached and discussed similar issues. Environmental Initiative lightly edited some comments for the sake of clarity.

Agricultural Lands: Discussion Themes

Farmer Education and Outreach

Though participants consistently noted that public awareness, including farmers, is at all time high, participants spent much of their time discussing the importance of continued—and more effective—education for landowners and operators. Comments about farmer education and outreach related to:

- helping farmers to access available federal and state programs,
- the importance of finding the right messenger (many participants suggested crop advisors and other influential leaders in the farming community),
- as well as the need to replace educational capacity lost as funding for University of Minnesota Extension programs has decreased.

Participants also noted the importance of meeting farmers on their own terms—in their communities and using positive messaging that invites constructive participation.

Small groups also spent significant time discussing the specific practices that education and outreach to farmers should focus on, including integrated pest management, use of cover crops / diversification of crop systems, reduced tillage, and reducing treated seed dust. Several groups also noted the need for greater incentives to promote the use of these practices.

Policies/Regulations on Use of Pesticides

The other topic the agricultural lands discussion groups focused on was pesticide use. Notably, about half of "top" strategies proposed to the full group in the agricultural lands category (and about half that participants marked as favorites) related specifically to pesticide use. Participants focused on the issue of seed treatment and called on the Minnesota Department of Agriculture to support reduction in the use of treated seeds (participants offered a number of specific suggestions). Numerous participants also expressed support for Province of Ontario policy as a model for reducing neonicotinoid use. Comments also addressed ending the prophylactic use of neonicotinoids, setbacks and pesticide drift prevention, and funding for additional research on the effects of (and alternatives to) pesticide application, particularly spraying for soybean aphids.

Coordination Across Public Agencies and Programs

The final broad topic that garnered significant discussion and many comments was the need for greater coordination across public agencies. In particular, people expressed an interest in drawing connections between the Department of Natural Resources Prairie Plan, efforts to improve water quality such as the 2015 buffer bill, and other conservation delivery programs in order to leverage existing resources for the benefit of pollinators.

Agricultural Lands: Detailed Comments

TOP BROADLY SUPPORTED ACTION ITEMS

- Implement Rep. Rick Hansen's 5 step plan, though among other things implement the DNR prairie plan (31 dots)

- Improve education of farmers and agronomists on pollinator issue and resources available (CRP practices, etc.) (14 dots)
- Provide information and incentives to farmers about when and how to use Integrated Pest Management (IPM) and limit prophylactic pesticide use (14 dots)
- Government programs: (7 dots)
  - Raise CRP crop acreage base (CAB)
  - Remove barriers from conservation programs for pollinator habitat (existing and new)
  - Promotion, flexibility
- Statewide campaign (commercials, billboards, radio ads) focused on improving awareness about pollinator crisis, issues, and positive changes everyone can consider (5 dots)
- Chemical decisions and applications need to be based on what is needed for crop health (5 dots)
  - Recommendations need to be impartial and based on science.
  - More education is needed for certified crop advisors on pollinator issues.
  - More focus on precision agriculture practices to help farmers meet their needs and enhance pollinator habitat
- Reduce unnecessary pesticide applications through IPM (4 dots)
  - Regulation like Ontario? [sic]
  - Education/outreach? [sic]
- Incentives for long term monitoring and reinforcement as part of initial process (cost-share should include more robust incentives) (2 dots)
- Modernize conservation delivery system by addressing/acknowledging the modern farm community. Minnesota Department of Agriculture (MDA) and Soil and Water Conservation Districts actions should address: (1 dot)
  - Who is "go to"
  - One stop shop
  - Accessibility
  - Using modern technology
- Expand DriftWatch to include protected lands, wildlife management areas, state parks (helps applicators with setbacks, etc.) (1 dot)
- Encourage greater availability of non-treated seeds (1 dot)
- Drop the part of the law requiring beekeepers to be registered with DriftWatch and invest in an extension program for beekeepers, run by beekeepers.
- Pair pollinator education with practices that offer additional positive economic impacts
- Existing government programs (Conservation Reserve Enhancement Program, Conservation Reserve Program, Reinvest in Minnesota, etc.)
  - Flexibility (long term too)
  - Make changes easier
  - Allow/promote pollination mixes
- Increase supply of seed mixes:
  - Support seed production and collection in Scientific and Natural Areas (SNAs)
  - Support supply by increasing demand through public programs

- Foster communication and unified approach between conservation initiatives
- Monetary incentives ($ or tax rebates) for growers and residential property owners to set aside land for pollinators
- Reduce seed treatment:
  - Research
  - Promotion/education
  - Funding/incentives
  - Offer options
- Farmer choice
  - Seed treatment
  - Labeling education (product and proper use)
- Research the effects of the environmental impacts of the insecticides used for aphids, and require reporting of aphid pesticide applications.
- Set pesticide reduction targets and meet them. Back targets up with funding and research. Approach should be comprehensive and integrated: reduce use of chemicals, need creative/innovative incentives to plant pollinator species, education is needed.

WHAT IS WORKING

Public Education and Awareness

- Educational programs with youth have been successful at teaching about planting seeds/ plants for pollinator habitat.
- Growers, when approached about adding planted buffers for pollinators, are in most cases receptive. This is also true pertaining to modifying spray programs in areas adjacent to organic production or sensitive areas.
- Ag industry awareness
- The level of knowledge and collaboration is high
- New professionals appear to be having an impact by interacting with the established clientele and having them reevaluate their positions. Relationship building is key.
- Initiatives are working where we can identify growers who are interested.
- The local media is engaged and helping to build momentum.
- Public awareness about pollinators
- There are a lot more entities promoting habitat than before. Overall public awareness seems good.
- The public is aware and putting pressure on businesses to change. For example Home Depot has even made sustainability changes.
- There is a lot going on to raise awareness. For example, the Farm Bureau gave out pollinator seeds, which drove a lot of conversation. Farmers asked, "Why are you giving away milkweed seed?" so it elevated the conversation.

Public Sector Investment/Leadership

- Minnesota is spending much more money than other states on this issue and is a good model for getting practices on the ground.
    - Money in Minnesota for research has stimulated the conversation.
- The Bee Lab at the University of Minnesota
- The fact that we are having a pollinator summit today and that there is receptive leadership at the MDA is hugely positive
    - This issue has an unprecedented level of support within the administration (three commissioners and the Lt. Governor here today).
- [On monarchs,] strong level of interagency coordination between all levels of government, in addition to the international agreement with Canada and Mexico
- Cost share programs for seeding are effective with growers.
- Federal Farm Bill programs (Conservation Reserve Program, Conservation Stewardship Program, Environmental Quality Incentives Program, etc.)
- Land into going into CRP and other programs for water quality, grazing, etc. has the unintentional impact of helping pollinators.
    - Recent focus/efforts related to water quality have also helped pollinators

Voluntary Actions and BMPs

- On their own (without state money or support) R.D. Offutt has taken land out of agricultural production (parcels ranging in size from five to 40 acres, for a total of 600 acres). They are also working with cover crops in the potato rotation. RDO uses signage to identity pollinator habitat.
- Organic farming movement
- That people are interested in cover crops and putting cover back on the land
- Better use of chemicals – less used now than in the past
- Pollinator-friendly seed mixes that are available
- We should recognize the long history of community beekeepers partnering with landowners and locating hives. A volunteer approach as been the backbone since beekeeping began. There are successful working relationships.

Pesticide Regulations and Reduction Programs

- Bee kill compensation program
- Training of pesticide applicators
- Research on efficacy of neonicotinoids and seed coatings

BARRIERS

Information/Research Needs

- When it comes to pollinators we don't know what is out there—we are still developing baselines.

Access to Existing Programs and Incentives

- A lot of federal money is potentially available for habitat, but it's hard to find land to fit the criteria for it to be used.
    - It's difficult to have land qualify for federal programs. Programs need to be flexible enough to allow land in.
    - Barriers to use of federal funding—need more flexibility so programs can work in Minnesota
- Lots of resources are available, but there needs to be more information/education on how to access the resources and who qualifies.
- Lack of funding for programs is a major barrier to implementation and follow-up.
- It's not to the farmer's [economic] advantage to conserve land. Some want to do the right thing, but the dollars aren't there, so loss of habitat and marginal land being farmed is the result.
- Federal programs are inflexible, with mandatory agreements.
- Reductions in payments from programs might force farmers to leave programs in orders to pay bills.
- CRP mid-contract management.
- We've lost a lot of CRP.

Establishing and Maintaining Habitat

- Finding the right locations for habitat that won't be contaminated by neonicotinoids
- It takes years to establish native prairie (5+ years), so even if the land is there, establishing habitat is harder than most people think.
    - There is a learning curve that people need to be patient with, because it doesn't look good for a while.
    - Getting these plantings/communities to grow is difficult. Doesn't happen naturally, especially if there's a lot of reed canary grass.
    - Shifting to a diverse habitat takes time.
    - Weed pressure is a problem in getting prairie started.
- Need better availability of quality seed
- There is no cookie cutter approach for farmers and landowners to implement and manage habitat.
- There's a lot of handholding required because farmers don't have a lot of time for this type of management. We need to know if the placement of a planting is in a good spot.

Farmer Education and Outreach

- Some landowners are not responsive to the messengers/messages that are out there.
- Psychological and social barriers…relationships are the key to overcoming these.
    - Cultural shift is needed.
    - Scarier than the government is what will the neighbors think. Milkweeds in roadsides – oh no.
- Need more partnerships and grassroots support

- Lack of interest on the part of conventional growers to adopt more diverse crop production practices (and maybe knowledge about why or how)
    - There's too much corn-on-corn.
- Lack of expertise is also a problem. Need one-on-one interactions with local programs.
- University of Minnesota Extension ran out of money 25 years ago, so farmers get their information from piecemeal sources – crop consultants, dealers etc.
- Historically, conservation has been driven through the Natural Resources Conservation Service (NRCS) – not sure every district conservationist has this as a priority and can advise appropriately.
    - I do think NRCS does have the education. Hurdle is getting people educated because it seems that only the people who are already on board are the ones who attend the trainings/meetings. It's hard to get to the broader audience.
- Need to work at messaging. Agriculture gets blamed for everything these days – every crisis there ever was. There are no meetings to celebrate success, only disaster. Figure out proactive messaging.

Use of Pesticides

- Lack of options for pest control other than neonicotinoids—not enough incentive for developing new chemicals.
- Concerned with the prophylactic use of insecticides.
    - Most farmers don't apply until they are over the economic threshold.
    - Thresholds are followed, it's all about input prices.
    - Minimal benefit for prophylactic use.
    - Prophylactic use is 7,000-10,000 times more toxic to bees than DDT.
- Pesticide drift is a major issue. More flowers should be planted in agricultural settings. If farmers could visibly see flowers on the landscape there would be more awareness in regards to drift.
    - Rampant poisoning is going on—we need clean flowers and to reduce the poison.
    - If we continue to have pesticide drift concerns, than the prairie plan is not doing its job.
    - There are technologies to reduce drift but not everyone is willing to spend the money.
- We need an honest conversation. Alternatives to the way we farm need to be at the forefront of that conversation.
- Barrier is not being able to consider all factors in the equation [pesticides, requirements of farmers].
- State needs to better regulate neonicotinoids – seed treatment is not treated as a pesticide application.
- Lack of access to non treated seeds.
    - Lack of choices for producers.
    - Farmers are not really asking for untreated corn seed.
    - Seeds only planted three inches deep—pheasants dig them up and die.

