

2020

Recommendations of the Pollinator Health Task Force — for Pollinator Health in Washington

Report to the State Legislature

As Required by RCW SSB5552

November 2020



Washington
State Department of
Agriculture

Derek I. Sandison, Director

AGR PUB 806-880 (N/11/20)

Do you need this publication in an alternate format? Contact WSDA at (360) 902-1976 or TTY Relay (800) 833-6388.

Task Force Participants

Katie Buckley, Department of Agriculture, Chair
Alison Halpern, Conservation Commission Appointee
David Wilderman, Department of Natural Resources Appointee
Taylor Cotten & Janet Gorrell, Department of Fish and Wildlife Appointees
Lisa Lantz, State Parks and Recreation Commission Appointee
Kelly McAllister & Jeff Dreier, Department of Transportation Appointees
Mary Fee, Noxious Weed Control Board Appointee
Eric Olsen, Tree Fruit Industry Representative
Annie Byerly, Alfalfa Seed Industry Representative
Richard Sakuma, Berry Industry Representative
Laura Lavine, PhD. WSU Representative
Allison Walston, Pesticide Distributors Representative
Chris Senske & Heather Hansen, Pesticide Applicators Representatives
Erin Morse, Pesticide Aerial Applicators Representative
Eric Lee-Mäder, Xerces Society Representative
Aimee Code & Sarina Jepsen, Xerces Society (Non-Voting)
Brighid O'Keane, LIVE Outreach Director
Bob Walters, FieldWatch Representative
Stephanie Regagnon (Non-Voting)
Jennifer Marquis, Master Gardener Representative
Colleen Miko, Certified Professional Horticulturist, former Master Gardener Coordinator
Ed Lisowski, Native Plant Society
Kevin Oldenburg, Washington State Beekeepers Association (WASBA) President
Tim Hiatt, Beekeeper
Jennifer Short, Beekeeper
Paul Hosticka, Beekeeper
Ben Sallmann, Bee Informed Partnership (Non-Voting)
Dave Hunter, Crown Bees & Orchard Bee Association
Demarus Tevuk, Crown Bees & Sustainable Seattle
Renee Davis & Paul Stamets, Fungi Perfecti (Non-Voting)
Clayton Smith, DBA, Snohomish Conservation District
Alex Harwell, Snoqualmie Tribe
Cheryl Shippentower, Umatilla Tribe
Adeline Rang, Youth Representative, FFA
Ray Ledgerwood, Facilitator (Non-Voting)
Brad White, Kelly McLain, Karla Salp, Bradley Farrar, Department of Agriculture (Non-Voting)
Kevin Jensen, Department of Agriculture Pesticides Advisor (Non-Voting)
Justin Allegro, The Nature Conservancy (Non-Voting)
Laura Matter, Tilth Alliance (Non-Voting)
Steve Sheppard, Brandon Hopkins, Dave Crowder, Elizabeth Murray, WSU (Non-Voting)
Heath Lambe, Yakima Valley Museum (Non-Voting)
Lynne Dolph, K-12 Education Advisor (Non-Voting)
Trish Cole, Community Awareness, Puyallup South Hill Rotary (Non-Voting)

Executive Summary

The Pollinator Health Task Force has created recommendations in the hope that decision makers in the Washington Governor’s Office, state agencies, and the Legislature will use this document to help prioritize and enact meaningful policy and other positive changes for pollinators in our state. The task force hopes that many of the recommendations in this document will be refined and enacted to measurably benefit Washington’s pollinators.

The 42 recommendations presented in this document were contributed by task force and advisory members and represent a wide range of perspectives and approaches. The full array of ideas that were seriously discussed by our group is listed, along with the results of a voting process (Appendix A). It should be noted that the most opposing votes any recommendation received was 6 out of 31. Nearly all recommendations were supported by at least two-thirds of all the task force members.

We organized the recommendations under five categories, abbreviated here as: 1) Habitat, 2) Pesticides, 3) Education, 4) Managed Pollinators, and 5) Research. Task force members voted in two ways. Members individually registered their support, opposition, or neutral position for each recommendation. Additionally, committee members prioritized a number of recommendations within each category. We have highlighted high-priority recommendations with broad support under each goal, as we believe they are the most likely to gain traction in Washington and be highly beneficial to pollinators.

Habitat priority recommendations

| Rec # | Recommendations | Priority Vote | Support Vote (support-neutral-opposed) |
|-------|--|---------------|---|
| 1.1 | Develop an ongoing small grants program administered by the State Conservation Commission to provide funding to conservation districts to educate landowners and community groups about the value of pollinator habitat, and to provide the necessary technical assistance and materials (e.g., seeds and plants) to create it | 17 | 26-5-0 |
| 1.10 | Create a dedicated “Pollinator Fund” for pollinator habitat creation and protection | 16 | 21-7-3 |
| 1.2 | Require all state-funded building projects and roadside construction projects which include landscaping or land alteration to include a certain percentage of pollinator landscaping and/or “eco-lawn” that is drought tolerant maintained with ecologically sound methods known to protect pollinators | 14 | 23-5-3 |
| 1.3 | Add pollinator-specific recommendations for the enhancement, creation, and maintenance of high-quality pollinator habitat along surface water corridors in existing recommendation documents for riparian restoration | 14 | 24-7-0 |
| 1.7 | Revise the state Open Space Farm and Agriculture Tax Classification Program to include private lands managed for pollinators and wildlife | 14 | 26-3-2 |

Pesticides priority recommendations

| Rec # | Recommendations | Priority Vote | Support Vote (support-neutral-opposed) |
|-------|---|---------------|---|
| 2.3 | Strengthen invasive species control efforts with consideration for supporting pollinators and pollinator habitat | 19 | |
| 2.3a | Detection and rapid response to invasive species | | 27-4-0 |
| 2.3b | IPM for established invasive species | | 27-4-0 |
| 2.3c | Replanting after noxious weed control | | 27-3-1 |
| 2.7 | Increase communication between beekeepers, growers, and pesticide applicators | 17 | |
| 2.7b | Bee protection protocols | | 22-5-4 |
| 2.1 | Support WSDA and WSU in their drift reduction efforts, including education and encouraging adoption of improved technology, and enhance the existing effort to ensure pollinator protection is incorporated | 16 | 29-0-2 |
| 2.6 | Increase research into and adoption of effective, pollinator-friendly integrated pest management (IPM) strategies for Washington crops and beekeeping | 15 | |
| 2.6a | Updated pesticides and pollinators publication | | 27-3-1 |
| 2.6b | Updated IPM best management practices (BMP) | | 23-6-2 |
| 2.6c | Treated-seed BMPs | | 21-5-5 |
| 2.6d | Outreach on improved IPM and BMP materials | | 23-6-2 |
| 2.6f | Support ongoing IPPM research and extension | | 26-4-1 |
| 2.6g | Publish beekeeper IPM guidelines | | 25-6-0 |

Education priority recommendations

| Rec # | Recommendations | Priority Vote | Support Vote (support-neutral-opposed) |
|-------|---|---------------|---|
| 3.1 | Provide funding for a new enhanced pollinator extension education and outreach program at Washington State University along with the funding needed to maximize pollinator education across the state of Washington | 21 | 28-3-0 |
| 3.10 | Increase pollinator protection training for pesticide applicators | 21 | 27-2-2 |
| 3.8 | Provide growers and the public with a curated resource for information on pollinators in general and specifically education about managed species | 15 | 29-1-1 |
| 3.2 | Include the importance of pollinators and their habitat, as appropriate, in resources developed for teachers within and related to current science standards | 14 | 30-1-0 |

Managed Pollinator priority recommendations

| Rec # | Recommendations | Priority Vote | Support Vote (support-neutral-opposed) |
|-------|--|---------------|---|
| 4.2 | Review policies on state lands to protect native pollinators and improve transparency for state land areas which may permit managed honey bees | 23 | 23-6-2 |
| 4.1 | Restrict non-native bumble bee commercial use | 16 | 23-6-2 |

Research priority recommendations

| Rec # | Recommendations | Priority Vote | Support Vote (support-neutral-opposed) |
|-------|---|---------------|---|
| 5.1 | Document the bee species of Washington State and map their distributions. Develop an annotated checklist of bees and create a research-grade specimen database | 18 | 28-2-1 |
| 5.6 | Pesticides research topics | 15 | |
| 5.6a | Residue testing in pollinator habitat | | 20-7-4 |
| 5.6c | Survey to understand seed treatment use in Washington | | 22-4-5 |
| 5.6d | Encourage additional screening for newly registered pesticides that exhibit moderate to high levels of honey bee toxicity and evaluate the effects on other pollinators | | 21-4-3 |
| 5.6e | Support research to understand the pesticide risks native bees face due to their unique behaviors and life cycles | | 25-4-2 |
| 5.6f | Assess tank mixes to evaluate their potential “additive” or “synergistic” effects to pollinators | | 23-3-5 |
| 5.5 | Determine pollinator benefit from habitat improvement on public land and refining habitat restoration techniques | 14 | 28-3-0 |

Taking action

The task force calls on decision-makers to advance and implement recommendations in this report to protect our state’s pollinators. The voting results associated with each recommendation offer decision-makers a sense of whether a given idea will be widely supported or encounter opposition, and whether it may be viewed as highly impactful for pollinator conservation. We urge decision-makers to take timely and thoughtful action based on all the recommendations proposed in this report.

Table of Contents

| | |
|---|----|
| Task Force Participants | 2 |
| Executive Summary | 3 |
| Table of Contents..... | 6 |
| Introduction | 7 |
| Recommendations for Pollinator Health | 9 |
| Task Force Process | 9 |
| Voting Process | 9 |
| Recommendations for Habitat..... | 9 |
| Recommendations for Pesticides..... | 24 |
| Recommendations for Education & Communication..... | 37 |
| Recommendations for Managed Pollinators | 45 |
| Recommendations for Research..... | 49 |
| References..... | 63 |
| Appendices | 66 |
| Appendix A - Voting Results in Priority Order | 66 |
| Appendix B - Glossary of Terms and Abbreviations..... | 70 |
| Appendix C - Task Force Participant Biographies..... | 71 |
| Appendix D - What should Washingtonians know about pollinators? | 76 |
| Appendix E - Outreach Target Audiences..... | 76 |
| Appendix F - Educational Resource/Potential Partnering Groups | 77 |
| Appendix G - Current WSDA Pesticide Compliance Information | 77 |
| Appendix H - Pollinator Survey Answers from Conservation Districts..... | 79 |
| Appendix I - Opposing Comments by Recommendation..... | 82 |

Contact Information

Pollinator Health Coordinator

Katharine Buckley
Plant Protection Division
Washington State Department of Agriculture
360-480-0602
KBuckley@agr.wa.gov

Any use of product or firm names in this publication is for descriptive purposes only and does not imply endorsement by the authors or the Washington State Department of Agriculture.

Introduction

Task Force Background

In June 2014, President Obama established a Pollinator Health Task Force (Obama 2014), which led to a U. S. Environmental Protection Agency (EPA) effort to get states to write their own Managed Pollinator Protection Plans (MP3s). Washington completed theirs in 2018 (Butler 2018), which resulted in essentially no changes at the time. It did, however, spark a change at the state legislative level, and in May 2019 Substitute Senate Bill 5552 passed unanimously (Lias et al. 2019). This bill created the WSDA Pollinator Program, made pollinators and pollinator habitat a priority for all state land-managing agencies, and established a Pollinator Health Task Force (PHTF).

As required by SB5552, the Washington State Department of Agriculture (WSDA) helped create the Pollinator Health Task Force to include subject matter experts from diverse backgrounds and with diverse perspectives. WSDA facilitated the task force and its work, but the recommendations in this report are the work of the task force, not WSDA.

The PHTF was tasked with developing a state pollinator health strategy which included research action plans on understanding, preventing, and recovering from pollinator losses, and more specifically into varroa mites and other pests and diseases that affect bees. The PHTF was also required to make plans to expand and coordinate public education programs outlining steps that individuals and businesses can take to help address the loss of pollinators, as well as specific targets and plans that state agencies should adopt to enhance pollinator habitat on their managed lands and facilities. Further recommendations required included: developing public and private partnerships to encourage pollinator protection, promoting seed banks and native plants beneficial for pollinators, and developing a plan to improve communication between beekeepers, landowners, and pesticide applicators. These recommendations needed to include the legislative, administrative, or budgetary actions necessary for implementation.

The Pollinator Health Task Force came together for the first time on Dec. 9, 2019. This was the same week that Asian giant hornet was first discovered in Washington, and the week after Houdini fly, a cleptoparasite of mason bees, was also reported for the first time in Washington. Previously, the last invasive species to enter the state with the potential to severely impact pollinators was the Varroa mite in the 1980s. The Varroa mite is still the number one threat on honey bee health worldwide.

Why is this important?

Honey bees are not the only pollinator, important though they may be. Washington is home to over 400 different species of native bees, 65 species of butterflies, as well as moths, wasps, beetles, flies, and hummingbirds. Many of these native species provide important pollinator functions and some of these species have seen sharp declines, including the once common western bumble bee, and the Monarch butterfly.

The ecosystems we rely on for life in turn rely on pollinators to continue functioning (Christmann 2019). The loss of individual species can contribute to significant decreases in plant and animal diversity and loss of ecosystem stability (Potts et al. 2010). The loss of pollinators, managed and unmanaged, can lead to decreased yields of many fruits, nuts, and vegetables (Winfrey et

al. 2011). That includes apples, sweet cherries, alfalfa, blueberries, and pears, which Washington is currently the top U.S. producer of. Loss of pollinators can directly impact ecosystem health, food security, and human welfare.

Our Recommendations

The PHTF was tasked with coming up with recommendations that would help all pollinators in Washington. Our main focus was on creating and restoring pollinator habitat, as that would benefit the most pollinators. Our recommendations include plans for state agencies, programs to foster partnerships to create pollinator habitat, and other actions that would foster habitat creation or restoration, especially with the use of native plants. We included research plans to better determine how best to create pollinator habitat for the native pollinators we have.

Education of growers, pesticide applicators, beekeepers, homeowners, and others was second. Our goals were to increase people's knowledge of the importance of pollinators, what kinds of pollinators we have, how to create habitat for them, and how to protect them from pesticides, parasites, diseases, and habitat degradation. We came up with two different plans that would increase communication between growers, pesticide applicators, and beekeepers, and both would require further education for all three groups.

We also looked into pesticides, managed pollinators, and research topics when we found current programs we wanted to support, potential areas for improvement, or data gaps we thought should be filled. Every recommendation had a rationale, responsible entities, implementation, funding, evaluation, and challenges section. Collectively we hope most of these recommendations are carried out to help reverse trends of pollinator loss and maintain healthy populations of native and managed pollinators for generations to come.

Recommendations for Pollinator Health

Task Force Process

The following recommendations were created using Minnesota's recommendations as a starting point (Bailey-Johnson et al. 2018) as they were the state that has passed the most pollinator legislation. Their recommendations were heavily edited, changed, deleted, and added to as the task force and its five subcommittees debated and discussed what would work in Washington with our own unique issues, ecosystems, and people. The only thing everyone had to agree on was if we wanted to delete a recommendation. We have tried to solicit as many opinions from different people as possible. The recommendations have been made available to all interested parties throughout the process, and all meeting minutes were made available online (<https://agr.wa.gov/departments/insects-pests-and-weeds/insects/apiary-pollinators/pollinator-health/task-force>). The task force used primarily Google Docs and video chat (WebEx) to share information and have discussions from people not only around the state but experts across the United States.

Voting Process

As the task force was made up of a very diverse group of people, we needed a way to indicate the group's priorities, as well as indicate support. Not everyone agreed with everything. Voting did not delete any recommendations, but helped us indicate our opinions about them.

Support votes were intended to indicate approval. An opposed vote indicated disapproval. Neutral votes were more variable, in that they could indicate a mixed opinion, or that the idea was vague or impractical, or they wished to abstain.

To assign priority to recommendations, task force members voted on one-third of the recommendations within each category. Only one priority vote per person could be assigned to a recommendation. For example, Habitat had 11 total recommendations and each member could select up to 4 recommendations (one-third of 11, rounded up to the next whole number). These priority votes were then added up for each recommendation. The criteria we used to prioritize recommendations were those recommendations we felt improved the survival of as many pollinators as possible, and had the largest impact possible for money, time, or effort spent.

Recommendations for Habitat

LANDS THROUGHOUT WASHINGTON SUPPORT HEALTHY, DIVERSE, AND ABUNDANT POLLINATOR POPULATIONS

Rationale: Loss of habitat is the number one cause for pollinator decline. The diversity, abundance, and health of pollinators requires access to sufficient and diverse flowers that bloom throughout the growing season, as well as undisturbed and uncontaminated habitat for foraging, nesting, larval hosts, and overwintering. Washington State does not have the pollinator habitat to support the pollinators it requires for our current agriculture

within the state. Creating habitat not only supports our native pollinators, but also our in-state beekeepers.

SSB 5552 also created a mandate for many state agencies to consider or implement policies to create, maintain, or manage state lands for pollinator habitat. Pollinator habitat is now one of the considerations for multiple-use state land management. Washington Department of Fish and Wildlife (WDFW) must now implement practices to maintain pollinator habitat on department-owned agricultural and grazing lands where practical. Pollinator habitat must now be considered in state park management and land acquisition practices. State roadsides and right-of-ways should be planted to native forage plants rich in pollen or nectar and beneficial to all pollinators whenever possible. Cities and towns now have the right to establish urban agricultural zones, and cities, towns, and counties have the right to authorize community gardens. WSDA now has a Pollinator Program that must promote and protect pollinator habitat, and assist others in implementing pollinator protection practices.

Implementation of many of these habitat recommendations will help to encourage the availability of a diversity of native plants and their seeds. Washington not only has one of the most diverse agricultures of any state, but we also have a rich diversity of native flora. These native plants and their pollinators are intricately connected and conservation and restoration of them is vital.

The following recommendations address pollinator habitat concerns in Washington. They reflect a variety of opportunities for habitat creation and enhancement, prioritizing landscapes, and practices that are highly meaningful but currently lacking resources for implementation in our state.

Recommendation 1.1

Develop an ongoing small grants program administered by the State Conservation Commission to provide funding to conservation districts to educate landowners and community groups about the value of pollinator habitat, and to provide the necessary technical assistance and materials (e.g., seeds and plants) to create it

PRIORITY VOTES – 17 SUPPORT– 26, NEUTRAL – 5, OPPOSE – 0

Rationale: Urban habitat and rural non-farm habitat have been identified as major gaps in pollinator habitat in Washington in terms of 1) land-use categories not currently eligible for habitat conversion under most existing state and federal programs, and 2) numerous opportunities for partnership with a high level of interest/demand. Turf and pasture conversion are forms of habitat restoration and would have immediate benefits to pollinators, as well as high visibility and potential for “ripple effects” through neighborhoods and communities. Urban habitats currently support the at-risk western bumble bee, but in very low numbers relative to previous decades. Existing populations of this species and other bees require abundant forage and nesting opportunities in

urban, suburban, and rural lands, in order to rebound in numbers. Monarch butterflies similarly require large scale restoration of milkweed to recover their numbers (Stenoien et al. 2018). Preference for pollinator plants should be given to native plants or non-native, non-invasive plants.

Educational efforts should include the benefits of habitat diversity, especially flowering and flowering woody plants. Riparian habitat restoration should be included.

There are existing financial assistance programs for creating pollinator habitat, such as those administered by the USDA Natural Resources Conservation Service (NRCS), but those programs are limited to eligible farmers (as opposed to community groups, and non-farmer rural landowners). Moreover, USDA financial assistance for pollinator habitat is not always available to farmers who do not rank highly enough in competitive funding situations.

As a result, many rural lands are often ineligible for USDA pollinator habitat funding, despite large tracts of available acreage, and significant interest among rural landowners. Even on eligible agricultural lands, management needs do not always match the timeline and resources available. As such, additional support, funding for plant materials and management dollars are needed. The state should direct resources to work with landowners whose property is ineligible for pollinator habitat funding through existing state and federal programs.

Responsible entities: Washington State Conservation Commission. Public entities including conservation districts, university extension offices, and other state agencies could apply for grants, which would create voluntary partnership opportunities with private landowners and NGOs. USDA personnel may be able to provide some guidance, especially for rural participants. WSDA pollinator ecologist serves as technical advisor to establish guidelines and recommendations for how pollinator plants and habitat should be designed and maintained after installation for this program.

Implementation: Create a small grant program to create better pollinator habitat, including landscape conversion with specific landscape design and maintenance guidelines created with WSDA pollinator ecologist

Eligible lands include private lands such as yards, golf courses, private schools and colleges, and rural land without crop history. Public lands such as parks, trails, natural areas, schools, and government facilities could also be included.

Planting projects should provide diverse native and/or non-native, non-invasive plants of high quality for foraging, nesting and overwintering, as determined by site suitability. Options include, but are not limited to, bee or “eco”-lawns, flowering habitat, flowering meadow gardens, shrub plantings, tree plantings, rain gardens, and other pollinator-friendly landscaping. Pesticide drift issues (especially possible in rural areas) are to be addressed via education/outreach and in habitat placement decisions. Installations could be tailored to support select species (e.g., monarchs, western bumble bees) or diverse species.

