Pollinator Steward Certification

A PROGRAM OF
POLLINATOR PARTNERSHIP

Module 1:
Introduction to Pollinators

Tuesday, February 6, 2024

Anthony Colangelo
Outreach and Education Specialist

Lora Morandin, PhD
Associate Director

www.pollinator.org
stewards@pollinator.org

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Land Acknowledgment

The land where I live and work is located in Sǫ̀ mba k'è, Denendeh (Yellowknife) located in Chief Drygeese territory, traditional land of the Yellowknives Dene First Nation.

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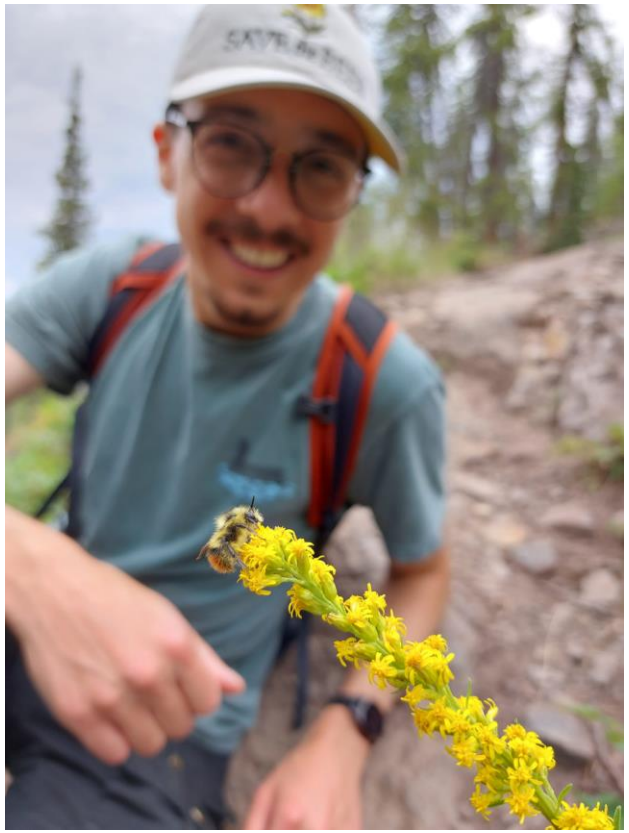
Meet Your PSC Instructors!



Anthony Colangelo
Outreach and Education Specialist
Pollinator Partnership

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About Pollinator Partnership

Pollinator Partnership is the world's largest nonprofit dedicated exclusively to the health of all pollinating animals. For 26 years, our mission has been to promote the health of pollinators, critical to food and ecosystems, through conservation, education, and research.

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More about Pollinator Partnership

Where We Work

We work with our partners across North America and the world to preserve native and migratory pollinators and the ecosystems they support.

Our Partners

We believe that everyone needs to be engaged to provide support for pollinators. We work with a diverse set of partners including governments, universities, private industry, and other nonprofits to make this happen.

Our Programs

Our programs are designed to bring every stakeholder together to tackle pollinator decline and biodiversity loss.

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Programs from Pollinator Partnership:

BEE FRIENDLY FARMING®

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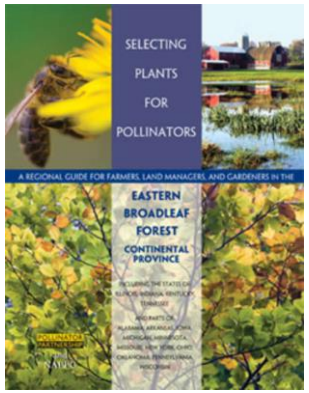
MonarchWings AcrossAmerica

North American Pollinator Protection Campaign
NAPPC



BeeSmart
POLLINATOR PARTNERSHIP School Garden Kit

*The*BeeMD

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www.pollinator.org

Steps to Certification:

Step 1) Watch the 7-part virtual training modules live or recorded. Once complete, a short learning form must be filled out to share training takeaways.

Step 2) Completion of one habitat creation action and one outreach or education action. A similar short form must be filled out by the following year.

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Details to Steps:

1. After all modules are complete in April, the Step 1 form will be emailed to you to share your training takeaways.

NOTE: We suggest that you write down in point form or 1-2 sentences the key takeaways from each training while you are attending live.

2. After you have watched all the modules live or recorded, transfer your answers into the Step 1 form by December 31st, 2024.

NOTE: Participants will be expected to share training takeaways for only one of the “Habitat Creation” modules (modules 5a, b, or c).