- We are seeing success in program adoption, especially NRCS/Environmental Quality Incentives Program (EQIP), yet honeybees are declining and monarchs are down 90%. Not sure the habitat strategy is working.
- Decision makers are not willing to move forward [to address pesticides] when needed. They keep putting money in habitat and are not willing to make hard decisions.
- The current situation is unrealistic – voluntary does not work. There needs to be mandated reductions.
- Keeping bees in California until after seeding is done in Minnesota is not profitable.
- Longevity of neonicotinoids in soil and movement in plants is a factor.

Other

- Landowners aren't the ones who farm the land.
    - 83,000 landowners in MN, 63,000 of them don't live on the farm.
- Milkweed is still a considered a noxious weed in some counties and townships.
- One honey bee hive takes about two acres of lush alfalfa to support the colony through the season, so we have a huge lack of flowers (takes about two million flowers to make about one pound of honey).

SOLUTIONS

Farmer Education and Outreach

- Crop advisors (including public agencies like conservation districts) are the key way to get to growers having impacts on watersheds. They are the key connections to growers.
    - Need to team with crop advisors to get better engagement.
    - Consultants are the key.
    - Psychological and social barriers…relationships are the key to overcoming these.
    - Need to make sure that farmers are using what [pesticide] is needed for crops and not just using general recommendations—those giving recommendations need to be impartial, and science-based information is the key. Use only what it needed at that point in time for crop health.
    - Crop advisors need to be more aware of pollinator issues. It should be private certified crop advisors and not always the co-op.
    - Farmers want a private organization to help them set up conservation plans (farmers go to the agricultural chemical suppliers for recommendations).
- Find influential people.
    - Target the grower who's a leader in the community, and set up a demo.
    - Use local Farm Bureau, retailers, NRCS, SWCDs, etc. to identify local leaders.
    - Maybe approach the national women's chapters.
    - Work with local leaders on smaller-scale networking.
- Extension funding has been reduced, so we need another way to promote IPM
    - Without University of Minnesota Extension there is a need for a new type of clearinghouse of information for farmers.

    - Redirect funding of Extension to SWCDs.
- The Minnesota Department of Agriculture needs to come up with specific recommendations for reducing pesticide use and exposure.
    - The Minnesota Department of Agriculture should offer more advice and experience to farmers. Minnesota farmers love MDA and hate the NRCS.
- People need info beyond just how to sign up land. They need to know what to plant, how to grow it, how to manage it so that it comes back, etc. Train people on how to manage a site.
- Use the media to emphasize success stories.
    - Maybe need TV commercials
- Make sure these types of meetings take place in farm communities.
    - Maybe go to the meetings the farmers are already attending. A trusted partner – get on their program.
- Use proactive and positive messaging (rather than pointing fingers).
    - Provide recognition to landowners that it's their private property—you'll get greater buy-in if it is voluntary rather than mandatory.
    - A lot of our farmers don't understand they are a part of the problem. There needs to be an acknowledgement that they are part of the solution. Education without pointing fingers.
- Farmers need a tool for obtaining more information on what impact their farm is having on the environment.
- Have farmers teach farmers—demos. Gabe Brown with soil health message.
- Need reinforcement of successes—follow-up is the key. Growers need to take ownership of decisions and see positive impacts.
- Find ways to focus habitat development on farmstead property.
- Focus efforts on the conventional growers and their programs.
- Growers need to know options—education at all levels
- Need more education about existing agricultural pesticide application laws
- Educate farmers and agronomists on pollinator issue and resources available such as federal programs.
- We need to inform people about how beneficial pollinators are and how much we need these pollinator acres.

Support for Beekeepers

- Invest in an extension program for beekeepers, run by beekeepers.

Federal Programs

- Get marginal lands into the Conservation Reserve Program as pollinator habitat.
- Recruit more farmers to participate in federal conservation programs (e.g., Environmental Quality Incentives Program).
- Make federal programs easier to access and qualify for.
- More use of IPM approaches is needed (information for growers).

- Allow grazing on existing CRP land.
    - Allow grazing on CRP in more situations.
    - If livestock numbers increase, then more pollinator-friendly plants would be grown.
- Revamping Federal conservation programs to fit today's needs, e.g., Farm Bill could lift the cap on conservation acreage.

Practices

- Focus on practices that can also have positive economic impacts.
- Challenge farmers who are creating pollinator habitat (including buffers) to consider best management practices (BMPs) for using neonicotinoids and preventing pollinator deaths.
- IPM and its guidelines need to be revisited and followed.
- We need to diversify crops, use cover crops, decrease pesticide dependence, improve soil health.
    - Plant cover crops.
    - Plant diverse "whole" crop systems in agriculture.
    - Support diversification of agriculture.
    - Task the land grant universities with figuring out how to make the economics work [for cover crops/perennials].
    - Plant other things (like alfalfa).
- Include pollinator goals in all conservation practices.
- Beneficial insect strip idea – need to use different spraying times of the day and use different chemicals. We need to encourage farmers to put the buffers in and this will be a paradigm shift.
- More reduced tillage
- Need a standard for the pollinator seed mixes—maybe different levels of mixes
- Let's talk about reducing exposure.
    - Technology, IPM and setbacks can be used together to minimize exposure.
- Reduce seed dust.
    - When these products were first registered, the planters would plant so that the dust would go into the furrow with the seed and get covered up. Now the vacuum planters cause more dust.
- There is a lot of idle land that has not been optimized [as habitat] yet.

Incentives

- Create a value for pollinator habitat, "Put nature back in farmer's lives".
- Farmers need incentives for planting of pollinators and so is reduced agricultural chemical usage.
- Include comprehensive and integrated incentives and focus on neonicotinoids as a start, but they are not the only concern
- Would like to see crop insurance money go towards pollinators – subsidize farmers and landowners directly for pollinators.

- Precision agriculture: How can we use this for pollinators and to improve profitability? How can we focus on marginal lands and put in pollinator habitat? More incentives are needed for this.
- Incentives ($) for growers to set aside marginal land for pollinators.
- Tax rebates for residential and agricultural lands.

Policies/Regulations on Use of Pesticides

- Put a moratorium on the use of neonicotinoids
- Restrict prophylactic use of neonicotinoids, or require that people justify use á la Ontario
- Minnesota should be proactive and consider the approach taken in Ontario. However, we need more money for this. We need restrictions that make sense and reduce chemical use.
    - Our neighbors in Ontario are on track based on science—they have a plan in place to reduce neonicotinoids by 80%.
    - We should be starting real conversation on what Ontario is doing (good and bad).
    - Ontario and Europe have set restrictions and bans on neonicotinoids, and first year in Europe without neonicotinoids they had a bumper crop.
    - Canada model of regulating.
    - Follow Ontario's example of reducing neonic uses and their goals, process, rules and regulations in regards to seed coating.
- Is it possible and wise to deal with the neonicotinoid issue? MDA has authority to do it. This past year was first year Europe had their ban on neonicotinoids—higher results without seed coatings in Europe.
- Department of Agriculture needs to use its authority to add protective measures (e.g., setbacks).
    - A lot of money is already spent to ensure that pesticides go where they need to go.
    - Need more consistent investment in technologies to reduce drift
    - Should have setbacks around water, where there is runoff
    - There is no right for someone to kill pollinators on other peoples' lands.
- Protected and sensitive areas should be listed on Driftwatch.
- Drop the part of the compensation law that beekeepers need to be registered on Driftwatch.
- Labeling on seed bags would be beneficial, with information/education on seed application risks.
- Need choices regarding seed treatment
    - Recommend that Minnesota regulates treated seeds the same as pesticides.
    - State ban on seed treatment.
    - Neonicotinoids is the gorilla in the room. The state of Minnesota needs to reduce the excessive exposure to these seeds.
    - Regulating treated seeds as pesticides would greatly increase costs.
    - Corn and soybean growers need to have a choice of treated and untreated seed.
    - Soybean farmers have the option now and have reduced treated seed use by 40%.
    - Provide information on use of neonicotinoids as seed treatment.

    - Communication and research: Provide a grant program to get at the use of seed treatment.
    - More choices for farmers on untreated seed.
    - Offer/use seed coatings without neonicotinoids.
    - Have more non-treated seed available.
    - Improve access to non-treated seeds.
    - Purdue and Brookings have done studies and have shown no difference in yields between treated and untreated seeds.
    - Grants from the MDA for seed production
    - Precision agriculture solutions could be important especially in seed treatments – both at the plant and then in the field.
    - Because predatory pests are being killed by the early treatment, more chemicals are being used latter in the season—it's creating a cycle.
- Put restrictions on the timing of insecticide applications and types of plants that can be sprayed/treated.
- If wind is greater than a specific speed, they could prohibit spraying.
- Department of Agriculture may need more lab space and employees to handle more samples to adequately test for drift/contamination.
    - Should have multiple labs to send samples to
- Restrict neonicotinoids
    - Reduction of Neonicotinoids on the landscape
- There needs to be responsible pesticide management. We know what needs to happen and how—now we need to scale it up into action.
- Agriculture should be regulated and required to do things like other industries (not always paid to do things through incentives.

Coordination Across Public Agencies and Programs

- Learn lessons from public lands and how they are managed for pollinators.
- Approach needs to be integrated and in parallel plan that all the agencies can use and work together. Farmers need to be profitable and any approaches needs to be comprehensive.
- Use existing programs to provide incentives to stack the benefits, including the Minnesota Agricultural Water Quality Certification Program: One practice is grass waterway, strips, minimal till…a number of things that can benefit pollinators. Focus is on water quality, but there are secondary benefits.
    - Couple with water quality programs, because that's all the rage now.
- We need to manage diverse habitat in strategic locations. We have 123 different plans—let's stack them all up (and implement them) so that we can establish enough habitat on the landscape so we have larger areas managed in a consistent way to support diverse habitat.
    - Implement the DNR Prairie plan (secure needed investment for implementation).
- Make after hours help/information available at SWCDs.

- Set targets for pesticide reduction and meet them. Back targets up with funding and research. Do this all in a coordinated manner—use an integrated approach:
    - Reduce use of chemicals
    - Incentives to plant pollinator species
    - Education

Consumer-driven Change

- Businesses should set standards – we shouldn't buy products unless the businesses support pollinators.
- Consumers should put pressure on companies to do this.

Research Needs

- Technology development to reduce use of pesticides.
- Research the effects of the environmental impacts of the insecticides used for aphids, and require reporting of aphid pesticide applications.
    - Soybean drift of aphid spray—we need a better understanding of that pesticide and how it affects bees and butterflies.
    - Spraying aphids aerially: Specific recommendation to legislature is to allocate money to study the effects of this
    - Needs to be a law in place to report when or where they are spraying so that we know where to do the research
    - Invest in the research for bio-control of aphids
- Research on soybean treated seed efficacy
- We need more info on native bees.
    - We need to focus on all pollinators, not just honey bees.

Representative Rick Hansen's List (as published in the Star Tribune on February 11, 2016)

- No neonicotinoids on state land, untreated seed available, pollinator safe zones, new chemistry effects and impact of land/air, and habitat corridors.
- Implement Rick Hansen's five-step plan

Public Lands: Discussion Themes

Regulation and Use of Pesticides

A major focus of discussion regarding public lands was the use of pesticides on public lands as well as on neighboring lands. Some participants suggested the state eliminate all use of pesticides on state lands, which would also include not purchasing plants or seeds treated with systemic pesticides. Most other comments related to controlling pesticide drift, through setbacks or buffers, as well as more fully utilizing reporting programs (for example, including all public lands in DriftWatch).