Criteria to rank applicants should include a detailed budget showing funding needs, resource concerns addressed, the likelihood of project success, value to at-risk native pollinators, multiple use benefits, planned project longevity, and plans for long-term maintenance.

Funding: Funding would be needed for conservation district staff and other eligible grant recipients to administer the program (e.g., provide education/outreach, technical support), and to implement habitat creation (e.g., site preparation, provision of seeds and plants).

Evaluation: Metrics for success include:

- Acres planted that successfully establish and are maintained for a minimum of 5 years.
- Monitoring planted areas for use by pollinators including trends over time.
- Number of participating landowners.

Challenges: Urban habitat may not offer as much acreage for habitat improvements as other landscapes and tends to be higher maintenance to meet aesthetic criteria. Weed-free turf is a cultural, and in some cases, a mandated norm and widespread acceptance may be difficult. Significant outreach and signage will be needed.

Recommendation 1.2

Require all state-funded building projects and roadside construction projects which include landscaping or land alteration to include a certain percentage of pollinator landscaping and/or “eco-lawn” that is drought tolerant maintained with ecologically sound methods known to protect pollinators

PRIORITY VOTES – 14 SUPPORT– 23, NEUTRAL – 5, OPPOSE –3

Rationale: When land is disturbed for state-funded building construction or roadside construction, pollinator habitat should be a part of necessary and legally required revegetation, reseeding, or post-disturbance landscaping. Doing so will increase pollinator habitat and raise public awareness. In many instances, it will also reduce water usage through decreased irrigation requirements of pollinator-friendly plants.

Responsible entities: All state and local agencies whose responsibilities include state-funded construction with measures for soil stabilization or landscaping including necessary revegetation. WSDA pollinator ecologist to establish pollinator protection guidelines within mandated landscape standards guidelines, including how pollinator plants and habitat should be designed and maintained after installation, as well as

guidelines for practical mitigation when landscapes must be altered whether for plant species attrition, emergencies or other unforeseen design or maintenance issues.

Implementation: Create and pass legislation requiring at least 25 percent of landscaping be pollinator forage and/or pollinator habitat. Guidelines on compliance will be available on the WSDA pollinator forage website (proposed elsewhere in these recommendations) and WSDA pollinator ecologist will be involved in the creation of pollinator protection guidelines within mandated landscape standards for various departments throughout the state, including public works, parks and recreation, universities, Capitol Campus, etc. (also another recommendation). WSDA pollinator ecologist will serve as a technical advisor as needed for state projects. Participation in design advisory committees throughout the state as well as through outreach to companies on various small works rosters can serve as an opportunity to influence and educate landscape architects and the contracting community who bid on, design, install and maintain state projects and properties.

Implementation is meant to apply to new state-funded building construction when such projects include landscaping. May also apply to landscape remodeling and roadside reconstruction projects. Recommend native and/or non-invasive, region-specific and high-quality pollen, nectar or host plants be options based on site suitability.

Funding: Existing budgets for landscaping can be applied toward this requirement. Some studies show pollinator plantings cost less to establish and maintain than turf (Sturm and Frischie 2020).

Evaluation: Guidelines will be determined by the WSDA pollinator ecologist and assisted by State Conservation Commission (SCC), working with the state's project liaison with the construction project manager/architect. Designs should be submitted for approval prior to work performed.

Challenges: Pollinator plantings will require high maintenance initially. However, over the long term, a properly established pollinator garden will require less maintenance and irrigation than turf.

Recommendation 1.3

Add pollinator specific recommendations for the enhancement, creation, and maintenance of high-quality pollinator habitat along surface water corridors in existing recommendation documents for riparian restoration

PRIORITY VOTES – 14 SUPPORT – 24, NEUTRAL – 7, OPPOSE – 0

Rationale: Waterways are an important habitat in the Washington landscape with 70,439 miles of river in the state. Wildlife corridors including waterways through urban areas can also have a significant impact benefiting wildlife allowing for edge forage opportunities and connectivity corridors. In addition, small scale habitat improvements

can have significant impacts to pollinator populations. Surface water corridors include rivers, streams, lakes, and wetlands, in combination with suitable road, utility, and rail corridors and other public (Department of Natural Resources lands, parks, natural areas, etc.) and private lands in rural areas. Washington Department of Fish and Wildlife uses best available science to draft riparian habitat recommendations for consideration by land managers, municipality, county and area planners, and private land managers, and local government. Updating those recommendations to include habitat restoration and management strategies specific for pollinators would provide additional pollinator conservation actions in riparian zones.

Responsible entities: Washington departments of Fish and Wildlife, Natural Resources, Agriculture and Ecology, SCC, counties; these agencies, in addition to conservation districts, watershed districts and other water management organizations would likely be the lead agencies in the implementation of WDFW riparian habitat recommendations. SSB 5552 requires the following agencies now consider pollinators or pollinator habitat: WSDA, WDFW, Parks and Recreation Commission, Washington State Department of Transportation (WSDOT), and any state agency managing multi-use public lands or engaged in noxious weed control.

Implementation: Should not conflict or be inconsistent with current protocols or legally binding agreements for riparian restoration, for example Habitat Conservation Plans. Future plans must consider pollinators and pollinator habitat. Habitat created can include wider transitional zones from riparian to other habitat that can include pollinator habitat that is appropriately diverse, connected, functional, safe and in all the necessary forms (i.e., forest, shrub-steppe, and wetlands with the required habitat components – native and/or non-invasive, high-quality, non-native plant diversity and enhanced floristic diversity with a special focus on pollinator-specific species, bare soil, woody debris, snags, etc.). Pollinator-friendly trees should be encouraged where appropriate and don't conflict with other management priorities like Endangered Species Act (ESA) species recovery. Region-specific plant lists for riparian-zone pollinator plants should be published and their use encouraged. WSDA and WSU will work with WDFW to develop management recommendations for pollinators which complement ongoing habitat recommendations intended for both terrestrial and aquatic species conservation.

As many state agencies are now required to consider pollinators, they can also consider partnerships with private landowners, using Recommendation 1.1 to increase the area they can potentially restore.

Funding: Compatible with existing funding. This would just recommend riparian projects using a more diverse plant list increasing the amount of flowering plants.

Evaluation: Successful incorporation of pollinator-focused recommendations within existing riparian management recommendation documents.

Challenges: None.

Recommendation 1.4

Manage rangeland to support native pollinators

PRIORITY VOTES – 11

SUPPORT – 20, NEUTRAL – 11, OPPOSE – 0

Rationale: Livestock grazing may be managed to protect and possibly enhance nesting and foraging resources for native pollinators. By controlling the number of cattle, timing, frequency, and duration of grazing, land managers can support wildflowers and native pollinators while still meeting the nutritional demands of their livestock (Harmon et al. 2011). Further, additional benefits of rangeland include reduced pesticide use, increased habitat for grassland birds and other wildlife, and improved soil health. In order to improve habitat for pollinators, WSDA and WSU Extension should develop and promote rangelands management techniques that give specific consideration to the needs of pollinators. These would include season long nectar and pollen sources as well as nesting opportunities for native bees and larval hosts for native butterflies. Increased pollinator forage would also help honey bees if rangeland owners want to rent out land for managed honey bee production. Programs would be developed (outreach materials, technical assistance, and financial incentives) to achieve these goals.

Responsible entities: WSDA, WSU, WSU Extension, State Conservation Commission, conservation districts, and Washington Department of Revenue. Possible partners: county Voluntary Stewardship Plans (VSP), Land Stewardship Project (LSP), Sustainable Farming Association (SFA), and Washington Cattlemen's Association.

Implementation: WSU will support research on range ecology, with an emphasis on using grazing as a tool to increase flowering resources for pollinators. WSU Extension will synthesize or produce grazing management recommendations and associated programs to protect and enhance grazed rangeland for pollinators. WSDA, WSU, WSU Extension, State Conservation Commission and conservation districts will promote these practices that encourage the well-being of all pollinators. Washington Department of Revenue will work on incentives (see Recommendation 1.7). One incentive could be to allow "agricultural" designation to private lands currently listed as "recreational" as long as they meet certain pollinator-friendly standards.

Funding: General funds could be used to dedicate agency staff resources towards implementation.

Evaluation: Grazing management recommendations to protect and enhance pollinator habitat are produced (yes/no). The number of acres on which those recommendations are applied.

Challenges: Care must be taken to use livestock stocking rates that provide enough flowering resources for pollinators. Use of wide-spectrum, broad-leaf herbicides in rangeland weed control should be reviewed.

Recommendation 1.5

Fund restoration crews dedicated to creating and enhancing pollinator habitat on roadsides

PRIORITY VOTES – 9

SUPPORT – 24, NEUTRAL – 6, OPPOSE – 1

Rationale: Roadside maintenance and management is important to ensure safe passage for vehicles, treating storm water, and soil stabilization. Roadside vegetation also provides habitat for pollinators, and is especially important in areas where nectar and pollen resources are limited on the landscape and where roadsides can provide connectivity of pollinator habitat between natural areas and croplands. At the State level, the Washington State Department of Transportation (WSDOT) has implemented a multi-faceted approach to improving roadside pollinator habitat. However, an estimated 55,000 acres of non-operational right-of-way is unmanaged and about half of it needs attention due to the prevalence of low-value, invasive plant cover. At the local level, standardized pollinator habitat enhancement policies and practices are generally lacking.

Responsible entities: WSDOT, DNR, WDFW, WSDA, counties, local road authority.

Implementation: WSDOT has implemented a multi-faceted approach to protect and enhance pollinator habitat along roadsides under its jurisdiction. WSDOT 1) has used Geographic Information Systems (GIS) data to identify the highest value roadsides for pollinators; 2) is applying ecological design and integrated vegetation management to benefit pollinators; 3) is implementing best management practices (BMPs) such as reduced and properly timed mowing and targeted use of herbicides for roadside maintenance, and 4) has initiated a study of seed mixes and seeding methods to identify best methods for enhancing roadsides. Not all roadsides provide similar benefits from restoration and it is important to identify the highest value areas for the enhancement and restoration of pollinator habitat. DNR, WDFW, and WSDA may serve as advisors on pollinator habitat creation and management decisions. WSDOT developed GIS models to identify high-value areas for preserving or enhancing pollinator habitat in WSDOT's right-of-way. WSDOT landscape architects preserve native habitat along roadsides where feasible, and revegetate following highway projects using native and/or non-invasive, high-quality, non-native plant species, as determined by site suitability, that provide sequentially available nectar and pollen throughout the growing season. Maintenance activities follow BMPs that prescriptively manage mowing and herbicide applications in high-value pollinator habitat. Finally, WSDOT initiated a multi-year study focused on evaluating methods for pollinator habitat restoration. The study includes field trials to formally evaluate different seed mixes and site-preparation treatments, and monitor the associated pollinator abundance and diversity.

Evaluation: Documentation of the number of acres of quality pollinator habitat created or enhanced on an annual basis with 5-year, 10-year, and longer-term targets. This documentation would occur at the state and local levels.

Funding: WSDOT is seeking funding for habitat management/enhancement crews to establish sustainable and beneficial habitat in the half of its 55,000 acres of non-operational right-of-way that is currently neglected.

Challenges: Roadside management is primarily done by WSDOT's maintenance division. To be effective, habitat enhancement needs to be accomplished by dedicated crews under the direction of the Environmental Services Office. Pollinator plantings require high maintenance initially to control invasive species. Maintenance crews typically have higher priority tasks, such as road surface repairs, replacing damaged guardrail and other infrastructure, removing danger trees, and responding to emergencies. In addition, funding for maintenance activities is limited, further requiring task prioritization. Funding for dedicated habitat restoration crews is required to accomplish pollinator habitat restoration goals. WSDOT has no influence over county and other local road departments and cannot make recommendations regarding revegetation plans, planting success, and monitoring.

Recommendation 1.6

Provide funding to the Washington Department of Fish and Wildlife to assess and interpret available data and develop and deliver Priority Habitat and Species (PHS) management recommendations for western bumble bee

PRIORITY VOTES – 8

SUPPORT – 22, NEUTRAL – 8, OPPOSE – 1

Rationale: Local governments are required to consider WDFW's PHS information when informing activities governed by the state's major land-use planning frameworks, including the Growth Management Act. Currently, there are no PHS guidance documents that focus on pollinators, yet pollinator habitat can be protected—and in many cases, restored/created—in many places, even in urban areas and within utility corridors where it may be difficult to protect/maintain habitat for other forms of terrestrial wildlife. Because western bumble bee is being added to the state's list of candidate species, it will automatically be added to the PHS list. Further, since it will be difficult to convey the conservation needs for western bumble bee spatially (because historically it occurred across the entire state), it will be especially important to develop a PHS management recommendation (MR) for the species, and then provide technical assistance to local governments (towns, cities, and counties) on implementing the MR within their jurisdiction. Western bumble bee, being primarily a generalist species historically occurring in a wide range of habitat types, recommendations benefitting it would also benefit multiple pollinator species including honey bees.

Responsible entities: Washington Department of Fish and Wildlife.

Implementation: Provide funding to the WDFW Priority Habitats and Species (PHS) Program to increase capacity to (1) develop statewide PHS Management Recommendations for western bumble bee; and (2) train other state agencies and local jurisdictions on how to incorporate the Western Bumble Bee Management Recommendations into land-use planning frameworks.

Funding: Increasing staff capacity will require funding: \$75,000 for one full-time fish and wildlife biologist to conduct research and draft the document; and one environmental planner for four months to edit and publish the document and conduct training for target audiences.

Evaluation: Publish PHS management recommendations for western bumble bee by April 30, 2022; and, by Nov. 30, 2022, complete at least two trainings for state agencies and at least two trainings focused on local government audiences on how to apply the management recommendations.

Challenges: Current funding mechanisms and capacity within WDFW is not sufficient to support development and delivery of this additional management recommendation within the next biennium.

Recommendation 1.7

Revise the state Open Space Farm and Agriculture Tax Classification Program to include private lands managed for pollinators and wildlife

PRIORITY VOTES – 14 SUPPORT – 26, NEUTRAL – 3, OPPOSE – 2

Rationale: Washington’s current Open Space Farm and Agricultural Land tax program provides a reduced rate property tax classification to rural landowners who produce agricultural products or harvest timber on their property. The current system incentivizes conversion of natural habitat to agriculture, and continued farming of sub-optimal land (rather than restoring those lands to natural habitat).

The current system should be revised to extend Open Space property tax eligibility to landowners who maintain or restore natural habitat. Such a revision would incentivize rural landowners to restore natural habitat for pollinators, as well as other priority wildlife such as salmon.

Responsible entities: Washington Department of Revenue, USDA Natural Resources Conservation Service (NRCS) in partnership with WDFW and local conservation districts

Implementation: Private lands managed for pollinators and wildlife should be granted an Open Space property tax designation by showing that they have a formal NRCS or conservation district plan that includes one or more pollinator or wildlife practice on the taxable land unit, AND that the practice has been implemented.

Funding: This recommendation requires no additional funding to implement. It is anticipated to result in long-term savings to the state through: 1) a reduced need for state agency investments in wildlife habitat restoration since more of that work will be performed by private landowners, 2) potential increases in hunting and fishing licensing revenue resulting from increased wildlife populations. Moreover, this recommendation would result in a tax reduction for conservation-minded landowners, incentivizing widespread adoption of habitat restoration that benefits all species of pollinators and wildlife.

Evaluation: Verification that landowners have carried out the habitat management practices described in their conservation plan through either 1) final NRCS approval paperwork (verifying that their client has fulfilled their contract requirements, or 2) onsite inspection and approval by local conservation district staff that the conservation practice meets an NRCS specification.

Challenges: No significant challenges are anticipated from this recommendation. A similar revision of Open Agricultural Property Tax Classification was carried out in Texas to broaden eligibility to lands managed for wildlife and pollinators and has not resulted in challenges.

Recommendation 1.8

Work with Sustainable Farm and Fields Grant Program (SFFGP) partners to prioritize grant applications that concurrently create or improve pollinator habitat

PRIORITY VOTES – 9

SUPPORT – 24, NEUTRAL – 6, OPPOSE – 1

Rationale: The SFFGP provides direct grants to rural landowners for farming, and private land management practices that sequester carbon, reduce greenhouse gas emissions, and increase the adoption of precision agriculture.

The creation/restoration of pollinator habitat using native and/or non-invasive, high-quality, non-native flowering plants (e.g., mass flowering cover crops, habitat restoration using native flowering trees) meets the fundamental criteria of the SFFGP, but pollinator habitat is not specifically listed for prioritization. In contrast, the SFFGP does prioritize riparian buffers for fish habitat.

Adding pollinator habitat to the SFFGP criteria would incentivize rural landowners who are not currently enrolled or eligible for other government-sponsored conservation programs, and expand the creation of pollinator habitat statewide.

Responsible entities: Washington State Conservation Commission

Implementation: This recommendation could be readily adopted through the specific addition of pollinator habitat as a priority for SFFGP grant applications. The State

Conservation Commission could further define eligible actions under this category based on pre-existing NRCS pollinator conservation scenarios (e.g., hedgerow planting).

Funding: No additional funding would be required for this recommendation.

Evaluation: Success and outcomes should be measured based on the standard SFFGP evaluation process.

Challenges: No challenges are anticipated from the adoption of this recommendation. Habitat systems (hedgerows, native prairie and meadows, and other native plant restoration practices) meet all of the pre-existing conservation criteria mandated under the SFFGP.

Recommendation 1.9

Recommend funding HB 2478 - 2015-16 to produce methods for replacing invasive plant species removed with native or non-native, non-invasive flowering plants as determined by site suitability

PRIORITY VOTES – 6

SUPPORT – 24, NEUTRAL – 5, OPPOSE – 2

Rationale: Habitat loss is the leading cause of pollinator decline. Landowners are mandated and encouraged to remove noxious weeds from their land, which also removes an important forage source for pollinators. When long-duration, ground-residual agents are used for removal, replacement with beneficial species may be impractical. Assistance should be provided in replacing the removed species with best-case, native-flowering plants, and with non-invasive, high-quality, non-native pollinator plants when the site is not suitable for native species. A pilot program would recommend best practices for various areas of the state.

Responsible entities: Noxious Weed Control Board.

Implementation: The State Noxious Weed Control Board shall conduct a pilot project that evaluates the options, methods, and costs of purposefully replacing pollen-rich and nectar-rich noxious weeds, such as knapweeds and non-native thistles, which are productive forage plants for honey bees, with either native or non-invasive, non-native forage plants that can produce similar levels of pollen and nectar with a similar bloom succession to support populations of honey bees and other pollinators. The goal of the pilot project is to develop optional guidance and best practices for landowners and land managers faced with the removal of noxious weeds. The pilot project must be developed to maximize the dual public benefits of reducing noxious weeds in Washington and supporting agricultural production through the maintenance of access to seasonally balanced, pollen-rich and nectar-rich plants for honey bees and other pollinators.

(2) (a) In implementing the pilot project, the State Noxious Weed Control Board must coordinate with willing landowners to provide goods or services, such as plant starts and seed packs, necessary to replace noxious weeds with either native or non-invasive, non-native plants or to create, in conjunction with noxious weed control efforts, new seasonally balanced forage patches for honey bees and other pollinators. (b) Priority in participation in the pilot project must be given to interested private landowners located in areas where the dual benefits of the pilot project can be maximized. However, public landowners or managers may also be considered for participation. No landowner may be required to participate in the pilot project either directly or as a condition of a permit or other governmental action.

(3) The implementation details of the pilot project required by this section are at the sole discretion of the State Noxious Weed Control Board, including the selection of pilot project partners and participants. However, pilot project partners should be located in both Eastern and Western Washington. The State Noxious Weed Control Board: (a) Shall coordinate with the county noxious weed control boards in which pilot projects are located, unless the county does not have a local noxious weed control board; and (b) May coordinate with the State Conservation Commission or individual conservation districts in the implementation of the pilot project if the State Noxious Weed Control Board finds that coordination would be beneficial.

(4) The state noxious weed control board must issue a report to the legislature, consistent with RCW 43.01.036, that outlines the successes and challenges of the pilot project, including the development of the tools in this subsection. This report must be presented by October 31, 2023, and include:

(a) A description of the following tools: (i) A list of suitable pollen-rich forage plant alternatives to noxious weeds, taking into account traits such as nectar and pollen quality, bloom succession, growth requirements, and habitat type; (ii) A list of seed and plant start suppliers that may be able to provide pollen-rich forage plant alternatives to noxious weeds. The list may only include suppliers who are willing to ensure the identity and purity of seed through appropriate testing performed or approved by WSDA or by any other agency authorized under the laws of any state, territory, or possession that has standards and procedures approved by the USDA secretary to ensure the identity and purity of seed; and (iii) A matrix, based on the pilot project, to provide guidelines to landowners and land managers when replacing noxious weeds or creating new pollen-rich forage patches;

(b) An assessment scale that may be used by landowners, land managers, and the apiary industry to rate the usefulness of the tools described in this subsection; and

(c) Any recommendations for extending the pilot project or using the lessons learned as part of Washington's overall noxious weed control strategy.