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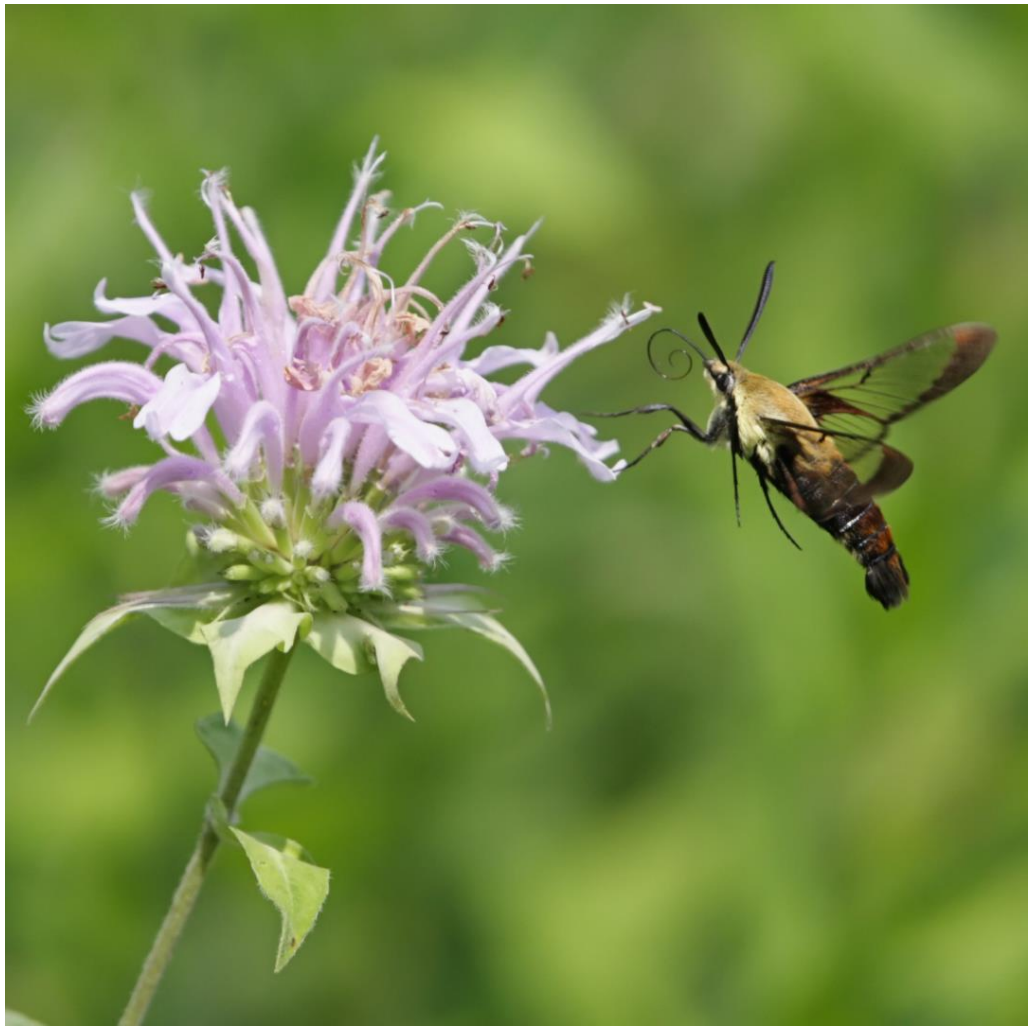
Details to Steps:

3. Step 1 is complete and you are now on Step 2. Complete your habitat and outreach actions. You may then fill out the Step 2 form describing your work and submit by September 30th, 2025.

4. Once both Step 1 and Step 2 forms have been submitted and approved, you will receive a certificate of completion, and the authority to use the Pollinator Steward stamp!



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CERTIFICATE OF COMPLETION

POLLINATOR STEWARD

THIS DOCUMENT ACKNOWLEDGES THAT

Your Name

Has successfully completed the requirements to become a
Certified Pollinator Steward by Pollinator Partnership Canada