Public Funding and Programs to Support Habitat Creation/Maintenance

The other major area of discussion was public programs and funding. Areas of particular interest included the need to fund maintenance costs alongside habitat establishment; leveraging existing resources for maximum impact (e.g., prioritizing projects on existing public land over acquisition, focusing on restoration projects that already include major changes/plantings, etc.); and use of public lands for native seed production. Participants also proposed several innovative options for use of public and quasi-public land to establish habitat.

State/Federal Government Coordination and Leadership

Many of the small groups discussed the opportunities and benefits of enhanced coordination across state and federal agencies on the issue of pollinators. Several people also brought up the need for public funding for research related to pollinator populations and habitat on public lands. In a couple of instances the options of requiring native plants/pollinator habitat to be included in public plantings and/or management plans were raised.

Education and Awareness

A number of comments related to the need to raise awareness and expand education for both the general public, and specifically land managers (including contractors). Multiple people suggested the creation of a clearinghouse or other centralized source of information for public (particularly local) land managers so that high-quality and current information is easy to find, including information on native landscape/habitat maintenance.

Stakeholder Engagement

Some groups discussed the importance of engaging and partnering with stakeholders outside of state government, including private landowners and industry. Participants noted this as a timely opportunity to capitalize on current interest and cement partnerships and commitments while the issue is in the public spotlight.

Public Lands: Detailed Comments

TOP BROADLY SUPPORTED ACTION ITEMS

- All state lands [should] be pesticide free (managed without pesticides) (13 dots)
- Manage public lands for habitat: (8 dots)

1. Shift from turf to habitat.
2. Lots of public and quasi-public land (campuses, medical centers, etc.)
3. Money is needed for maintenance (easy to get money to establish habitat, no money for maintaining).

- Science: We need to improve scientific understanding of pollinator issues. It's complex. We have a lot of excitement and enthusiasm but let's not get ahead of science and what it's telling us or not telling us. (8 dots)
- Stricter regulations (ban neonicotinoids) on public lands, transparency, and pesticide drift enforcement (7 dots)
- Increase capacity for managing habitat: (4 dots)
  - Citizen participation
  - Funding
- Encourage education of local leaders on need to manage public land for pollinators (2 dots)
- Funding: (2 dots)
  - Acquisition (targeted)
  - Management - especially in the long-term
  - Public relations
  - Education: staff and public
  - Research
- Burn management: smaller burns; 20% ideal (2 dots)
- Diversification of plantings including legumes and natives (2 dots)
- Legislative support: more funding for research, outreach and education (1 dot)
- Increase awareness of stewardship actions strategically
- Mandates for all public lands to include native pollinator plants.
- One stop shop for all available pollinator resources.
  - One entity needs to be the manager of a website, etc.
  - Needs to be easy to use and informative.
- Communication about all resources that are available for all sectors and that educates people/stakeholders about the one stop shop idea. (People need to know what's available where it's at, etc.)
- Funding and economics: Limited financial resources exist despite the various local, state and federal funding sources. Need to prioritize funding and think about new ways to fund pollinator incentives.
- Formalize the cooperation that currently exists:
  1. Develop MOU.
  2. Executive order for state plan.
  3. Strong support now - solidify it.
- Ecosystem approach: soil health, invasive species, biodiversity, adjacent lands, carbon sequestration, community involvement, public lands can't do it all.
- Place priority on restoring degraded public natural areas with native plants (also, increase supply of systemic pesticide free plant material).
- Critically evaluate the use of pesticides on public lands, especially insecticides.

Food plots on Wildlife Management Areas (WMAs).
- No neonicotinoids
- Polycultures

- Prevent pesticide drift on public land (also, do not use plant material with systemic pesticides on public land).
- City and county government adopt resolutions to restrict pesticide use on public lands.
- Funds used for chemical management on public lands [should] be redirected to chemical-free options.

WHAT IS WORKING

Public Education and Awareness

- Recognition of the importance of habitat, and also the efforts to make people aware of problems facing pollinators
- People are making more connections about the importance of pollinators, their habitat and related issues.
- Tons of interest and an overwhelming amount of information and activities
- There are many resources available from local, state and federal agencies as well as the private sector for private citizens and landowners.
    - All the educational materials available online
- The public has caught on to, and taken ownership of, this issue. People come out of the woodwork to help on restoration projects – in 30 years of experience I have not seen such support: it's crazy!
    - This is an issue that transcends; it brings everyone to the table.
- Minnesota has the luxury of having many nonprofits that are willing to help pull with the agencies. This issue cuts across a wide area; we need to pull the available energy from many groups together.
- We are seeing collaboration across all types of organizations: public, private citizens, non-profit organizations, city councils, utility companies, etc.
    - Impressed by extent of partnering that is already happening
- Many good pollinator-related questions are being raised, beyond awareness. For example, creating the right habitat for specific geographical locations, maintenance of habitats after establishment, and potential funding for agencies or organizations to address pollinator issues.
- Rain gardens are providing habitat.

Local Policies and Initiatives

- The adoption of pollinator-friendly resolutions by municipalities and other governmental units. Some local units of government, primarily in the Twin Cities Metro Area, have passed resolutions regarding pollinator habitat and related initiatives. This is a good model for other cities and local units of government to utilize in their pollinator work.

- It is good that it is recognized that there IS habitat in urban areas and that funding is coming into urban areas for restoration projects.
    - Urban areas are becoming the habitat refuges for small animals and plants that will not do well in large managed landscapes.
- Cities, schools, and counties are limiting the use of plants treated with neonicotinoid pesticides on their public land. If local and state government support the protection of habitat on public land businesses and agriculture will follow the example.
- Pollinator-supportive resolutions by various governmental units
- It's easier to leverage federal dollars in urban areas because of the concentration of people and businesses that are willing to support projects through in-kind and cash donations.
- There are great examples of local government initiatives/projects:
    - Anoka County Parks is active in natural area restoration. Rum River Central Regional Park plantings are an amazing example of what can be done.
    - Duluth is removing invasive species and replacing them with pollinator-friendly native plants. There are plans for doing a demonstration garden with educational signage.

State/Federal Government Coordination and Leadership

- Agency collaboration and the fact that the state owns land where pollinator habitat can be enhanced or further developed. Just the fact that this summit was organized illustrates that the State of Minnesota is willing to listen.
    - Lots of organization/agency discussion
    - Public and decision-maker attention
- The Legacy Fund puts Minnesota in a better position than other states. Legislators in other states cannot fathom the restoration resources Minnesota has available.
    - Compared to other states, there are a lot of resources targeted to the pollinator issue – we are ahead of the game.
- There is national awareness regarding this issue, especially given that the US, Canada and Mexico have signed an agreement. This has been a fairly quick response.
- Good cooperation of state agencies and integration with federal agencies on this issue
- Habitat protection and management (e.g., Scientific and Natural Areas program) in western Minnesota is doing a good job of supporting pollinators.

Limits on Pesticide Use

- Limited agricultural chemicals are used in natural settings.
- People are paying attention to pesticide labels. There are lots of tree pesticides being used in urban areas such as for Emerald Ash Bore and Dutch Elm Disease control and it is good applicators are aware of the need to practice care.
- Technology is getting better on sprayers.

BARRIERS

Public Education and Awareness

- Education and communication needs to be more tailored to the appropriate audiences.
- Cultural beliefs—cultural preferences for landscaping that are pollinator-unfriendly
    - There is a perception barrier of what is pretty and what is not. Often native plantings are not seen as pretty.
    - There are cases where native planting has generated public pushback.
- Better communication to the public about what they can and cannot do (example: collecting and dispersing seeds on state/federal lands)
- How to channel public interest/energy toward conservation efforts
- Education and outreach has room to grow.
- Complicated message – how to tell story that motivates without overwhelming
- People in rural areas don't use as much social media—need for outreach
- LOT's of information about monarch's and pollinators, but maybe not enough focus for public to know what is important.
- We need to educate people better on pollinators, monarchs and honey bees.

Land Manager Education and Awareness

- Need to get information resources about pollinator-related topics to the entities that can use them
- Getting information to public lands staff for management and education
- Pollinator habitats need to be managed to maintain a rich diversity of flowering forbs and grasses to sustain insect pollinators. Education is needed in "how to manage a pollinator habitat."
- Dissemination of research is an issue—awareness of what research exists and ease of access to it
- Not a lot of experts that can identify the insects in the area

Complexity of Issue/Solutions

- More information is needed about alternative practices.
    - Difficulty in finding less-harmful alternative methods of achieving the results the harmful chemicals are used for
    - Alternative practices are not easily found and could potentially be more harmful that the original practice.
    - Unintended consequences of certain practices
- Lack of knowledge about the entire system—to implement, manage and sustain native prairie for pollinators is complex, and so are the life systems of pollinator species
    - The complexity of natural systems and solutions—no single route to solve all the problems
    - The focus on single actions and individual species, rather than ecosystems/ habitats/interconnectivity—should use flagship species to educate about ecosystem relationships

- Other factors relating to pollinator habitat are not being fully addressed, such as control of invasive species and their effects on habitat and wildlife, soil conservation as it relates to pollinator plants, water quality effects with increased pollinator habitat, etc.

Regulation and Use of Pesticides

- Unless neonicotinoids are eliminated, focusing on creation/protection of pollinator habitat is pointless.
- State laws are not properly regulating agricultural chemicals.
- The Minnesota Department of Agriculture does not have the authority to stop pesticide drift on neighboring property.
- Pre-emption laws—statutory prohibitions on lower-level units of government for creation of more stringent regulations [on pesticides] than those imposed by higher-level units
    - Cities cannot regulate pesticide use; regulation of pesticides is preempted by the state. A local unit of government can pass a pollinator friendly resolution, but they currently cannot regulate pesticide use within their jurisdiction.
- Use of pesticides in crops planted on public lands in transition out of agriculture
- Pesticide drift can move 0.5 to 1.0 miles and impact pollinators on land adjacent to where pesticides are being used. We need to figure out the pesticide issue.
- There is a lack of action and funding. Where is the law? We know that we need habitat and to remove some pesticide use.
- Mortality and how public lands are sprayed

Public Funding and Programs to Support Habitat Creation/Maintenance

- There was a misunderstanding that Legacy Fund land purchases need to be open for hunting and fishing, which would limit its use in urban areas. That is not the case. This is good because it will allow for planting of flowering basswood and willow as urban ash trees are cut.
- Money is still a barrier. We are getting lots of money for pollinator work, but compared to the need, money is still short. The need is huge.
    - Funding is a key issue as well as how to access funds for pollinator initiatives.
    - Long-term funding is needed for improving pollinator habitat on public lands.
    - Lack of resources (time/staff/money for all the work to do)
    - Funding
    - Inadequate funding
    - Many smaller communities do not have the staff or budget to undertake habitat establishment projects.
- Buying land is flashy – it provides opportunities for photos and erecting signs honoring individuals. Establishing and maintaining habitat on existing public land does not give that level of recognition, but is a more effective way of getting the job done.
- There is plenty of money to establish habitat but money for maintenance is short.
    - Short of money and staff to maintain the natural habitats being established in the City of Saint Paul.
    - Natural areas are easy to buy, hard to maintain

    - Maintenance activities often take a backseat. It is a challenge to be able to maintain existing natural areas in a way that will benefit pollinators.
    - Lack of resources (for management and monitoring) to take on additional lands when they are available
    - Managing public lands requires long-term management, strategy, and resources—this comes with a cost.
    - Habitat maintenance challenges
- Overlapping jurisdictions! City, Met Council, Park Board, DNR; all need to coordinate and sometimes they do not. They can also be at cross-purposes (Loring Lake example).
    - Confusion about public lands—who does what, rules, info, etc.
    - The number of agencies working on the same goal is a barrier. It is hard to know how to engage all these agencies for the best results.
    - Public doesn't recognize the difference between different land management agencies/properties
- Pollinator information flow within organizations is not streamlined. Staff is unsure of whom to contact with questions/issues on pollinators.
- Appropriate management for pollinator habitat has to be tied to the functionality of the public land (parks, golf courses, city parks, recreational fields, etc.).
    - Public lands that are primarily set aside for recreation, how to manage the resources with competing goals (agency) and interests (interest groups)
    - In Duluth, more public land is being dedicated to recreational activities (soccer, mountain bike), which leaves less for natural habitat (not much interest in natural habitat use).
    - User demands are an issue
- State wildlife management areas have traditionally been managed for game species.
- There is a lack of research on habitat restoration: defining the problem and finding solutions
- Honeybees need legumes—bees don't only need prairie. Have not had legumes in CRP since the 90's. It's all brown grass, no milkweeds. Native wildflowers generate less honey than basswood trees or legumes.
- There are local ordinances that inhibit establishment of perennial vegetation.
- Not enough protected habitat
    - Much less prairie land

Habitat Fragmentation

- Pollinator habitat is too disjointed and not connected. The gaps need to be reduced to allow for insect pollinators to move more freely and efficiently between habitats (some pollinators are localized and not strong fliers).
- Public lands are too diffuse and fragmented.
- We are looking at how much we burn. Large blocks give you more bang for your buck, but we're looking to reduce the size of burn since insects can't travel far.