Funding: Ask the Legislature to fund WSDA to carry out this relatively inexpensive directive. Estimated \$65,000 for the biennium. The Noxious Weed Control Board does not currently have the funding to carry out the project.

Evaluation: Success is measured by the report generated, and its applicability to all areas of the state.

Challenges: Funding.

Recommendation 1.10

Create a Dedicated “Pollinator Fund” for pollinator habitat creation and protection

PRIORITY VOTES – 16

SUPPORT – 21, NEUTRAL – 7, OPPOSE – 3

Recommendation summary: Create a dedicated “Pollinator Fund” funded through fees or other dedicated funding. The Pollinator Health Task Force (PHTF) was established by the Legislature in the 2019-2020 legislative session in SSB 5552. This bill was passed by unanimous vote in both houses and signed by the Governor. In order to implement the recommendations of the Task Force and Section 2 of SSB 5552, and subsequently improve conditions for all pollinators in Washington, dedicated resources are necessary.

Rationale: The PHTF has taken on and identified a number of different areas to work to improve pollinator populations. In order to fund these diverse pollinator efforts, the PHTF has recommended a dedicated Pollinator Fund for the WSDA Pollinator Program.

Responsible entities: 2021 Legislature and WSDA.

Implementation: The program will carry out activities related to pollinators including evaluating habitat creation plans, developing an educational campaign on the use of IPM, pesticide applicator training, development of stewardship materials, etc. Creation of such an account would require legislative action.

Funding: We do not know. We started a list of ideas:

- General fund
- Toxics account
- Pollinator license plate

Evaluation: Success will be determined if a Pollinator Fund is created or not necessary to determine success of the program.

Challenges: Deciding how to do this.

Recommendation 1.11

Establish tax exemptions to incentivize the production and increased availability of seed banks and native plants beneficial for pollinators

PRIORITY VOTES – 6

SUPPORT – 20, NEUTRAL – 11, OPPOSE – 0

Rationale: Washington’s enacted pollinator health bill (SSB 5552), calls for the task force to develop a plan that includes “Recommendations for promoting seed banks and native plants beneficial for pollinators;” (Section 3:4:f). Aligned with this mandate, the Legislature should enact tax exemptions for the production and sales of pollinator-beneficial wildflowers and native plants.

Using other tax exemptions as a model, this should include an exemption or reduced business and occupation (B&O) tax, retail sales tax, and use tax for the production and sales of pollinator-beneficial wildflowers and native plants.

Similar tax exemptions already exist to advance and incentivize strategically important economic and environmental industries in the state (including beekeeping). This recommendation will accelerate and increase the availability of high-value conservation plant materials that not only benefit pollinators, but will have value to other wildlife, including in the use of riparian restoration for fish habitat and water quality protection.

Responsible entities: Department of Revenue (DOR), WSDA.

Implementation: In coordination with DOR, WSDA should develop a standardized definition of pollinator-beneficial plants (including native plants specifically), and a definition of eligible producers and retailers of pollinator-beneficial plants to whom the tax exemptions apply. Based on this definition, the following activities should be considered for exemption (or reduction) of B&O, sales, and use taxes:

- Wholesale and retail sales of pollinator-beneficial plant materials.
- The purchase of pollinator-beneficial plant materials.

Funding: Minimal funding is required for the implementation of this tax exemption or reduction.

Evaluation: DOR should evaluate the impact and performance of this tax exemption according to their standard operating procedures for tax exemption categories.

Challenges: To be successful, this recommendation will need a narrow definition of pollinator-beneficial plant materials and eligible producers and retailers of those materials. Care will need to be taken to avoid an overly-broad definition of:

- Pollinator-beneficial plant materials -- to avoid extending tax exemptions to plants which are not produced or sold primarily for conservation purposes.
- Eligible producers and retailers of pollinator-beneficial plant materials – to avoid extending tax exemptions for producers and retailers who are not primarily selling plants for conservation purposes.

Recommendations for Pesticides

PESTICIDES ARE ONE OF THE STRESSORS POLLINATORS FACE, AND THE FOLLOWING RECOMMENDATIONS ARE MEANT TO REDUCE THAT RISK

Rationale: Pesticides are one of the tools that Washington growers, gardeners, homeowners, beekeepers, and pesticide applicators use to manage pests. Yet some pesticides are known to have negative and long-term impacts on bees, other pollinators, and beneficial arthropods. Others have minimal impacts. Exposure to pesticides can occur during applications, as well as afterwards when pollinators come in contact with pesticides that are still active. Insecticides can be lethal to pollinators and lower exposures are linked with sub-lethal impacts. Herbicide exposure can kill off the flowering habitat directly. Some fungicides synergize the toxic effects of insecticides, or disrupt pollinators' natural microbiota, leading to their increased susceptibility to pathogens and parasites. Honey bees are exposed to miticides when beekeepers try to control Varroa mites.

Pollinator-protection language is required to be on some pesticide labels and outlines ways to minimize adverse effects. The U.S. Environmental Protection Agency (EPA), charged with regulating pesticides, bases the labels they approve for pesticide products on a risk-benefit analysis.

Under this goal are recommendations which strive to increase awareness, education, and incentives to ensure all Washingtonians use pesticides properly, and within an integrated pest management (IPM) framework.

Recommendation 2.1

Support WSDA and WSU in their drift reduction efforts, including education and encouraging adoption of improved technology and enhance the existing effort to ensure pollinator protection is incorporated

PRIORITY VOTES – 16

SUPPORT – 29, NEUTRAL – 0, OPPOSE – 2

Recommendation summary: WSDA, WSU Extension and grower groups are already working to reduce pesticide drift through increased outreach to applicators and various educational efforts, including evaluation of new technology. The importance of pollinator protection should be added to these efforts.

Rationale: Reduction of pesticide drift and other off-target pesticide movement could reduce pesticide load in flowering non-crop habitats, thereby reducing risk of pollinator and other ecosystem exposure to pesticides.

Responsible entity: WSDA, WSU Extension, and producer groups.

Implementation: WSU is already working with equipment manufacturers, grower groups, crop consultants, and pesticide applicators to evaluate equipment and practices to identify drift-reduction technologies and methods.

Pesticide safety is a coordinated effort to deliver consistent messaging on the reduction of drift/off-target movement through stakeholder networks. WSDA and WSU Extension include drift reduction strategies as part of pesticide applicator training, field demonstration, and research. Pollinator best management practices could easily be included into the current program. WSDA, equipment manufacturers, grower groups, and WSU Extension should provide consistent messaging to the state's growers and agricultural professionals. Drift reduction recommendations will address what the group finds as gaps in current training materials and will include the latest research-based information on practical steps to reduce off-target movement.

Funding: WSDA may be able to fund their program all or partially through current channels.

Evaluation: Number of drift safety trainings that include pollinator protection practices. Consider contamination sampling to evaluate efficacy of drift reduction techniques (see 5.6 for pesticide research).

Challenges: Funding. Communication and collaboration between responsible parties. Adoption of new technology.

Recommendation 2.2

WSDA Pesticide Compliance should increase outreach to improve pesticide misuse reporting, and increase fines

PRIORITY VOTES – 10

SUPPORT – 21, NEUTRAL – 7, OPPOSE – 3

Rationale: WSDA enforces pesticide label requirements intended to protect pollinators (US EPA 2013). WSDA focuses on changing future behavior if a pesticide applicator violates the label. Some protections have been in place to mitigate pesticide exposure to pollinators since USDA regulations of the 1960s, prior to the formation of EPA. The cornerstone has always been the clear and unambiguous admonition: "Do not apply to blooming crops or weeds," which appears on the label. There are a number of existing requirements. Extended residual toxicity (greater than 8 hours) cannot be legally applied or drifted onto blooming crops or weeds. Short residual toxicity products (less than 8

hours) can be legally applied to bloom in early morning, late evening, or when temperatures are below 55F if the pesticide label allows.

Under WSDA's charter with EPA, WSDA can be more stringent in regulating pesticides than the federal government, but not less stringent. This is one area where Washington does and must continue to lead the way for the nation. Increased outreach to improve reporting and an increased maximum fine in the case of negatively impacted pollinators are recommended to improve the current program.

Responsible entity: WSDA.

Implementation: WSDA pesticide enforcement should include special attention to violations that occur when pesticides are applied while crops are in bloom and pollinators are foraging (in violation of bee hazard label). This may include: increased random enforcement checks during specific periods, as defined by WSDA and stakeholders; increased random enforcement checks in specific places, as defined by WSDA and stakeholders. A notice of correction is commonly given (with fines possible) when there are label violations, with the intent of changing future behavior. The fine matrix is currently under review, and fines should be increased from current levels. Pollinator health should be one of the factors that they consider in assessing the fine matrix.

How to report label violations is included in pesticide applicator training. Beekeepers should also be advised on how to report, with information on the WSDA Pollinator Program webpage linked to the Pesticide Compliance webpage.

Funding: WSDA currently has sufficient funding to investigate all reports made to them, and regularly does more than the EPA requires.

Evaluation: Annual report to the Pollinator Program on number and type of pollinator-related investigations. WSDA will track changes over time.

Challenges: The label is the law. We would like to find better methods to ensure compliance.

Recommendation 2.3

Strengthen invasive species control efforts with consideration for supporting pollinators and pollinator habitat

PRIORITY VOTES – 19

Rationale: Invasive species can negatively impact our ecosystem, including our pollinator's health. Invasive insects can prey upon, infest, or compete with our native pollinators. Invasive weeds outcompete our native plants, and often provide inadequate forage, larval food sources, and nesting habitat for our native pollinators. Invasive species are also a primary driving force behind pesticide use, and pesticide use can

have unintended environmental consequences, including negative impacts on pollinators.

From both a short- and long-term perspective, prevention, detection, and rapid responses to introductions preventing the establishment of invasive species, is the most cost-effective way of dealing with invasive species. While eradication may be preferred, long-established invasive species may be best managed with an IPM strategy, which should reduce the use of pesticides and pollinator exposure to pesticides. Finally, a key step often missed in invasive weed control specifically is habitat restoration after weeds have been controlled. Areas heavily disturbed from weed control efforts may be more susceptible to reinvasion, and depending on the control method, may no longer have any native flowering plants providing pollinator forage.

2.3a Detection and Rapid Response to Invasive Species

SUPPORT – 27, NEUTRAL – 4, OPPOSE – 0

Responsible entities: WSDA, Washington Invasive Species Advisory Council, Washington State Noxious Weed Control Board, and other relevant agencies and groups.

Implementation: The responsible entities should identify gaps in invasive species prevention, detection, identification, and rapid response capabilities and gaps in the funding needed for these endeavors.

Funding: Agency budgets supported by legislative funding.

Evaluation: Annual reports on detections and rapid response actions by appropriate agencies.

Challenges: Funding is the primary challenge; a poor understanding of the seriousness of the growing invasive species threat; potential impacts on commerce and other human activities.

2.3b IPM for Established Invasive Species

SUPPORT – 27, NEUTRAL – 4, OPPOSE – 0

Responsible entities: WSDA, Washington Invasive Species Advisory Council, Washington State Noxious Weed Control Board, WSU, and other relevant agencies and groups.

Implementation: The responsible state agencies should identify knowledge gaps in invasive species management efforts and gaps in the funding needed for these endeavors. Sustained support of current and future research efforts focused on the management of invasive species will be needed for improved invasive species management outcomes.

Funding: Agency budgets supported by legislative funding, funding for research.

Evaluation: Existing invasive species threats should be prioritized and targeted for management and eradication in a strategic manner.

Challenges: Funding is the primary challenge; a poor understanding of the seriousness of the growing invasive species threat; potential impacts on commerce and other human activities.

2.3c Replanting after Noxious Weed Control

SUPPORT – 27, NEUTRAL – 3, OPPOSE – 1

Responsible entities: WSDA, Washington Invasive Species Advisory Council, Washington State Noxious Weed Control Board, and other relevant agencies and groups.

Implementation: After research into best restoration practices (Recommendation 1.9), a cost share program could be created that helps landowners restore habitat lost due to invasive weed control.

Funding: Funding for cost share program plus initial funding for research (Recommendation 1.9).

Evaluation: Number of acres restored to pollinator friendly habitat after weed control.

Challenges: Funding is the primary challenge.

Recommendation 2.4

Add WSDA Pollinator Health Coordinator to Washington State Noxious Weed Control Board Pollinator Committee

PRIORITY VOTES – 6 SUPPORT – 23, NEUTRAL – 6, OPPOSE – 2

Rationale: Increase cooperation and distribution of information between the Washington State Noxious Weed Control Board, the WSDA Pollinator Program, and stakeholders of each.

Responsible entities: WSDA, Washington State Noxious Weed Control Board

Implementation: Require a WSDA pollinator health coordinator or other pollinator advocate seat on the State Noxious Weed Control Board's Pollinator Committee to provide economic and environmental impacts of weed listing/categorization on pollinator health. Will also require a report from the WSDA Pollinator Coordinator, which describes current pollinator health issues. Will need to be implemented through the Legislature.

Funding: None needed.

Evaluation: Annual pollinator report submitted to Washington State Noxious Weed Control Board.

Challenges: None.

Recommendation 2.5

Increase awareness of third-party certification of sustainable agriculture that promotes good pollinator practices

PRIORITY VOTES – 5 SUPPORT – 19, NEUTRAL – 11, OPPOSE – 1

Rationale: Increase grower awareness of certification programs that support pollinator health, biodiversity, and low-input pesticide application.

Responsible entities: WSDA and WSU Extension, LIVE (wine grapes), Salmon-Safe (partnership - built into LIVE program for vineyards; additional farm program for other crops), Certified Organic, Bee Better Certified, other third party certifications

Implementation: WSDA and WSU Extension to produce lists of third-party certifications to be made available without recommendation to growers. Include short descriptions, crops, certification logos, and contact information to clarify how the programs are different from each other. Explicitly state there are no endorsements.

Example: LIVE (www.livecertified.org) supports environmentally and socially responsible wine growing through third-party certification and education in the Pacific Northwest. We have vineyard and winery members in Washington, Oregon and Idaho. Our science-based standard is internationally accredited and independently verified through site inspections and annual record-keeping.

[Green-Yellow List of approved chemistries](#)
[Vineyard management standards](#)

Funding: None.

Evaluation: Track participation in various certification programs. Third-party certification assures that sustainability best practices are implemented at the farm level.

Challenges: None at an administrative level. Challenges were mentioned at the individual grower level to comply with program requirements. The certification programs mentioned as part of this recommendation are opt-in and requirements only apply to growers pursuing or maintaining certification.

Recommendation 2.6

Increase research into and adoption of effective, pollinator-friendly integrated pest management (IPM) strategies for Washington crops and beekeeping

PRIORITY VOTES – 15

Rationale: Growers have made IPM the industry standard, which focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties. Pesticides are used only after monitoring or conditions indicate they are needed according to established guidelines, and treatments are made with the goal of removing only the target organism. Pest control materials are selected and applied in a manner that minimizes risks to human health, beneficial and non-target organisms, and the environment. Still, there are gaps in our knowledge about cultural and physical management and challenges caused by emerging pests. Current IPM practices should be evaluated and expanded with emphasis on protecting pollinators.

2.6a Updated Pesticides and Pollinators Publication

SUPPORT – 27, NEUTRAL – 3, OPPOSE – 1

Responsible entities: WSU Extension, Oregon State University (OSU)

Implementation: WSU Extension should publish a comprehensive list of products of short residual toxicity and extended toxicity. This list should highlight those products which have label warning for use near pollinators. The OSU document (Hooven et al. 2013)) may be a good starting point, with changes in Washington pointed out. OSU's document is currently undergoing revision, and should be a joint effort with WSU to become a common resource.

Funding: Could require new funding or could be included in current funded mandates.

Evaluation: Updated document published.

Challenges: Cooperation between WSU and OSU (not a significant challenge). Funding, dissemination.

2.6b Updated IPM Best Management Practices

SUPPORT – 23, NEUTRAL – 6, OPPOSE – 2

Responsible entities: WSU

Implementation: WSU shall examine current IPM methods and best management practices (BMPs) for crops which use pesticides on the list created by recommendation

2.6a, and shall update those BMPs with pollinator protection methods, including non-chemical IPM practices for managing pest and disease such as the use of pest-resistant crops and crop rotations. This information will be used to fill gaps in IPM training materials and enhance pollinator protection.

Funding: Could require new funding or could be included in current funded mandates.

Evaluation: BMPs updated to include new practices to manage pests and expand pollinator protection methods as necessary.

Challenges: Funding, dissemination.

2.6c Treated Seed BMPs

SUPPORT – 21, NEUTRAL – 5, OPPOSE – 5

Responsible entities: WSU

Implementation: WSU shall examine current treated seed practices to evaluate their efficacy against common pests found in relevant crops. This knowledge will add guidance to BMPs for when they should be used, and when they are unnecessary and should not be used.

Funding: Could require new funding or may be included in current funded mandates.

Evaluation: Assess improvement in current BMP guidelines and adoption.

Challenges: Funding, dissemination.

2.6d Outreach on Improved IPM and BMP Materials

SUPPORT – 23, NEUTRAL – 6, OPPOSE – 2

Responsible entities: WSU Extension, WSDA

Implementation: WSU Extension and WSDA shall conduct outreach on these improved IPM methods and BMPs. This educational campaign would be a coordinated effort among key “information sources” to deliver consistent IPM messaging (including: scouting, thresholds, alternate tactics) and proper pesticide application to stakeholders. These stakeholders include, but may not be limited to, farmers, beekeepers, native bee managers, businesses (commercial landscaping, golf courses, etc.), state and county roadside managers, and homeowners, in rural, urban, and suburban areas. For the agriculture sector these “information sources” could be grower associations, state agencies, extension and industry groups.

Funding: Could require new funding or could be included in current funded mandates.

Evaluation: Assess improvement in current IPM and BMP adoption.

Challenges: Funding, dissemination.

2.6e Incentivize IPM and BMP Adoption

SUPPORT – 19, NEUTRAL – 10, OPPOSE – 2

Responsible entities: WSU Extension, WSDA

Implementation: Identify programs currently available that could incentivize adoption of IPM strategies which protect pollinators. Where gaps exist, WSDA could consider development of an incentive or grants program to increase adoption of practices not covered by existing programs. Examples of IPM strategies that could be considered are use of pest-resistant crops and crop rotations, and cropping systems. This effort would facilitate/increase adoption of a diversity of management tactics and other IPM practices.

Funding: Could require new funding or may be included in current funded mandates.

Evaluation: Assess improvement in current IPM and BMP adoption.

Challenges: Funding, dissemination.

2.6f Support Ongoing IPPM Research and Extension

SUPPORT – 26, NEUTRAL – 4, OPPOSE – 1

Responsible entities: WSU, WSU Extension

Implementation: WSU should develop novel Insect Pest and Pollinator Management (IPPM) strategies and/or demonstrate and promote established and proven IPM efforts that take pollinators into account.

Funding: Grants from commodity group representatives, growers, pest control advisors and businesses, pesticide industry representatives, conservation agencies, government and non-governmental organizations, sustainability certification programs, and other groups.

Evaluation: Assess improvement in current IPM, IPPM, and BMP guidelines and adoption.

Challenges: Funding, dissemination.

2.6g Publish Beekeeper IPM Guidelines

SUPPORT – 25, NEUTRAL – 6, OPPOSE – 0

Responsible entities: WSU, WSU Extension, WSDA, WASBA.

Implementation: WSU will publish IPM guidelines for beekeepers concerning Varroa mite control specifically, as well as other pests and diseases. WSU Extension, WSDA, and Washington State Beekeepers Association (WASBA) will help disseminate this information.

Funding: Could require new funding or may be included in current funded mandates.

Evaluation: Assess improvement in current IPM and BMP guidelines and adoption.

Challenges: Funding, dissemination.

Recommendation 2.7

Increase communication between beekeepers, growers, and pesticide applicators

PRIORITY VOTES – 17

Recommendation summary: SSB 5552 - Sec. 3 reads:

(g) Recommendations for developing a plan to improve communication between beekeepers, landowners, and pesticide applicators, including a draft policy for the director of agriculture to consider that would allow the release of contact information for registered apiarists when requested by a landowner or pesticide applicator in order to protect the apiary when possible.

The Pesticides Subcommittee came up with two different ideas to increase communication between beekeepers, growers, and pesticide applicators. We think one or both of these would help, but need to be combined with education and outreach for growers, beekeepers, and pesticide applicators on their rights and responsibilities. For example, it is the responsibility of the pesticide applicator to not spray bee hives. It is the responsibility of the beekeeper to get permission to place their hives on someone's property. It is a grower's responsibility to pay attention to what is happening on their property, and it is their right to have beekeepers charged with trespassing if they have hives there without permission.

2.7a Adoption of an Online Mapping and Communication Platform

SUPPORT – 17, NEUTRAL – 8, OPPOSE – 6

Rationale: To facilitate communication between beekeepers, landowners, and pesticide applicators, it is recommended that Washington implement an online mapping registry. The registry would identify locations and contact information of beekeepers. An example of this type of registry is the BeeCheck platform managed and operated by FieldWatch. They have a nationwide, voluntary platform, that is adopted in multiple states today. States pay for adoption of the platform but it is free for applicators and beekeepers to use. Detailed below is the description of FieldWatch and the registries.