Date

Anthony Colangelo
Instructor

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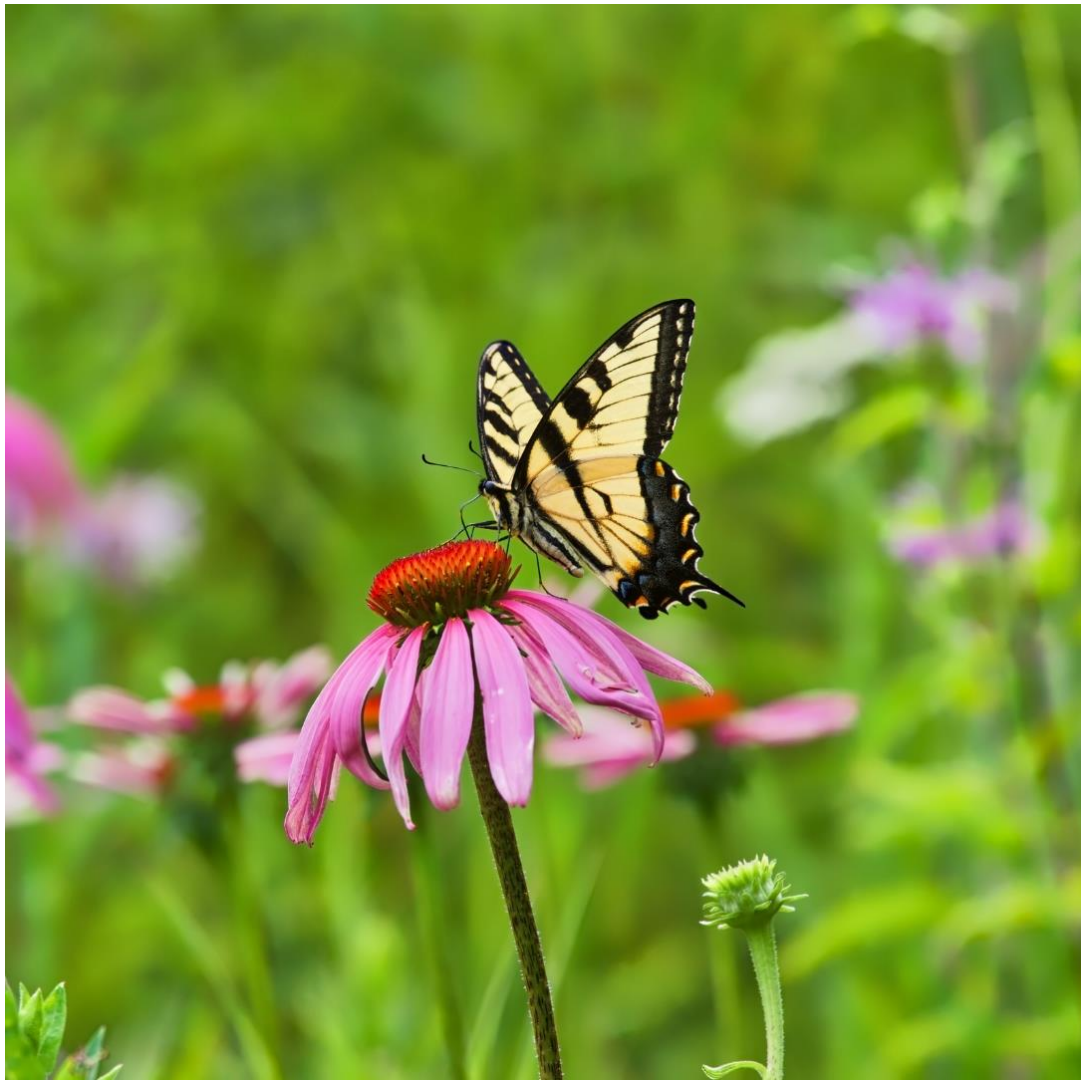
Step 2 Habitat Actions:

- Creation of pollinator habitat; any size, any location.
- Creating pollinator and garden signage.
- Alteration of management practices to promote pollinator health.
- Email stewards@pollinator.org if you have a question about your habitat action.



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Step 2 Outreach Actions:

- Creating pollinator and garden signage.
- Connecting with other community members and schools to spread pollinator education.
- Art/science outreach through crafts and installations.
- Email stewards@pollinator.org if you have a question about your outreach or education action.

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Course Information Page:

The Course Information page will be your homebase for module recordings, updates, and program resources. Login to the Course Information page using the following username and password:

website: https://www.pollinator.org/psc/course-info
username: PollinatorSteward
password: psc2024

Please do not share the username and password as this page is only for registered participants of the 2024 Pollinator Steward Certification program.

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Pollinator Steward Certification Schedule 2024

All modules will take place at 4:00pm to 5:30pm PST / 7:00pm to 8:30pm EST

Session 1 – Introduction to Pollinators
Tuesday, February 6th

Session 2 – Indigenous Perspectives
Tuesday, February 13th

Session 3 – Butterflies and other Pollinators
Tuesday, February 20th

Session 4 – Creating Habitat for Pollinators Overview
Tuesday, February 27th

Session 5a – Habitat Creation: Yards, Gardens, and Balconies
Tuesday, March 5th

Session 5b – Habitat Creation: Large Land Managers, Right-of-Ways, and Municipalities
Wednesday, March 6th

Session 5c – Habitat Creation: Farmers, Growers, and Agricultural Landscapes
Thursday, March 7th

Session 6 – Identification and Monitoring
Tuesday, April 9th

Session 7 – Expand your Impact!
Tuesday, April 16th

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Housekeeping:

- Will start right at 7:00 pm EST. Recordings will be shared by the following week, and be available until December 31st, 2023
- Closed captioning is available – enable in your controls.
- Please put questions in the Q&A box; UPVOTE questions you like!
- Questions for panelists will be answered at the end of the session.
- Contact stewards@pollinator.org for registration issues, questions, etc.
- Engage in respect and kindness with each other in the chat.
- **Tonight – the Moderator's Choice Award for favorite question!**

