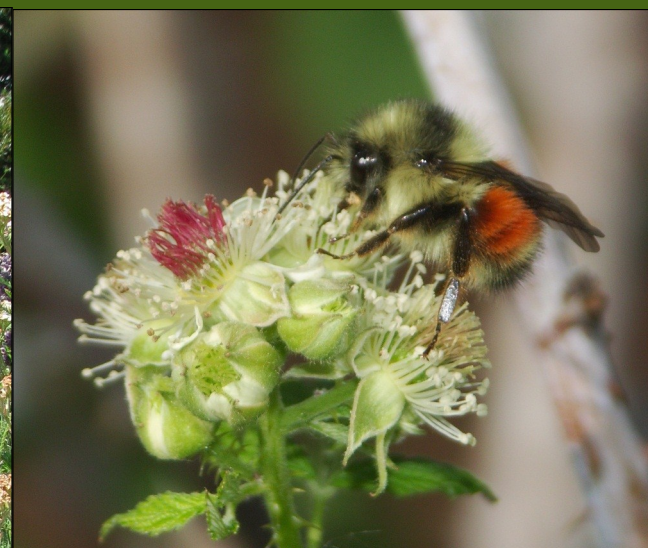


Pollinator Conservation in the Portland Metro Area

A Regional Stakeholders Report



The Xerces Society for Invertebrate Conservation

Oregon • California • Minnesota • Michigan • New Jersey • North Carolina



THE XERCES SOCIETY
FOR INVERTEBRATE CONSERVATION

The Xerces Society for Invertebrate Conservation is a nonprofit organization that protects wildlife through the conservation of invertebrates and their habitat. Established in 1971, the Society is at the forefront of invertebrate protection, harnessing the knowledge of scientists and the enthusiasm of citizens to implement conservation programs worldwide. The Society uses advocacy, education, and applied research to promote invertebrate conservation.

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Pollinator Conservation in the Portland Metro Area

A Regional Stakeholders Report

Proceedings of the Portland Pollinator Conservation Workgroup meeting, held on
November 10, 2011 at West Multnomah Soil & Water Conservation District in Portland, OR

Prepared by

Ashley Minnerath
The Xerces Society for Invertebrate Conservation

Oregon • California • Michigan • Minnesota • New Jersey • North Carolina

Report Overview

On November 10, 2011, twenty-five representatives from state, federal, and municipal agencies, nonprofit conservation organizations, educational institutions, and environmental consulting firms assembled at the offices of West Multnomah Soil & Water Conservation District in Portland, OR to examine the status of pollinator conservation efforts in the region. The objective of this meeting was to assess current efforts and barriers to pollinator conservation, identify regional priorities, and opportunities for collaboration between regional stakeholders concerned about the conservation of the region's native pollinators. This report summarizes the primary themes of the meeting and identifies recommendations that conserve this essential ecological and economic resource.

Pollinators: An Essential and Declining Resource

Pollination is critical to human agriculture and native ecosystems alike, with an estimated 85% of the world's flowering plants depending on animals—most of them insects—for pollination. Animal pollinators in North America include bees, butterflies, moths, wasps, flies, beetles, ants, bats, and hummingbirds. Insects make up the vast majority of pollinator species, and bees are the most important pollinators in temperate North America, including in Oregon.

Although the non native European honey bee (*Apis mellifera*) is best-known crop pollinator in the United States, research shows that native bees contribute substantially to the pollination of many crops; including watermelon, canola, sunflower, and tomatoes. The value of crop pollination by native, wild bees in the United States is estimated at \$3 billion. In Oregon and Washington, native bees play a significant role in agriculture. In addition, native bees provide incalculable value as pollinators of native plants.