A national registry like FieldWatch is one way to address this issue, recommendation 2.7b also addresses the issue.

Responsible entities: 2021 Legislature and WSDA

Implementation: FieldWatch is a non-profit, multi-stakeholder agriculture collaborative that operates a crop and apiary registry with the purpose of helping pesticide applicators make the best possible and most informed spraying decisions. FieldWatch is currently operating in 22 states and the Canadian province of Saskatchewan and is the only registry of its kind with a national footprint. Their DriftWatch® Specialty Crop Registry allows growers to identify the location of their fields, what crop they are growing and how they are growing it (e.g., conventional, organic), as well as provide their contact information should the applicator have questions. The BeeCheck® Apiary Registry has a few additional features for beekeepers, but operates on the same principle of communicating critical information to applicators who need to know what is around them. Both registries are completely voluntary– for growers and beekeepers – and it is completely voluntary for applicators to check the registry. For convenience, FieldWatch recently launched two mobile applications. FieldCheck® allows applicators to see what’s around them in an easy-to-read application they can use anywhere. The BeeCheck app allows beekeepers to add and move hives by GPS out in the field. This allows for instant updates to the system, allowing applicators to operate with real-time data.

FieldWatch always seeks to meet the needs of individual states and can modify our platform as needed. In Washington, it will likely be required that applicators “register” with FieldWatch to access any crop or apiary data (registering is a free, three-minute process) and crop/hive locations will not be available on a public map. The details can be worked out with state stakeholders moving forward. Other mapping and communication platforms would likely have similar capabilities.

Funding: FieldWatch requires an upfront fee of \$24,500 to cover technology development costs and training of all stakeholders in new states. This cost includes both the DriftWatch Specialty Crop platform and the BeeCheck Apiary Registry. However, if a state would only like to adopt the BeeCheck registry, the fee is reduced to \$13,000. The ongoing maintenance fee for each state is \$6,500 annually for one or both registries. This helps FieldWatch cover costs like continued innovation of the tool (e.g., mobile apps), server maintenance, communication tools, training, etc. It is currently unknown what other companies or nonprofits might charge to produce a similar platform.

Evaluation: Success will be determined if FieldWatch or another platform is implemented and utilized by beekeepers and pesticide applicators.

Challenges: Adoption will be low among the vast majority of commercial beekeepers. Bee Protection Protocols represent a more acceptable alternative.

2.7b Bee Protection Protocols

SUPPORT – 22, NEUTRAL – 5, OPPOSE – 4

Rationale: Ground and aerial applicators of pesticides, as well as growers, apply chemicals which harm pollinators. Lack of communication is one reason why managed pollinators can sometimes be harmed by such applications. Better communication will improve managed pollinator protection.

Responsible entities: WSU Extension, agricultural industry groups, aerial and ground applicator groups, WSDA, WASBA.

Implementation: Pollinator protection standards should be published and disseminated among the affected groups. Further refinements can be made by those groups as conditions evolve. WSU Extension should convene a committee of stakeholders to review and approve changes/additions to the standards. These standards should be adopted by all groups whose actions affect managed pollinators: landowners/lessees, pesticide users, and pollinator managers.

First draft is as follows:

Pollinator Protection Standards: A way to improve communication between the Ag Industry and pollinator managers

Grower/Landowner/Lessee Standards:

1. If you allow managed pollinators on your land or land you manage, keep the contact information of the pollinator manager.
2. Protect pollinators by applying pesticides according to the label. Many pollinator-damaging pesticide labels say “Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.” You are the best person to determine if bees are visiting the crop.
3. When the pollinator manager asks permission to use your land, let them know what crops may receive pesticide applications in the area so the manager can decide if they should locate there or not.
4. If possible, direct the pollinator manager to place pollinators in sites with least danger of drift or far from fields where pesticide use is likely.
5. When fields require pesticide application, let the pollinator manager know your application schedule so the manager can plan ahead. Also let the pesticide applicator know the location and distance of managed pollinators from the intended site of application so they can properly plan time of day and wind direction to protect pollinators. Scouting pollinator locations before application is best done by the onsite landowner/lessee, who is most familiar with the neighborhood and the people involved.
6. Get to know your neighbors. Notice if your neighbors have managed pollinators on their land adjacent to your crop which may need pesticide applications, or if your neighbors have crops which may need pesticide applications near managed pollinator sites on your land. Coordinate with neighbors and involve the pollinator manager to protect pollinators, whether by applying at favorable times, removing the pollinators, or changing the pesticide to be applied.

7. Do not allow managed pollinators on your land without your permission and your obtaining the pollination manager's contact information. Pollinators without contact information cannot be reliably protected. Contact local law enforcement or other pollinator managers for assistance in locating the owners of such illegally-placed managed pollinators to remove them or to obtain permission and trade contact information.

Pesticide User Standards:

1. Protect pollinators by applying pesticides according to the label and as possible taking actions, such as implementing BMPs, that go beyond label requirements to further protect pollinators.
2. When the pesticide user is also the landowner/lessee, coordinate directly with the pollinator manager when the pesticide application schedule becomes firm. More notice is better. Work with the pollinator manager to protect pollinators, whether by applying at favorable times, removing the pollinators, or changing the pesticide to be applied.
3. When the pesticide user is not the landowner/lessee, the pesticide user should ask the landowner/lessee about managed pollinators in the area so the applicator can choose a time when winds are favorable or when the time of day is best, or have the landowner/lessee contact the pollinator manager to mitigate the danger of damage. The exact location in relation to the field to be treated should be given.

Pollinator Manager Standards:

1. Always obtain permission from the landowner/lessee before placing pollinators. Keep the contact information of the landowner/lessee and be sure to share yours with them.
2. Ask about the possibility of pesticides being used in crops in the surrounding area. Reconsider placement or shorten placement time if nearby pesticide use is likely.
3. Mark the location or equipment with your contact information and/or Washington registration number.

Funding: Once the standards are agreed upon, funding required should be minimal.

Evaluation: Successful implementation of standards will decrease the instances of pesticide applicator difficulty in doing their work and decrease pollinator incident reports to WSDA's Pesticide Management Division.

Challenges: Dissemination and adoption will take time as some aspects of these industries are loosely organized.

Recommendation 2.8

Prompt WSDA to re-evaluate systemic applications of neonicotinoids to pollinator attractive woody plants to determine whether actions are needed to limit risk

PRIORITY VOTES – 5

SUPPORT – 19, NEUTRAL – 6, OPPOSE – 6

Rationale: Research has demonstrated that systemic applications of neonicotinoids to woody pollinator-attractive plants can harm pollinators even when applications occur months prior to bloom time (Mach et al. 2017). Trees and other woody plants are vitally important as pollinator forage, especially early in the year when other floral resources are limited. The Legislature could direct WSDA to assess the potential risk of existing uses and outline reasonable actions in response.

Actions could include both outreach and education, as well as potential regulatory changes as needed to protect bees from unreasonable harm. The committee noted that appropriate actions would likely take into account issues such as whether the target pest is a nuisance or economic pest.

Responsible Entities: Legislature and WSDA

Implementation: Require WSDA to reassess systemic insecticides use on pollinator-attractive woody plants to determine potential risk and propose solutions.

Funding: Unknown.

Evaluation: Depends on research results.

Challenges: May be expensive, overlap research currently being conducted, and assessment may fall more under the purview of the EPA.

Recommendations for Education and Communication

WASHINGTONIANS UNDERSTAND, VALUE, AND ACTIVELY SUPPORT POLLINATOR POPULATIONS

Rationale: To conserve and enhance pollinator populations for current and future generations, it is vital that all Washingtonians learn about the value to our food systems and ecosystems of pollinators, including native non-managed species. These recommendations promote understanding of the biology of pollinators, their habitat needs, and the proper use of pesticides in our state.

Recommendation 3.1

Provide funding for a new enhanced pollinator extension education and outreach program at Washington State University along with the funding needed to maximize pollinator education across the state of Washington

PRIORITY VOTES – 21 SUPPORT – 28, NEUTRAL – 3, OPPOSE – 0

Rationale: Education is integral to pollinator conservation. WSDA, WSU Extension, and other relevant partners should develop a statewide, science-based, audience-specific pollinator education plan targeted at educating beekeepers, agricultural producers, land managers, licensed pesticide applicators and other professionals, and the public. This plan should emphasize pollinator best management practices for both native and managed species including the provision of quality pollinator habitat, and the proper and judicious use of pesticides. A permanent, statewide, pollinator-specific, extension educator position(s) should be created to coordinate and lead this recommendation.

Responsible entity: WSU Extension (lead), WSDA, other state agencies

Implementation: Implementation of this recommendation should begin with a WSU and WSDA review of the statewide education needs related to pollinator education followed by the development of a plan that outlines the goals related to pollinator education in Washington and the necessary partners, personnel, and other resources.

Funding: State funding for WSU Extension and relevant partners. Funding for a WSU regional extension specialist on pollinators (location not specific), salary plus annual operations budget would be around \$100,000 at a minimum.

Evaluation: As part of the WSU Extension program, documentation of educational activities and their impacts, and how success of this project will be defined and a method to measure this.

Challenges: Funding is likely the primary challenge.

Recommendation 3.2

Include the importance of pollinators and their habitat, as appropriate, in resources developed for teachers within and related to current science standards

PRIORITY VOTES – 14 SUPPORT – 30, NEUTRAL – 1, OPPOSE – 0

Recommendation summary: Pollinators play a critical role in the ecological and food production systems both in Washington and globally. Educational materials relevant to

pollinator conservation will be shared with organizations that provide teachers' resources such as E3Washington and the OSPI curriculum resource groups.

Rationale: Lesson plans within current standards can be used to expose Washington students to pollinator-related topics and activities and enhance general understanding of the value of pollinators including native species, the threats they face, and how to support their populations.

Responsible entities: OSPI; input and curricular resources provided by members of the PHTF and others.

Implementation: Washington State's current science standards allow for curriculum reflecting the importance of pollinators and their habitat. The potential exists to develop and/or share existing curricular materials through the E3Washington resource webpage and other portals that provide curricular resources to teach using pollinators as a subject and resource. Recommendation 3.3 below would be linked as the hands-on portion of lesson plans.

Funding: Funding may be necessary to develop, validate, and train teachers on new curriculum. This should be a responsibility linked to funding for the WSU regional specialist in 3.1.

Timeline: Connect with the E3Washington in fall 2020, and identify when and where suggestions can be provided on how to accomplish this goal.

Evaluation: Number of teachers adopting curriculum and using lesson plans.

Challenge: Ensuring resources are available to support teachers in delivering pollinator-related information, and activities to their students.

Recommendation 3.3

Establish pollinator gardens on school grounds as an educational tool for primary, secondary, and post-secondary students

PRIORITY VOTES – 12 SUPPORT – 24, NEUTRAL – 7, OPPOSE – 0

Rationale: It is important to engage students and school neighborhoods by providing pollinator education and awareness with the curricula created in 3.2, which should include the importance of creating pollinator habitat through demonstration and hands-on participation. The use of on-site venues when teaching concepts related to insects, plants, and ecology is particularly valuable.

Responsible entities: Board of Education, Superintendent of Public Instruction and Enterprise Services, independent school districts, University of Washington, and Washington State colleges and universities.

Implementation: Utilize existing or create new agency resources to increase outreach, technical, and maintenance assistance to educational facilities that wish to establish pollinator-friendly habitat. A recognition program could be implemented to further incentivize educational facilities to create pollinator habitat.

Pollinator habitat can also be added to existing school gardens or plans for school gardens that help teach students about nutrition and where food comes from. This would have the added benefit of teaching the importance of pollinators to the food we eat. The additional pollinator garden resources would also be available on the current WSDA school garden website: <https://agr.wa.gov/departments/business-and-marketing-support/farm-to-school-toolkit/school-gardens-and-farms>

Funding: School district levies; public, non-profit, or corporate sponsorship. Repurposing of current landscaping budget. Schools might also apply for a grant from Recommendation 1.1.

Evaluation: Success would be evaluated by the percentage of schools that meet an established pollinator-friendly landscaping goal, number of acres of pollinator habitat on school properties, and number of students impacted.

Challenges: Pollinator plantings will require some maintenance initially, as well as committed care over the long term. Adding curricula to support this for long-term gains.

Recommendation 3.4

Continue partnership in the national strategy to improve pollinator health

PRIORITY VOTES – 11 SUPPORT – 30, NEUTRAL – 1, OPPOSE – 0

Rationale: To avoid duplication of effort, maximize resources and impact, and promote enhanced outcomes related to improving pollinator populations and health, the state of Washington should continue as a partner in the national strategy to improve pollinator health.

Responsible entities: The Governor’s Office and all pertinent state agencies. WSDA will be the point agency.

Implementation: The various agencies of the state of Washington should maintain partnerships with federal agencies and neighboring states to promote and enhance the implementation of the National Strategy to Promote the Health of Honey Bees and Other Pollinators (Pollinator Health Task Force, 2015) within Washington and neighboring states with a focus on measurable outcomes and should report new and continuing initiatives and achievements to the governor of the state of Washington on an annual basis.

Funding: Agency budgets with federal assistance as appropriate and available.

Evaluation: Goals that achieve measurable outcomes should be set and reviewed, and updated as needed on an annual basis.

Challenge: Meaningful cooperation can be difficult.

Recommendation 3.5

Education and development of county-based partnership panels around land management in respect to pollinator health

PRIORITY VOTES – 5 SUPPORT – 22, NEUTRAL – 8, OPPOSE – 1

Rationale: Land managers may remove pollinator forage while performing necessary maintenance and invasive control at the specific time that these species are needed by all pollinators (during the mid- to late-summer). With the development of regional partnership panels to include representatives from managed bees, WSU Extension Master Gardener groups, public works, WSDOT, noxious weed control, landscape professionals, and any others who may have input to discuss better decision-making paradigms when mowing, removal, and replanting projects are planned which would be in the best interests of not only the county maintenance departments, but also pollinators, birds, wildlife, and agriculture.

Responsible entities: Conservation districts, WSDA, WDWL, county weed boards, tribes

Funding: Minimal costs associated with providing representatives from each organization that has a relevant input to the creation of management solutions.

Evaluation: Management techniques for public forage areas are discussed and alternative processes are documented, and training is accomplished to bring visibility to the issue.

Challenges: Staff representation allotments in each of the organizations.

Recommendation 3.6

WSDA pollinator ecologist should be a technical advisor for forage design and implementation decisions

PRIORITY VOTES – 9 SUPPORT – 21, NEUTRAL – 7, OPPOSE – 3

Rationale: The position should influence state decisions about land management projects to benefit pollinator species' habitat needs, distribution and abundance. This includes involvement in the creation of pollinator protection guidelines within mandated landscape standards for various departments throughout the state, including public works, parks and recreation, universities, Capitol Campus, etc. Such standards would include guidelines and recommendations for how pollinator plants and habitat should be

designed and maintained after installation, as well as guidelines for practical mitigation when landscapes must be altered whether for plant species attrition, emergencies or other unforeseen design or maintenance issues. 2015 was the last standards review and next review/update should take place in the next year or so.

This is a person with the skills, knowledge, and experience that can review and coordinate agency initiatives, conduct education and outreach, and be a knowledge-based resource about all things regarding pollinators. The WSDA pollinator ecologist will help train landscapers and others making state land management decisions on how to create pollinator habitat and otherwise protect pollinators, and will serve as a technical advisor as needed for state projects. Participation in design advisory committees throughout the state as well as through outreach to companies on various small works rosters can serve as an opportunity to influence and educate landscape architects and the contracting community who bid on, design, install and maintain state projects and properties. See 1.3 Habitat recommendation.

The WSDA pollinator ecologist will also be responsible for curating, updating, and expanding the WSDA Pollinator website (3.8 and 3.9), as well as running the referendum for Washington beekeepers on creating a new chief apiary inspector position and registered apiary locations (4.4).

Responsible entities: WSDA.

Funding: Ongoing state funding for WSDA Pollinator Program.

Evaluation: Number of landscapers or land managers completing pollinator habitat design and protection training, and state projects with incorporated pollinator habitat. Successful establishment of pollinator protection guidelines and recommendations in state landscape standards when next updated.

Challenges: Position already exists, but duties will not be well defined until task force recommendations prioritized and funded (see WSDA pollinator health coordinator).

Recommendation 3.7

Educate the public through plant nurseries about the necessity for blooming nectar plants to be available to pollinators throughout their respective active seasons

PRIORITY VOTES – 7

SUPPORT – 28, NEUTRAL – 3, OPPOSE – 0

Rationale: It is necessary for pollinators to have access to nectar and pollen resources throughout their active season. Late summer and early fall flower resources are particularly important. Many native pollinators have short foraging ranges and improved local habitat has a huge impact on pollinator health. Plant nurseries engaged with their

customers are the best way to reach and educate people at the point they make their planting decisions.

Responsible entities: WSDA (including Nursery Research and Advisory Committee), plant nurseries.

Implementation: Independent nursery centers could be a great source of education for home gardeners who turn to these groups for advice on which plants to purchase. These nurseries hold free or inexpensive classes for home gardeners. Pollinator plant friendly labeling or lists are something to consider when partnering with nursery centers. WSDA Pollinator Health website could include information about sourcing pollinator friendly plants at nursery centers, and reference educational materials that have been distributed, or pollinator-friendly symbols on retail plant identification tags, etc.

Funding: Nursery centers are licensed through WSDA. Their licensing fees are used in part for the Nursery Research Fund with grants for horticulture related research and education efforts. WSDA could use a portion of funds to provide pollinator-friendly plant information in partnership with licensed nurseries with the goal of educating home gardeners where they buy their plants. Another funding opportunity would be to capitalize on the existing relationship with WSDA to nurseries simply as a communication channel for pollinator-protection education/outreach materials and information. The Washington State Nursery and Landscape Association's (WSNLA) Scholarship and Research Charitable Fund offers small grants (up to \$5,000) for industry related education and could be another source of funding.

Evaluation: Number of participating nurseries.

Challenges: Training materials and implementation of training to nurseries might be a challenge. Message consistency might be a challenge.

Recommendation 3.8

Provide growers and the public with a curated resource for information on pollinators in general and specifically education about managed species

PRIORITY VOTES –15 SUPPORT – 29, NEUTRAL – 1, OPPOSE – 1

Rationale: Multiple pollinators provide more complete pollination services. Improving bee-species richness ensures future healthy pollinator populations.

Responsible entities: WSDA, WSU, coordination with other agencies and partners.

Implementation: Produce web-enabled catalog of current resources on best management practices and other educational resources available to growers and the general public. Include information on co-pollination of honey bees and native pollinators to increase pollination services and quality. WSDA Pollinator Program will

review on an annual basis to ensure links remain good and if anything new should be added.

Once guidelines and recommendations for pollinator protections are established within state landscape standards (3.6), the specific information should appear on this site.

Funding: Should be minimal to construct and maintain a webpage linking required resources.

Evaluation: Number of page hits.

Challenges: Stakeholder experts to assure content is up-to-date.

Recommendation 3.9

Increase availability of pollinator-related resources on state agencies websites

PRIORITY VOTES – 9 SUPPORT – 27, NEUTRAL – 4, OPPOSE – 0

Rationale: The internet is an easy way for people to find information, and using our state agency websites to promote Washington and Pacific Northwest specific pollinator information would be helpful for our residents.

Responsible entity: Washington State agencies.

Implementation: State agencies and university partners should work to ensure that resources related to pollinators, pollinator habitat, pollinator health and management, and pollinator research are freely accessible online. Other states with similar programs may also participate (Oregon Bee Project.)

Funding: Utilize existing resource sharing/distribution channels.

Timeline: Initiated, fall 2020.

Challenges: Compiling the materials, coordination between agency websites.

Recommendation 3.10

Increase pollinator protection training for pesticide applicators

PRIORITY VOTES – 21 SUPPORT – 27, NEUTRAL – 2, OPPOSE – 2

Rationale: Oregon Department of Agriculture (ODA) has made pollinator education a core credit for pesticide recertification training, which makes this training highly desirable for applicators. Moreover, ODA also approved credits for pollinator habitat,

which is key because many applicators do vegetation management. Washington should do something similar.

Responsible entity: WSU Extension, WSDA, industry.

Implementation: WSU Extension and WSDA will adapt existing or create new pollinator protection training for pesticide applicators. Pollinator protection would be considered one of the core credits pesticide applicators are required to take. Pollinator habitat training would be acceptable for vegetation/weed management pesticide applicator credits.

Highlights of this training will include reading labels for pollinator safety (for example, not spraying when flowers are blooming or spraying at night; this is part of current training), as well as pollinator biology and habitat. This would include education and outreach regarding the risk of systemic applications to woody pollinator-attractive plants and to provide best management practices to limit exposure concerns. Growers and pesticide applicators may think of pollinators as transitory (commercial honey bees, migratory butterflies), but many are local and do not move that much (native bees, hobbyist honey bees). So pollinator safety is something to keep in mind year-round.

New BMPs from 2.6 would be included in this training and education, and any new results from 5.6 or any other research recommendations could be distributed to pesticide applicators through these trainings.