Relationship to (Programs Targeting) Private Lands

- Public lands adjacent to private lands need to be studied as to what is conceivable between the landowners so as to achieve a plan that is beneficial to the pollinators and agreeable to the landowners.
- Public lands are tiny compared to the total area of Minnesota. Roadsides account for 0.8% of the total state area. We need a bigger vision of pollinator protection that also includes private land.
- If you take all of the government land and convert it to prairie it would not amount to much.
- Farmers are at the mercy of the market and have the incentive to plant every inch of their land.

Availability of and Access to Trained Contractors/Landscapers

- Often public works contractors are not experienced in creating roadside habitat. It might be put into job specifications, but contractors can struggle to implement correctly. There are not enough specialized native restoration firms to cover the work.

Additional Work/Effort Needed

- Native plantings can take more work to establish and maintain. Turf grass is easy to do. Also, if those mowing are not informed, native plantings can be damaged.
- Cost/availability of seed is an issue.

Competition with Invasive Species

- With climate change and warming temperatures, southern species are moving north and competing with native Minnesota species. Researchers may call this evolution and a natural process, but it makes maintaining endangered species all the more difficult.
- ATV, hiking and bikes disperse invasive species.
- Reliance on burning public lands for control of noxious/invasive weeds and not working with grazing animal farmers to use conservation grazing to manage invasive weeds
- Even though everyone says invasive species need to be controlled, there is not enough money for the job.

Value Placed on Native Species

- Native species not seen as having an economic value

SOLUTIONS

Regulation and Use of Pesticides

- The state of Minnesota should follow the lead of cities, schools, and counties and limit the use of plants treated with neonicotinoid pesticides on public land.
    - The state should not purchase plants or seeds treated with systemic pesticides. This will provide protection of pollinators, set precedence, and provide an opportunity for education.

    - Do not use plant materials treated with neonicotinoid pesticides for new [public] plantings.
- No pesticide use on public lands
    - No pesticides on public land
    - Proscribe the use of pesticides on all public lands.
    - Changes in public programs' (Minnesota Department of Transportation, City Public Works, Park and Rec, etc.) IPM strategies to reduce or eliminate pesticide usage; increased IPM training for individuals responsible for creating plans at those agencies
- Tighten up regulations on drift
    - Public land can be included in DriftWatch to monitor for pesticide drift.
    - DriftWatch collectors could be installed on state land and have enforcement if drift is detected.
    - Include drift monitoring and reporting as part of habitat restoration contracts on state land.
    - Pesticide application setbacks are needed – we don't have the right to kill pollinators on our neighbor's land (due to pesticide drift). The Commissioner of Agriculture could require setbacks in the registration of pesticides.
    - Public land should be a sanctuary for endangered species and pesticide drift on these lands should be prevented.
    - Creation of buffers around important habitat: There should be buffer zones around pollinator habitat areas that are free from agricultural chemicals and pesticide drift.
    - Greater interagency reporting on potential pesticide drift issues
    - State protected lands need more protection when up against agricultural lands—make them high priorities
- End prophylactic spraying on soybean aphids.
- Redirect funds devoted to management with pesticides to pesticide-free alternative techniques.
- Public lands have to implement a strategy of restricting the use of pesticides (insecticides/herbicides/fungicides/other) in a manner that is not detrimental to pollinators.
- Increase the available supply of systemic pesticide-free seed and plant material.
- The agricultural chemical companies need to synthesize new pollinator friendly chemicals.
- Stricter regulation on pesticides, ban on neonicotinoids, stricter regulations on systemic pesticides

Public Funding and Programs to Support Habitat Creation/Maintenance

- Incentives to install pollinator-friendly plots
- Money provided for easements should include dedicated funding for on-going maintenance and monitoring of long-term performance.

- Local governments/land managers need resources both to establish habitat, but then also to maintain it. (For example, City of Stillwater decided against a water quality project not because of its construction cost, but on-going maintenance costs.)
    - Clearer access/pathways to information, resources and staff
- We can do more working with existing public land than buying more. Land acquisition should be reserved for when it's needed to create habitat connectivity and corridors, but otherwise resources should be focused on establishing and maintaining habitat on existing land.
- Using local ecotypes is so important. Priority should be to find locations of local ecotypes and then expand their range locally around those locations.
- Rather than focus on converting turf to natural habitat, suggest focusing on introducing pollinator-friendly species (basswood and willow) as part of natural area restoration projects (e.g. invasive species removal). Put a priority on restoring natural areas rather than converting lawns to native plants.
    - Place a priority on restoring degraded natural areas with pollinator-friendly plants (as opposed to converting turf grass areas to natural areas).
    - Renovate past restoration projects that were mostly grass-based and lack flowering plants.
- Use public lands for native seed production.
    - Work with seed growers for adequate supplies of high-value pollinator plants such as thistle.
    - Let commercial seed producers have access to public land to collect seed stock (wild harvest).
    - Open up state lands for growing additional pollinator seed production. The state needs to support the seed industry.
- We often don't know why these butterflies have disappeared. We have lost populations due to controlled burns. We don't know how much of an issue controlled burns are. Lots of interacting factors including weather, chemicals and management practices. I want to recommend smaller burns.
    - Reduce burn frequency and extent
- Conservation grazing on public lands can control invasive species and enhance pollinator habitat.
- Pollinator planting and apiaries on prison lands
- Use of prison crews to help with removing invasive species and restorations
- More seasonal employees
- Habitat areas on public lands need to be focused on as how to manage native plant communities. Minnesota has prairie, wetlands, forests, prairie-forest interface areas that have diverse and different plant communities from each other. Some public land may not have the right attributes to effectively manage a [pollinator-friendly] plant community.
    - Use appropriate plants for the site
- Use of non-native plants on public lands can offer benefits to wild and managed bees.
    - Diversification of planting—add legumes

- Honeybee management and their pests have to be integrated with management of other pests on public lands so they are compatible.
- Managing public lands abutting private agricultural production land will require cooperation with farmers to reduce pesticide drift on to public lands, managing invasive species, or in some cases a diffuse buffer area (mixed and dispersed vegetation adjacent to private lands, with vegetation becoming more intense further from the buffer area). The diffused vegetation border area allows for more light and lower statured vegetation to grow which will enhance a more favorable site for pollinator habitat vegetation and insect pollinators.

State/Federal Government Coordination and Leadership

- We should formalize this current level of cooperation in some way, such as creating an interagency memorandum of understanding.
    - Progress happens when there are established broad partnerships and integrated incentives and funding sources.
    - Hopefully Environmental Quality Board (EQB) will be able to provide the needed central coordination role for state agencies.
    - State coordination is needed to tap public interest in this issue and leverage the resources available.
    - Better coordination of public land efforts
    - Interagency work for plantings on other public lands
    - We need sustainable and integrated management techniques and tools.
- A comprehensive effort is needed. A coordinated state plan is needed otherwise this effort can get into trouble. If the state legislature directs agencies to create a plan, it will be done.
- There are multiple efforts—monarch butterfly efforts, bee efforts; it would be easier for those who aren't experts if species-specific efforts could be presented as a united effort so projects could be designed to have multiple benefits. People will follow guidance if provided.
- Legislative solution: more funding for research, outreach and education
    - Funding—incentives for landowners and habitat funds are needed
    - Turfgrass is cheap and easy to maintain. Money will be needed to transition public land to perennial vegetation.
- Legislative action to mandate state owned lands are managed for optimum habitat
- Garner political support for government resources and programs that benefit pollinators (one way to do this might be to publicize bipartisan benefits of pollinators)
- Executive orders are one option, but they can go away with change of administrations. However if an executive order is in place and it works, then there is a good chance it will continue or be later placed into law.
- EQB or Metropolitan Council could create a map of all types of public land so it can be visualized.
- We need to plant a flag and say we are going to hold this ground as far as species loss. Climate change is making it more difficult by allowing southern species to move north and compete with our natives, but we have to make a stand to save what we have.

Local Policies and Initiatives

- Have a requirement for public buildings to incorporate native plants into current plantings and proposed planning/development (at all levels, especially city and county)
- Allow local units of government to regulate pesticide use in their jurisdictions.
- There are large urban parks in the Twin Cities Metro Area that can provide pollinator habitat.
- The state can help local government establish habitat on land they manage.
- Cities and counties could include in specifications for new land management projects that a given portion of land needs to be in native flowing plants. They should have a goal for land area to be restored to natural landscape.
- Integration of pollinator habitats in large urban areas is needed due to the increase of beekeepers in Metro area.

Relationship to (Programs Targeting) Private Lands

- Discussions have to be held to address ways to connect public and private lands for the enhancement, sustainability of pollinators and endangered species that have specific localized, geographical habitats.
- We need to think of all public land available, including quasi-public land like University of Minnesota and MSCU campuses.
- The public cannot rely on public lands to provide enough pollinator habitat for the state.

Research Needs

- We need to determine what the baseline is for pollinator habitat.
- More research dollars
- Research: More research and continued support
- Increase funding for fundamental research.
- Public lands need more flowering forbs and more research is needed as to the proper mix for a location.

Public Education and Awareness

- Signage is important to explain "wild" look of native planting and get past that possible barrier of public non-acceptance due to appearance.
    - Universal signage (symbols) for sensitive areas
- Minneapolis Park Board (and I think Hennepin County Parks as well) is doing [things] for pollinators and they need to get the message out to the public about why they are doing certain things, such as not spraying dandelions. Need to make sure the public understands the relationship between these measures and pollinators.
- If we can get people to understand the monarch butterfly issue it can serve as an entrée to understanding other issues, including the impact of climate change. If they understand the issue, they will get behind and advocate for it, including advocating to their legislators.
- The monarch butterfly is a great flagship species to raise awareness and build support around. However, we need to expand that awareness and support to lesser-known species that need attention too.