Many of Oregon's agricultural sectors depend on insect pollination, for example, Oregon ranks fifth in the nation in the production of specialty crops, including numerous fruits and vegetables, horticulture, and nursery crops (including floriculture). Native bees are especially important to a number of iconic Northwestern agricultural products such as cherries, apples, and berries, as well as seed crops such as alfalfa, canola, and vegetable seed (e.g., onion, carrot, etc.). Specialty crops contributed over \$613 million to Oregon's economy between 2010 and 2011.

Nationwide there are approximately four thousand species of bees, with approximately 600-800 species native to Oregon alone. In the Willamette Valley there are more than 250 species of native bees. While significant media attention has been devoted in recent years to the decline of honey bees, there is also evidence of wild pollinator declines. In some cases the fates of those wild native pollinators are significantly worse than the introduced honey bee. For example, the western bumble bee (*Bombus occidentalis*), once among the most abundant native bee species throughout Oregon, has disappeared from nearly one-third of its historic range, and is almost entirely absent from low elevation areas of western Oregon where it was formerly common. This is particularly concerning because bumble bees are among the most efficient agricultural pollinators.

In addition to bees, the Willamette Valley is home to approximately 50 native species of butterflies, several of which are at-risk. Among them are the Taylor's checkerspot (*Euphydryas editha taylori*), and Fender's blue (*Icaricia icorioides fenderi*). Ninety-nine percent of the native prairie and grassland habitat that these butterflies rely on for their survival has been degraded or lost due to urban and agricultural development.

Causes of declines are difficult to pinpoint, but loss of habitat due to increasing urbanization, expansion of intensive agriculture, invasive species, introduced diseases and parasites, and the widespread use of pesticides all negatively impact pollinator populations. Protecting, enhancing, or providing new habitat is the best way to conserve native pollinators.

The Portland Metro Area Pollinator Conservation Workgroup

The November 10, 2011, meeting represents a first-of-its-kind initiative in the region, linking natural resource agencies, environmental consultants, educational institutions, and nonprofit conservation organizations around a simple idea: that pollinators can provide a framework for achieving multiple conservation goals. Pollinator conservation can be a vehicle for encouraging the protection of public greenspaces, highlighting urban and rural interdependence, supporting farms that reduce pesticide use and conserve natural habitat, promoting the use of native plants in residential landscaping, and advancing environmental education among schools, community groups, and the general public.

To foster this collaboration, a workgroup of 30 members was formed in the fall of 2011, consisting of representatives from 20 agencies, organizations, and educational institutions. A subset of these workgroup members convened at the November meeting.

Workgroup Facilitators

Eric Mader, Assistant Pollinator Program Director, The Xerces Society for Invertebrate Conservation; Extension Professor of Entomology, University of Minnesota.

Mary Logalbo, Urban Conservationist, West Multnomah Soil & Water Conservation District.

Erica Stokes, Education Coordinator, West Multnomah Soil & Water Conservation District.

Workgroup Members (*Indicates attendance at the stakeholder meeting)

Andrea Berkeley, Natural Resource Specialist (Portland), Oregon Parks & Recreation*	Marsha Holt-Kingsley, Manager, Metro Plant Materials Center*
Gaylen Beatty, Backyard Habitat Manager, Columbia Land Trust*	Jennifer James, Education Program Manager, Sauvie Island Center
Vanessa Blackstone, Wildlife Biologist, Oregon Parks and Recreation*	Logan Lauvray, Natural Areas Manager, Friends of Trees
Nancy Bond, Resource Conservation Specialist, Portland Public Schools	Weston Miller, Master Gardener Program Coordinator – Metro Region, Oregon State University Extension*
Mary Bushman, Environmental Specialist, Bureau of Environmental Services*	Carolyn Myers Lindberg, Communications Coordinator, West Multnomah Soil & Water Conservation District
Erik Carr, Urban Conservationist, Clackamas Soil and Water Conservation District*	Kathy Pendergrass, Plant Materials Specialist, USDA Natural Resources Conservation Service*
Casey Cunningham, Sustainable Storm Water Program, Portland Bureau of Environmental Services*	Jenne Reische, Riparian Specialists, Clackamas Soil and Water Conservation District*
Joe Engler, Biologist, United States Fish and Wildlife Service*	Cheryl Schultz, Associate Professor, School of Biological Sciences, Washington State University*
Steve Fedje, District Conservationist, USDA Natural Resources Conservation Service*	Kate Skelton, Environmental Designer, Herrera Environmental Consultants*
Carl Grimm, Natural Gardening & Toxics Reduction Planner, Metro*	Jonathan Soll, Manager, Metro Natural Areas*
George Hansen, Vice President, American Beekeeping Federation*	Chris Stockner, Energy and Environment Coordinator, OMSI

