Addressing Native Pollinator Concerns in State and Tribal Protection Plans

Recommendations from the Xerces Society for Invertebrate Conservation

State and Tribal pollinator protection plans are increasingly looked to as a road map to reducing honey bee (*Apis mellifera*) losses and restoring native pollinator populations.

While every state and tribe will focus on its own specific concerns, there are some overarching issues that should be considered as they develop their plans.

Collaboration between the USDA's Natural Resources Conservation Service and ranchers Gary and Sue Price lead to flower-rich rangeland that supports both native pollinators and cattle. (Photograph by Anne Stine, The Xerces Society.)

The Value of Native Bees

Honey bees, which were introduced from Europe in the 1600s, are perhaps our most well-known pollinator. While managed honey bees fulfill the majority of agricultural pollination, the value of native pollinators is increasingly recognized[1]. Native bees provide free pollination service conservatively valued at $3 billion a year in the United States[2]. Research has demonstrated that native bees can be more effective at pollinating some crops compared to honey bees[3]. Furthermore, some crops show improved quality and increased quantity when native bees are present[4,5,6].

There are approximately 4,000 species of native bees in North America. The vast majority are solitary, creating nests in tunnels in the ground or wood. Bumble bees are the most familiar native social bees, with small colonies of up to 300 workers. Native bees range in size from tiny mining bees that measure less than ⅛" to bumble bees bigger than 1". They vary in color from dark brown or black to metallic green or blue, and may have stripes of red, white, orange, yellow, or mother-of-pearl, with hairy stripes or patches of yellow, white, black, or orange.

Specific Concern for Native Bees

While native bees face many of the same risks as managed honey bees, their biology and behavior are different enough that some honey bee protections fail to address native bee concerns. For example, unlike honey bee hives with thousands of workers, solitary bees act independently—creating and provisioning their nests without assistance. If a female solitary bee dies, her nest remains incomplete.

While little data is available on native bee abundance, existing data shows population declines for many species. A recent assessment by the International Union for Conservation of Nature's Bumblebee Specialist Group found that more than 25% of North American bumble bee species are at risk of extinction[7].

Native pollinator decline is linked to the fragmentation, degradation, and loss of habitat. Transmission of disease is another concern—parasites from managed pollinators are implicated in the decline of several native bumble bee species[8]. Pesticides are also of concern for native bees, research suggests that native bees can be more sensitive to insecticides than honey bees[9].

Elements to Include in Pollinator Protection Plans

I. Habitat Installation and Enhancement

- Where appropriate, require installation or enhancement of pollinator habitat featuring native plants on state and tribal lands—including parks, natural areas, and roadsides.
- Encourage landowners to install or enhance pollinator habitat. For example, facilitate partnerships with the USDA's Natural Resources Conservation Service and the Farm Service Agency to increase support for pollinator habitat plantings on private agricultural lands.

More than 17 million acres of roadsides stretch across the United States. Managed with care, transportation rights-of-way can provide habitat for pollinators and other wildlife. (Photograph courtesy of Maria Urice, Iowa Living Roadway Trust Fund.)

II. Best Management Practices to Minimize Risk of Pesticides to Bees

- Encourage growers to institute pest monitoring practices and set economic thresholds for insecticide treatments—including the planting of coated seed.
- Create a list of known and suspected pesticide mixtures that could be of concern for pollinators, and urge growers to avoid mixing these chemicals.
- Urge growers to create no-spray buffer zones to avoid pesticide movement into designated pollinator habitat.
- Incorporate the recommendations from *How to Reduce Bee Poisonings from Pesticides**.
- Encourage crop consultants, pest control advisors, and growers to use the *USDA's Agronomy Technical Note No. 9: Preventing or Mitigating Potential Negative Impacts of Pesticides on Pollinators Using Integrated Pest Management and Other Conservation Practices**.

(*See Resources on back.)

Nearly 70% of the native bee species in North America nest in the ground—including agricultural fields—where they may come into contact with residues from soil drenches, chemigation, or seed coatings. (Photograph courtesy of Rob Cruickshank, flickr.com.)

III. Policy Changes to Protect Pollinators From Pesticides

- Extend pesticide licensing requirements to mandate licensing for anyone paid to apply pesticides, even if the products are general use.
- Prohibit, during bloom, the application of pesticides via tank mixes that include active ingredients with demonstrated synergistic effects.
- Institute an Integrated Pest Management policy for state property.