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Invasive species

Pesticides

Habitat loss

Parasites, Diseases

Climate change

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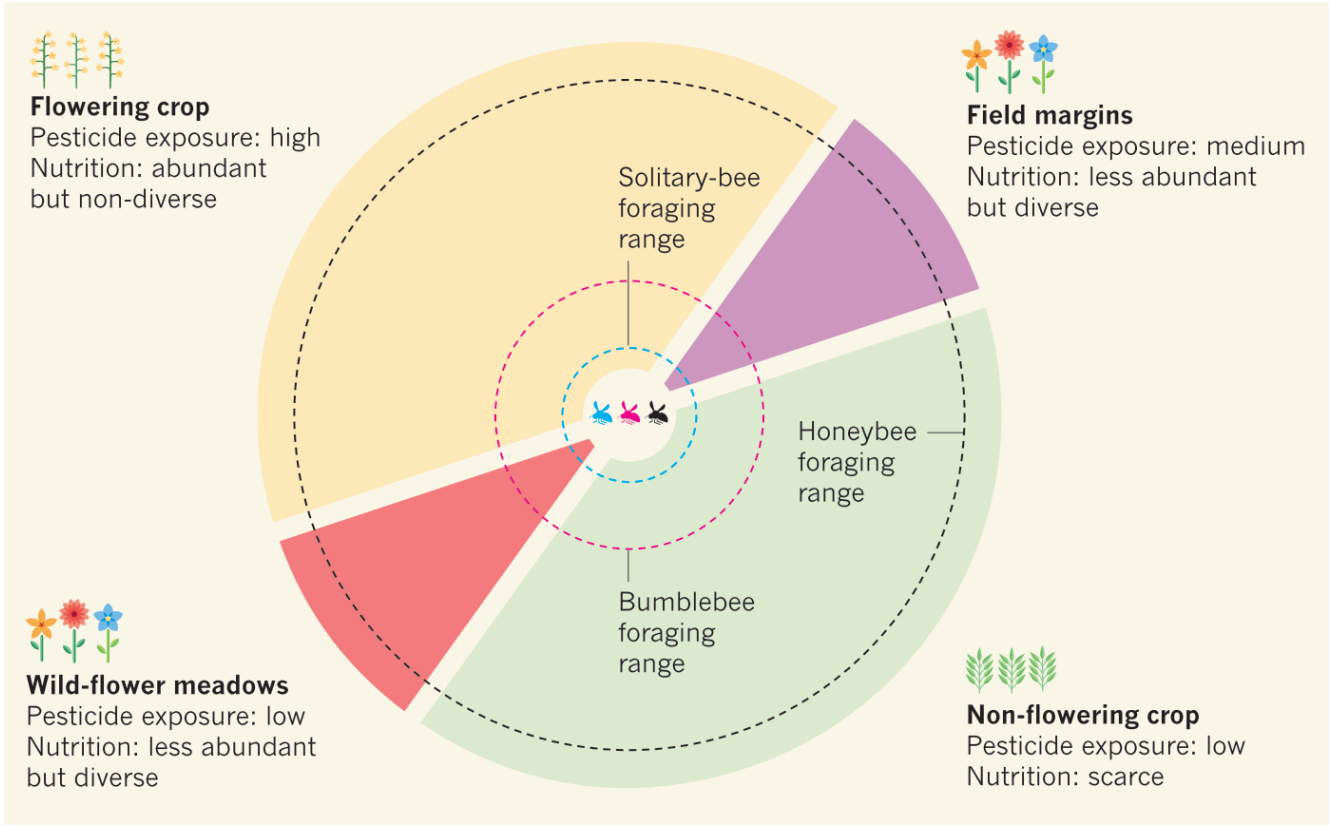
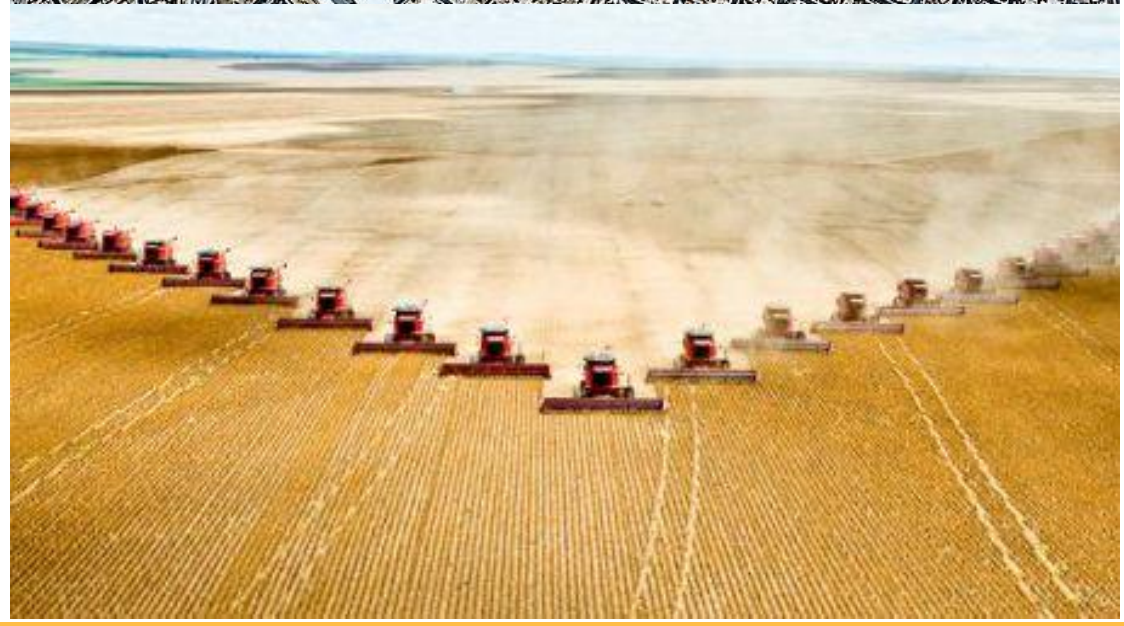
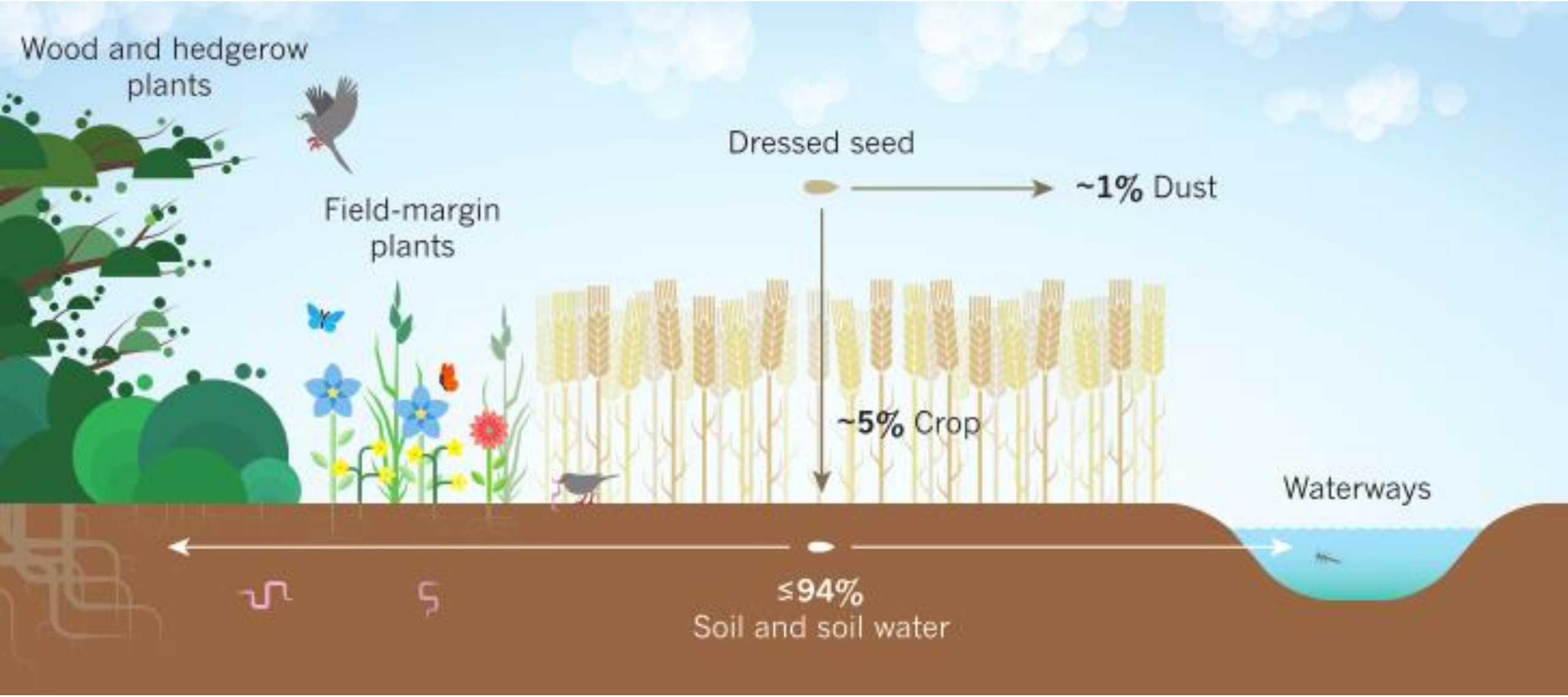
Habitat Loss and Fragmentation