Workgroup Members Continued (*Indicates attendance at the stakeholder meeting)

Mace Vaughan, Pollinator Program Director, The Xerces Society for Invertebrate Conservation*

Mark Griswold Wilson, Restoration Ecologist, Portland Parks & Recreation – City Nature Division*

Nikkie West, Backyard Habitat Certification Program, Audubon Society of Portland*

Annie Young-Matthews, Agronomist, USDA Natural Resources Conservation Service Plant Materials Center*

Joe Williams, Manager, USDA Natural Resources Conservation District Plant Materials Center*



The western bumble bee (*Bombus occidentalis*) was once abundant throughout the western United States and Canada. These bees can still be found in the northern and eastern parts of their historic range, but the once common populations from southern British Columbia to central California have nearly disappeared. Photograph by Derrick Ditchbum.

STAKEHOLDER MEETING PROCEEDINGS

Pollinator Conservation Builds Bridges

Unlike many of the crucial but often abstract and contentious environmental issues facing us today, the highly publicized decline of honey bees, bumble bees, butterflies, and other iconic flower visitors inspires broad public sympathy and motivates grassroots efforts. By focusing on their needs for habitat, and protection from pesticides, pollinator conservation provides a convenient framework for achieving multiple goals.

Environmental Benefits

Frequently, habitat enhancements for pollinators can provide numerous other environmental benefits. Most obviously, flower-rich native plant landscapes support greater biodiversity, supporting not only pollinators, but also other beneficial insects (including those that prey upon pests), songbirds, and small mammals. Pollinator enhancements can also be integrated into engineered greenspaces, such as rain gardens, bio-swales, green roofs, grassed waterways, and drainage ditches to provide storm water filtration, and ultimately, benefits to salmon and other aquatic species.

Sustainable Agriculture Links Rural and Urban Communities

Natural habitat on or close to farms and gardens has a direct influence on pollinator diversity and abundance. Incorporating pollinator habitat in urban areas increases the resiliency of local food systems and connects urban and rural communities through shared interests. Urban gardeners can be encouraged to incorporate pollinator friendly plants next to their gardens.

Practices aimed at restoring natural habitat near farm landscapes not only provide conservation benefits, but also increase growers' security by helping them take full advantage of the crop-pollinating native bees and other beneficial insects. Working with landowners to modify land management practices, such as the timing and intensity of mowing, and can also positively impact pollinators. This tangible link between restoring habitat for pollinators and improving crops production helps farmers, park managers, and all citizens understand the importance of natural areas. Thus increasing their willingness to support the protection and restoration of these habitats.

Landscape Aesthetics

High-quality pollinator habitat by definition consists of diverse flowering plants that bloom throughout the entire growing season. Studies have linked the availability and quality of public greenspaces to neighborhood crime reduction, increased property value, and urban livability. Attractive greenspaces increase local residents' sense of place and investment in public spaces, facilitating a strong connection to their community and a willingness to protect their surroundings.

Pollinator Conservation and Public Spaces

Pollinator conservation and habitat enhancement efforts can often be incorporated into land management plans for publicly owned parks, rights-of-way, and natural areas. Simple measures such as incorporating pollinator-friendly plants, reducing the use of pesticides, and strategically timing maintenance activities such as mowing can all help support local pollinator populations.

