Welcome to the Western Pollinator Conservation Webinar!

This webinar will be recorded.

Today's speakers and agenda:

1. Amanda Barth (WAFWA) : Opportunities through Partnership
2. Cat Darst (USFWS): Western Monarchs
3. Jeff Everett (USFWS): Western Bumble Bees
4. Emma Pelton and Rich Hatfield (Xerces Society): Documenting what you see through iNaturalist and Bumble Bee Watch

Thank you for muting your microphones and turning off your videos during presentations!

WAFWA
Western Association of Fish & Wildlife Agencies

Opportunities Through Partnership

WAFWA's Western Monarch & Native Pollinator Working Group

Western Monarch and Native Pollinator Working Group

Established Western Monarch Working Group in 2017

- Seven state members + federal + NGO partners
- *Western Monarch Conservation Plan 2019-2069*
- Developed tool to report conservation actions (www.monarchchat.org/)
- Messaging for supporting western monarchs

https://wafwa.org/committees-working-groups/monarch-working-group/

Western Monarch and Native Pollinator Working Group

Expanded working group focus in January 2022

- Inclusive of at-risk native pollinators in West
- Monarchs as “ambassador species” to develop conservation priorities
- Habitat-based goals to support pollinators
- Opportunities for state + federal collaboration

https://wafwa.org/committees-working-groups/monarch-working-group/

Western Monarch and Native Pollinator Working Group

Landscape-level solutions for listing prevention

- Utilizing best science available
- Corridors and linkages
- Funding opportunities and cooperative agreements