Funding: Utilize existing funding. The proposed WSU pollinator extension position would likely be heavily involved.

Challenges: Keeping the trainings current and up-to-date.

Recommendations for Managed Pollinators

BOTH WILD AND MANAGED POLLINATORS REQUIRE SUPPORT

Rationale: To conserve and enhance pollinator populations for current and future generations, it is vital that all Washingtonians learn about the value of both managed and wild pollinators to our food systems and ecosystems.

Fruit, nut, and vegetable producers have been able to externalize part of the cost of production through beekeepers finding good habitat to maintain healthy honey bees for pollination. As non-agriculture honey bee habitat becomes more rare, less of the cost of maintaining healthy pollinators will be externalized. Decreased pollinator forage is one of the largest issues impacting honey bee health, and driving beekeeper conflicts. Reducing the number of beekeepers forced to be migratory to keep their bees healthy will also reduce agriculture's carbon footprint. We foresee this becoming a further issue and outside of Washington state recommendations would also recommend the federal government create something similar to the Federal Waterfowl Stamp Act to help create pollinator habitat.

These recommendations promote restrictions and support of managed pollinators to increase the health of all pollinators. Honey bees are by far the most abundant managed pollinator both worldwide and in Washington, though Washington does have a diverse array of other managed pollinators. These recommendations reflect that.

Recommendation 4.1

Restrict non-native bumble bee commercial use

PRIORITY VOTES – 16 SUPPORT – 23, NEUTRAL – 6, OPPOSE – 2

Rationale: Managed bumble bees benefit Washington agriculture, but the production and movement of non-native species like the common eastern bumble bee (*Bombus impatiens*) can pose risks to wild bees through pathogen spillover, genetic pollution, and competition. *Bombus impatiens* has already established a small population in Western Washington and has been expanding its range. Commercial production and deployment of managed bumble bee species should consider the needs of wild pollinators, especially those species that face extinction risk. To reduce the risk of pathogen spillover and competition with Washington's bumble bee Species of Greatest Conservation Need and other native bee species, only native species of bumble bees, produced within their native ranges, should be used commercially in Washington when bumble bees are used (in accordance with this policy: [Policy – IUCN SSC Bumble Bee Specialist Group](#)).

Responsible entities: Legislature or WSDA

Implementation: An RCW should be created that restricts non-native managed bumble bees from being moved into Washington State for open-field agricultural use. If managed bumble bees are used in greenhouse settings, restrictions should be in place to ensure that colonies are disposed of at the end of the season and not released into the outdoor environment, and greenhouses should be thoroughly screened to prevent escape of managed bumble bees. See California Department of Food and Agriculture regulations regarding use of managed bumble bees (https://www.cdffa.ca.gov/plant/PE/interiorexclusion/pdfs/CEQA_BumbleBee.pdf) and Oregon's Approved Invertebrates List (<https://www.oregon.gov/ODA/shared/Documents/Publications/IPPM/OregonApprovedInvertebrateList.pdf>).

Funding: Unknown.

Evaluation: State law changed.

Challenges: There is currently only one Washington native bumble bee commercially available, and may not be easily available in Washington without additional planning. A small business impact assessment may be required.

Recommendation 4.2

Review policies on state lands to protect native pollinators and improve transparency for state land areas which may permit managed honey bees

PRIORITY VOTES – 23 SUPPORT – 23, NEUTRAL – 6, OPPOSE – 2

Rationale: Placement of honey bees in natural areas or areas managed for native species can pose risks to wild bees through competition and pathogen spillover (Hatfield et al. 2018). However, honey bees need more natural forage to maintain their health when they are not pollinating agricultural crops, and some state lands may provide such healthy forage. There is a need to strike a balance between allowing beekeepers access to state lands for placing their hives while protecting sensitive areas for native pollinators, including Washington's bumble bee Species of Greatest Conservation Need, and the unique ecosystems that depend upon native pollinators.

Responsible entities: WDFW, DNR, Legislature, WSDA, and other state land management agencies.

Implementation: All land-managing state agencies shall review their guidelines and policies for allowing beekeeping permits so that beekeepers understand which lands are available for forage, and so that impacts to wild pollinators from honey bees can be minimized. Agencies shall clearly indicate where beekeepers can and cannot apply for permits and, where applicable, shall have a process for beekeepers to easily apply for permits. WSDA will host a webpage for beekeepers with links to all available state agency permit processes for managed honey bees on state lands. State agencies managing sensitive conservation areas (DNR Natural Area Preserves, DNR Natural Resource Conservation Areas, WDFW Wildlife Areas and Washington State Parks) shall implement policies accounting for the risks and potential risks that honey bees pose to wild, native bees. Such policies may include restricting honey bees from an agency's managed lands, or allowing new permits for honey bees only if an agency pollinator specialist determines the potential risk to native pollinators and their associated habitats is low.

Funding: Current funding sufficient.

Evaluation: Updated permitting guidance resources and land management approaches.

Challenges: Consistency across state agencies may be difficult.

Recommendation 4.3

Emergency assistance for all managed pollinators program

PRIORITY VOTES – 13 SUPPORT – 19, NEUTRAL – 8, OPPOSE – 3

Rationale: Managed pollinators are essential to many of the crops that Washington State produces, and these pollinators are subject to the forces of Mother Nature. A morning cloud burst early in the pollination season that drowns alkali bees in the Walla Walla Valley could mean an alfalfa seed field goes unpollinated. A fast burning scrub land fire burns through an orchard and takes out boxes of honeybees. Financial assistance would help pollinator managers recover from these unexpected, adverse conditions.

Responsible entities: Legislature, WSDA

Implementation: There are three possible ways to get insurance for all managed pollinators.

Option 1: Washington State would provide assistance to eligible owners, producers, growers, and beekeepers of all managed pollinators including honey, bumble, mason, leafcutting, alkali bees for losses due to, but not limited to, adverse weather, floods, and wildfires. Similar to the federal government program through the USDA Farm Service Agency's Emergency Assistance for Livestock, Honey Bees and Farm-raised Fish (ELAP). ELAP only applies to honey bees. The Washington State program would apply to all managed pollinators. Washington State does not currently have any type of crop insurance program, so this would be completely new.

Option 2: Get the federal ELAP program expanded to cover all managed pollinators. This would require lobbying at the federal level (somewhat beyond the scope of the state task force.) As a benefit, this could provide coverage to all managed pollinators throughout the United States.

Option 3: Ask private crop/farm insurance to cover all managed pollinators. Most growers already have some type of crop insurance, and beekeeping insurance is also available. Ask them to extend that to cover other managed pollinators. This option would be piecemeal, and may not work, as most crop insurance is actually federally subsidized (ELAP program), so insurance companies may not want to extend coverage.

Funding: Depends on option chosen.

Evaluation: Depends on option chosen.

Challenges: Depends on option chosen.

Recommendation 4.4

Creation of registered yard locations and establishment of WSDA apiculture inspector position

PRIORITY VOTES – 10

SUPPORT – 16, NEUTRAL – 10, OPPOSE – 5

Rationale: Locations for forage is one of the most significant aspects of managing pollinators. There are continuous problems of overcrowding areas with managed pollinators. This practice increases disease transmission and reduces available forage for those bees and native bees. States such as Montana and North Dakota have requirements for yard registrations. The development of such a system has the potential to reduce theft and increase hive registration participation. Any form of this program would likely require a full-time apiculture position to manage and also work to identify pest and disease issues in the state. The person could respond to suspected pesticide spray kills, help with Asian giant hornet, perform national survey work, etc.

Responsible entities: WSDA and State Legislature.

Implementation: A referendum of beekeepers would be needed to see if there is support for an apiculture position in WSDA or registered apiary locations. If the referendum is positive, the Apiary Advisory Committee should be consulted for further implementation.

The best part of Montana's and North Dakota's programs should be used. Registered apiary locations would need to be a minimum of 2 miles apart from each other.

Funding: Survey may be completed with current funding. Implementation of apiary inspector position and registered apiary locations would require at least 1 FTE position and supportive funding.

Evaluation: Abide by results of beekeeper referendum.

Challenges: Funding and support from beekeepers.

Recommendations for Research

RESEARCH GOALS IN WASHINGTON SUPPORT THE INFORMATION NECESSARY TO MAINTAIN HEALTHY POLLINATOR POPULATIONS AND RECOVER FROM POTENTIAL POLLINATOR LOSS

Rationale: To conserve and enhance pollinator populations for current and future generations, it is vital we understand more about our pollinators and their requirements to stay healthy. These recommendations promote understanding of the biology of pollinators, their habitat needs, and the proper use of pesticides in our state.

Recommendation 5.1

Document the bee species of Washington State and map their distributions. Develop an annotated checklist of bees and create a research-grade specimen database

PRIORITY VOTES – 18

SUPPORT – 28, NEUTRAL – 2, OPPOSE – 1

Rationale: Conservation and management of bee species in Washington State requires accurate knowledge of bee distribution. Informed estimates indicate there are 400-600 native bee species in Washington, yet currently we do not have a list of the state's bee species. In the mission to conserve native bees, it is critical to know where different bee species are found and where we may expect to find them in the future. The existing information on Washington bees is scattered across scientific literature, online records, and various data repositories, such as insect museum collections. A coordinated database that compiles these records will establish baseline understanding of what is actually here. This complements the goals of recommendation 5.2 and can help identify species or regions of the state that lack information. Survey information can be interpreted in the context of broader bee data and a knowledge of historical distributions.

One result of this initiative will be bee checklists. Checklists can be used to answer questions such as: "Is bee species X a new state record for Washington, or for our county? If so, does the presence of a new bee species reflect an expanding invasive species, a new introduction facilitated by human transport, or new taxonomic expertise?"

The bee database records will also be important as "big data", when researchers use aggregated specimen information to identify patterns in bee distributions and collections throughout the past century. Bee distributions may expand, contract, or shift, but we will not be able to monitor that without a historical baseline. A bee specimen database allows us to make predictions of where and when to find certain types of bees, and aids in revealing bee species or targeted ecosystems that are high-priority for future surveys. Most importantly, historical baseline bee population data will help us determine if a native bee species is declining or becoming threatened so that we can respond swiftly before the species is lost.

Responsible entities: WSDA, WSU, WDFW.

Implementation: Fund three main positions. 1) One primary biologist funded part-time to coordinate database initiatives and manage data entry, literature and record review, and bee identifications. Funding must include costs for travel to regional collections (WSU, UI, OSU), to record curated material, and to identify unknown specimens. 2) One technician to enter data and check veracity of all data. 3) One computer programmer (or related field), as needed, to develop an online database. Resulting product would include bee localities, county records, flowers visited, sources of the information, and notes for each species (such as: introduced, conservation concern, specialist pollinator). The specimen-level database created will be valuable to research and conservation efforts within Washington and to researchers worldwide.

Funding: There may be interest in having a checklist of bees from various groups such as community scientists, conservation groups, state agencies and regional parks. Getting the level of money to do the job thoroughly and subsequently release results on a website will take a larger funding push. A comprehensive database may require approximately \$100,000 and 2-3 years of part-time work to complete.

Evaluation/Dissemination: A searchable website would be ideal, and would require support for development and a commitment to long-term maintenance. This website could be promoted and designed for public access and use. Additionally, researchers would produce scientific papers on new bee species or distributions. Information collected and produced from this project will also benefit larger national initiatives, such as the nascent National Native Bee Monitoring Network, which begins operations this year.

Challenges: Identification of non-curated material in collections will be difficult for several genera having little taxonomic information known, e.g. *Melissodes*, *Eucera*, *Nomada*, and *Lasioglossum (Dialictus)*. Some of these can be addressed through molecular DNA approaches, but will require further funding; this could be completed in-house by WSDA. As with all checklists, the content will change. This could occur through species introductions or additional local records emerging from other research and monitoring efforts. This is why a modern website with a small amount of ongoing support for database maintenance would provide the best return for the state input.

Recommendation 5.2

Continue and create native pollinator and habitat community science tracking programs

PRIORITY VOTES – 9

SUPPORT –27, NEUTRAL – 3, OPPOSE – 1

Rationale: Baseline data and long-term survey data is important to monitoring pollinator populations, identifying and addressing threats, as well as determining significant and important areas for conservation or management. WDFW, WSDA, and WSU's invertebrate programs have expertise to develop and guide surveys for certain species and pollinator communities respectively. However, since some pollinator species are accessible and surveyed with minimal specialized tools and skills, they are ideal study organisms for volunteer based community science projects. Community science projects will be useful compliments to agency efforts to survey for pollinator species and habitats, as well as engaging the public in helping protect our pollinators (McPhail et al. 2020). It is recommended that the state of Washington create a program dedicated to supporting and facilitating this critical work emphasizing volunteers and community science wherever possible to foster connections with the public and capitalize on substantial volunteer contributions. Non-lethal monitoring protocols should be prioritized in this effort, though that will not be possible with some bee monitoring.

Responsible entities: The DNR Natural Heritage and Natural Areas Programs, WSU, WSDA, WDFW, and citizen science groups (such as Bumble Bee Atlas partnership between Xerces and WDFW) are already involved in these types of activities and could be the lead entities in these efforts.

Implementation: Provide the funding and personnel required to achieve the goals outlined in this recommendation. Some agencies may already be implementing on a

targeted or small scale. There should be an annual sharing of survey data on pollinators between different groups. The WSDA pollinator coordinator will help arrange the annual meeting or other method of data sharing. Recommendation 5.1, 5.5, and 5.9 are examples of projects that would be reported to the group.

Example projects include, but would not be limited to, citizen science projects that would target people with mason bee houses, adopting a grid cell or patch of habitat for surveys/monitoring, systematic monitoring for specific species groups like bumble bees or butterflies, comprehensive native pollinator habitat inventories and ranking, or abundance and density estimates in critical areas. Intensive survey or monitoring projects for specific groups like bumble bees will cost between \$30,000 and \$200,000, depending on scope and level of training required.

Funding: The Clean Water, Land and Legacy Amendment may be a source of initial funding, DNR budget, grant funding (public and private), new legislative restricted funds for state agency implementation.

Evaluation/Dissemination: Reports on changes in pollinator species and habitat on an annual or biennial basis. Annual data sharing between different groups.

Challenges: Recognition of the importance of these efforts and dedicated funding. Breadth of working could be overwhelming at first requiring prioritization.

Recommendation 5.3

Encourage adoption of evidence-based best management practices by target audiences regarding pollinator health, pollinator habitat and strategies to increase pollinators and pollinator effectiveness in Washington State

PRIORITY VOTES – 8

SUPPORT – 23, NEUTRAL – 7, OPPOSE – 1

Rationale: Assess changes in knowledge, improved awareness and changes in behavior as related to the use of evidence-based best management practices to increase pollinator health, pollinator habitat and strategies to increase pollinators in Washington State. The goal is to educate target audiences, measure their change in knowledge and document this over time to assess the translation of the research into on-the-ground results.

1. Improved public recognition of and increased habitat for native pollinators.
2. Increased knowledge among stakeholders.
3. Increased use of best management practices among the diverse target audience (growers, beekeepers, pesticide applicators, K-12, etc.).
4. Documentation of changes in practices among diverse groups directly related to improving pollinator health, pollinator habitat and other pollinator strategies. For

example, a reduction in chemical use in managed hives would be a documented change in behavior based on research recommendations.

Responsible entities: WSU, USDA ARS, state agencies (DFW, etc.) and other researchers/scientists.

Implementation: This recommendation is tied to the education subcommittee materials and programs. This would be a study or a set of studies to determine the overall effectiveness over time (assessment) of the goals and programs generated from the translational materials used in that set of recommendations and other research-based evidence, best management practices, extension bulletins, and other educational materials. The findings of Project ICP (<http://icpbees.org/>) would likely be a good starting point for this research.

Funding: Industry, competitive grants programs.

Evaluation: Improved recognition, improved adoption, increased knowledge, changes in behavior that match research recommendations.

Challenges: Diverse target audiences.

Recommendation 5.4

Yield can be increased with the optimal pollinator(s)

PRIORITY VOTES – 6

SUPPORT – 19, NEUTRAL – 10, OPPOSE – 2

Rationale: For some crops, honey bees provide great pollination services. Honey bees cannot perform “buzz pollination” and may be too large, too small, or have too short a tongue to effectively pollinate certain flower morphologies. For crops like canola, seed crops, alfalfa, cucurbits, and other fruits, nuts, and vegetables, understanding how pollen is best spread may increase yields and suggest the best pollinators for each system. Honey bees may not be the most effective and efficient pollinators for each crop, where other native or managed bee species may be more suitable. In some cases, other pollinators such as flies may even be preferred. Research should delve into whether there is a best pollinator or cohort of pollinators for different crops to help maximize yield and productivity.

Responsible entities: WSU and other research institutes.

Implementation: The new WSU pollinator extension position (Recommendation 3.1) would begin with a literature review to find if there is published information on best pollinators for Washington crops. If no research exists, or is limited to non-native species only, WSU and other research institutes may petition industry groups for funding to investigate further into best pollinators among our native pollinators, plus honey bees. Based on those results, best management practices for encouraging or otherwise managing those pollinators may be necessary if none exists.

There are a few starting points for this expanded research. WSU doctoral student Eli Bloom's research found that bee diversity increases with an organic farm's age (Bloom & Crowder, 2016). A vital addition to that research would be determining if that influenced organic farm yields and/or profit. This would answer the question of whether increased bee diversity makes organic farming more profitable.

The pear industry predominantly uses only honey bees for pollination services. Honey bees don't like the bitter nectar taste and tend to fly away from the crops. *Osmia lignaria* is known to pollinate pears, and may be a good supplemental or alternate pollinator on pears. Native *O. lignaria* bees have a tighter flight radius and may significantly increase yield. Other native bees could also be evaluated on their potential for yield increases in pears. These are ways we can evaluate new alternate pollinators in one crop.

Alfalfa leafcutter bees (*Megachile rotundata*) are already used on alfalfa in Eastern Washington. Other summer crops grown in Eastern Washington like onion seed, beans, peas, melons, potatoes, etc. may gain more yield if leafcutter bees were used as well. This might show that one easily managed alternate pollinator can be used in more than one crop.

There might be other challenges in managing some of these alternate pollinators. For example, there are chemical smells or other factors that occasionally result in leafcutter bees not returning to provided nesting sites. Research should be conducted into what drives these bees away from otherwise good nesting habitat.

Funding: Initial study could be tied in with 3.1 funding. Further projects should be industry driven, as better knowledge of best pollinators could result in increased yields and potentially lowered pollination service costs.

Evaluation/Dissemination: Results must be distributed to growers along with best management practices for encouraging the pollinator species best suited to their cropping system. Findings must be disseminated via multiple avenues, including but not limited to, extension documents, presentations at trade shows, articles in trade journals, and other potential avenues.

Challenges: There is an incredibly broad range of both crops and pollinators that could be studied for this. An initial first step is going to require a lengthy literature review to determine gaps in knowledge.

Recommendation 5.5

Determining pollinator benefit from habitat improvement on public land and refining habitat restoration techniques

PRIORITY VOTES – 14 SUPPORT – 28, NEUTRAL – 3, OPPOSE – 0

Rationale: Portions of Washington's public lands are subject to habitat improvements projects, some of which very likely deliver substantial benefit to pollinators. Investment

in adaptive management and refining restoration and reclamation techniques will make on the ground habitat improvement projects more successful. We propose to evaluate various restoration and habitat improvement methods, quantify benefits on several habitat projects, and to understand not only the benefit delivered, but also the potential public dividend of investing in public lands restoration.

Depending on habitat type and pollinator species, pollinator habitat restoration and rehabilitation may require different techniques or approaches to be successful.

Attention and research into habitat preferences for various guilds of pollinators will inform restoration efforts. Having data to support various restoration approaches in different areas and for different groups of pollinators will help make those restoration and habitat rehabilitation activities more successful and cost effective.

Responsible entities: WDFW, WSU, and other potential partners (WSDA, DNR, Xerces Society).

Implementation: WDFW will identify and implement multiple restoration and habitat improvement projects on WDFW Wildlife Management Areas and other state and federally managed lands with the goal of improving habitat for native pollinator species. In addition, various methods and restoration techniques will be evaluated to identify the most successful approaches for different ecological systems and species communities to be incorporated into adaptive management documents and restoration recommendations to be prepared for public and private land managers to implement.

Funding: Potential funding options already available: Recreation and Conservation Office (RCO) restoration grants, USFWS/USDA pollinator funding, non-flexible legislative funding, various federal competitive grants. Dedicated funding may also be required.

Evaluation/Dissemination: Pollinator abundance and species richness following restoration efforts. Pollinator abundance and species richness on surrounding public and private lands following subsequent restoration efforts on public lands would also inform the value of investing in public lands restoration. Developed and published species restoration and rehabilitation strategies for various regions and pollinator species communities.

Challenges: These should be minimal. Several restoration projects have been done, some quite recently. It is evident that they support an increase in pollinator visits, and measuring benefit to pollinators can be done in several ways using proven methods. A process for prioritizing unstudied habitats will be important to determine where to focus next.

Recommendation 5.6

Pesticides research topics

PRIORITY VOTES – 15

Rationale: In order to evaluate the potential risks pesticides pose to pollinators in Washington State, we recommend the following research activities. These are topics that we identified where additional information will inform appropriate responses and best practices in Washington.