Pesticides Movement Through Ecosystems



Pesticides
Lethal and Sublethal Impacts

POTENTIAL PESTICIDE IMPACTS ON BEES

Bees can be impacted lethally or sublethally by pesticides. For more information, see Recognizing and Reporting a Bee Poisoning in the Resources section on p.36.

Lethal

increased bee death

Sublethal

increased susceptibility to pests and diseases

alteration of gut microbiome

decreased reproduction

learning and memory impairment

impaired orientation

reduced foraging

Parasites and Pathogens
Mites, Viruses, Protozoans, Bacteria, Fungi, Parasitoids

Denis Anderson, 2007 CC-BY-SA 4.0

This Photo of deformed wing virus by Unknown Author is licensed under CC BY-SA-NC

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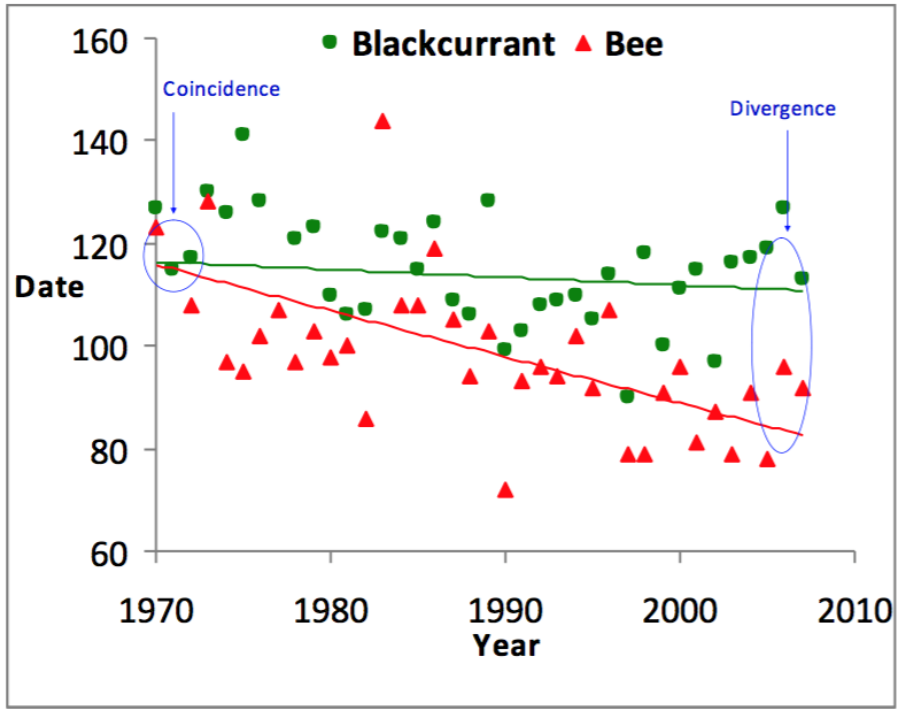
Gómez-Moracho, Heeb and Lihoreau, 2017

Climate Change Effects
Plant relationships



University of Reading

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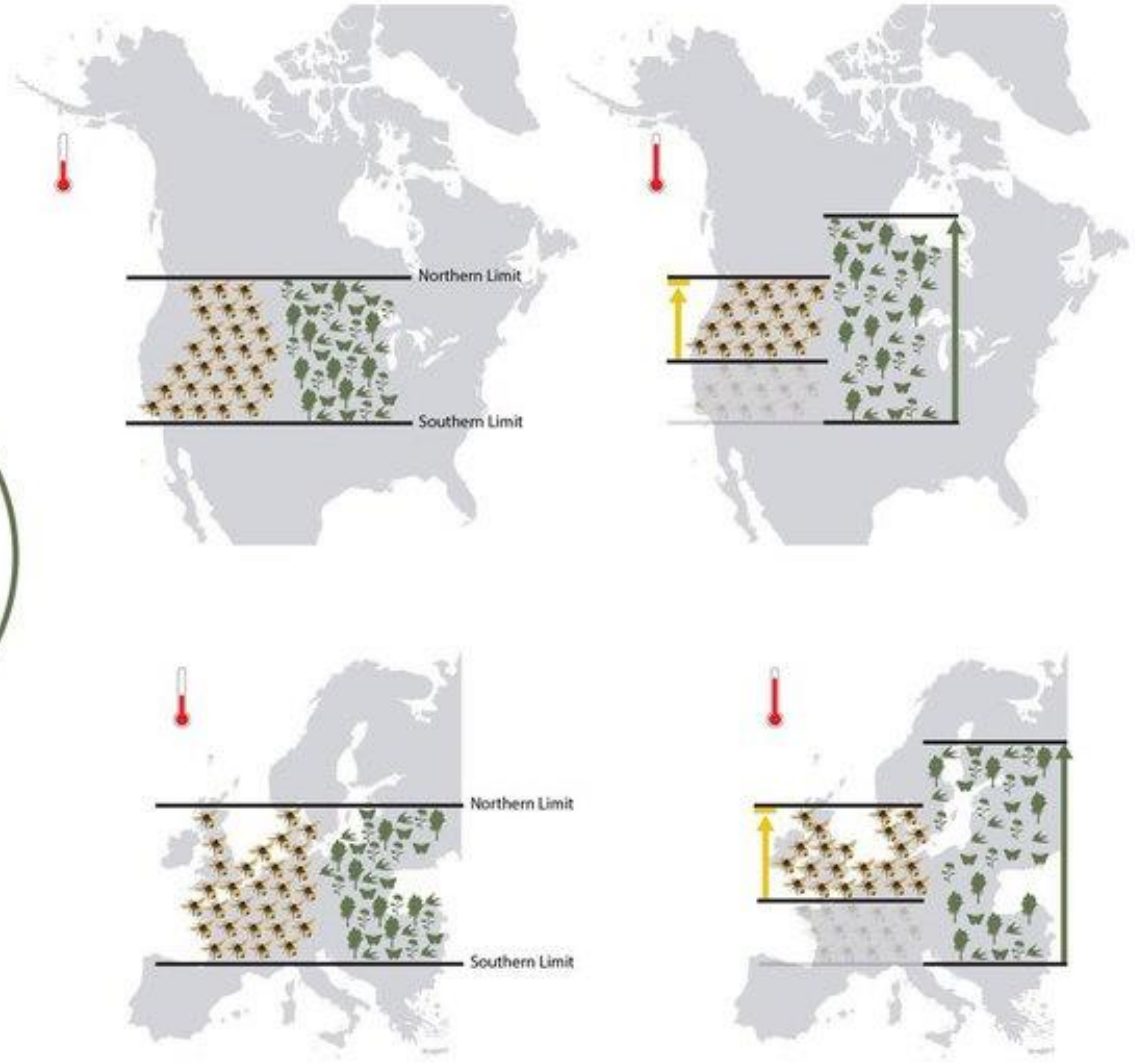
Climate Change Effects
Range Contractions



