



Xerces Pollinator Conservation Program

Introduction and Portfolio

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Photo: Jennifer Hopwood

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The Xerces Society

Protecting the Life that Sustains Us

The Xerces Society is a nonprofit organization that protects wildlife through the conservation of invertebrates and their habitat.



Photos: Xerces; Joel Sartore, Eric Lee-Mäder



Pollinator conservation and agricultural biodiversity

Also

- Pesticide policy and regulation
- Endangered species
- Aquatic conservation



Xerces Pollinator Program

Public / Private Partnerships

NRCS PARTNER BIOLOGISTS

- 14 Xerces biologists located in NRCS offices nationwide
- Conservation technical assistance to landowners

PRIVATE SECTOR SERVICES

- Supply chain support for General Mills, Nestle, Danone, Whole Foods Market, others
- Habitat restoration and pesticide risk mitigation on supplier farms

IMPACTS

- 900,000+ Acres of nationwide habitat restoration support since 2008
- Extensive work in WA tree fruit underway
- Also transportation and energy ROWs



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Global Disappearance of Insects

- Europe: 76% decline in insect biomass since 1980s
- North America: 25% of bumble bees at risk of extinction
- 90% decline in monarch butterflies over last 20 years
- Western monarch population dropped below the extinction threshold in 2019



Photo: John Anderson

2019 Research: Worldwide Decline of Insects

“...dramatic rates of decline...may lead to the extinction of 40% of the world’s insect species of the next few decades”

Francisco Sanchez-Bayo, PhD and Kris A.G. Wyckhuys, PhD
Journal of Biological Conservation: 1/25/19

Living Planet Index - Meta Analysis

Earth Has Lost 60% of its Wildlife in the Past 40 Years



Largest global analysis of thousands of animal species (birds, mammals, fish, reptiles, etc.)



TERRESTRIAL SPECIES DECLINED BY 39 PER CENT BETWEEN 1970 AND 2010



THE LPI FRESHWATER SPECIES SHOWS AN AVERAGE DECLINE OF 76 PER CENT



MARINE SPECIES DECLINED 39 PER CENT BETWEEN 1970 AND 2010

Photos: WWF, BBC, Gory Sowie

Ecosystems are degrading at a rate unprecedented in human history

World wildlife populations halved in 40 years - report

By Roger Harrabin
BBC environment analyst



Habitat loss and hunting have reduced tigers from 100,000 a century ago to just 3,000

Pollination by Wild Bees

4000+ Species in North America

Wild bees fully pollinate some crops when more than 30% of the immediate landscape is natural habitat