- More education has to be offered to the public on pesticide movement on the landscape (above/below ground) and keeping it out of soil and surface water on public lands.
- Could there be a clearer path to information about what to do and what not to do, for example, through QR codes?
- Improve the information about how to create pollinator habitat, especially for the urban environment.
- Capitalize on the great interest in urban agriculture.
- Let the public know what success looks like.
- Bees are a food issue—it should be framed as a food issue for the support that would give.

Land Manager Education and Awareness

- Develop a clearinghouse for information or a habitat database.
- Dissemination of information—there is lots of information, but knowing how to access it is a problem, especially maintenance information.
- Those outside of state agencies need better information on what is available for funding.
- Provide local governments with the greatest and best information.
- Educate local government leaders to make it a priority to manage a portion of their public lands for pollinators.
- Make sure that city staff are properly trained on how to manage rain gardens or other infrastructure that they now have to deal with.

Stakeholder Engagement

- Land protection entities such as The Nature Conservancy, Pheasants Forever, etc., need to be more involved.
- All stakeholders need to be part of this. Local soil and water conservation districts can play a big part in outreach and the implementation of pollinator habitat.
- Tap into data industry has generated in the process of testing their products
- High-level collaboration is needed—this is a case in which it would be useful to coordinate actions of agencies and NGOs. A memorandum of understanding would be an umbrella over the top giving legitimacy at the highest levels, just as President Obama's pollinator program support has done. We have public attention now but we can lose it . . . we need to solidify the current level of collaboration.
    - We need to coordinate the tremendous amount of interest and support we have now.
- Fundraising for pollinator projects and programs on public lands
- Everyone needs to be a part to have an effective solution.

Environmental INITIATIVE
Powerful Partnerships, Effective Solutions

Roadsides and Rights-of-Way: Discussion Themes

Public Funding and Programs to Support Habitat Creation/Maintenance

The roadsides and rights-of-way groups focused most of their conversation on public programs and policies that can help enhance pollinator habitat. Comments particularly addressed:

- Specific ideas for sources of dedicated funding
- Enforcement of existing (and reexamination of) mowing laws for ditches and roadsides
- The need to prioritize projects and areas of biggest impact
- Program examples from other states
- Other opportunities for habitat on roadsides, such as stormwater ponds, rain gardens, rest areas, and medians

The issue of how to prioritize actions so that they have the greatest possible impact generated the largest number of comments, and ranged from suggestions to select roadways with lower speed limits and wider corridors (to minimize vehicle strikes) to focusing on connecting existing habitat patches with roadside corridors. Participants made suggestions both for and against investing in habitat adjacent to agricultural lands, noting the risk of pesticide drift, but also cost savings associated with eliminating the need to mow in those areas.

Regulation and Use of Pesticides

While comments related to the use of pesticides were limited from the roadsides and rights-of-way groups compared to those on other breakout topics, several suggestions were made related to targeted or spot spraying to limit pesticide use for weed control.

Research

Multiple groups discussed and put forward ideas related to using roadsides and rights-of-way for pilot projects and research, including research on:

- Population-level impacts of roadside habitat on rare species
- Pesticide drift effects
- Effectiveness of different seed mixes on different landscapes and topographies
- Maintenance options/techniques

Role of the Private Sector

Several groups discussed power line and gas line rights-of-way as significant opportunities, but also discussed the challenges that come with more complex ownership and management models, given that most of that land is privately owned and under easement.

Education and Awareness

Like in many of the public lands discussions, the importance of educating the general public, as well as land managers, was addressed by several groups. Specifically, the idea was raised of establishing a volunteer/partnership program using the Adopt-a-Highway program model.

Environmental INITIATIVE
Powerful Partnerships, Effective Solutions

Roadsides and Rights-of-Way: Detailed Comments

TOP BROADLY SUPPORTED ACTION ITEMS

- Dedicated funding source for roadside pollinator habitat (e.g. tax-return check-off, lottery funds, license plate funds) (18 dots)
- Re-examine Minnesota's roadside mowing law (5 dots)
- Consider context (roadside habitat may not make sense in all cases, could be a population sink) (5 dots)
  - Prioritize connecting existing habitat w/ roadside corridors
  - Prioritize wide swaths where possible
- Pilot projects on roadsides and rights of way (ROW) (4 dots)
  - Test different seed mixes to determine most effective habitat/wildflowers for pollinators
  - Tie replanting to road construction projects (opportune timing)
- Habitat pilot projects on roadsides and ROWs: (3 dots)
  - Pair w/ funding for research to better understand population-level effects on rare species
  - Pair w/ pesticide research to better understand drift
- Better enforcement of existing mowing laws (consider setting a maximum deck height of 8-12") (3 dots)
- Regulate timing of roadside/ditch mowing: (2 dots)
  - Prohibit mowing in peak summer
  - Pair enforcement with education/outreach
  - Exempt top cut for safety
- Connect prairie conservation plan corridors (2 dots)
- Establish showcase pollinator plantings where highly visible (1 dot)
- Updated public education on aesthetic and environmental benefits of natural habitats (1 dot)
- Develop targeted education on mowing and spraying for counties and townships, including updating Extension materials and outreach (1 dot)
- Utilize areas to provide maximum benefit such as wide corridors (1 dot)
- Enforce existing mowing law (1 dot)
- Facilitate better interagency and state/local coordination (including funding and technical assistance to LGUs) (1 dot)
- More public engagement and consistent symbolgy (e.g., interpretive signage, roadway signage)
- Establish a trust fund to provide for roadside pollinator seeding and continued management
- Examine Iowa Living Roadside Trust Fund
- Don't farm right of ways

WHAT IS WORKING

Public Funding and Programs to Support Habitat Creation/Maintenance

- Programs such as "Living Snow Fences" have had an impact—also Wildflower Route.
- Can see impacts on roadside projects here in Minnesota vs. other states—commitment of Minnesota to programs is evident.
- Iowa integrated roadside vegetation management program
- BWSR seed mixes
- Some counties are finally leaving milkweed instead of spraying it.

State/Federal Government Coordination and Leadership

- This meeting is good.
- Meeting people doing this work, such as the presenters this morning. Educating people about all the different pollinators, not just bees and butterflies. This meeting is great.
- DOT, MDA, and DNR have some strong programs and education.
- From top – down, federal to state to local, everyone wants to do something (but not sure what).

Regulation and Use of Pesticides

- Momentum from bill in Oregon
- DriftWatch program

Public Education and Awareness

- Conversation (about pollinators) in Minnesota is ahead of other states. More awareness is needed, but need a simple approach. "What can I do as a landowner?"
- Minnesota is a very activist state. Next week is a statewide conference—campaign called Pledge to Plant for Pollinators and Clean Water. Moving forward, need a cultural movement and change. Millennials want "back-to-nature" rather than "golf course" lawns. The public is demanding the natural landscape aesthetic.
- Signage has been useful to point out habitat projects…public awareness
- The education effort has appeared to have an impact on the local level. Awareness of pollinator programs and seeding mixtures to use [has grown].
- Rain gardens/native plant establishments have been successful—increased awareness.
- More and more hobby beekeepers

BARRIERS

Public Funding and Programs to Support Habitat Creation/Maintenance

- Funding: Lack of long term consistent funds
    - DNR Program (Roadsides for Wildlife) is on hold due to underfunding and lack of staff

  - Budget restraints are always an issue to success of projects—must be well-funded
  - Short-term cost
- Needed maintenance/management after seeding
  - DOT didn't come out to inspect a ditch
  - Native planting push along Hiawatha LRT was successful, but no follow-up maintenance was done and the garden has suffered (miscommunication between MnDOT and City of Minneapolis or Met Council?)
- Roadside authorities are not willing to compromise or make changes in their vegetation management of ditches (roadside authorities: MnDOT, county highway departments, and townships).
- Potential lack of incentives to local jurisdictions to get on board with programs
- All roads are salted and graveled so the bottom of ditches will silt in eventually, which is a threat to natives.
- Road salt
- In Minnesota, only able to mow after August first
- Different species have different needs—some don't fly far

Local/State/Federal Government Coordination and Leadership

- Communication between agencies/governments
- Why is each agency developing their own material? Why don't we all combine?
- Interagency coordination is a problem.
- Jurisdictional divides create complexity regarding ownership.
- Not enough coordination between state, county, city roads to manage mowing schedules, etc.
  - There is no uniformity across the state in how roadside mowing is enforced.
  - Variation across counties—some blanket spray and others do not (inconsistency)
  - Townships or counties have jurisdiction over ditch maintenance (local weed inspectors).
  - MnDOT practices vs. county highway practices
  - Mowing laws are not easy to enforce (you're not supposed to mow before August first but lots of people do). Who is responsible for enforcement?
- BMP Committee discussed haying—state can hay if it owns the ROW; some owned by landowner, haying is allowed; other parts of the state, you're not allowed to hay

Regulation and Use of Pesticides

- Pesticide drift when adjacent to agricultural lands
- Drift from seed coatings
- Stores that no longer want to carry neonicotinides are phasing out product and selling it at a discount. Not everyone has the buying power of Bachmanns (who can return product).
- Drift as an issue on the back slope, unless farmers set back their spray pattern to avoid the ditch—weeds take over in those steep areas that are hard to manage

Competition with Invasive Species

- Invasive species
- Invasive species (yellow sumac and thistles) are problematic. They are spreading into fields if the ditches aren't well managed.
- Corridor of trees in Dakota County cut for power lines has now filled in with burdock and it is spreading (clear cutting can lead to invasive species taking over).
- Limited weed control options—mowing destroys habitat, and herbicides have issues too.
- Law requires invasive species management, so that will trump pollinator habitat practices.

Public Education and Awareness

- Minnesota needs a massive information campaign. I'm asking people about monarchs and butterflies and nobody knows anything, and I'm from a very ag-intense rural area.
- Lack of education
- Realistic expectations
- There is a rural culture of roadsides being mowed for appearance or to harvest vegetation.
- Social media—how do we get info shared with farmers? We need to update Extension materials. The boots-on-the-ground are the master gardeners—they need updated material.

Land Manager Education and Awareness

- Timing of mowing is critical—or understanding the need to mow or not mow. Getting people to understand at the township level… Use MDA's BMPs and IPM classes and re-educate on management broadly—need education.
    - Roadside management—mowing frequency
- Installment/seeding of mixes can tend to be an afterthought—less than desirable seed bed prep when including specific species in mixes, compacted ground, etc. Need awareness of how best to plant/maintain these specific mixtures. Also, usually it's their last operation—time constraints to complete it.
    - Contractors may not have expertise in establishment or post seeding maintenance [for native plantings]. Need education with these pollinator-friendly species mixtures.
    - Tendency to take lowest bid on projects may affect the success rate of effective establishments.

Private Land Management

- Utilities have an easement on the ROW but they do not own the land; farmers can farm it if they own it and they choose to.
    - Property under power lines is not owned or controlled—need permission of landowners
- There are companies with good pollinator initiatives, but we don't know who is doing what so that we can tap into those resources.
- Railroads—spraying of weeds

- Timing of mowing of ditches is questionable. Not sure we have given people the info they need to do what they can.
- Education needs to include how low to mow. Maybe a change in how to mow in addition to when.
- Everyone is busy—needs to be simple—where to get seeds, how to plant, how to manage it.
- If monoculture plants exist in roadsides and are cut before frost, the habitat and food source is lost to insect pollinators for the season from the roadside.