https://wafwa.org/committees-working-groups/monarch-working-group/

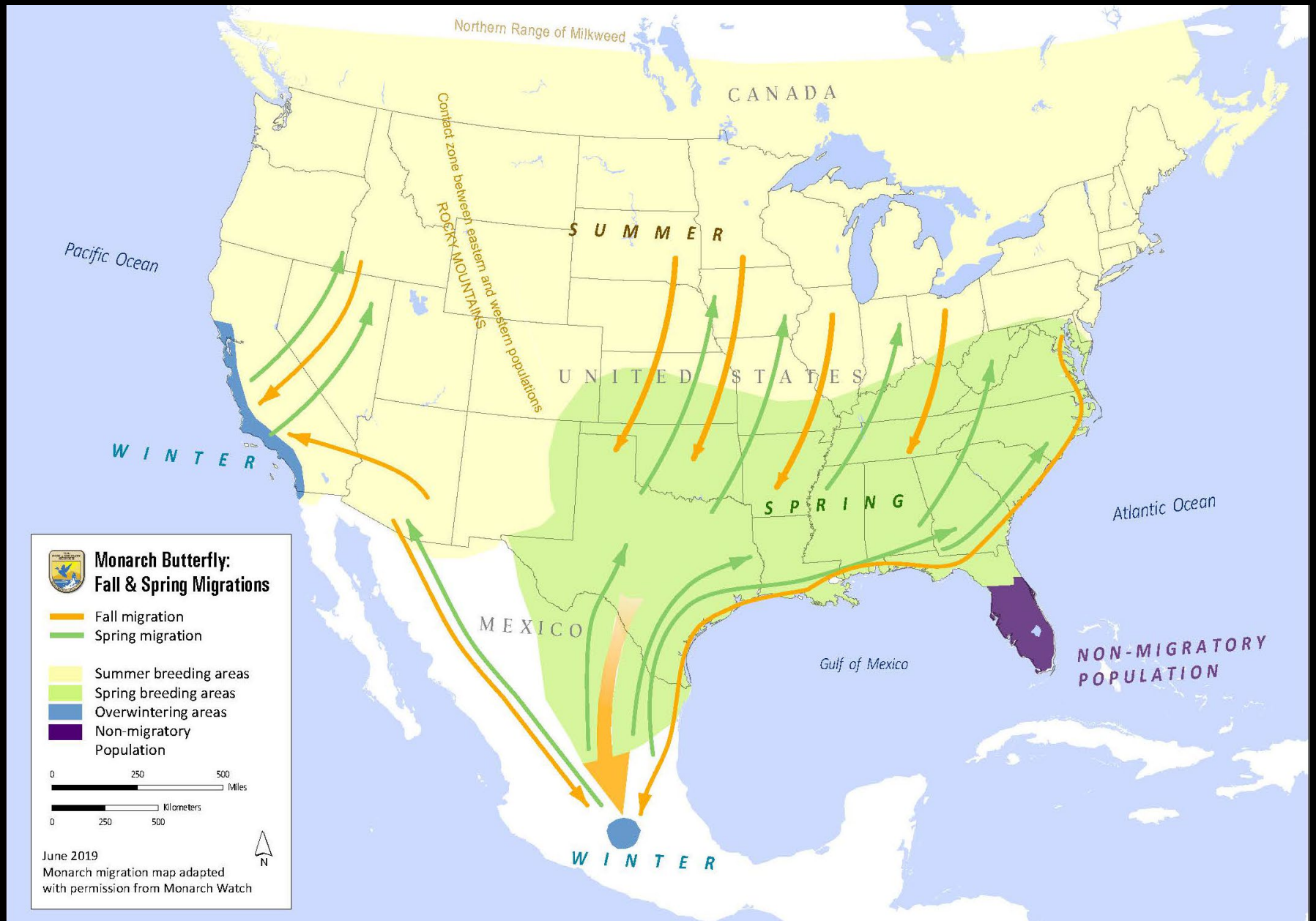


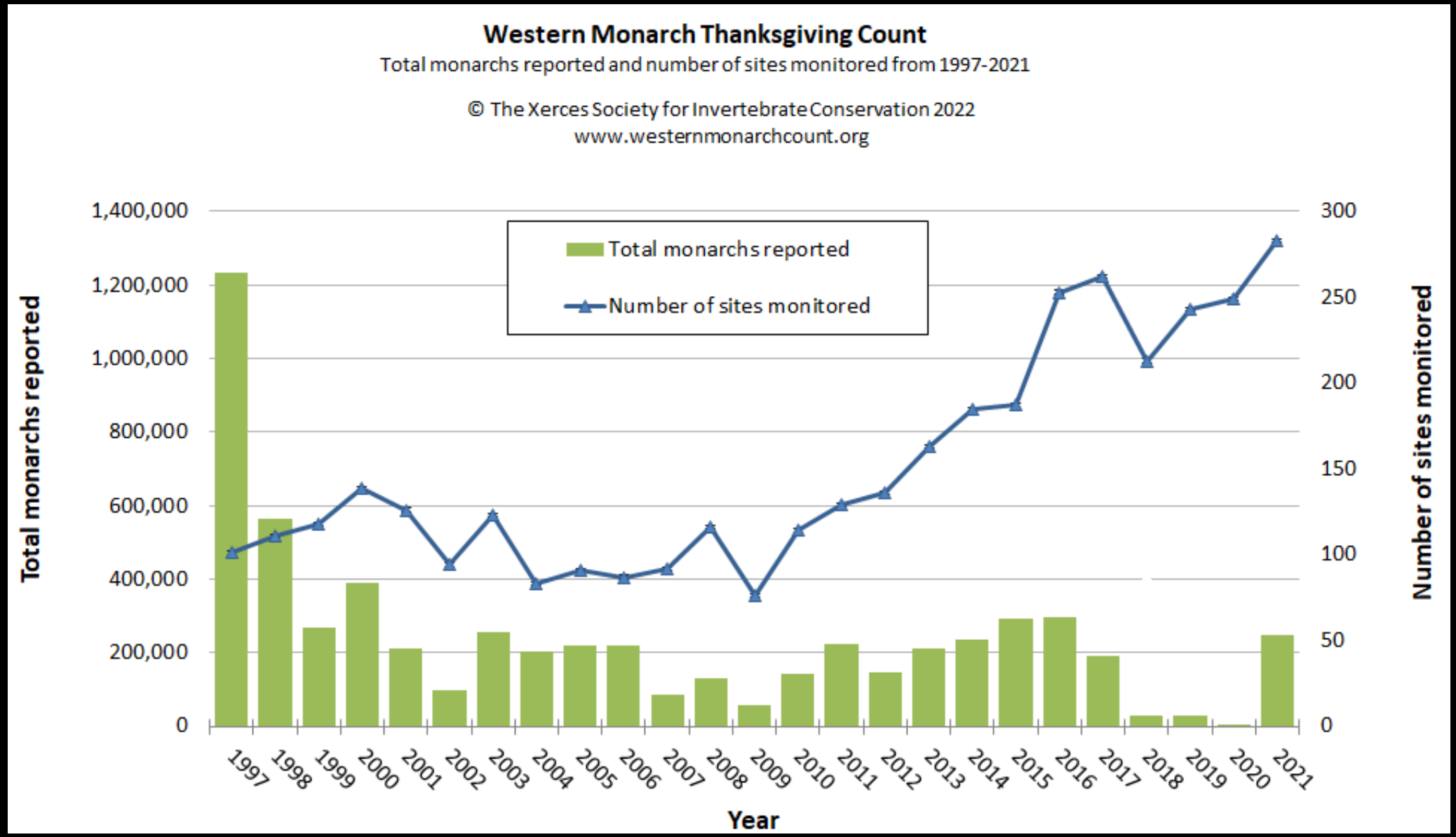


Western Monarch butterfly population status and actions

www.fws.gov/savethemonarch

Monarch range in North America




Western Monarch Thanksgiving Count
Total monarchs reported and number of sites monitored from 1997-2021
© The Xerces Society for Invertebrate Conservation 2022
www.westernmonarchcount.org
Total monarchs reported
Number of sites monitored
Total monarchs reported
Number of sites monitored
Year
1,400,000
1,200,000
1,000,000
800,000
600,000
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Why was 2021 so much better than 2020 for Western monarchs?

Multi-faceted:

- Milkweed availability
- Decrease in threats
- Increase in migrants

Western Monarch Butterfly

Conservation Plan

Sponsored by the **Western Association of Fish and Wildlife Agencies**

2019-2069

Priority Action Zones for Recovering Western Monarchs

Priority #1

Early breeding zone: Protect and plant pesticide-free early season native milkweed and nectar plants.

Central coast areas where monarchs overwinter: Protect and restore overwintering habitat and plant pesticide-free native nectar plants. Avoid planting milkweed within *5 miles* of the coast.

Priority #2

South coast areas where monarchs overwinter: Protect and restore overwintering habitat and plant pesticide-free native nectar plants. Avoid planting milkweed within *1 mile* of the coast.

North coast areas where monarchs do not overwinter: Plant pesticide-free native nectar plants.