City, county, or agency-owned brownfield sites, such as abandoned industrial waterfronts, could be relatively easy to enhance for pollinators with low-cost, non-invasive wildflower seed mixes (e.g., species like California poppy, clarkia, and cosmos). Such mass wildflower seedings can improve aesthetics, and reduce the need for routine mowing to maintain visual standards. Such an approach could save money by reducing maintenance costs.

Conservation Education and Outreach

Habitat restoration for pollinators provides opportunities for the general public to see tangible results of conservation at any scale, from local farms to small school gardens. Workgroup members identified opportunities for public education and outreach through interpretive signage, public events, and demonstration projects.

Pollinator Education in Plain Sight

Enhancing habitat for pollinators in public spaces can serve as an educational opportunity for local residents and community groups. For example, low-cost wildflower seed mixes and signage designating regional bike and walking trails as “pollinator corridors,” (such as the Springwater Trail, used by 4,000 people every day), would expose new audiences to the concept of ecosystem services, and city agency investments in preserving those services.

Coordinating Pollinator Tours

The stakeholder group will work to implement pollinator habitat project tours throughout the Portland metro area. Tours will target local agency stakeholders, the general public, farm groups, and conservation organizations. The tours will highlight a variety of pollinator enhancement projects, such as urban meadowscaping sites, demonstration plantings, pollinator hedgerows, and on-farm habitat plantings.

Portland Urban Meadowscaping

The Portland Urban Meadowscaping Project has been formed by the Columbia Land Trust, West Multnomah Soil & Water Conservation District, the Xerces Society, and others to encourage meadowscaping among urban residents in their yards and parking strips (as an alternative to turf grass). A network of homeowner-volunteers are working to pilot-test meadowscaping practices and to document site preparation methods and plant selection. Information gathered from this network will be used to prepare educational materials, which will be shared in local conservation education programs. The Portland Urban Meadowscaping Project will work to acquire additional funds, and conduct tours of homeowner demonstration projects in the future.

Availability of Native Plant Materials

There is a consensus among stakeholders that a diverse selection of regionally appropriate plant materials (especially herbaceous wildflowers) for pollinator habitat restoration is often difficult to find. Locally native plants support more abundant and species-rich insect communities. Native flowering plants are also adapted to the local environment, requiring less water use and maintenance than non native plants.

Gaps in Supply and Demand

It can take several years for native plant nurseries to bring new species to market. This lag time, along with knowledge gaps in the propagation requirements of many native plants, can create hesitation among producers to grow new plant species. Further, concern that demand for the species may disappear before a new species is brought to market serves as another significant barrier to increasing commercially available native plant choices.

Incentivizing the Native Seed Industry

Greater participation in organized initiatives such as the Portland Urban Meadowscaping Project, and federal Farm Bill conservation programs makes it possible to generate large seed and plant orders. This in turn increases engagement by the native seed industry. If we want to make more native species commercially available, then we must increase participation in these voluntary efforts by private citizens.

Agency Partners in Native Plant Production

Several government agencies such as Metro’s Native Plant Nursery, USDA Natural Resources Conservation Service’s Corvallis Plant Materials Center, and Portland Parks and Recreation’s Nursery have expertise in propagation and access to locally native plants. However, they don’t supply the residential market. To the greatest extent possible, they should continue to be central in influencing local restoration decisions—especially on public lands. Further, these agency nurseries already share expertise with private native plant nurseries. Therefore, if we want native plant restoration to be a priority, ongoing support for these agency nurseries is imperative.

Mitigating Harm from Pesticides

Finally, the workgroup is concerned about the impact of pesticides on pollinator health in our region. While pesticides are primarily regulated at the federal level, state licensing of pesticide applicators, as well as local regulations can also shape pollinator protection. Three issues are of special concern.