Photo: Mace Vaughan

Pollination by Wild Bees

Canola

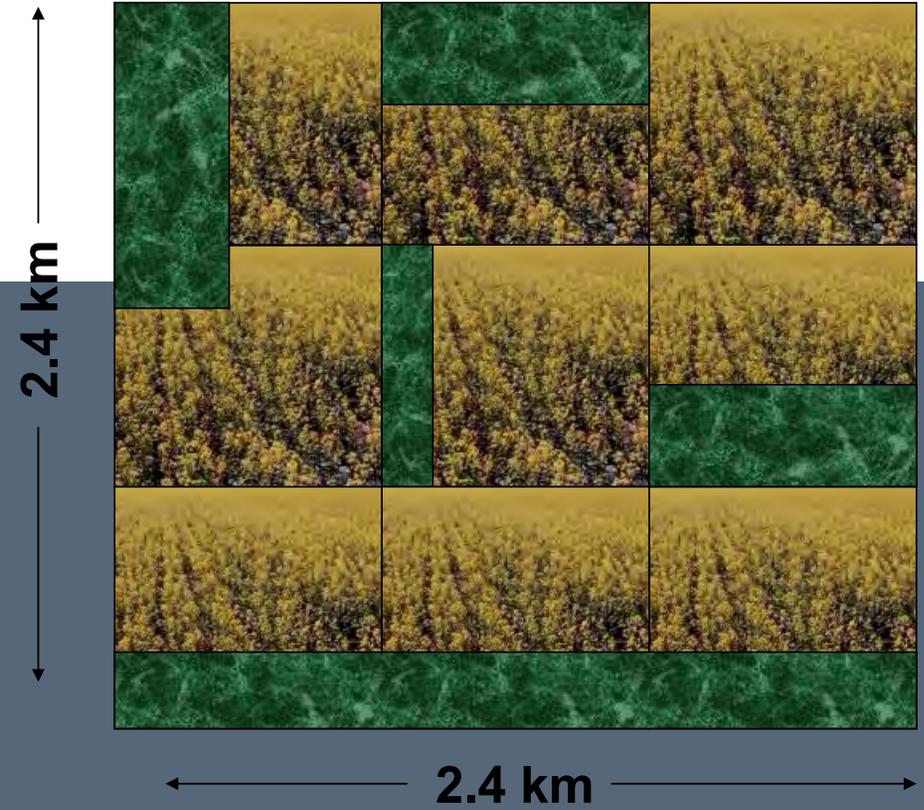
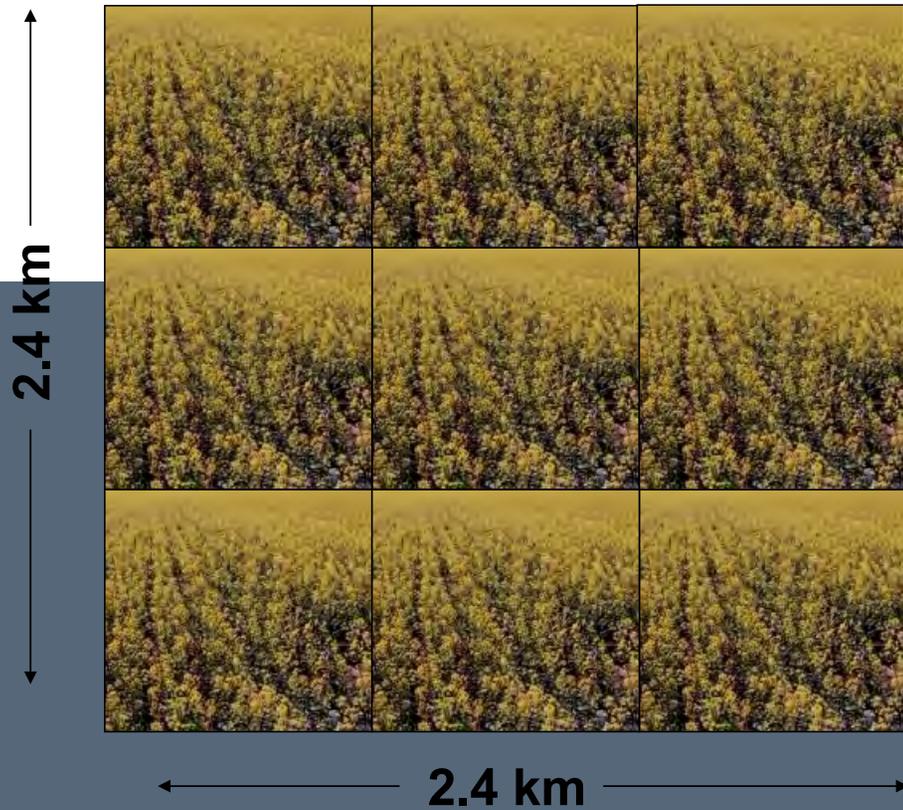
Producers more profitable if 30% of the farm is natural habitat due to enhanced pollination

Morandin, L., and M. Winston. 2006. Pollinators provide economic incentive to preserve natural land in agroecosystems. *Agriculture, Ecosystems and Environment* 116:289-292.



Photo: Mace Vaughan

Pollination by Wild Bees – Canola Continued



Slide courtesy of Lora Morandin

Pollination by Wild Bees - Blueberries

Native Plant Field Borders

- In 2011, Michigan researchers observed 12% higher blueberry yields adjacent to wildflower plantings.
- Increased yields may pay off the cost of establishing wildflowers in 3-to-4 years.

Research by Brett Blaauw and Dr. Rufus Isaacs, Michigan State University



Photo: Brett Blaauw

MICHIGAN STATE
UNIVERSITY

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Consumer Preference for Bee-Friendly Products

Increased Willingness to Pay

- In nationwide surveys, bee-friendly product labeling increased consumer perception of value by 5 times
 - Michigan State University (2015)
 - University of Maine (2019)



Bee Better Certified

A first of its kind pollinator-focused food and farm certification program.