Kerr et al. 2015

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Climate Change and Migratory Pollinators

Invasive Species

Changing Habitat Composition

- Naturalized or invasive
- Positive, neutral or negative effects
- Disrupt plant-pollinator relationships
- Shift community composition

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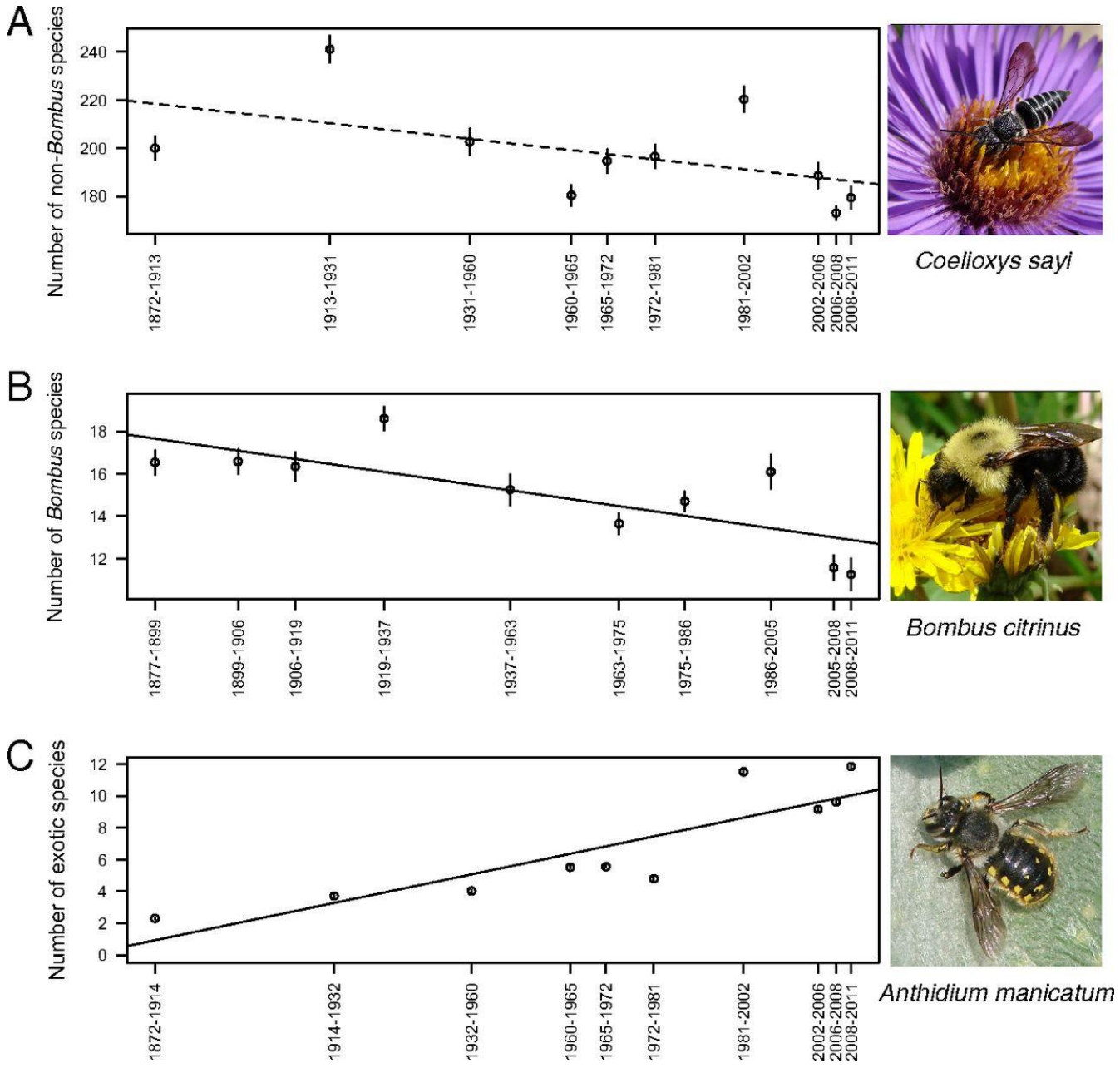

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Species at Risk

COSEWIC and Species at Risk Act

Group	Number of Listed Species
Bees	2 (NS)
Bumble bees	7
Butterflies	19
Moths	20
Beetles	10
Flies	2 (YK, BC)

Pollinators Federally-listed as Endangered or Threatened Species

Mammals

Little Mariana fruit bat (Pteropus tokudae)
Mariana Fruit Bat (*Pteropus mariannus mariannus*)
Mexican Long-nosed Bat (*Leptonycteris nivalis*)