Summer breeding zone: Identify and protect existing native milkweed and nectar plants. Plant pesticide-free native milkweed and nectar plants.

County boundaries

XERCES SOCIETY for Invertebrate Conservation

U.S. FISH & WILDLIFE SERVICE

WAFWA

CALIFORNIA ASSOCIATION OF RESOURCE CONSERVATION DISTRICTS

MONARCH JOINT VENTURE

CALIFORNIA STATE PARKS SINCE 1864

CALIFORNIA DEPARTMENT OF FISH & WILDLIFE





U.S. FISH & WILDLIFE SERVICE

October 15, 2021

Western Monarch Butterfly Conservation Recommendations:

Purpose: Section 7(a)(1) of the Endangered Species Act of 1973 (ESA), directs federal agencies to use their authorities to further the purpose of the ESA, by conducting conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary activities that an action agency may undertake to avoid and minimize the adverse effects of a proposed action, implement recovery plans, or to develop information that is useful for the conservation of listed species. The purpose of the following conservation recommendations is to encourage federal agencies to incorporate monarch butterflies into their Environmental Assessments and Biological Assessments associated with Section 7 Biological Opinions, when in consultation with the U.S. Fish & Wildlife Service. These recommendations are organized by habitat zone, so that they may be cut/paste, as applicable and contingent upon project location. There is potential utility for these recommendations beyond Section 7, and they are intended to promote benefits for other pollinators as well.