5.6a Residue Testing in Pollinator Habitat

SUPPORT – 20, NEUTRAL – 7, OPPOSE – 4

Rationale: The extent to which pesticides contaminate pollinator habitat is not well documented in Washington. Collecting data on pesticide residues will help inform future research and efficacy of regulation. The program could also be linked with current drift reduction efforts to assess efficacy of this important program.

Responsible entities: WSDA, WSU

Implementation: Assess the extent of pollinator habitat contamination in Washington by completing pesticide sampling during foraging season. Sampling sites should include a breadth of landscapes including both urban and rural areas, as well as agricultural lands and possibly natural areas and/or rights-of-way.

Funding: Requirements unknown.

Evaluation/Dissemination: Improved BMPs for pesticide applicators from WSDA and WSU Extension.

Challenges: Funding.

5.6b Pesticide Residue Testing in Honey Bee Hives

SUPPORT – 15, NEUTRAL – 14, OPPOSE – 2

Rationale: Beekeepers must treat their hives for Varroa mite. However, miticide misuse can harm honey bees. Pesticide residues from the surrounding environment may also find their way into hives. Testing pesticide residues in wax, honey, and pollen can help inform beekeeper best practices, grower best practices, and pesticide applicator best practices.

Responsible entities: WSDA, WSU.

Implementation: Tests could be run on pesticide residues in different parts of the hive including wax, honey, pollen, propolis, brood boxes versus honey supers, and older comb versus newer comb, using the commonly-applied pesticides panel used when investigating suspected pesticide poisoning incidents. The testing could also examine differences in hobbyists versus commercial beekeepers, and hives used to pollinate different crops. Data from prior bee kill investigations may inform this research and be used in the research.

Funding: Requirements unknown.

Evaluation/Dissemination: Improved BMPs for beekeepers, pesticide applicators, and growers.

Challenges: Funding.

5.6c Survey to Understand Seed Treatment Use in Washington

SUPPORT – 22, NEUTRAL – 4, OPPOSE – 5

Rationale: Currently there is little information available about the planting of pesticide-treated seed in Washington. There is significant research into the potential effects insecticide-treated seed have on pollinators. A survey would provide valuable information into the use of pesticide-treated seed to facilitate future research into the risks and benefits from these uses.

Responsible entities: WSU Extension

Implementation: Fund WSU Extension to complete surveys for crops that have registered use of pesticide seed treatments. The surveys could be used to understand the frequency with which treated seeds are used in these crops, as well as what chemicals are being used and the application rates. This survey is meant to determine extent of use, and if further research is needed into risk to pollinators. Survey design could be based on questions asked in USDA's Agricultural Resource Management Survey (ARMS), but should include crops beyond what are currently surveyed by ARMS. Survey design should be responsive to findings that farmers know less about seed treatments than other pesticide uses. To that end, the survey could be targeted at growers as well as seed suppliers and others within the supply chain.

Funding: Requirements unknown.

Evaluation/Dissemination: WSU Extension.

Challenges: Funding. Treated seeds are not considered pesticides, which impacts our understanding of their use.

5.6d Encourage Additional Screening for Newly Registered Pesticides that Exhibit Moderate to High Levels of Honey Bee Toxicity and Evaluate the Effects on Other Pollinators

SUPPORT – 21, NEUTRAL – 4, OPPOSE – 3

Rationale: Washington State would like to encourage additional screening for newly registered insecticides that exhibit moderate to high levels of honey bee toxicity (LC50 values above level of concern defined by EPA) and evaluate the effects on other pollinators. Honey bees have been used as a standard for testing pesticide effects on bees specifically, and sometimes pollinators in general. Honey bees have very different behavior than most other bees, and other pollinators (wasps, beetles, flies, butterflies, and moths) can have extremely different biology than honey bees. We would like to encourage expanded testing to tease out risks and potential impacts to pollinators besides honey bees.

Responsible entities: EPA, pesticide registrants.

Implementation: In an effort to understand the level of toxicity of new insecticides to solitary bees and other pollinators, Washington State would like to encourage surveys for the presence of native bees/other pollinators in or near agricultural ecosystems, especially monocrop cultures. In addition, Washington State would like to encourage the support of research and development of testing methods (Hinarejos et al. 2015) based on those pollinator species that are identified in the survey research. Pesticide registrants would use those results to assess the impact on native pollinator species commonly found in or near crops that new pesticides would be used on.

Funding: None.

Evaluation/Dissemination: New data would be added to pesticide labels.

Challenges: EPA is already taking some of these actions, and pesticide registrants are following. Implementing these actions is still going to be a long process.

5.6e Support Research to Understand the Pesticide Risks Native Bees Face Due to Their Unique Behaviors and Life Cycles

SUPPORT – 25, NEUTRAL – 4, OPPOSE – 2

Rationale: In an effort to understand the risks of insecticides and other pesticides to native bees and other pollinators, Washington State would like to support research that seeks to understand the unique risks native bees face due to their unique behaviors and life cycles.

The majority of research into the impacts pesticides have on pollinators is toxicity testing on honey bees. Yet, Washington's native bees have very different life cycles than honeybees. Better understanding the field-realistic impacts of pesticide use to native pollinators will help craft conservation actions, including best management practices and educational materials.

Responsible entities: WSU

Implementation: Washington could support WSU research into the specific risks native bees and other pollinators face from current agricultural practices in Washington. Funding could be linked to the pollinator extension specialist position at WSU. Given the high amount of specialty crops, crops with high potential exposure risk should have funds allocated for assessing onsite impacts of new and existing products for specialty crops known to be attractive to pollinating insects. As appropriate, field research could be performed to evaluate the impact planting insecticide-treated seed has on bee species that nest in the ground around crop fields.

Funding: Unknown.

Evaluation/Dissemination: Findings could be incorporated into BMPs for growers and pesticide applicators, and potentially into pesticide labels.

Challenges: Funding.

5.6f Assess Tank Mixes to Evaluate Their Potential “Additive” or “Synergistic” Effects to Pollinators

SUPPORT – 23, NEUTRAL – 3, OPPOSE – 5

Rationale: Current regulation analyzes individual insecticides to determine the toxicity to honey bees. A number of studies, including the recently published study Tosi and Nieh (2019), found a greater impact to pollinators occurred with tank mixing insecticide and fungicide products. Exposure to multiple modes of action at one given time could potentially have compounded or sublethal effects on pollinators. Better understanding of these potential concerns to avoid harmful mixtures could reduce harm to bees and other pollinators.

Responsible entities: WSU, WSDA

Implementation: WSU Extension or industry groups can collect information on most common and/or high risk tank mixes for specific crops. Suggested methods to narrow down the list of high-risk tank mixes would include pesticides found in honey bee hives (5.6b), pesticides associated with bee kills (WSDA reports), or chemicals with known synergistic properties or increased uptake effects. WSU or other research institutes can then conduct research on synergistic effects on pollinators or other non-target organisms.

Funding: Unknown.

Evaluation/Dissemination: Registrant should be notified so label language may be changed if problems are discovered.

Challenges: Funding.

Recommendation 5.7

Increase research into Varroa mite control in Washington State

PRIORITY VOTES – 10

SUPPORT – 22, NEUTRAL – 8, OPPOSE – 0

Rationale: *Varroa destructor* mite (or Varroa) is recognized as the single most dangerous biological pest faced today by honey bees. Eradication is, to date, impossible and control is difficult. Predation by Varroa decreases honey bees' ability to detoxify from chemical exposure, is a vector for viruses, and reduces bee fitness and longevity. Improved Varroa control also decreases potential risk of disease transmission to native bees. The puzzle is how to eliminate an unwanted bug living on a wanted bug without harming the beneficial one.

Responsible entities: Legislature, WSDA Apiary Advisory Committee, and WSU.

Implementation: Obtain funding to initiate the WSU Center on Honey Bee Parasites within the WSU Bee Lab. The center would, as a start, hire a parasitologist and molecular biologist and/or other specialists to build on the foundation of study on Varroa and identify a novel method or methods for eliminating Varroa or effectively controlling it. Focusing on Varroa in honey bees exclusively, these positions should use non-conventional deliberations and processes to arrive at methods which are novel and effective. Such methods may include novel applications of existing technologies. Should these researchers solve the Varroa problem, they may shift to tracheal mites, small hive beetles, *Nosema cerana*, other parasites of honey bees, or other alternate stressors. The center may cost from \$500,000 to \$1.25 million annually. Facilities and supplies may be used in common with the WSU Honey Bee and Pollinator Research, Extension and Education facility. The program will be administered by the Dean of WSU College of Agriculture, Human and Natural Resource Sciences and the chair of the WSU Entomology Department in consultation with beekeeping industry representatives.

Funding: Permanent state funding leveraged with grant funds offered by proponents of honey bee health.

Evaluation/Dissemination: Success in eradication or control of parasites to increase honey bee health and longevity, as expressed in a report every five years to WSDA and the Legislature on success or failure and further steps to achieve the goal.

Challenges: Obtaining funding, employing researchers at the forefront of their respective fields.

Recommendation 5.8

Understand interspecies disease spread

PRIORITY VOTES – 9

SUPPORT – 24, NEUTRAL – 7, OPPOSE – 0

Rationale: Infectious diseases are a threat to pollinators. Pollinators can carry and transmit many types of pathogens including viruses, bacteria, and fungal diseases. These pathogens are found across many pollinators, including solitary, social, managed, and unmanaged bees. The impact of pollinator diseases and the mode of transmission is a growing field of research. Commercially raised bumble bees may be exposed to other pollinator species, and even establish and colonize areas and habitats in Washington potentially outside their native range. Besides allowing potentially invasive species into our state (which Recommendation 4.1 is meant to address), even native species commercially raised may cause problems by fostering the spread of diseases and parasites. Similar concerns could follow with commercially raised mason bees. Disease spread has been documented from commercially raised bees to wild bees. The potential for diseases and parasites from managed pollinators to jump into populations of native bee species should be more fully researched and understood.

Responsible entities: WSU or other research institutes.

Implementation: WSU or other research institutes potentially

Funding: Grant funding or directed state dollars, WSDA Apiary Advisory Committee.

Evaluation/Dissemination: New knowledge about what diseases could transfer between species should be incorporated into best management practices.

Challenges: While there are not many managed pollinator species, there are numerous diseases and parasites that can affect them, and over 400 native species of bees in Washington that may need to be considered.

Recommendation 5.9

Plant-pollinator interaction webs for three key systems in Washington

PRIORITY VOTES – 4

SUPPORT – 21, NEUTRAL – 9, OPPOSE – 1

Rationale: More than 85 percent of land plants require an animal (usually an insect) to transfer pollen in order to reproduce (Ollerton et al. 2011). Washington State supports a varied and vibrant agricultural sector, a diverse assemblage of natural ecological systems, and key cultural landscapes, all dependent on unknown and understudied pollinators.

We propose a multi-year study of the plant-pollinator interaction webs (“networks”) for three key systems in Washington: 1) an agricultural plant system (e.g., blueberries, apples, cherries) to be selected by the agricultural community; 2) an ecological system of conservation concern, we propose the florally diverse and little-studied North Pacific Bog and Fen system, located on the Olympic Peninsula; and 3) a culturally significant plant system, the montane black huckleberry (*Vaccinium membranaceum*) meadows of the Cascades Mountain Range. Recommend focusing on *Vaccinium* species for easy compare/contrast across the three focus areas.

An interaction web in its simplest form is a summary of interactions: a matrix showing which plants are visited by which pollinators. Plant-pollinator network studies identify the pollinators for each system or focal plant species, as well as the additional plants within each system the pollinators rely on for floral nectar and pollen throughout their life cycle. Using an interaction web approach allows for community-level assessment of plant or system resilience and vulnerability, and provides information to guide management actions to improve resiliency and reduce vulnerability. To ensure key agricultural crops, rare ecological systems, and cultural landscapes flourish over time, we need to know how they are linked to the fates of specific pollinators, and indirectly through those pollinators to other plants. Specifically, we need to understand the plant-pollinator “interaction webs” in which our plants of interest are embedded and use this understanding to guide restoration and management actions.

With a varied approach across agriculturally, culturally, and ecologically significant systems, all residents of Washington would benefit from these pollinator network research proposals.

Responsible entities: WSU, WDFW, WSDA, DNR, Agricultural community, Tribes.

Implementation: Three-year, three-study sites per system/focal species. End result will provide management plans available for growers and other land managers. Could include an economic or crop yield component for the agricultural system.

After the initial three-year study, there should be a follow up every five years to determine if there are substantial changes in any of the systems. Those changes would identify problem areas in pollinator health and conservation, or conversely may identify how we've improved.

Funding: Grants or specific state dollars.

Evaluation: Successfully identifying the species involved in each pollinator system with an eye toward increasing harvests and preserving systems supporting pollinators of concern.

Challenges: Access to ecosystem sites, correct timing of sampling. Long-term follow up.

References

- Bailey-Johnson, E., Calkins, J., Ellis, S., Flakne, D., Jordan, S. F., Horan, L., Koch, R., MacSwain, D., Paap, K., Rupp, E., Schutte, D., Spivak, M., Suss, T., Thalmann, B., & Yang, Y. (2018). *GOVERNOR'S COMMITTEE ON POLLINATOR PROTECTION*. 66.
- Bloom, E. H., & Crowder, D. W. (2016). Biological Control and Pollination Services on Organic Farms. In A. R. Horowitz & I. Ishaaya (Eds.), *Advances in Insect Control and Resistance Management* (pp. 27–46). Springer International Publishing. https://doi.org/10.1007/978-3-319-31800-4_3
- Butler, L. (2018). *Managed Pollinator Protection Plan* (AGR Pub 101-681 (N/4/18); p. 11). WSDA.
- Christmann, S. (2019). Do we realize the full impact of pollinator loss on other ecosystem services and the challenges for any restoration in terrestrial areas? *Restoration Ecology*, 27(4), 720–725. <https://doi.org/10.1111/rec.12950>
- Harmon, J. P., Ganguli, A. C., & Solga, M. J. (2011). An Overview of Pollination in Rangelands: Who, Why, and How. *Rangelands*, 33(3), 4–8. <https://doi.org/10.2111/1551-501X-33.3.4>
- Hinarejos, S., Domene, X., & Bosch, J. (2015). *Developing laboratory test methods for evaluating toxicity to solitary bees (Osmia spp.)*.
- Hooven, L., Sagili, R., & Johansen, E. (2013). *How to Reduce Bee Poisoning from Pesticides*. Pacific Northwest Extension.
- Substitute Senate Bill 5552, no. 5552, Washington State Legislature (2019). <http://lawfilesextra.wa.gov/biennium/2019-20/Pdf/Bills/Senate%20Passed%20Legislature/5552-S.PL.pdf>

- Mach, B. M., Bondarenko, S., & Potter, D. A. (2018). Uptake and dissipation of neonicotinoid residues in nectar and foliage of systemically treated woody landscape plants: Neonicotinoid residues in nectar of woody landscape plants. *Environmental Toxicology and Chemistry*, 37(3), 860–870. <https://doi.org/10.1002/etc.4021>
- MacPhail, V. J., Gibson, S. D., & Colla, S. R. (2020). Community science participants gain environmental awareness and contribute high quality data but improvements are needed: Insights from Bumble Bee Watch. *PeerJ*, 8, e9141. <https://doi.org/10.7717/peerj.9141>
- Obama, B. (2014, June 20). *Presidential Memorandum—Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators*. Whitehouse.Gov. <https://obamawhitehouse.archives.gov/the-press-office/2014/06/20/presidential-memorandum-creating-federal-strategy-promote-health-honey-b>
- Pollinator Health Task Force. (2015). *National Strategy to Promote the Health of Honey Bees and Other Pollinators* (p. 58). The White House. <https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/Pollinator%20Health%20Strategy%202015.pdf>
- Potts, S. G., Biesmeijer, J. C., Kremen, C., Neumann, P., Schweiger, O., & Kunin, W. E. (2010). Global pollinator declines: Trends, impacts and drivers. *Trends in Ecology & Evolution*, 25(6), 345–353. <https://doi.org/10.1016/j.tree.2010.01.007>
- Stenoien, C., Nail, K. R., Zalucki, J. M., Parry, H., Oberhauser, K. S., & Zalucki, M. P. (2018). Monarchs in decline: A collateral landscape-level effect of modern agriculture. *Insect Science*, 25(4), 528–541. <https://doi.org/10.1111/1744-7917.12404>

Sturm, A., & Frischie, S. (2020). *Mid-Atlantic Native Meadows: Guidelines for Planning, Preparation, Design, Installation, and Maintenance*. Xerces Society for Invertebrate Conservation.

Tosi, S., & Nieh, J. C. (2019). Lethal and sublethal synergistic effects of a new systemic pesticide, flupyradifurone (Sivanto®), on honeybees. *Proceedings of the Royal Society B: Biological Sciences*, 286(1900), 20190433. <https://doi.org/10.1098/rspb.2019.0433>

US EPA, O. (2013, April 30). *Label Review Manual* [Other Policies and Guidance]. US EPA. <https://www.epa.gov/pesticide-registration/label-review-manual>

Winfree, R., Gross, B. J., & Kremen, C. (2011). Valuing pollination services to agriculture. *Ecological Economics*, 71, 80–88. <https://doi.org/10.1016/j.ecolecon.2011.08.001>

Appendices

Appendix A - Voting Results in Priority Order

Table of Habitat Recommendations Votes by Priority

| Rec # | Recommendations | Priority Vote | Support Vote (support-neutral-opposed) |
|-------|--|---------------|---|
| 1.1 | Develop an ongoing small grants program administered by the State Conservation Commission to provide funding to conservation districts to educate landowners and community groups about the value of pollinator habitat, and to provide the necessary technical assistance and materials (e.g., seeds and plants) to create it | 17 | 26-5-0 |
| 1.10 | Create a dedicated "Pollinator Fund" for pollinator habitat creation and protection | 16 | 21-7-3 |
| 1.2 | Require all state-funded building projects and roadside construction projects which include landscaping or land alteration to include a certain percentage of pollinator landscaping and/or "eco-lawn" that is drought tolerant maintained with ecologically sound methods known to protect pollinators | 14 | 23-5-3 |
| 1.3 | Add pollinator-specific recommendations for the enhancement, creation, and maintenance of high-quality pollinator habitat along surface water corridors in existing recommendation documents for riparian restoration | 14 | 24-7-0 |
| 1.7 | Revise the state Open Space Farm and Agriculture Tax Classification Program to include private lands managed for pollinators and wildlife | 14 | 26-3-2 |
| 1.4 | Manage rangeland to support native pollinators | 11 | 20-11-0 |
| 1.5 | Fund restoration crews dedicated to creating and enhancing pollinator habitat on roadsides | 9 | 24-6-1 |
| 1.8 | Work with Sustainable Farm and Fields Grant Program (SFFGP) partners to prioritize grant applications that concurrently create or improve pollinator habitat | 9 | 24-6-1 |
| 1.6 | Provide funding to the Washington Department of Fish and Wildlife to assess and interpret available data and develop and deliver Priority Habitat and Species (PHS) management recommendations for western bumble bee | 8 | 22-8-1 |
| 1.9 | Recommend funding HB 2478 - 2015-16 to produce methods for replacing invasive plant species removed with native or non-native, non-invasive flowering plants as determined by site suitability | 6 | 24-5-2 |
| 1.11 | Establish tax exemptions to incentivize the production and increased availability of seed banks and native plants beneficial for pollinators | 6 | 20-11-0 |

Table of Pesticide Recommendations Votes by Priority

| Rec # | Recommendations | Priority Vote | Support Vote (support-neutral-opposed) |
|-------|---|---------------|---|
| 2.3 | Strengthen invasive species control efforts with consideration for supporting pollinators and pollinator habitat | 19 | |
| 2.3a | Detection and rapid response to invasive species | | 27-4-0 |
| 2.3b | IPM for established invasive species | | 27-4-0 |
| 2.3c | Replanting after noxious weed control | | 27-3-1 |
| 2.7 | Increase communication between beekeepers, growers, and pesticide applicators | 17 | |
| 2.7a | Adoption of an online mapping and communication platform | | 17-8-6 |
| 2.7b | Bee protection protocols | | 22-5-4 |
| 2.1 | Support WSDA and WSU in their drift reduction efforts including education and encouraging adoption of improved technology and enhance the existing effort to ensure pollinator protection is incorporated | 16 | 29-0-2 |
| 2.6 | Increase research into and adoption of effective, pollinator-friendly integrated pest management (IPM) strategies for Washington crops and beekeeping | 15 | |
| 2.6a | Updated pesticides and pollinators publication | | 27-3-1 |
| 2.6b | Updated IPM best management practices (BMP) | | 23-6-2 |
| 2.6c | Treated-seed BMPs | | 21-5-5 |
| 2.6d | Outreach on improved IPM and BMP materials | | 23-6-2 |
| 2.6e | Incentivize IPM and BMP adoption | | 19-10-2 |
| 2.6f | Support ongoing IPPM research and extension | | 26-4-1 |
| 2.6g | Publish beekeeper IPM guidelines | | 25-6-0 |
| 2.2 | WSDA Pesticide Compliance should increase outreach to improve pesticide misuse reporting, and increase fines | 10 | 21-7-3 |
| 2.4 | Addition of WSDA pollinator health coordinator to WSNWCB Pollinator Committee | 6 | 23-6-2 |
| 2.5 | Increase awareness of third party certification of sustainable agriculture that promotes good pollinator practices | 5 | 19-11-1 |
| 2.8 | Prompt WSDA to re-evaluate systemic applications of neonicotinoids to pollinator attractive woody plants to determine whether actions are needed to limit risk | 5 | 19-6-6 |