Systemic Insecticides are Widespread in the Landscape

In recent years, systemic (typically neonicotinoid class) insecticides have been promoted for their lower mammalian toxicity, and widely adopted by nursery crop growers, landscape pesticide applicators, and for countless agricultural products. Recent research demonstrates that in some cases these systemic insecticides are sequestered in flower nectar or pollen, resulting in pollinator poisoning. Neonicotinoids can persist in soil for months or years after a single application. According to recent research, measurable amounts of residues have been found in woody plants up to six years after application.

Because of this, concerns exist about the residual action of systemic insecticides in soil, and the uptake of those chemicals by diverse plants over a multi-year period. Additionally, products approved for home and garden use may be applied to ornamental and landscape plants, as well as turf, at significantly higher rates (potentially 120 times higher) than those approved for agricultural crops.

Pollinator Education and Pesticide Applicator Licensing

Licensing requirements for pesticide applicators in Oregon are based upon a classroom-training model with specific knowledge criteria assessed in a formal written examination process. While knowledge criteria does include an overview of pollinator protection, this is minimal and focuses almost exclusively on honey bee protection—and emphasizes the role of the beekeeper in mitigating harm, such as by recommending that hives be moved out of areas where spraying will occur. Information on the ecology of native pollinators, and the responsibility of pesticide applicators in reducing harm (spraying at night, using less toxic options, etc.) is largely absent from training materials.

Pesticides in Urban Areas

The use of pesticides in urban settings is often greater, per acre, than in agricultural landscapes. Metro’s Natural Gardening & Toxics Reduction Program has determined that there are 1.1 million people with yards in the Portland metropolitan area, of these there are 709,000 users of garden chemicals (specifically “chemical moss killers,” “weed and feed,” “chemical fungicides,” and “RoundUp™”).

Specific Opportunities for the Portland Metro Area

- 1** Natural areas can be managed for diversity and abundance of pollinator-friendly plants, nest sites, and butterfly larval host plants. Land managers can, and indeed should, continue efforts to remove invasive species that reduce overall flowering plant diversity. Although some invasive species (e.g., Himalayan blackberry) provide limited resources for pollinators, they do so at the expense of diverse native plant communities that can supply nectar and pollen for a greater variety of animals over a longer period of time.
- 2** Incentive programs and partnerships can be supported and expanded to help the region's landowners to create pollinator-friendly, flower-rich habitats in natural and working landscapes. At multiple levels, cost-share assistance and conservation project grants are available through agencies like Soil & Water Conservation Districts and the USDA Natural Resources Conservation Service. These incentive programs are a critical link in creating on-the-ground conservation change.
- 3** Both urban and rural landowners can be engaged to eliminate, minimize, and/or mitigate the impacts of insecticide use on pollinators. Efforts like Metro's Natural Gardening Program, and Oregon State University Master Gardeners Program and the Cooperative Extension Service are well positioned to deliver comprehensive pesticide reduction education to diverse audiences.
- 4** Pollinator habitat connectivity can be created across the urban corridor through backyard habitat, eco-roofs, bioswales, green streets, school, community, and public gardens, and public parks. By emphasizing connectivity, pollinator populations can move in the landscape and re-colonize areas when disturbance occurs.
- 5** Organizations like the Xerces Society can continue to educate urban landowners about the diversity of bees and other pollinators in the region. Those education efforts can be more fully integrated into the important work already underway by many other organizations and agencies.

WORKGROUP RECOMMENDATIONS

Based on initial stakeholder input, the *non-governmental* workgroup members recommend the following six actions.

1 **Full Funding of Farm Bill Conservation Programs**

Conservation funding in the Farm Bill is critical to the ongoing creation and maintenance of pollinator habitat across the country. This funding should continue to be available to American farmers and landowners in the upcoming 2012 Farm Bill. This funding has led to tens of thousands of acres being enhanced to provide habitat for pollinators, providing vital ecosystem services. Pollinator habitat projects contracted through these programs exists on the rural fringe of the Portland metropolitan region and provides direct benefits to local food systems and rural prosperity.