Progress to Date

- 20,000+ acres certified or pending since 2017
- Almonds, small grains, berries, more
- Fresh produce and processed foods
- 2019 certified products in Costco, Walmart, Trader Joes, Krogers
- Häagen-Dazs ice cream launch in Q1 2020
- Also wine, whiskey, snack bars, nut milk, possibly cotton



BEE BETTER
CERTIFIED
XERCES SOCIETY

Pollinators and Organic Certification

NOP Rulemaking on Natural Resources

- Pollinator conservation supports new certification requirements on natural resources conservation



Definition of Organic Production

A production system that is managed ... to respond to **site-specific** conditions by **integrating** cultural, biological and mechanical practices that foster **cycling of resources**, promote **ecological balance**, and conserve **biodiversity**.

NOP Final Rule, part 205.2

Pollinator Hedgerows



Photo: Jessa Cruz

Pollinator Hedgerows

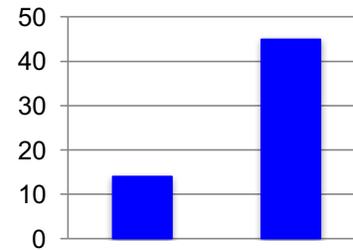
70+ Miles of Pollinator Hedgerows Since 2008

- Hedgerows up to 6.5 miles long on individual farms
- Major corporate initiatives



Photos: Jessa Cruz

July 2013 Pollinator Totals



In timed observations wild bee populations more than double on farms with hedgerows compared to control sites

- Narrow configuration does not interfere with crops
- Barriers to trespassing



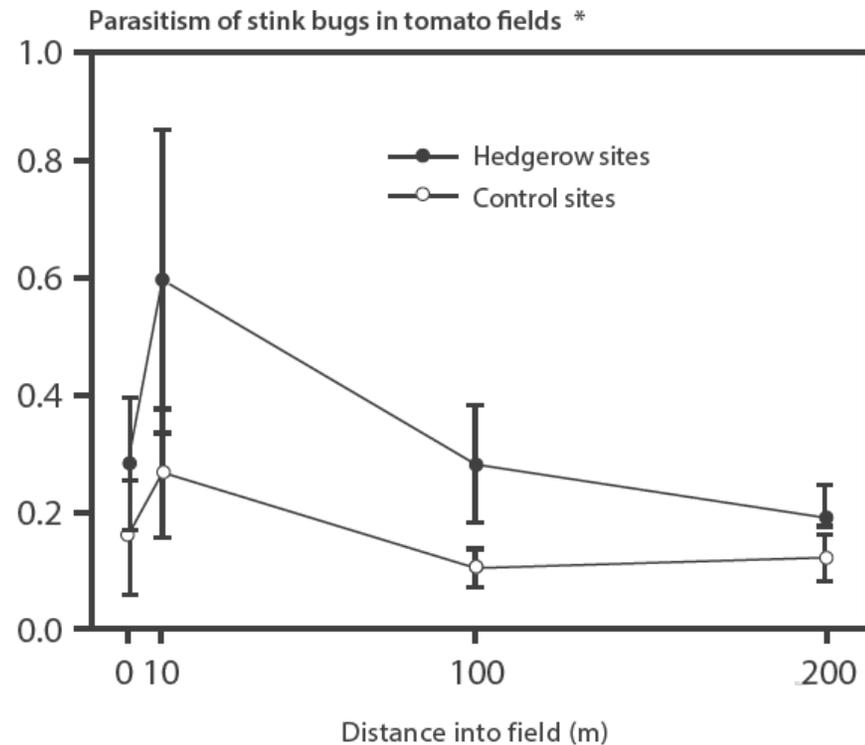
Hedgerow Research: Natural Pest Suppression



UC Berkeley / Xerces Society Case Study

- More stink bug eggs parasitized (by wasps) in fields with nearby native plant hedgerows (than in fields without)
- Vertical axis is proportion of parasitized egg masses observed at distances from the field edge

*Morandin, L., R. Long, and C. Kremen. 2014. Hedgerows enhance beneficial insects on adjacent tomato fields in an intensive agricultural landscape. *Agriculture, Ecosystems, and Environment*. 189: 164-170.