> "Prioritize independent cooperative extension research and technical support for grower adoption of Integrated Pest Management."

Integrated Pest Management programs can be adjusted to incorporate ecosystem services, such as conservation of pollinators and beneficial insects. (Photograph by Eric Lee-Mäder, The Xerces Society.)

"Include 'at-risk' pollinators in State Wildlife Action Plans."

IV. Actions to Protect Native Bumble Bees From Diseases

- Require that managed bumble bees entering the state or tribal lands be certified as free of pathogens and parasites that are harmful to wild bees.
- Limit commercial use of managed bumble bees to species native to the region that are also reared within their native ranges.
- Restrict usage of commercial bumble bees exclusively to greenhouses—not in open fields or orchards—that are enclosed with screen-covered ventilation systems, in order to prevent managed bumble bees from escaping and interacting with wild bees.

Many bumble bee species, including the Western bumble bee (*Bombus occidentalis*), are threatened by commercial bumble bee rearing. Proper oversight can reduce risk. (Photograph by Rich Hatfield, The Xerces Society.)

V. Other State and Tribal Actions

- Prioritize independent cooperative extension research and technical support for grower adoption of Integrated Pest Management programs that are protective of bees and other pollinators.
- Include at-risk pollinators in State Wildlife Action Plans (SWAPs).
- Inform growers and applicators about the native pollinators in their area, especially the pollinators that have been identified as "at-risk".
- Increase pesticide monitoring efforts to both evaluate success and better understand potential areas of concern.
- Address concerns of managed bees in state and tribal natural areas. For example, California authorized placement of apiaries on state lands only after completing an environmental assessment.

Wild bees—such as alkali bees (*Nomia melanderi*)—pollinated over 80% of alfalfa flowers they visited; whereas, managed leafcutter (*Megachile rotundata*) and honey bees only pollinated 25% of flowers visited[3]. (Photograph courtesy of Washington State University.)

"Encourage landowners to install or enhance pollinator habitat."

Working with Xerces Society staff, Muir Glen Organic Tomatoes installed one of the largest native plant hedgerows in their area—over a mile long.

After one year, nearly twice as many bees were found on the hedgerow than along the field borders of neighboring farms, resulting in enhanced crop pollination, in addition to reduced pest damage, due to other beneficial insect species also attracted to the hedgerow. (Photograph by Jessa Kay Cruz, The Xerces Society.)

Resources

Publications

Are Neonicotinoids Killing Bees? (report)
www.xerces.org/neonicotinoids-and-bees/

Beyond the Birds and the Bees (report)
www.xerces.org/beyond-the-birds-and-the-bees/

Conserving Bumble Bees (guidelines)
www.xerces.org/bumblebees/guidelines/

Farming for Bees (guidelines)
www.xerces.org/guidelines-farming-for-bees/

"Pollinator Conservation at Sixty Miles an Hour," *Wings* Spring 2015 (vol 38, #1)
www.xerces.org/wp-content/uploads/2015/05/Wings_Spring2015.pdf

Agronomy Technical Note No. 9: Preventing or Mitigating Potential Negative Impacts of Pesticides on Pollinators Using Integrated Pest Management and Other Conservation Practices (USDA–NRCS manual)
http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=34828.wba

How To Reduce Bee Poisoning from Pesticides (OSU Extension Service manual)
https://catalog.extension.oregonstate.edu/files/project/pdf/pnw591.pdf

Websites

Pollinator Conservation Resource Center
www.xerces.org/pollinator-resource-center/

Pollinator Plant Lists
www.xerces.org/pollinator-conservation/plant-lists/

Pollinator Conservation: Roadsides
www.xerces.org/pollinator-conservation-roadsides/

Pollinator habitat should provide abundant and diverse floral resources from early spring through fall, including native plants—which are four times more attractive to native pollinators—as much as possible. (Photograph by Jennifer Hopwood, The Xerces Society.)

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The Xerces Society
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Protecting the life that sustains us

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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 enthusiasm of citizens to implement conservation programs worldwide. The Society uses advocacy, education, and applied research to promote invertebrate conservation.

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