Table of Education Recommendations Votes by Priority

| Rec # | Recommendations | Priority Vote | Support Vote (support-neutral-opposed) |
|-------|---|---------------|---|
| 3.1 | Provide funding for a new enhanced pollinator extension education and outreach program at Washington State University along with the funding needed to maximize pollinator education across the state of Washington | 21 | 28-3-0 |
| 3.10 | Increase pollinator protection training for pesticide applicators | 21 | 27-2-2 |
| 3.8 | Provide growers and the public with a curated resource for information on pollinators in general and specifically education about managed species | 15 | 29-1-1 |
| 3.2 | Include the importance of pollinators and their habitat, as appropriate, in resources developed for teachers within and related to current science standards | 14 | 30-1-0 |
| 3.3 | Establish pollinator gardens on school grounds as an educational tool for primary, secondary, and post-secondary students | 12 | 24-7-0 |
| 3.4 | Continue partnership in the national strategy to improve pollinator health | 11 | 30-1-0 |
| 3.6 | WSDA pollinator ecologist should be a technical advisor for forage design and implementation decisions | 9 | 21-7-3 |
| 3.9 | Increase availability of pollinator-related resources on state agencies websites | 9 | 27-4-0 |
| 3.7 | Educate the public through plant nurseries about the necessity for blooming nectar plants to be available to pollinators throughout their respective active seasons | 7 | 28-3-0 |
| 3.5 | Education and development of county-based partnership panels around land management in respect to pollinator health | 5 | 22-8-1 |

Table of Managed Pollinator Recommendations Votes by Priority

| Rec # | Recommendations | Priority Vote | Support Vote (support-neutral-opposed) |
|-------|--|---------------|---|
| 4.2 | Review policies on state lands to protect native pollinators and improve transparency for state land areas which may permit managed honey bees | 23 | 23-6-2 |
| 4.1 | Restrict non-native bumble bee commercial use | 16 | 23-6-2 |
| 4.3 | Emergency assistance for all managed pollinators program | 13 | 19-8-3 |
| 4.4 | Creation of registered yard locations and establishment of WSDA apiculture inspector position | 10 | 16-10-5 |

Table of Research Recommendations Votes by Priority

| Rec # | Recommendations | Priority Vote | Support Vote (support-neutral-opposed) |
|-------|--|---------------|---|
| 5.1 | Document the bee species of Washington State and map their distributions. Develop an annotated checklist of bees and create a research-grade specimen database | 18 | 28-2-1 |
| 5.6 | Pesticides research topics | 15 | |
| 5.6a | Residue testing in pollinator habitat | | 20-7-4 |
| 5.6b | Pesticide residue testing in honey bee hives | | 15-14-2 |
| 5.6c | Survey to understand seed treatment use in Washington | | 22-4-5 |
| 5.6d | Encourage additional screening for newly registered pesticides that exhibit moderate to high levels of honey bee toxicity and evaluate the effects on other pollinators | | 21-4-3 |
| 5.6e | Support research to understand the pesticide risks native bees face due to their unique behaviors and life cycles | | 25-4-2 |
| 5.6f | Assess tank mixes to evaluate their potential “additive” or “synergistic” effects to pollinators | | 23-3-5 |
| 5.5 | Determining pollinator benefit from habitat improvement on public land and refining habitat restoration techniques | 14 | 28-3-0 |
| 5.7 | Increase research into Varroa mite control in Washington State | 10 | 22-8-0 |
| 5.2 | Continue and create native pollinator and habitat community science tracking programs | 9 | 27-3-1 |
| 5.8 | Understand interspecies disease spread | 9 | 24-7-0 |
| 5.3 | Encourage adoption of evidence-based best management practices by target audiences regarding pollinator health, pollinator habitat and strategies to increase pollinators and pollinator effectiveness in Washington State | 8 | 23-7-1 |
| 5.4 | Yield can be increased with the optimal pollinator(s) | 6 | 19-10-2 |
| 5.9 | Plant-pollinator interaction webs for three key systems in Washington | 4 | 21-9-1 |

Appendix B - Glossary of Terms and Abbreviations

ARS – Agricultural Research Service (part of the USDA)

BMP - Best Management Practice

DNR - Department of Natural Resources

DOE - Department of Ecology

DOR - Washington Department of Revenue

ELAP - Emergency Assistance for Livestock, Honey Bees, and Farm-raised Fish

EPA - Environmental Protection Agency

FSA - Farm Service Agency

FTE - Full Time Equivalent - the hours worked by one employee on a full-time basis

IPM - Insect Pest Management - an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties. Pesticides are used only after monitoring indicates they are needed according to established guidelines, and treatments are made with the goal of removing only the target organism.

IPPM - Insect Pest and Pollinator Management - nearly identical to IPM, but also takes managed and wild pollinators and often other beneficial insects into account, often through timing of pesticide applications, habitat buffers, and non-chemical control methods

IUCN – International Union for Conservation of Nature

LC50 - the lethal concentration level that kills 50% of the test animals during an observation period (typically 14 days), similar to an LD50

Noxious Weed - invasive, non-native plants that threaten agricultural crops, local ecosystems, or fish & wildlife habitats

Invasive - a nonnative organism that grows and disperses easily, usually to the detriment of native species and ecosystems

NRCS – Natural Resources Conservation Service (part of the USDA)

ODA – Oregon Department of Agriculture

OSPI - Washington Office of Superintendent of Public Instruction

OSU – Oregon State University

Pollinator - an animal that moves pollen from the male anther of a flower to the female stigma of a flower

SFFGP - Sustainable Farm and Fields Grant Program

UI – University of Idaho

USDA – United States Department of Agriculture

WASBA – Washington State Beekeepers Association

WDFW - Washington Department of Fish and Wildlife

WSDA - Washington State Department of Agriculture

WSDOT - Washington State Department of Transportation

WSNLA - Washington State Nursery and Landscape Association

WSU – Washington State University

Appendix C - Task Force Participant Biographies

Katie Buckley

Katie Buckley has a Bachelor of Science in entomology from Purdue University, a Master of Science in entomology from the University of Florida (UF), and a PhD in entomology from WSU. For her master's, she worked in the UF Honey Bee Research and Extension Lab on creating habitat for native bees in an agricultural setting. Her doctorate research was on using sagebrush steppe habitat restoration in vineyards to effect beneficial and pest insect communities. She was until recently working as a pest biologist for the WSDA, running invasive species surveys, and is now the WSDA pollinator health coordinator. She has also been a hobbyist beekeeper for the last three years with a huge passion for gardening.

Annie Byerley

Annie Byerley is a third-generation farmer in the Walla Walla valley. She and her family raise wheat, tall fescue, and alfalfa seed, and manage alkali and leafcutter bees. She is also the vice-chair of the Washington Alfalfa Seed Commission and an associate supervisor for the Walla Walla County Conservation District.

Aimee Code

Aimee Code joined Xerces in 2013 to direct its new pesticide program. In that role, she has built a program focused on securing practices and policies that promote ecologically sound pest management. She and her staff evaluate the risks of pesticides, develop technical guidance, and advocate for actions that reduce reliance on and risks of pesticide use in both urban and agricultural settings. Aimee received her M.S. in Environmental Health with a minor in Toxicology from Oregon State University.

Taylor Cotten

Taylor Cotten is the Conservation Assessment Section manager for the Washington Department of Fish and Wildlife. In addition to leading a team of species specialists, he works with internal and external partners to design, develop, and implement surveys, monitoring, and data-collection protocols for Washington's Species of Greatest Conservation Need. Taylor also participates in other broad pollinator/invertebrate conservation initiatives such as the Western Association of Fish and Wildlife Agencies Western Monarch Butterfly Conservation Plan. Taylor has been with WDFW for three years, prior to which he was a species specialist and research scientist with the Arizona Game and Fish Department.

Jeff Dreier

Jeff Dreier is a biologist with WSDOT's Fish and Wildlife Program. He has been with WSDOT for seven years, focusing on Endangered Species Act consultations, habitat connectivity, pollinator enhancements of state highways, and biologist training. Prior to going to work for WSDOT, Jeff was a consulting biologist in California where he did extensive work with vernal pool crustaceans, bay checkerspot butterfly, callippe silverspot butterfly, and ecosystem restoration associated with several threatened and endangered species. After serving in the U.S. Navy, he started his career in 1992, monitoring northern spotted owls, marbled murrelets, and salmonids on commercial timberlands. Jeff received a bachelor's degree in biology from California State University Chico.

Mary Fee

Mary Fee started her career in noxious weed management as the Ferry County Noxious Weed Board coordinator. Leading up to her employment at Ferry County, she studied biology and environmental chemistry at Eastern Washington University. Mary also gained valuable knowledge on Western Washington noxious weed identification and control measures through her employment as a Noxious Weed specialist for the King County Noxious Weed Control Program prior to her current career as the executive secretary for the Washington State Noxious Weed Control Board.

Janet Gorrell

Janet Gorrell is the Landscape Conservation Section manager for the Washington Department of Fish and Wildlife. She and her team work to facilitate and implement conservation action at large spatial scales through partnerships. Prior to stepping into this position in February 2019, Janet worked as a planner for the WDFW Lands Division for 10 years, focusing on reducing impacts of ongoing land management activities on listed and sensitive fish and wildlife. Before moving to Washington, she worked for the Utah Division of Wildlife, coordinating the development of the first State Wildlife Action Plan.

Heather Hansen

Heather Hansen has worked in agricultural policy for 25 years. She runs her own government relations firm specializing in agricultural and natural resource issues. Heather grew up on a farm in Washington. She earned both bachelor's and master's degrees from Washington State University, and served on the faculty of Utah State University and the University of Arizona as a county extension agent. Heather currently serves on the Advisory Board of the William D. Ruckelshaus Center for public policy. She has received awards for grassroots organizing, promoting agriculture, and excellence in legislative and government affairs from various state and national organizations.

Alex Harwell

Alex Harwell is the Outreach Program manager for the Snoqualmie Indian Tribe's Natural Resource Department. Alex has worked for the tribe for the past five years in various roles, including on the Restoration Team. The Snoqualmie Tribe prioritizes native pollinators in their restoration plantings by making sure to plant a variety of flowering native shrubs and trees. Alex has a background in restoration ecology and holds a master's degree in environmental horticulture and a certificate in landscape design. Her main goal is to connect plants and people, and she believes strongly in this connection for the long-term success of global earth repair.

Tim Hiatt

Tim Hiatt is a second generation beekeeper from Ephrata, Washington. He and his brothers operate 18,000 colonies on the West Coast and Midwest for crop pollination and honey production. He is a board member of True Source Honey, a member of WSDA's Apiary Advisory Committee, and is the legislative chair for Washington State Beekeepers Association.

Paul Hosticka

Paul Hosticka is a retired carpenter and lifelong beekeeper and hobby farmer. Together with wife Susan, they keep about 40 hives of bees for honey production, grow vegetables, tree fruit, berries and a few hogs on their small acreage in rural southeast Columbia County. Paul has been involved with state and national beekeeper organizations for many years. They both are members of the Native Plant Society and Blue Mountain Land Trust, and work toward conservation of habitat for creatures great and small.

Kevin Jensen

Kevin Jensen has been a pesticide investigator for the Washington State Department of Agriculture for six years. Kevin has an extensive background in agriculture and still currently manages his family farm in Tenino, Washington. He has a Bachelor of Science from Washington State University in animal science and a minor in agriculture economics. Kevin's wide range of work with WSDA brought real investigation and inspection information to the pollinator committee to provide on-the-ground current statistics for the group to consider in pesticide recommendations.

Sarina Jepsen

Sarina Jepsen directs the Xerces Society's Endangered Species Program, which works to prevent the extinction of imperiled invertebrates and influence the way that habitats are managed through education, applied research, restoration, and advocacy. She holds a master's degree in entomology. She has overseen the development of several community science projects that engage volunteers in pollinator conservation, including the Western Monarch Count, Western Monarch Milkweed Mapper, Bumble Bee Watch, and regional bumble bee atlases. She has authored and co-authored publications to promote and guide the conservation of at-risk pollinators, including best management practices, Endangered Species Act petitions, species fact sheets, and research papers. She co-chairs the IUCN Bumblebee Specialist Group, a global network of scientists that aims to evaluate the extinction risk of bumble bees worldwide.

Kelly McAllister

Kelly McAllister is WSDOT's Fish and Wildlife Program Manager. He served as the agency's habitat connectivity biologist for 11 years and was promoted in June 2018. The Fish and Wildlife Program employs staff dedicated to habitat connectivity, pollinator enhancements of state highways, wildlife law compliance, and Endangered Species Act consultations. Prior to going to work for WSDOT, Kelly was a district wildlife biologist with the Washington Department of Fish and Wildlife, where he did extensive work with prairie-associated wildlife like the Mazama pocket gopher and Taylor's checkerspot butterfly. He conducted a long-term study of the Oregon spotted frog in the Black River drainage of Thurston County, Washington. He started his career in January 1980, helping build the Nongame Program (now Wildlife Diversity Division) of the Washington Department of Fish and Wildlife. Kelly received a bachelor's degree with a major in fisheries from the University of Washington.

Colleen Miko

Colleen Miko is the former horticulture educator for WSU Kitsap Extension, where she trained and coordinated nearly 300 volunteers in the Master Gardener and Rain Garden Mentor Programs, and provided low-impact development education for building and landscape professionals. She is a certified professional horticulturist (CPH) and freelance garden writer. With 20 years of experience as a landscape designer, she designed gardens for the Point

Defiance and Northwest Flower and Garden Shows. Her television debut as winning designer on the HGTV show “Landscape’s Challenge” aired in 2007. She has been an active member of the Washington State Nursery and Landscape Association (WSNLA) since 1998. Colleen pens her own blog Verdure: www.colleenmiko.wordpress.com

Brigid O’Keane

Brigid O’Keane is the outreach director for LIVE, a non-profit organization that certifies and supports sustainable wineries and vineyards in the Pacific Northwest.

Richard Sakuma

Richard Sakuma is a third-generation farmer from Burlington, Washington. He has farmed with his uncles and cousins for the past 42 years at Sakuma Bros. Farms, growing strawberries, blueberries, blackberries, raspberries, apples, and rotational field crops. Pollinators play a large part in the success of their crops, which led to establishing a pollinator meadow three years ago, through consultation with Xerces. A long-time cooperater with Washington State University Extension research along with state and regional berry commissions, Richard will be representing the berry industry.

Ben Sallmann

Ben Sallmann is the Pacific Northwest Honey Bee Health field specialist for the Bee Informed Partnership (BIP), and helps commercial beekeepers monitor diseases, pest loads, and colony health. Before settling in Oregon, he worked with BIP in Northern California, helping queen breeders select stock and test for hygienic behavior. Comparing different management strategies has shown that there are many ways to run a successful commercial operation, but Ben’s goal is to determine best management practices that can be applied across the industry. He believes that more real-world trials to test Varroa and brood disease treatments are needed, and is currently overseeing a number of in-field experiments. Ben’s interest in bees began while working for the family apiary in Wisconsin, and he received a Bachelor of Arts in anthropology and global studies from Ripon College. After stints as a Navy logistician, musician, and teaching abroad, Ben returned to the world of commercial beekeeping in 2012 and is committed to improving bee health.

Jennifer Short

Jennifer Short is a veterinarian and beekeeper managing over 200 colonies in Western Washington. Focused on locally adapted bees and health and welfare issues with managed bees, she owns and operates Camano Island Honey and Sanctuary Farms Apiary. She’s a speaker for beekeeping associations and environmental groups on forage diversity, honey bee management and health, as well as nutrition, and disease prevention. Dr. Short is a Board of Directors member for the Washington State Beekeepers Association and on the Committee for Education, as well as the chair of the Grants Committee.

Demarus Tevuk

Demarus Tevuk is an Inupiaq woman from Nome, Alaska. She grew up watching arctic bumblebees pollinate fireweed, blueberry, nagoonberry, cloudberry, and many other arctic flowers. Demarus is an environmental educator, teaching classes and workshops for children and adults about native bee life cycles, the importance of bee diversity, and how to provide

forage and nesting habitat with a focus on native plants. For four years she produced educational content for Crown Bees, a mason and leafcutter bee supplier located in Woodinville, Washington. Demarus now works as an engagement strategist for the nonprofit Sustainable Seattle. Demarus is currently serving as an interim board member of The Common Acre, a nonprofit that focuses heavily on pollinator restoration work. Demarus has a degree in environmental studies from the University of Washington and a permaculture design certificate from Permaculture College Australia.

David Wilderman

David Wilderman is the statewide ecologist for DNR's Natural Areas Program and has been with the Natural Areas Program for 25 years. He manages the Natural Areas Science Program and serves as a consultant to the agency for the resolution of questions and issues within the science program. His focus includes setting ecological management goals, directing monitoring and research efforts, habitat restoration and invasive species control, and rare species management and recovery. He has been involved with recovery and restoration efforts for a variety of habitats and species including prairies and grassland balds, dry forests, estuaries, Taylor's checkerspot butterfly, Wenatchee Mountains checker-mallow, and golden paintbrush. He serves on rare species technical advisory groups and has played an active role in the South Puget Sound prairie partnership since 2006.

Appendix D - What should Washingtonians know about pollinators?

- Understand pollinators: define pollinators, including managed species
- Endangered species (pollinators and plants), pollinator behavior (life cycle, ground-nesting, cavity-nesting, solitary versus social, foraging range)
- Habitat: forage (plant recommendations includes bloom times), nesting (ground nesting sites, dead wood, and host plants), maintenance
- Native plants are best for our native pollinators, but non-invasive, high quality non-native plants can also be pollinator friendly depending on site suitability
- How to create, design, and implement a pollinator garden
- Do not spray pesticides on plants when blooming
- Use pesticides only when necessary and according to the label
- Blooming nectaring plants should be available to pollinators during their respective nectaring seasons (create diversity of bloom)
- Nesting habitat for ground and cavity-nesting bees is an important consideration in managing bee habitat (bare soil, stems, etc.)
- Protect nests and egg laying sites for hummingbirds
- Monoculture lawns do not support pollinators
- When removing undesirable plants, new pollinator friendly plants need to be planted
- Host plants for larvae are important in butterfly conservation

Appendix E - Outreach Target Audiences

- General public
- K-12
- Museums and libraries
- Home gardeners through independent nursery centers
- Greenspace land managers (golf course, public parks, etc.)
- Landscape professionals
- Growers (large 25+ acre plots)
- Growers (small less than 25 acre plots)
- Pesticide applicators
- Forest managers

Appendix F - Educational Resource/Potential Partnering Groups

- Western Washington Golf Course Superintendents Association
- Washington State Nursery and Landscape Association
- Washington Association of Landscape Professionals
- WSU Urban IPM and Pesticide Safety Education
- WSU Extension Integrated Pest Management especially <https://ipm.wsu.edu/pollinator-health/>
- Washington State Pest Management Resource Service
- WSU Master Gardeners
- Washington Native Plant Society
- Washington Association of Conservation Districts
- Washington Noxious Weed Board
- NRCS Conservation Stewardship Program
- Oregon Bee Project
- Municipal Research Services (MRSC)

Appendix G - Current WSDA Pesticide Compliance Information

WSDA Pesticide Investigations currently have offices in Olympia, Wenatchee, Yakima, Moses Lake, Spokane, and Pasco.