Graph: Lora Morandin

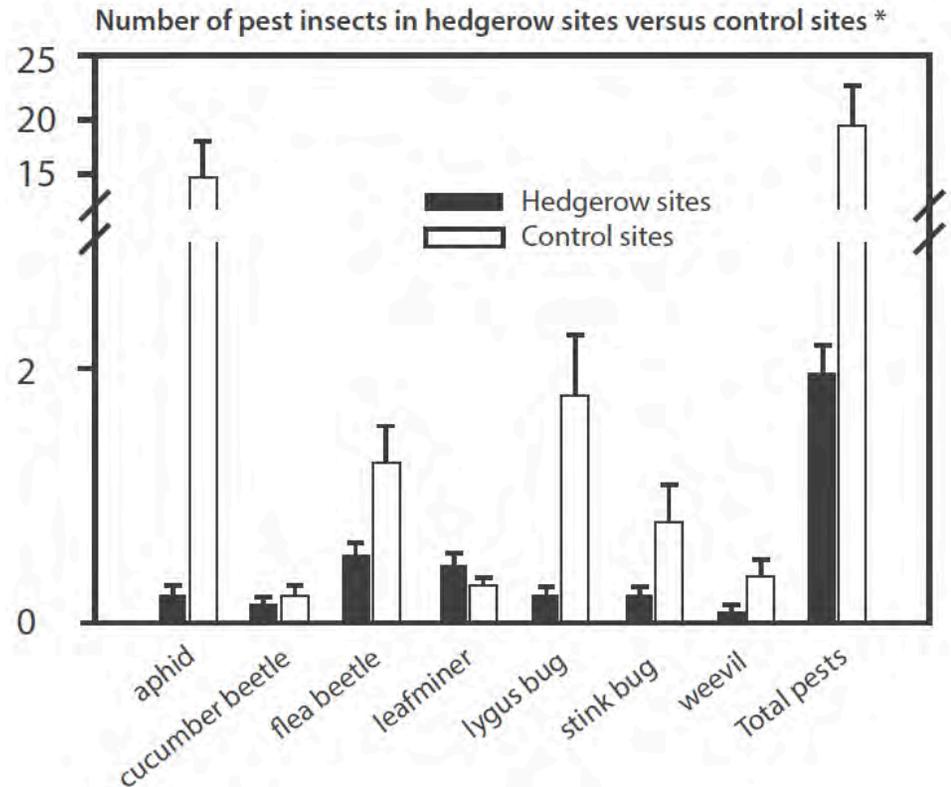
Research: Hedgerows Don't Increase Pests



UC Berkeley / Xerces Society Case Study

- Sweep net samples of insect activity
- Native plant hedgerows versus weedy field edges
- Fewer pests (except leafminers) at the hedgerow sites

*Morandin, L., R. Long, and C. Kremen. 2014. Hedgerows enhance beneficial insects on adjacent tomato fields in an intensive agricultural landscape. *Agriculture, Ecosystems, and Environment*. 189: 164-170.