Background: The western migratory monarch butterfly population has declined by more than 99 percent since the 1980s. An estimated 4.5 million monarchs overwintered on the California coast in the 1980s, whereas in 2020, the population estimate for overwintering monarchs was less than 2,000 butterflies. This extreme population decline is likely due to multiple stressors across the monarch's range, including the loss and degradation of overwintering groves; pesticide use, particularly insecticides; loss of breeding and migratory habitat; climate change; parasites and disease. Historically, the majority of western monarchs spent the winter in forested groves near the coast from Mendocino County, California, south into northern Baja California, Mexico. In





What you can do to help

- Protect and restore overwintering groves
- Plant native, insecticide-free milkweed and nectar plants in breeding habitat
- Do not plant non-native tropical milkweed
- Protect monarchs and their habitat from pesticides
- Contribute to monarch sightings databases and survey efforts

Western Pollinator Practitioner Webinar
Bumble Bee Update, 5/4/22

Jeff Everett, Fish & Wildlife Biologist
Oregon Fish & Wildlife Office

- Petitions and listings
- Western bumble bee status review
- Finding Franklin's bumble bee
- Knowledge gaps you can help fill!

Bumble Bees and the ESA:

Rusty-patched bumble bee (*Bombus affinis*)

Petitioned 1/2013
SSA 6/2016
Listed endangered 3/2017
Draft recovery plan 1/2020

Franklin's bumble bee (*Bombus franklini*)

Petitioned 6/2010
SSA 8/2017
Proposed endangered 8/2019
Listed endangered 9/2021

Yellow-banded bumble bee (*Bombus terricola*)

Petitioned 9/2015
SSA 10/2018
Not warranted 9/2019

S. Carpenter; USGS, FWS photos

Bumble Bees and the ESA:

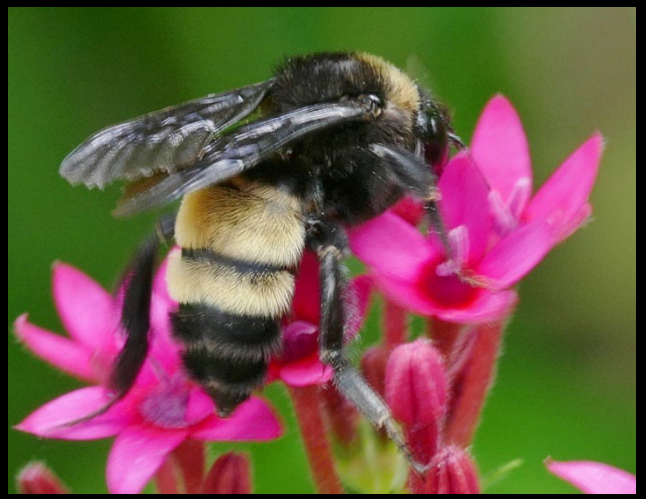
Western bumble bee (*Bombus occidentalis*)

Petitioned 9/2015
SSA 2/2022
Determination 2024

Suckley's cuckoo bumble bee (*Bombus suckleyi*)

Petitioned 4/2020
Positive 90 day finding: 5/2021
Determination 2025

American bumble bee (*Bombus pensylvanicus*)



Petitioned 3/2021

inaturalist, C. Sheffield, FWS photos

Photo: Las Vegas Sun

Take home point:

…since the ESA was enacted in 1973, over 1600 species across many taxa have been listed as endangered or threatened, but only 9 bees have been listed, and only two of those are bumble bees…..