Birds

Akeke'e or Kaua'i 'Akepa or (*Loxops caeruleirostris*)
'Akiapola'au (*Hemignathus wilsoni*)
'Akikiki (*Oreomystis bairdi*)
'Akohekohe or Crested Honeycreeper (*Palmeria dolei*)
'Alala or Hawai'ian Crow (*Corvus hawaiiensis*)
Bridled White-eye (*Zosterops conspicillatus conspicillatus*)
Hawai'i 'Akepa (*Loxops coccineus*)
Hawai'i Creeper (*Loxops mana*) [1]
'I'iwi (*Drepanis coccinea*)
Kaua'i 'Akialoa (*Akialoa stejnegeri*)
Kaua'i Nukupu'u (*Hemignathus hanapepe*)
Kaua'i 'O'o (*Moho braccatus*)
Ma'oma'o or Mao (*Gymnomyza samoensis*)
Maui 'Akepa (*Loxops ochraceus*)
Maui Nukupu'u (*Hemignathus affinis*)
Maui Parrotbill (*Pseudonestor xanthophrys*)
Moloka'i Creeper or Kakawahie (*Paroreomyza flammea*)
O'ahu 'Alauahio or O'ahu Creeper (*Paroreomyza maculata*)
'O'u (*Psittirostra psittacea*)
Palila (*Loxioides bailleui*)
Po'ouli (*Melamprosops phaeosoma*)
Rota Bridled White-eye (*Zosterops rotensis*)
[1] Still listed in some locations by its former scientific name, *Oreomystis mana*

Bees

Anthricinan yellow-faced bee (*Hylaeus anthracinus*)
Assimulans yellow-faced bee (*Hylaeus assimulans*)
Easy yellow-faced bee (*Hylaeus facilis*)
Hawaiian yellow-faced bee (*Hylaeus kuakea*)
Hawaiian yellow-faced bee (*Hylaeus longiceps*)
Hawaiian yellow-faced bee (*Hylaeus mana*)
Hilaris yellow-faced bee (*Hylaeus hilaris*)
Rusty patched bumble bee (*Bombus affinis*)

Butterflies, Skippers, and Moths

Bartram's hairstreak butterfly (Strymon acis bartrami)
Bay Checkerspot (*Euphydryas editha bayensis*)
Behren's Silverspot (*Speyeria zerene behrensii*)
Blackburn's Sphinx Moth (*Manduca blackburni*)
Callippe Silverspot (*Speyeria callippe callippe*)
Carson Wandering Skipper (*Pseudocopaeodes eunus obscurus*)
Cassius Blue (Leptotes cassius theonus) [Listed due to similarity in appearance to Miami blue.]
Ceraunus Blue (Hemiargus ceraunus antibubastus) [Listed due to similarity in appearance to Miami blue.]
Dakota Skipper (Hesperia dacotae)
El Segundo Blue (*Euphilotes battoides allyni*)
Fender's Blue (*Icaricia icarioides fenderi*)
Florida leafwing (Anaea troglodyta floridalis)
Karner Blue (*Lycaeides melissa samuelis*)
Kern Primrose Sphinx Moth (*Euproserpinus euterpe*)
Laguna Mountains Skipper (*Pyrgus ruralis lagunae*)
Lange's Metalmark (*Apodemia mormo lange*)
Lotis Blue (*Lycaeides argyrognomon lotis*)
Mariana eight-spot butterfly (*Hypolimnas octocula mariannensis*)
Mariana wandering butterfly (*Vagrans egistina*)
Miami Blue (Cyclargus thomasi bethunebakeri)
Misson Blue (*Icaricia icarioides missionensis*)
Mitchell's Satyr (*Neonympha mitchellii mitchellii*)
Mount Charleston Blue (Plebejus shasta charlestonensis)
Myrtle's Silverspot (*Speyeria zerene myrtleae*)
Nickerbean Blue (Cyclargus ammon) [Listed due to similarity in appearance to Miami blue.]
Oregon Silverspot (*Speyeria zerene hippolyta*)
Palos Verde Blue (*Glaucopsyche lygdamus palosverdesensis*)
Pawnee montane Skipper (*Hesperia leonardus montana*)
Poweshiek skipperling (Oarisma poweshiek)
Quino Checkerspot (*Euphydryas editha quino*)
San Bruno Elfin (*Callophrys mossii bayensis*)
Schaus Swallowtail (*Heraclides aristodemus ponceanus*)
Smith's Blue (*Euphilotes enoptes smithi*)
St. Francis' Satyr (*Neonympha mitchellii francisci*)
Taylor's checkerspot (Euphydryas editha taylori)
Uncompahgre Fritillary (*Boloria acrocnema*)

Other Insects

Delhi Sands Flower-loving Fly (*Rhaphiomidas terminatus abdominalis*)
Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)

https://www.fws.gov/pollinators/Programs/Endangered.html

Wrap Up and Next Session:

- Recordings and resources will be shared on the Course Information page by next week.
- Tuesday, February 13th, 4 pm PST/7pm EST
  - Module 2: Indigenous Perspectives – featuring Brad Howie and Melanie Kirby
  - Use the same Zoom link that you used today to join future modules. Zoom will also send a reminder email with the link one hour before each module.

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