Graph: Lora Morandin

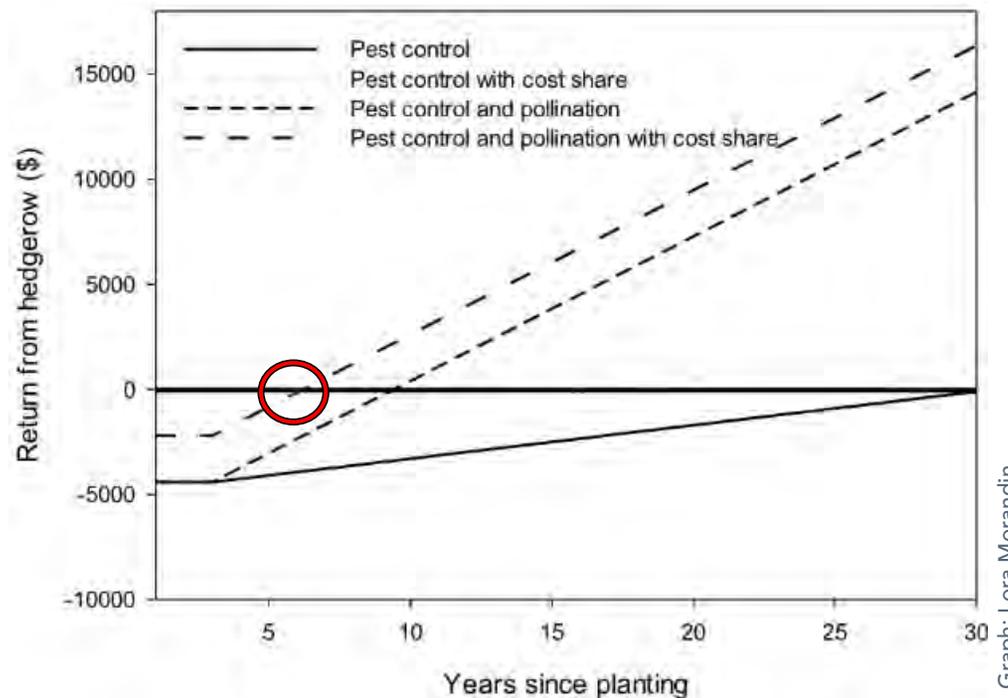
Research: Hedgerows Pay for Themselves



UC Berkeley / Xerces Society Case Study

- Assuming an average cost of \$4400 to establish a 350 meter hedgerow...
- The value of increased pollination and pest control pays for the initial investment within 10 years
- Or within 5 years with NRCS cost share assistance

*Morandin, L., R. Long, and C. Kremen. 2014. Hedgerows enhance beneficial insects on adjacent tomato fields in an intensive agricultural landscape. *Agriculture, Ecosystems, and Environment*. 189: 164-170.



Graph: Lora Morandin

Pollinator Hedgerows



Photo: Rachel Long

Pollinator Hedgerows



Pollinator Hedgerows



Pollinator Field Borders



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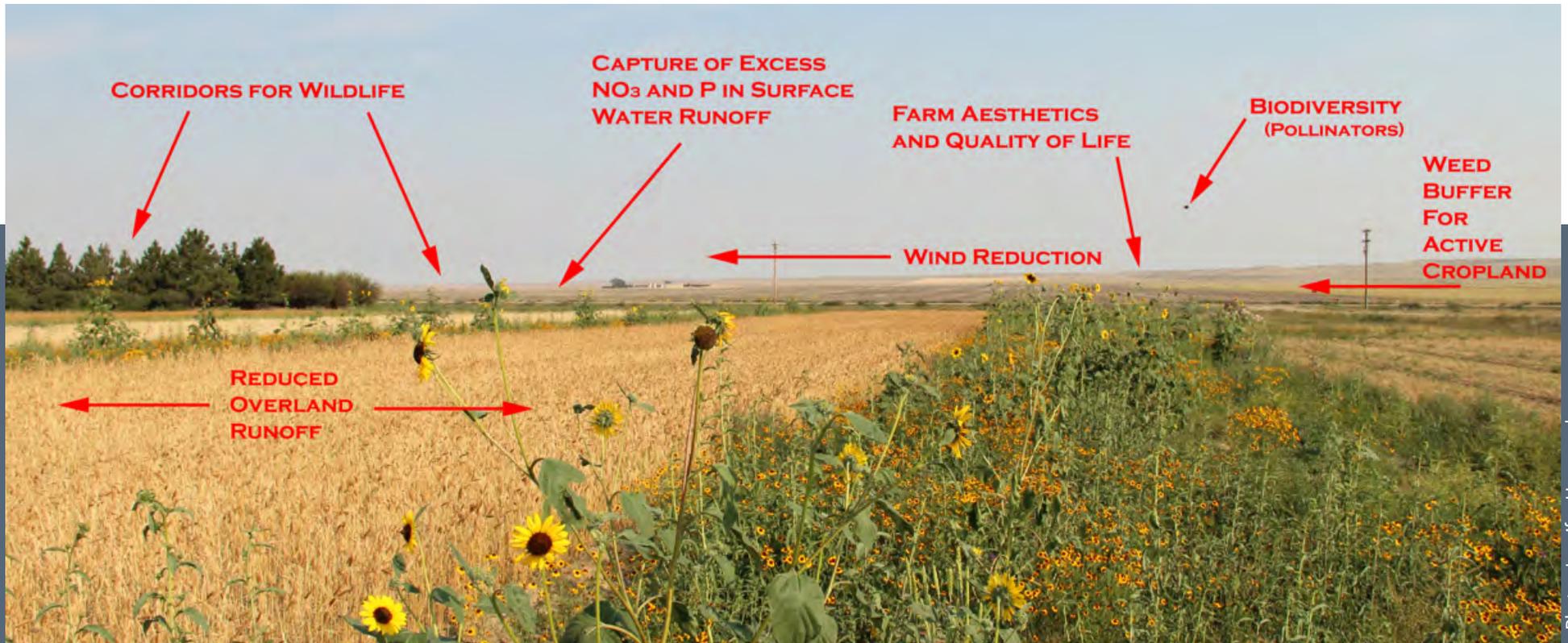