-13 investigators, 6 management

-38,000 pesticide license holders in Washington State

-14,500 registered pesticides

Inspections

-2018, 255 total across the state

-2019, 182 total across the state

Investigations

-2018, 152 total across the state

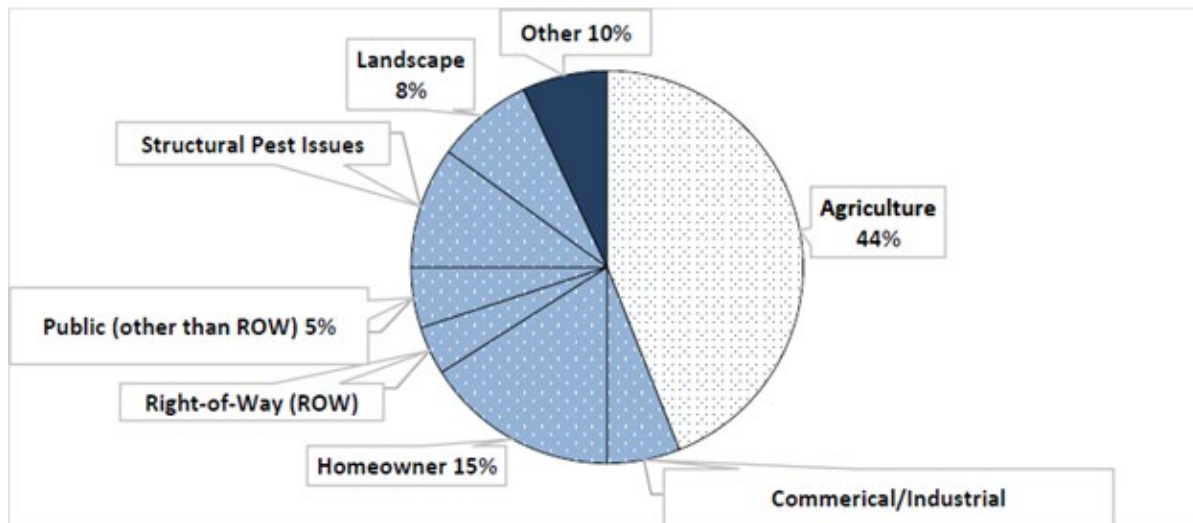
-2019, 135 total across the state

Pollinator Specific information

In 2018 there were 3 pollinator involved investigations (2% of total 152 investigations in 2018), of the 3 investigations, 1 was related to an actual bee kill. In 2019 there were 6 pollinator involved investigations (4% of total 135 investigations in 2019), of the 6 investigations, 3 were related to actual bee kills.

2019 Investigations

Pollinators are lumped into “other” because there are so few pollinator investigations, below is Investigation data



During FY19 (July 1, 2018 - June 30, 2019), PMD conducted 135 investigations in a variety of settings, related to a variety of activities (see Figure 1 and Tables 7 and 12):

- 122 (90 %) related to possible⁶ pesticide application, storage, or disposal issues.
- 18 (13.3 %) related to structural pest issues (may or may not have included application issues).
- 13 (10%) related to licensing, distribution or other incidents not related to pesticide application.

Of the 135 total investigations PMD conducted in FY19 (i.e., agricultural, non-agricultural and other – see Table 12), the majority (87%) had no direct impact on human health:

- 70 cases (52%) – typically minor plant damage from herbicide to neighbor’s plants, lawn, etc.
- 44 cases (32%) - no pesticide involved or no violation found.
- 17 cases (13%) – some human exposure and/or symptoms or illness, no human deaths.
- 4 cases (3%) - significant plant/crop damage, animal injury or environmental effects.

Table 9. Investigations by Pesticide Type - FY19

| Pesticide Type | Number of Investigations |
|------------------------------------|--------------------------|
| Herbicides Only (weed killers) | 48 |
| Insecticides Only | 27 |
| Combination of products* | 16 |
| Other Pesticide Types** | 18 |
| Pesticide application not involved | 14 |
| Unknown | 12 |

*Commonly an insecticide or herbicide combined with a fungicide

**Rodenticides, Moss Killer, Bactericide, Disinfectant, Moth Balls, Plant Growth Regulators, etc.

Appendix H - Pollinator Survey Answers from Conservation Districts

Washington Conservation Districts: Supporting pollinator health statewide

A brief survey was distributed to all 45 Conservation District managers between August 31 and October 12, 2020 seeking information about current efforts to support pollinator health. Thirty-one District managers representing 33 Conservation Districts (CDs) responded to the survey. Of the respondents, 26 (78.8%) indicated they engage in education and outreach efforts about pollinator conservation and ways that everyone (e.g., farmers, land managers, homeowners, renters, schools, etc.) can create pollinator habitat and forage. Pollinator conservation education and outreach activities include:

- Clark Conservation District: [Farming for Native Pollinators](#)
- Ferry Conservation District: Has written about pollinators in newsletters, provides pollinator-friendly species at their annual native plant sale, and tries to incorporate pollinator habitat into cost-share costs when landowner is interested.
- Foster Creek Conservation District – The Foster Creek CD regularly shares links and information about pollinators on its Facebook page and in its [newsletter](#). It provided a [pollinator education event](#) during the summer of 2019. Pollinator Habitat Creation/Management is recognized as a key conservation activity of the [Douglas County's Voluntary Stewardship Program \(VSP\)](#).
- Benton, Franklin, and North and South Yakima Conservation Districts help residents create [Heritage Gardens](#), which include water-smart and pollinator-friendly plants.
- The Jefferson County and Kitsap Conservation Districts are partnering with The Xerces Society to host a webinar on [Pollinator Conservation in Agricultural Landscapes](#) on November 13th, 2020.
- The King Conservation District has also hosted Xerces education workshops in past years. They includes pollinator conservation practices in their Outreach programming, and provide information about supporting pollinators on their website, e.g., [Pollinator Resources](#) and [Ways to Support Native Pollinators](#).
- The Kitsap Conservation District has an informative webpage about [native pollinator conservation](#), was a 2020 NACD Urban Agriculture Grant Recipient for its Pollinator Planting Project, and has distributed herb garden kits to support pollinators with those funds.
- The Lewis Conservation District promotes pollinators during farm planning, implementing CREP hedgerows and riparian plantings, and when working on VSP projects.
- The Mason Conservation District has a webpage up about [creating pollinator habitat](#) and provides information about pollinator-friendly native plants.
- The North Yakima Conservation District discusses pollinator habitat with their riparian restoration effort as a complementary option. They are also developing a Heritage Garden at

the CD office building that will be used as a living example of plants attract and benefit pollinators.

- The Okanogan Conservation District was just awarded a USDA Specialty Crop Block Grant through WSDA to educate and inform landowners about pollinator habitat.
- The Palouse Conservation District has a page about [Backyard Conservation](#) that mentions pollinators and one of their [Conservation Talk Series](#) is about Conservation with native Plants. They also have a Palouse prairie project that focuses on protection, restoration, and recovery of Palouse prairie and pollinators.
- The Pierce Conservation District has a [webpage on pollinators](#) as well as providing links to pollinator resources on its website.
- The San Juan Islands Conservation District is currently implementing an Island Marble Butterfly habitat project. They also emphasize pollinator species importance in technical assistance discussions and options available to landowners.
- The Skagit Conservation District provides pollinator education through both its Agricultural Habitat and Backyard Wildlife programs.
- The Snohomish Conservation District regularly posts about pollinators on social media and their blog, such as [how to provide native hedgerows and buffers on horse properties](#). They also have various fact sheets that they hand out about increasing pollinator habitat in yards, on farms, etc.
- The South Douglas Conservation District provides information about pollinators through its newsletter, website and plant sale.
- The Spokane County Conservation District hopes to resume its [Backyard Conservation Stewardship classes](#) in 2021, topics of which includes how to attract pollinators.
- The Stevens County Conservation District staff have presented information a master gardeners program, and youth events and school, averaging 4-5 times a year.
- The Whidbey Island Conservation has a webpage with Tip for a Pollinator Friendly Yard, complete with the option to take a [Pollinator Pal Pledge](#). They also post many social media posts about pollinators on both Facebook and Instagram. They are working with the Endangered Species Coalition with 3 pollinator garden projects at 3 schools. They had organized a Native Pollinator Workshop in June, but it was canceled due to COVID-19.

When asked if they receive requests from landowners and residents who are interested in creating pollinator forage/habitat, 31 (94%) Conservation Districts indicated that they did, and only 2 (6%) said they did not. The CDs report minimal or occasional requests from growers and urban residents. More interest is shown in pollinator habitat when CD personnel are on-site for other purposes. To date, this is not a high demand request, although some CDs report increasing inquiries.

When asked if they are able to provide technical assistance to landowners and others specifically to create pollinator habitat, 32 (97%) Conservation Districts indicated that they did. Only 1 (3%) said it did not. CDs reported mixed availability of technical assistance. Reason for

lack of help for the public include limited funding sources and insufficient staffing. Often, offering outreach materials provided by outside conservation groups is the main assistance they offer. However, some CDs do offer technical assistance but is limited to those relatively few CDs who have staff with specific training about pollinator habitat.

For those Conservation Districts that hold an annual native plant sale, 20 (62.5%) provide information about the species that are beneficial to pollinators, and 12 (37.5) do not.

Many, if not all, Best Management Practices (BMPs) provide multiple environmental, economic, and aesthetic benefits in addition to improving the primary resource concern. Conservation Districts were asked if, when applicable, they mention the benefits to pollinators when discussing recommended BMPs with landowners and residents. Twenty-nine (88%) indicated that they did, and 4 (12%) indicated that they did not.

Conservation Districts were asked to estimate the funds needed if a landowner or resident wanted to create new pollinator-friendly habitat on 0.25 acres of land. This amount could include cost of technical assistance, plants/seeds, cost of installation, etc., and estimates varied widely. For a minimal installation (providing seeds/plant starts and the landowner performing the work), estimates were \$300-\$600. More commonly, full crew restorations (including land preparation crew and follow-up to assure success), estimates were \$3,000-\$10,000. An established pollinator habitat program would reduce costs. Many conservation districts recommended seeking additional sources for funding such projects, such as NRCS grants.

Appendix I - Opposing Comments by Recommendation

Habitat

1.1 - "Good idea, but the Conservation Commission is already tasked with a multitude of programs. I couldn't support this without knowing where the funding is coming from and what it is competing with."

"Abstaining, only because it directly involves my agency."

1.2 - "As written, this recommendation is not necessarily consistent with native habitat restoration. Landscaping associated with state-funding building projects may focus on restoring the native habitat at the site, which may or may not have an appropriate pollinator component."

"I'd be more likely to support if proposed as voluntary instead of required. Or maybe a staircase approach by a certain year in the future. All new buildings with at least 25% with no plan from the creators of the idea, that's not very helpful to builders. What if they are in a city and there is no room?"

"This recommendation does not fit forest roads, i.e. typically dirt/gravel used for forest operations. They do not typically provide good potential pollinator habitat, do not entail roadside landscaping, and are often temporary and are abandoned after a period of use. They are also subject to different rules than state or local transportation systems. This was discussed in committee meetings but is not currently clear in the wording. These road types should be exempt."

"I don't object to the idea, but this could drive up costs for cities and counties, which could result in delaying projects. I could support it as a recommendation, not a requirement."

"I am not opposed to the concept of a percentage of state funded landscape projects to include pollinator friendly plantings. But I do have an issue with specifying the minimum percentage as part of the implementation section. The subject landscape could be part of a school project, as an example, that may include large turf playground areas. The proportional area required to make up for that large landscape area could require excessive land purchase requirements that would unnecessarily increase the cost of a school project as an example. Do not include the 25% minimum area requirement for pollinator habitat. Allow the architect to determine what is a cost effective implementation of the requirement."

1.3 - No comments.

1.4 - "Public or private? I could support recommendations and education, not mandates. Mandates increase costs and often backfire."

1.5 - "Not a wise use of public resources. I could support education and recommendations, not mandates."

1.6 - No comments.

1.7 - "This program is very specifically crafted to support farmland. The land must show revenue to qualify. Any changes to it are very contentious. Proposed changes are often very difficult for county assessors to implement."

1.8 - "Not worth the effort of rewriting legislation."

"I do want nesting material included in the solution. seeds are not habitat, but food."

1.9 - "This is a waste of money. We have been "fighting" invasive plants for years and we just end up spraying herbicide over and over with no discernable results. At this point, your "invasive, non-native" plants should probably be considered native as they are not going away."

1.10 - "I can't support this without an identified source of funding. Funds will be tight this year, I'm not sure this is a priority compared to other needs for state funds."

"We have state agencies and others already doing this work. Instead of creating all these new mechanisms this should just provide funding to the agencies with their existing mandate already doing or already able to do this work. The funding mechanisms described would also further

dilute the limited funding going into to the state to do similar work without providing substantial net gain.”

1.11 - “Not opposed, but I don't believe this is politically viable.”

Pesticides

2.1 - “I oppose this recommendation because no relevant pesticide training material was provided showing that this is not already being done in pesticide trainings by WSDA and WSU. I also oppose this recommendation if no additional funding is provided.”

2.2 - “WSDA is already re-evaluating the penalty matrix.”

“This is already being done with an emphasis on human health. I don't think this group should micromanage the Pesticide compliance program.”

“Nowhere in HB 5552 are pesticides mentioned except in the context of communication to, and education of pesticide users about pollinator habits and habitats. Therefore, pesticide regulation or restriction should not be considered in the recommendations made to the legislature. The Rationale section of 2.2 refers to increased enforcement and fines to pesticide users. I believe this is beyond the scope of HB 5552.”

2.3a - No comments.

2.3b - No comments.

2.3c - “This is a waste of money. These so called "noxious" weeds are essentially impossible to control and more harm is done trying to control them.”

2.4 - “Another paid position in the WSDA is not necessary.”

“In order to have any impact the Pollinator Health Coordinator must be a voting member.”

2.5 - No comments.

2.6a - No comments.

2.6b - “I suspect funding for this will be a low priority.”

2.6c - “This is a red herring and not a wise use of limited resources.”

“2.6c reads like a research project. This work has likely been done but is unknown to this particular group. Unless this is funded, this should not be mandated by the state.”

“WSU, private researchers and chemical companies with seed treatments already evaluate the efficacy against common pests. Between Rhizoctonia, Fusarium, Pythium and wireworms, there is a need for seed treatments in the PNW.”

2.6d - “I support the idea, but believe it is already being done. Adding emphasis would take increased funding. I'm not sure that's a wise use of scarce resources.”

2.6e - No comments.

2.6f - No comments.

2.6g - No comments.

2.7a - “Reads like an advertisement for FieldWatch. No other examples of similar platforms was mentioned or the idea of creating one locally through other local non-profits.”

“This will only give legal protection to applicators and have little positive effect on beekeepers.”

“Won't be adopted by majority of beekeepers, privacy is a concern, could facilitate theft, vandalism, overcrowding of apiaries.”

“The Fieldwatch program puts the burden on the beekeepers for liability purposes and removes the responsibility for drift and communication from the applicator and the grower who are ultimately the responsible parties for pesticide use. This will only drift to a penalty system whereby the beekeepers will either sign up or not be compensated for their losses. It's a pesticide/grower no fault clause and beekeepers are not going to be on board.”

2.7b - “Already in use today.”

“This was created in retaliation against FieldWatch and hasn't currently worked in Washington. Some beekeepers refuse to be under the watch of WSDA or other groups, when the rest of the

groups are regulated by government. Proposing better and a different form of communication in 2.7a is supported.”

2.8 - “This is EPA’s responsibility. WSDA can submit data to EPA. The state doesn’t have the resources or expertise to do this at the state level.”

“This has been studied to death. If you look at the original research that showed neonics are toxic to bees, any scientist with a brain will tell you that the study was extremely flawed. Neonics are actually good for pollinators as they specifically target insects that feed on a treated plant. They are not a broad application pesticide.”

“Not an area of high volume or risk.”

“Nowhere in HB 5552 are pesticides mentioned except in the context of communication to, and education of pesticide users about pollinator habits and habitats. While Recommendation 2.8 Actions section does refer to outreach and education it also relies heavily on regulation of pesticides and users. Therefore, pesticide regulation or restriction should not be considered in the recommendations made to the legislature. The Actions and Implementation sections of 2.8 refers to potential regulatory changes restricting the use of pest management products. I believe this is beyond the scope of HB 5552.”

“This study is already required by EPA of the neonicotinoid registrant. These studies are expensive and very, very time consuming to collect nectar and pollen. Proposing these studies is redundant.”

Education

3.1 - “I support the concept, but not sure it should be a high priority compared to other needs for state resources this year.”

3.2 - No comments.

3.3 - “Many schools already have gardens. As someone who is allergic to bee stings, this may increase liability for schools.”

3.4 - No comments.

3.5 - No comments.

3.6 - “This work would overlap significantly with work being done at WSU. Mission creep of WSDA as a regulatory arm whereas WSU is the education arm.”

“Technical advisor to whom? I have no objection to this, but it must recognize that land managers have multiple objectives. Pollinators cannot take priority over all other objectives. Invasive species control, wildfire prevention, nutritional value, etc. must all be taken into consideration.”

3.7 - No comments.

3.8 - “This is a difficult and everchanging resource to manage. Theoretically I am not opposed but practically this will take more time and effort than is perhaps warranted considering the large list of other needs.”

3.9 - No comments.

3.10 - No comments.

Managed Pollinators

4.1 - No comments.

4.2 - “Current state natural area preserve and natural resources conservation area management already restricts introduction of non-native species, such as honey bees.”

“Too vague. Who is going to review the policies? With what goal in mind, too restrict the use of public land? Terrible recommendation.”

4.3 - “Why is this only available to managed pollinators? Native and wild species would also benefit from these scenarios and also can provide pollination services to crops. If all managed

pollinators are considered "livestock" why aren't there already mechanisms to provide these resources as with other livestock?"

"A state program is unrealistic and expanding the federal program is beyond the scope of this task force."

4.4 - "The beekeeping community is not receptive to a government function of location data for managed bee yards. The apiarist inspector position is for governance and micromanaging beekeepers and has had no function for support. This position was suggested in this recommendation to police identification of managed beekeeping equipment."

"In theory we already have this. It just needs to be reimplemented. We currently, voluntarily, register our hives and there was an inspector years ago until funding was cut. How do you propose to get funding for this position?"

"A state apiarist and a registration system does nothing to address the lack of forage, which is the reason this recommendation exists. Habitat should not be destroyed and instead should be preserved and created to address this problem."

Research

5.1 - No comments.

5.2 - No comments.

5.3 - No comments.

5.4 - "Too vague. How do you define Yield, what yield?"

5.5 - No comments.

5.6a - "This could be incredibly expensive and provide little useful information. What if you detect residue, it would likely be very difficult to identify where it came from. I don't think this should be a high priority compared to other needs for state resources this year."

"This isn't well thought out as would you have to run a full screen of all pesticides? That is expensive. Is this just for drift? Converted agriculture land? If the "pollinator habitat" had been better defined, I'd be more inclined to support."

"What residues? When is testing? Who is testing? What is the cost? This is poorly worded and could be construed anyway one likes."

5.6b - "This could be incredibly expensive and provide little useful information. What if you detect residue, it would likely be very difficult to identify where it came from. I would support this if beekeepers paid for it and it included testing for pesticides used by beekeepers."

"The absence of effective registered varroa mite controls requires many commercial beekeepers to use "off label" treatments and may expose them to penalties or other government actions. I have no objection to testing honey or other hive products for residues."

"Who is going to pay for this? What residues are to be tested? Who is doing the testing and what happens if a hive comes back positive? This could move commercial beekeeping out of state. WASBA opposes this recommendation."

5.6c - "Look to other States where seed treatments make up a larger percentage of planted volume."

"This was explained. Treated seed is considered a pesticide treatment. Farmers know that they need to control soil-borne diseases and wireworms. All seed treatment product labels are available online for reference if farmers would like to know the active ingredients."

"Again, too vague. What seeds? All seeds or only those used over a certain number of acres. Who is doing the survey and what is the purpose."

"Unless this is fully funded by the state legislature, it should not be mandated. Current research and extension in this area is balanced by funding and need of stakeholders, pesticide industry, and government funding agencies. Current regulations and state and federal laws are sufficient. Advocacy groups who want more research should pay for more research."

5.6d - "This is in the EPA's and the registrants dealings."

“This would be incredibly expensive. This is EPA's responsibility. Duplicating it in Washington State is not a wide use of resources.”

“Let EPA determine what additional tests are needed. I think EPA will have gathered plenty of data on pollinators from the registrant's data package. This is an unnecessarily expensive proposal that will be duplicative at best and potentially suggest results that are not useful if completed. Also, The state legislature is not going to be able to dictate to EPA and possibly registrants to do this research considering the significant costs involved. Not every species can be tested. If there is a specific impact to a species not tested, perhaps the interested parties could fund a research project of some fashion to prove the level of safety of that product.”

“The FDA and USDA already cover this. Adding additional screening will adversely affect agriculture in our state. We need to follow federal guidelines.”

“Unless this is fully funded by the state legislature, this should not be mandated. Current regulations and state and federal laws are sufficient. Advocacy groups who want more research should pay for more research.”

5.6e - “I support the idea, but would not prioritize state level public funding for this. It should be paid for at the national level.”

“Unless this is fully funded by the state legislature, this should not be mandated. Current regulations and state and federal laws are sufficient. Advocacy groups who want more research should pay for more research.”

5.6f - “This is being dealt with by EPA. Washington State does not have the resources or expertise for this. We need to support EPA doing their job.”

“There are too many variables on "tank mixes" to make this a viable and useful project. The cost to come up with any viable and applicable results will be nearly impossible. If there is a specific impact to a species that is suspected to come from a particular tank mix, perhaps the interested parties could fund a research project of some fashion to prove the level of safety of that product mix. I don't believe there could be any widescale research completed within the budget of EPA, the state or registrants.”

“Pesticide registrants already try to screen for these additive or synergistic responses. They are very rare in occurrence. The paper cited has no evidence and is all theory based.”

“Unless this is fully funded by the state legislature, this should not be mandated. Current regulations and state and federal laws are sufficient. Advocacy groups who want more research should pay for more research.”

5.7 - “I would rather support national efforts, it's a more efficient use of resources.”

5.8 - “Not opposed, but would rather support national efforts, it's a more efficient use of resources.”

5.9 - “Too vague. What is actually being said here?”