2 **Support Urban Conservation Grant Programs**

Financial limitations can be a significant barrier to adopting native plant landscaping. Providing cost-share incentives for the implementation and maintenance of pollinator habitat to urban residents and community groups is a proven formula for creating conservation change. The existing, but limited conservation grant programs available to urban residents and community groups have already been instrumental in making the Portland metropolitan region a better place for all residents. The impact of these grant programs can be seen in countless rain gardens, street trees, de-paving projects, and the increasing number of green rooftop projects under construction. The programs that make these efforts possible should be fully funded and expanded in the future.

3 **Revise Tall Vegetation Ordinances**

To ensure greater adoption of turf alternatives in urban yards and parking strips, revisions to tall vegetation ordinances need to occur. An expert panel should be developed to create formal criteria for city officials and residents to identify beneficial vegetation versus problematic vegetation. Incentives should also be provided to residents for planting and maintaining pollinator-friendly parking strips.

4 **Incentivize the Native Plant Industry**

Diverse, regionally native plant materials have limited availability, especially native wildflowers and wildflower seed in bulk quantities. This is a barrier to habitat restoration across the Pacific Northwest. Native plant nurseries should be encouraged and supported in their propagation of regionally appropriate species. Locally native plants should be used in public greenspace efforts, therefore building markets for native plant producers.

WORKGROUP RECOMMENDATIONS CONTINUED

5 **Increase Protections from Pesticides**

A citywide or state ban on the cosmetic use of pesticides should be put into effect. Such bans have been adopted across entire provinces in Canada. Portland, as a change-leader should set a similar standard for the United States. Local jurisdictions should enact policies to require public land managers to follow best management practices, including IPM. Similarly, the states of Oregon and Washington should implement more comprehensive pollinator protection training in licensing and continuing education requirements for pesticide applicators. Further, Cooperative Extension Service, Master Gardeners Program, Metro, and other regional agencies should continue to increase pesticide reduction and education programs for gardeners and homeowners. In all cases, alternatives to pesticides should be encouraged.

6 **Support Research on the Use of Native Plants for Conservation Buffers**

Additional research is needed on the efficacy of specific native grasses and wildflowers for roadside stabilization, storm water filter strips, carbon sequestration plantings, green rooftops, and other engineered conservation buffer systems. Identifying multiple benefits of specific plants will lead to greater use of pollinator friendly plants in human-modified landscapes.



Oregon is the number one producer of black raspberries in the United States. In 2010, black raspberries contributed \$2.2 million to Oregon's economy. Female *Osmia aglaia* on black raspberry by Mace Vaughan, The Xerces Society.

Recommendation Signatories

The following workgroup members support full implementation of these recommendations.

Mace Vaughan, Pollinator Program Director, The Xerces Society for Invertebrate Conservation.

Eric Mader, Assistant Pollinator Program Director, The Xerces Society for Invertebrate Conservation;
Extension Professor of Entomology, University of Minnesota.

Jennifer James, Education Program Manager, Sauvie Island Center

Logan Lauvray, Natural Areas Manager, Friends of Trees

Nikkie West, Backyard Habitat Certification Program, Audubon Society of Portland

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Photo Credits

Front Cover

Left: Pollinator garden in Portland Metro Area front yard by Matthew Shepherd, The Xerces Society for Invertebrate Conservation.

Top Right: *Bombus melanopygus* on raspberry flower by Mace Vaughan, The Xerces Society for Invertebrate Conservation.

Bottom Right: Portland right-of-way with blooming flowers by Mace Vaughan, The Xerces Society for Invertebrate Conservation.

Inside cover

Fender's blue butterfly (*Icaricia icarioides fenderi*) by Dana Ross.



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