Photo: Jennifer Hopwood

Pollinator Cover Crops



Photo: Jessa Cruz

Pollinator Cover Crops



Photo: Jessa Cruz

PNW Bumble Bee Atlas



PACIFIC NORTHWEST BUMBLE BEE ATLAS

www.pnwBumbleBeeAtlas.org

A collaborative effort to track and conserve the bumble bees of the Pacific Northwest



Oregon State
University

Supported with funding from:



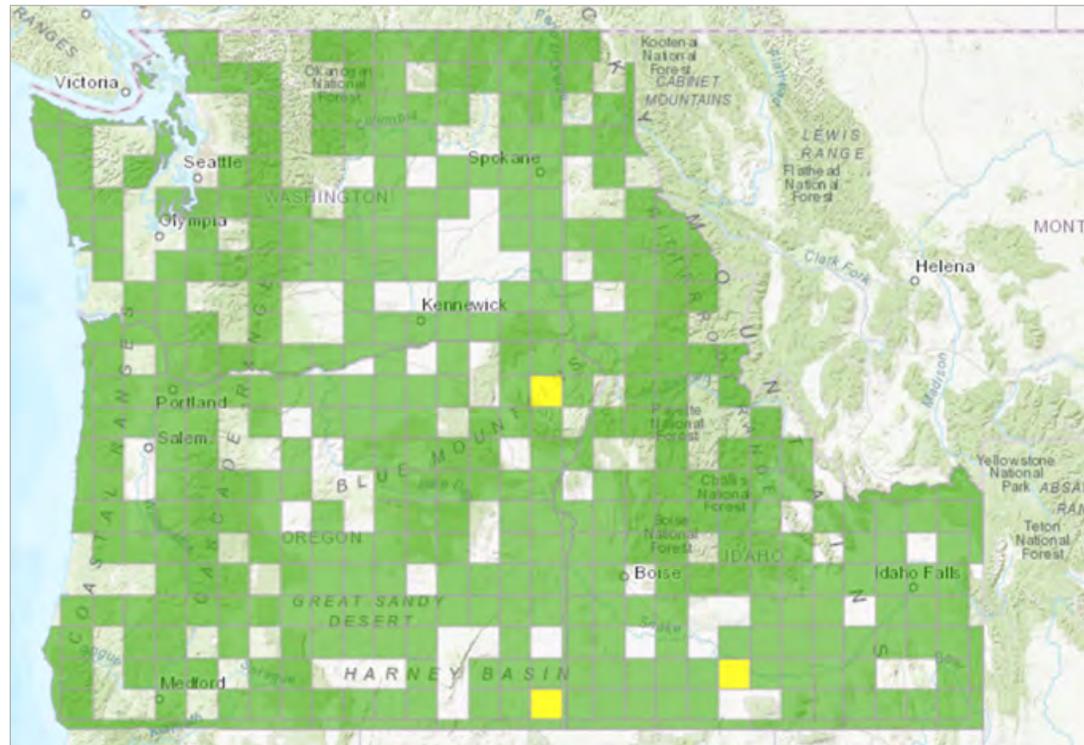
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PNW Bumble Bee Atlas Project

Goals

- Gather more information about bumble bee distribution
- Learn habitat associations
- Apply what we've learned to on-the-ground conservation



Thank You!

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