Risk of Vehicle Strikes

- Car strikes can have population-level impacts on certain populations of rare species—need to balance the need for improving roadside habitat without imperiling native species.
    - Different considerations for I-35 vs. county roads, which are much less frequently traveled.
    - Population-level biology needs to be considered—herp habitat in particular is not recommended along roadways.
    - Car strikes and trauma of the wind/air pressure change can be lethal to butterflies or bees.
- Not enough knowledge on population-level effects on pollinators of roadside habitat planting
    - Don't ignore the negative consequences of roadside prioritization for habitat—potentially needs more study before we push statewide policy/practices
    - Open question on how much potential roadsides present for pollinator habitat
- Prairie skippers feed on grasses, so its especially important to consider for them.
- Monarchs are fairly unique, and highway corridors can work well for them.
- Considerations for different roadways, such as speed limits
    - County roadways present a better opportunity, perhaps, than major highways.
    - Trade-offs with visible education opportunity with high traffic roads
    - Ground-nesting bees of the *nomia* genus in the Northwest have designated beds and "slow" signs to alert drivers.
- Plant habitat away from the road where possible.

Conflicts with Public Safety Issues

- High-speed highways with high traffic—8 foot buffer gets mowed for safety and therefore detracts pollinators
- Light pollution and its effects on moths and pollinating beetles—different light fixtures and types can minimize light pollution

SOLUTIONS

Public Funding and Programs to Support Habitat Creation/Maintenance

Funding Sources

- Establish a trust fund to provide for both establishment of pollinator-friendly species in roadsides/ROW areas and for continued maintenance.
- Possible funding sources include percentage of lottery fund or some sort of pollinator habitat "check off" type program/funds designation on state taxes.
- Wilflower vanity license plate as a funding source
- Pool of money for DNR (e.g., Roadsides for Wildlife)—this has been effective for grassland birds
- CRP agreements set requirements on maintenance and management and provide funding.

Enforcement of Existing Mowing Laws

- There should be more regulatory control over how ditches are managed and enforced.
- Uniform enforcement of the roadsides mowing law (MS 160.232 Mowing Ditches Outside Cities)
- Better enforcement of existing mowing laws (with 8-12" max deck height)
- Regulation to control timing of roadside mowing (stop mowing before August 15 with top cuts exempted for safety reasons). Couple it with education, outreach and awareness-building.
- Based on local needs, the timing of mowing needs to be re-examined or enforced. Full-bloom plants are being cut.
- Determine the best time to mow—not before July—and enforce it, but top-cut only near shoulders to allow sightlines around corners
- One thing we can do is not farm highway ROWs. You can see farmers "scalping" (plowing and planting) into ROW, or baling and selling hay cut from ROWs. There will be some squealing, but not farming ROWs is something we can do.
- Monitor and limit hay harvesting.
- Maybe signage would be effective.

Need to Prioritize Projects and Areas of Biggest Impact

- Many township roads are too steep or too narrow—county- and state-run highways should be the focus.
- Utilize areas that provide maximum benefit: Wide corridors and open spaces.
- Widest possible habitat plantings can prevent road mortality—focus on wide swaths on one side of the ditch vs. narrow patches on both sides.
- Prioritize habitat corridors for roadside planting (look at land acquisition opportunities and map current assets and overlay existing easements to find areas to expand).
- Prioritize certain roadways and focus efforts based on GIS data (MnDOT-managed especially).
- Connect existing habitat patches with roadside corridors.
    - Roadsides present connectivity opportunities – prioritize there
- Direct limited resources to larger swaths of land, not focusing as much on roadways.
    - Buffer strips on waterways and utility ROWs could be a better opportunity than roads

- Prioritize planting wildflowers in residential ditches and leave agricultural ditches alone since there is the added challenge of weed maintenance and pesticide drift.
    - Roadsides that do not border cropland are a great opportunity.
- Back slope opportunities: Any opportunity to avoid having to manage while ensuring invasive species and weeds don't take over would save counties a lot of money (they have to go in with heavy equipment in areas that are difficult to maintain, which is tricky due to adjacent crop line).
- An area that could be restored is the I-35 corridor. It is dominated by weeds, including noxious weeds that are supposed to be controlled. We can start with highway ROW for restoration sites.
    - Could focus efforts on specific sites on I-35 corridor for monarch habitat improvement (i.e., integrate plantings of milkweed in designated areas).
    - Monarchs are not necessarily as susceptible to pesticide drift.
- Strategic and selective prioritization of certain roadways
- Roadsides provide a lot of acreage but require maintenance so there are definite tradeoffs of planting habitat in roadsides vs. other conserved lands.
- Consider context—roadside habitat may not make sense in all cases (speed limits, traffic patterns, etc.).
- Urban areas present a lot of opportunities, so roadsides may not need to be the focus, but in rural areas roadside opportunities may be more prevalent.

Program Examples from Other States

- Coordinate re-plantings with road construction projects – opportunistic chance to build new and to educate (Texas program is an example – every new road construction project since 1938 has included wildflower planting)
    - Statewide wildflower program (similar to Texas) to get out of the mowing and bagging cycle (each June)
- Revisit the Iowa Living Roadway Trust Fund to see if there are possibilities for something like this to be established in Minnesota.
    - Iowa has a robust roadsides program through state grants to counties plus state agency technical assistance—counties need funding and assistance
- West Virginia or Indiana programs – Chamber of Commerce or Adopt-a-Highway programs could provide matching funds to keep flowers on the roadsides

Other Opportunities for Habitat on Roadsides

- Storm water ponds could be used to expand native/pollinator habitats.
    - Storm water storage ponds are currently mowed but it's not clear why; native grasses could be preferable (if we can get over the aesthetic barrier)
- When roads are being built, rain gardens should replace old landscapes.
- Establish showcase "pollinator areas" in heavily used areas such as rest stops.
    - Rest stop education opportunities and/or habitat opportunities at rest stops (larger footprint)

- Introduce pollinator friendly plants to roadsides that have lower plant height and would not be required to mow regularly, but have flowers to provide food resource to insect pollinators.
    - Want to see a diversity of flowering forbs in roadsides that bloom from spring to fall, thereby providing pollen and nectar all season long.
    - In new roadside construction, plant less brome grass and more native grass species.
    - Allow middle section of roadsides to grow longer into season or establish taller plant species in middle to catch snow.
    - Provide plant seed diversity with plants that bloom from spring to fall when seeding roadsides.
    - The goal has to be to get flowers on the landscape
- Need well-designed site prep and long-term management plans for pollinator habitat/plantings.
- Need well-designed wildlife/native plant/pollinator planting corridors/transitions
- Utilize species that are reasonable and competitive—seed mixes should be tailored and site-specific
    - More strategic seed mixes to provide a barrier to protect pollinators from drift (there are trade-offs but it is possible – drift can go up to half a mile so a buffer strip would not be sufficient)
    - Forage production as a seed mix vs. local natives
- Controlled burning as a strategy to allow flowers to recover (burning in mid- to late-summer is most effective)
    - Burn smaller parcels to allow faster re-colonization for species that can't travel long distances (can take years)
    - Burn maintenance can be easier in the median
- Energy is around monarchs and bees. Make sure whatever is designed for those two, works for all the other pollinators.
    - Long, narrow strips of habitat sometimes are too much distance for certain species (skippers)
- Use light fixtures and types that minimize light pollution
- Need to incentivize programs
- Start at the state level and figure out what works on a pilot scale and then be patient with scaling up and expansion, figure out sustainable funding
    - Get easy things going, then build momentum.
- Ramp up the creation of pollinator habitat (native habitat) along transportation corridors.
- Germany has used roadsides for solar and wind development

Local/State/Federal Government Coordination and Leadership

- Laws to require establishing pollinators
- Better coordination between agencies and between state and local government
- Interagency coordination and state/local coordination

Regulation and Use of Pesticides

- Roadside authorities should move away from using some pesticides
- Weed management – "spot" spraying herbicides needs to be considered
    - Targeted/spot spraying
- Integrated pest management
- More selective herbicides could be used for invasives management, but there's a trade-off because it limits your diversity in the seed mix

Research Needs

- Research on roadside habitat effects on rare species
- Research on native insect species and habitat needs
- Small pilot projects through MnDOT
    - Pair with funding for population-level research to better understand roadside effects on rare species
    - Also pair with pesticide research to better understand drift effects
    - Pilot project for roadsides to see what works well – updated to today's research and technology – try different seed mixes on different landscapes and typographies
    - Pilot/demonstration projects to test different seed mixes, determine what is most effective (and connect native and flower planting with road construction projects), and research pesticide effects on pollinators
- Ongoing monitoring of roadside plantings

Private Sector Action

- Power lines and gas lines ROWs as an opportunity—alfalfa could be planted in June so it can bloom through the summer
    - Opportunities under power lines
    - Power line corridors as an opportunity
    - Great River Energy has tried to partner with public land managers to establish natural habitat under power line right-of-ways (they will cover the cost of establishment and three to five years of maintenance), but public land managers have not been receptive. They don't like the "weedy" look or maintenance requirements.
- Getting buy-in from ALL adjacent landowners is key. There is a great example of a success story in Inver Grove Heights
- Railroad beds could be used much more intensively to cultivate pollinator habitat
- Pheasants Forever can be a source of private funds to supplement planting projects
- Controlled, rotational haying

Land Manager Education and Awareness

- What about educating the roadside mowers?
- Target counties and townships for education on mowing. Update Extension education materials.

- Create BMPs for ROWs that include species considerations
- Monarch Joint Venture has recommended 8 – 12" deck height on mowers (recommended but not regulated)

Public Education and Awareness

- Change expectations for appearance
- Target public for education—teach that it is good to have roadside habitat and a good property aesthetic.
- Right of way signage—interpretive signs
- Need to engage citizen groups, like "adopt a highway," that can take ownership of an area
    - Adopt-a-Highway program – any potential to modify the model? Turn it into Citizen science plots where we can monitor for rare and endangered species
- Milkweed education—opportunities to encourage common milkweed planting by finding other uses for it

Commercial Landscapes: Discussion Themes

Education and Outreach to Landscaping and Lawn Care Companies
Participants noted the need for more trained landscaping professionals who can install and maintain native and other pollinator-friendly plantings. According to many participants, trained landscaping professionals are critical, not only to meeting growing demand for this type of landscaping, but also to ensuring that companies help to build demand by encouraging, rather than dissuading, land owners to shift to native landscapes. A professional certification program was one option suggested for encouraging landscaping professionals to seek training in this area and to help make ongoing training profitable.

Education and Outreach to Commercial Property Owners
Although public awareness has already been growing, education was noted as essential to overcoming some companies' aesthetic concerns and entrenched cultural preferences, as well as, in some cases, fear of liability associated with bee stings. Participants suggested providing a toolbox resource for companies to make it easy for them to choose plants, assess costs, and carry out maintenance. A certification program (or the addition of pollinator-friendly landscaping standards to existing programs) could also be targeted at properties or property owners.

Financial and Technical Assistance
Several people suggested that financial incentives—which could include a cost share program and/or free or easily accessible technical assistance and marketing support—would increase business engagement. Recognition programs could help businesses see a financial benefit from investing in pollinator-friendly practices.

Local Policy Change
A couple of comments related to how local government policies can help drive the installation of pollinator habitat on commercial properties, either by eliminating restrictions on landscaping or by requiring the inclusion of pollinator habitat in site plans through municipal development codes.

Business-Led Solutions
Participant comments included a number of suggestions for things businesses can do on their own, including establishing volunteer pollinator teams, trying out native plantings in raised beds, educating shoppers on pollinator-friendly practices, and incorporating habitat into existing green infrastructure such as stormwater ponds.

Commercial Landscapes: Detailed Comments

TOP BROADLY SUPPORTED ACTION ITEMS

- Incentives/financial assistance for clients to install pollinator-friendly habitat Financial/technical assistance for landscapes to maintain plantings (14 dots)
- Expansion of education to create a formal communication structure for: (10 dots)

- Toolbox for commercial landscaping
- Public info campaign re: urgency and solutions
- Bee certification like LEED
- etc.

- Develop a certification program and marketing mechanisms to increase recognition for businesses. (4 dots)
- Educate decision-makers, designers, and property owners on the business case and environmental benefits of pollinator plantings. (2 dots)
- Combine [integrate] pollinators into multiple existing programs to result in synergy of costs and benefits. (1 dot)
- Leverage existing assets (for example space) with minimal disruption and costs

WHAT IS WORKING

- Increased residential awareness is spilling over into the commercial sector (consumers are becoming more aware, and companies are realizing this).
- There are currently some good examples (city halls, corporate campuses).
- The University is doing educational outreach (e.g., workshops focused on IPM).
- There is some funding available for projects (e.g., Mississippi Watershed Management Organization provides grants).
- National Wildlife Federation has a wildlife habitat certification (http://www.nwf.org/How-to-Help/Garden-for-Wildlife/Certify-Your-Wildlife-Garden.aspx) .
- Increased availability of native plants/seed
- Companies are signing on to pledges and advertising their connections to this issue.
    - There is safety in numbers—if other companies are sticking their necks out, it is easier to join in.
    - Companies see this as a way to attract Millennials.

BARRIERS

Aesthetics/Perceptions

- The pollinator-friendly plants/landscapes need to be attractive.
    - Unkempt look may not be what people want to see.
    - Industry follows what the consumer wants.
- General public needs to be educated about benefits of native landscapes
    - We need ways to reach new receptive audiences (not preach to the choir).
- There is a need for education as to the variety of native plants.
- Big name chains have planned landscaping set-ups. They do not want native landscaping because they feel it looks messy.

- Customers may be bothered by bees when walking into a business (may also have legal impacts if a customer is stung).
    - Fear of bugs and snakes
- Purism: For example, native plant proponents being upset that some nonnatives were used in a planting. There should be some recognition that even if something is not 100% native there are still at least some benefits seen.
    - Another option is transitional landscapes, for example flowers/pollinator attractants being planted further away from a daycare center, as an alternative to not having any pollinator attractants on the daycare site.

Lack of Space/Resources

- The cost of restoration to "pollinator-friendly" landscapes
- Resources may not be available for ongoing maintenance.
- Loss of parking spaces in commercial areas
- Pollinator-friendly planting may require more uniform planting areas/beds.
- Lack of space where businesses could install habitat in urban/compact environments

Need to educate landscaping companies/property managers

- Expertise: Some landscapers are not educated on native plants.
- Having enough crews that can work on pollinator-friendly areas
- People need to be clearer on the difference between prairie restorations and pollinator plantings.
- Native landscapes are not maintenance-free, and the maintenance required is different than what people are used to.
- Need to address the nesting aspect of pollinator needs—they need uncut native plants to overwinter in.
- Landscaping companies may not be proponents of this as it may be outside of their expertise/experience and perceived as reducing the need for their services.

Neighboring property use of pesticides/herbicides

SOLUTIONS

Education/outreach to landscaping and lawn care companies

- Educate landscaping companies on how to maintain pollinator habitat, as well as how to maximize income from maintaining pollinator habitat.
- MDA certification is needed for pesticide applicators.

Education/outreach to commercial property owners

- Provide a toolbox resource for commercial companies to help them choose plants, assess costs, and carry out maintenance.

    - Include the rules and regulations for permits and regulatory processes a commercial business may need.
    - Include information on how to make a pollinator-friendly landscape compatible with other uses
- Certification for pollinator-friendly landscapes
    - Tiered program with greater levels of recognition for more effective/significant efforts
    - Can be used as a vehicle to inspire others and publicize a company's efforts
- Add pollinator-friendly standards as a layer to existing programs.
    - Expand connections with in the infrastructure that is already in place.
    - Storm water: A lot of people understand the process and money for storm water permitting, why not find ways to incorporate pollinator-friendly methods into business storm water programs?
    - Incorporate into green sanctuary program (program aimed at churches)

Financial Assistance

- Provide technical and financial assistance for landscaping with native plants.
    - Offer cost sharing for projects that are already implemented.
    - Provide a sliding scale of incentives [Example: Stop spraying herbicide and seed low-growing nonnatives and let them bloom to earn a lesser incentive. Plant an all-native prairie restoration to earn a greater incentive.]
    - Incentivize the additional efforts businesses are making, especially if there is a public benefit.
- Support the development of more examples of well-designed native landscapes. This will help with education and managing expectations.
- Give companies the opportunity to improve their corporate image by using natural landscaping.

Local Policy Change

- Eliminate municipal (or other government) restrictions on pollinator habitat (e.g., lawn height, setbacks). Do this by educating council members so they can vouch for pollinator-friendly development.
- Change municipal codes to require that a certain percentage of property be managed as pollinator-friendly.

Business-led Solutions

- Commercial pollinator teams that can educate and provide maintenance
    - Could be a summer intern program
    - Volunteer program for current employees/retirees to maintain
- Bring in a raised bed—removable planters are a lower commitment, less intimidating, and can be borrowed or rented.
- Large businesses with corporate campuses could incorporate distinct landscapes with different purposes within their property/footprint (an area for picnicking, garden plots, pollinator plantings).

- Specific trees and shrubs are beneficial for pollinators and should be included in the plans for commercial areas (e.g., basswoods, dogwoods, etc.).
- Educate shoppers. They will then "vote with their wallet" by choosing plants that are best for pollinators.
- Install floating pallets into storm water ponds and drainage areas that have native pollinator-friendly plants on them.

Residential Landscapes: Discussion Themes

Public/Homeowner Outreach and Education

Among the residential landscapes discussion groups, more than twice as many comments were made related to public education than any other category. These included calls for demonstration sites, youth education and incorporation into the K-12 curriculum, community/neighborhood-level leadership programs, and paid advertising, among other ideas.

Education of Planning/Development Professionals

Participants also stressed the importance of getting information about the benefits of pollinators and how to establish pollinator habitat (for example, on species selection and plant sources) to planners, developers, and engineers. New housing developments were noted as a particular opportunity, and developers could be encouraged or required to include pollinator-friendly landscapes in development designs.

Certification and Recognition Programs

Residential landscapes discussion groups proposed the development (or support) of certification/recognition programs for:

- Nurseries
- Gardeners/Naturalists
- Residences/Individuals' Yards
- Neighborhoods
- Other Stores

Local Policies and Ordinances

Much like in the commercial landscapes groups, either removing current restrictions that limit or prohibit the development of pollinator habitat on private property, and/or requiring that public buildings/property include pollinator habitat were suggested.

Regulation of Pesticides

Several groups discussed options for reducing pesticide exposure from residential gardens, including whether changing the plant labeling law back to its original wording would help with the accessibility of pollinator-friendly plants.

Residential Landscapes: Detailed Comments

TOP BROADLY SUPPORTED ACTION ITEMS

- Policy-level incentives: (13 dots)
  - Certifications for yards (pollinator-friendly certification)
  - Signage/recognition
  - Tax breaks for increased habitat
- Homeowner education: (8 dots)
  - Simple main message

- Unified statewide education program (centralized website, educational materials, multimedia programs, games, toolkits for empowering stakeholders)
- Make it easier for homeowners to participate--no risk of failure

- Expand seed and native plant availability (plant exchanges [only with proper] quality control) (5 dots)
- University of Minnesota Extension possible pollinator friendly certification (gardens and landscapes) (3 dots)
- Local government demo sites: (2 dots)
  - Public buildings and spaces
  - Neighborhood leaders
- Ban neonicotinoids on ornamental and retail plants (2 dots)
- A source or directory to find knowledgeable and/or certified landscape professionals for pollinator friendly designs (1 dots)
- Education (1 dot)
  - City inspectors
  - Residents
- Financial incentives: (1 dot)
  - Tax incentives
  - Cost share
- [When] prioritizing specific areas for native/pollinator plantings, focus on connectivity (including collaboration with other state agencies) (1 dot)
- K-12 curriculum and demo gardens, kits to take home
- Native master garden training program
- Education: more demonstration projects, state government leads by example (Governor's residence, etc.)
- Education sources, neighbors teaching neighbors
- Central hub for info:
  - One-stop website
  - Link to website from cities/counties
  - Educate people to ask questions
  - Natural nurseries support/sponsor info hub
- Reduce/eliminate restrictive ordinances that prohibit pollinator habitat

WHAT IS WORKING

Education and Public Awareness

- Local technical support for landscape transformation, including county extension offices and other local government (city, county), to help people convert underutilized properties, make native planting central to local planning and development, spearhead public engagement, and provide advice on IPM/chemical treatment strategies for property owners

- Use of imagery to support education—imagery of "good" vs. "bad" insects and when to use insecticides (University of Minnesota Extension and PollinatorRevival.org are sources of that information)
- Connections to storm water management in cities—increased promotion of rain gardens, which can provide a good mix of plants for pollinator species
    - Metro Blooms has done a good job promoting rain gardens.
- The MDA-developed BMPs are popular.
- More programs are being organized (like the Minneapolis Monarch Festival).
- The Minnesota Landscapes Arboretum has done a lot to help people understand the value of native landscapes.
- The University of Minnesota Morris has been very vocal about pollinator habitat, education and prairie restoration.
- The Watershed Friendly yard program in Minneapolis is working.
    - Yard signs to recognize native plantings have helped shape positive changes in community policy related to native plantings.
- Corporate leaders using their properties to showcase the balance of design and responsible planting of native species
    - Businesses adopting native planting on their property have driven a cultural shift.
- Awareness that not all plants are "weeds" has empowered people to make small changes and consider larger projects.
- Grassroots ownership of neighborhood revitalization has led to more community gardens, educational opportunities in the community, and local celebrations/recognition events to show accomplishments.
    - Engagement by hobby groups and gardening associations
- Many more people now know about the plight of monarch butterflies (Wild Ones has helped to disseminate this information).
    - There has been a rush of good information published, especially on bees and monarchs.
- Media is disseminating the information.
- More information is available on neonictotinoids than it used to be previously.
- People in urban areas seem more accepting of a patchwork of pollinator gardens across the community (as opposed to large single restoration plots).
- We have reached a critical mass of interest in this topic. We are at a point in which we can have these conversations.

Changes in Landscaping Industry and Plant Nurseries

- Stores are keeping neonicotinoid-free plants.
- A local newspaper has published a list of stores where neonicotinoid-free plants are available.
- Small nurseries are seeing business benefits from this awareness, although big stores are behind on the issue.

State Incentives

- Incentives to plant buffer strips with native plantings

Local Policies and Ordinances

- More cities are allowing people to keep bees.
    - Some cities are warming to the idea of apiaries within city limits. There are quite a few that are "not on the grid" because some cities have been slower to accept, but acceptance is certainly becoming more widespread.

BARRIERS

Public/Client Preferences and Expectations

- Timeline for establishment of native plantings is felt to be too long.
- Concerns about the amount of labor involved with installation and upkeep
    - People are too busy.
- Scale of project (larger may be prohibitive)
- Most homeowners only know what is available at the nursery (typically cultivars and non-native species).
- Cultural mindset of what a yard is supposed to look like
    - Stigma of anything other than a mowed, pristine lawn
    - Perceptions of what lawns should look like
    - There are differing values moving from core metro to outer suburbs, with the core more likely to support native plants.
    - The City of Minneapolis gets calls to report messy looking yards that are not up to code.
    - Peer pressure is a barrier.
- Awareness that plant diversity is very important—some people like how just a few species look which limits pollinator use.
- Concerns about getting stung by bees
- People do not play in public/common places, because of which younger people are not involved in the issue.
- Not enough public spaces/buildings/properties as examples
- Advertisements shown in media emphasize flower-free lawns as the best maintained lawns. This leaves the impression on people that well mowed lawn is the best maintenance.

General Lack of Knowledge

- Figuring out which types of plants to purchase and how to manage those plants
- Garden plot owners are not educated on safe use of pesticides.
- People don't know what to do or how to start.
- Residents are not experts or do not have access to one.
    - Homeowners are not experts.

Differentiating Good Information

- There is lot of information available, however, people are not sure which information is reliable and what strategies are going to work.
- Some people get lost trying to figure out where to go for reliable information.
- Stopping the spread of misinformation—the emotion vs. science issues
- Poor government website synchronization: It is difficult to find unified information/messages from various government agencies, websites are poorly structured, and they don't link to info on other agency pages.

Lack of Availability/Accessibility of Pollinator-Friendly Plants and Seeds

- Most people go to bigger stores to buy plants. However, bigger stores are still behind on pollinator issues as compared to the local nurseries.
- It is still hard to find pollinator-friendly (pesticide free) plants/seed from the stores that are in easy reach of people.
- Poor availability of native plants for sale in metro (it is better in rural areas)
    - Lack of native species selections within central metro
- Nurseries have not caught up to this movement. Selection of pollinator-friendly plants is limited.
- There's not a respectable retailer for native plants.

Local Policy/Ordinances

- Many cities still haven't updated city codes to help pollinators.
- Public management programs that conflict with pollinator support such as:
    - Turf management in public spaces
    - Mosquito Control District application as possible endangerment to pollinators
- City policies can be a barrier, for example rules and regulations related to weeds, plants next to sidewalks, etc.

Regulation of Pesticides

- State pollinator laws are not really "pollinator friendly." Why was the law on neonicotinoid concentrations changed to "no observable effect" level and why will pesticide concentrations from flowers be analyzed? The current law takes into consideration the acute concentrations only and not the chronic or sub-lethal concentrations.
- Labeling is not clear on containers.
- Pesticides like glyphosate and neonicotinoids, which can harm pollinators, should be restricted or banned.
- There are not enough pesticides that are identified as restricted use for only licensed individuals.

Program Accessibility

- Property wasn't eligible for native planting CRP application because the property owner hadn't owned it land long enough (it would have qualified if eligibility had started from signing of purchase agreement).
- Application for rain garden grant via a watershed group was too confusing for client to complete.

Fragmentation of Habitat

- Sustaining populations won't happen with little rain garden patches sporadically placed around a neighborhood or town. You need a network so that pollinators can move.

Residential Site Limitations

- Some residential lots are large, which takes some though about where a pollinator habitat should be placed, other residential lots are very small and might not be conducive to creating habitat.

Availability of Qualified Contractors

- Finding contractors or landscapers or vendors who know what they're doing

Cultivation/Breeding of Native Species

- The breeding of native plants for landscape purposes creates cultivars that cross with native plants that could compromise the genes of the entire population (e.g., purple cone flower).

SOLUTIONS

Public/Homeowner Outreach and Education

- More demonstration sites for education and outreach
    - High-visibility, well-designed demonstration projects (golf courses, municipal buildings, libraries, etc.)
    - Promote demonstration sites
        - Local government (public properties)
        - Neighborhood leaders (private properties)
- Make it easier for newcomers to do something (e.g., distributing seed packets of pollinator-friendly seed mixes).
- Produce some public service announcements (PSAs) on what people can do to support pollinators.
- Roadside advertisements that list available resources
- Incorporate importance of native plantings into statewide K-12 curriculum.
    - Offer grant program
    - Engagement of Department of Education
    - Kits could be created to take projects from classrooms to backyards
- Improved youth education

    - Youth garden programs with summer support (STEM opportunity)
    - Youth programs for unified native plants and agricultural education
- Develop a centralized (managed) resource/dashboard to make finding resources easier.
- Use simplified and consistent messages/branding to get the word out.
- Develop statewide educational materials and toolkits similar to Http://rootsinminnesota.com/.
- Get strong Minnesota Nursery and Landscaping Association (landscaping industry) buy-in and support.
- Create multimedia games, videos, and tools to create no-risk interest and training for current and potential users.
    - How-to videos, Plant ID tools, life cycle ID tools, etc.
    - Provide rich training and support to make it easy for stakeholders/public to participate.
- Create a community of native plant gardeners to suppose education/outreach.
    - Encourage block club leaders to have (and advertise) pollinator-friendly yards—create a ripple effect through the block.
    - Create a registry of pollinator-friendly gardens around the area.
    - Rain garden grading (Better Homes and Gardens-type of thing)
- Outreach documents should show before and after photos of regular lawns with native landscaping and explain the benefits, barriers, and aesthetic biases of each.
- Produce educational documents to explain where different types of native plants should be planted in your yard and what mixes will provide blooms all growing season.
- Cities should link to MDA pollinators website—it doesn't make sense for each city to recreate its own pollinator outreach materials.
- State agencies and universities should disseminate more information and encourage people to buy pollinator-friendly plants.
- Providing resources "in hand" (how-tos, info packets, seed packets) puts tools in the hands of the people who want to do something.
- Help get people to the following (.org) resources:
    - Wild Ones
    - The Prairie Enthusiasts
    - Minnesota Native Plant Society
- Better education to support responsible (appropriate) planting to ensure success of establishment
- Education for people who have large lots and want to mow it all—changing perceptions
- Encourage people to grow plants producing nectar.
- Fact sheets distilled to basic concepts—simplify to a level that average landowners can understand

Education of Planning/Development Professionals

- Get strong Minnesota Nursery and Landscaping Association (landscaping industry) buy-in and support

- Get the right information to planners, developers, and engineers on species selection and plant sources.
    - Place priorities on multi-user landscapes (humans and insects).
- New housing developments should include pollinator friendly landscapes in the design.
    - There is an opportunity to create different, native habitats in new developments.
    - Create similar habitat to the surroundings of a development to create a more seamless residential landscape.
    - In shared backyards continuous plantings should be created—especially in developments.

Certification and Recognition Programs

- Nurseries that sell pollinator-friendly plants should be certified by the state and a list of certified nurseries/stores selling pollinator-friendly plants be advertised.
- Master Native Gardener program similar to Master Gardener and Master Naturalist programs
- Designations (official or unofficial) of pollinator-friendly residences or neighborhoods
- People, nurseries, and stores promoting pollinators should be awarded at the State Fair or other venues.
- Signage that shows your yard is pollinator-friendly—would need a partner like Metro Blooms or some other third-party verifier
- Development of a pollinator maintenance certification program

Provide Incentives

- Create a refund program for buying native plants.
    - Rebate program for native plants
- Small-scale "CRP-like" program
- Layering program support (financial) for pollinators and storm water management
    - Property tax credits—grant one for rain gardens and storm water mitigation.
    - An all-encompassing initiative that incorporates different efforts to restore natural hydrology and ecology: rain gardens, pollinators, etc.
- Scalable incentives for projects of all sizes

Availability/Accessibility of Pollinator-Friendly Plants and Seeds

- Make pesticide-free (untreated) seed available to growers.
- Duluth Public Library seed program
- Appropriate seeds in retails stores
- Encourage seed exchange programs.
    - Risk of spreading invasive plants and pathogens places limits on these types of programs.

Local Policies and Ordinances

- Cities should pass ordinances that a certain proportion of land must be designated for pollinators.

    - City governments should be doing something at a scale that can make a difference (they can).
    - Cities and developments should follow different protocols and plant different landscapes.
- Have a requirement for public buildings to incorporate native plants into current plantings and proposed planning/development (at all levels, especially city and county).
- Enable more pollinator-friendly lawns by changing zoning laws and protocols for citations and by educating city staff who issue citations.
- Eliminate prohibitive ordinances or housing association covenants that hinder the development of habitat.

Regulation of Pesticides

- Change the pesticide law back to original where a plant cannot be labeled as pollinator-friendly if any concentration of pesticide is detected in the plant.
    - This could lead to having less pollinator-friendly plants available, as pesticide can get into the plant from soil, water or other sources that the nursery owner does not know about. Fear of penalties could lead nursery owners not to offer these plants at all.
- Ban neonicotinoids on ornamentals and pollinator-attractive plants.

Environmental INITIATIVE

Powerful Partnerships, Effective Solutions

Minnesota Department of Agriculture Pollinators Summit

Pollinators Summit Agenda

Friday, February 12, 2016
8:30 a.m. – 4:30 p.m.
The Wellstone Center
179 Robie Street East
Saint Paul, MN 55107

8:00 Registration and Continental Breakfast

8:30 Welcome
Dave Frederickson, Commissioner, Minnesota Department of Agriculture and Lt. Governor Tina Smith

8:40 Introductions and Housekeeping
Mike Harley, Executive Director, Environmental Initiative

8:45 Current Research Updates Related to Stressors Facing Minnesota Pollinators

- *Dr. Marla Spivak, MacArthur Fellow and Distinguished McKnight Professor in Entomology, University of Minnesota Bee Lab*
- *Dr. Dan Cariveau, Assistant Professor, University of Minnesota Bee Lab*
- *Wendy Caldwell, Community Program Specialist, Monarch Joint Venture, University of Minnesota Monarch Lab*
- *Dr. Erik Runquist, Butterfly Conservation Biologist, Minnesota Zoo*

10:00 Break

10:15 State Pollinator Programs and Initiatives

- *Jamison Scholer, Research Scientist, Minnesota Department of Agriculture*
- *Dan Shaw, Native Vegetation Specialist, Board of Water and Soil Resources*
- *Crystal Boyd, Entomologist/Bee Specialist, Minnesota Department of Natural Resources*
- *Tina Markeson, Roadside Vegetation Management Unit Supervisor, Minnesota Department of Transportation*

11:30 Federal Pollinator Programs and Initiatives

- *Charlie Zelle, Commissioner, Minnesota Department of Transportation*
- *Ryan Galbreath, State Resource Conservationist, Natural Resources Conservation Service, United States Department of Agriculture*
- *AnnMarie Krmpotich, Monarch Coordinator, Midwest Region, U.S. Fish and Wildlife Service, United States Department of the Interior*

12:00 Identifying Opportunities for Action
Mike Harley, Executive Director, Environmental Initiative

12:15 Lunch

1:15 Breakout Group Discussions – Session I
- Agricultural Landscapes
- Residential Landscapes
- Commercial Landscapes
- Roadsides and Rights-of-Way
- Public Lands

2:15 Break (move between groups)

2:25 Breakout Group Discussions – Session II
- Agricultural Landscapes
- Residential Landscapes
- Commercial Landscapes
- Roadsides and Rights-of-Way
- Public Lands

3:25 Break

3:45 Report Back from Breakouts and Identify Priorities

4:15 Wrap-up Comments on Action Steps
Dave Frederickson, Commissioner, Minnesota Department of Agriculture

4:30 Adjourn

Environmental INITIATIVE
Powerful Partnerships, Effective Solutions

Pollinators Summit Participants

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