FWS photos

For bees in general, and bumble bees in particular, there is a fundamental lack of basic information

Western Bumble Bee Timeline Species Status Assessment

- 2015: Defenders of Wildlife Petition
- 2016: Positive 90 day finding

NEW!!

Sept- Dec 2020
- Data request call

Nov 2021
- First reginal leadership briefing

March 2022
- Second regional leadership briefing

May 2022
- Peer & Partner Review

Feb 2024
- Listing determination due

- Assembled core team
- Expert elicitation webinars
- Literature database
- Delineate AU + RU
- Develop analytical approach
- 1998-2020 occupancy model
- Historical viability
- SSA report drafting

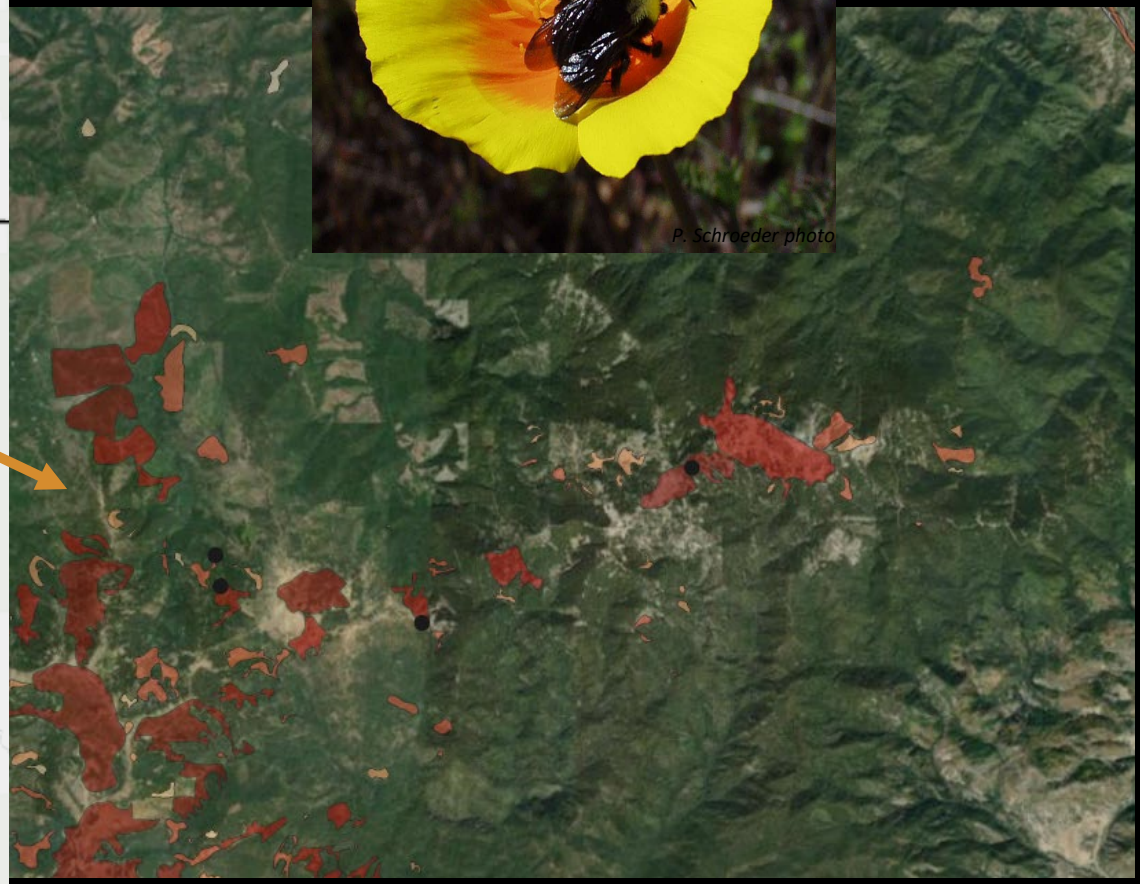
- Current viability
- Future viability
- Current range map
- Finish SSA report draft

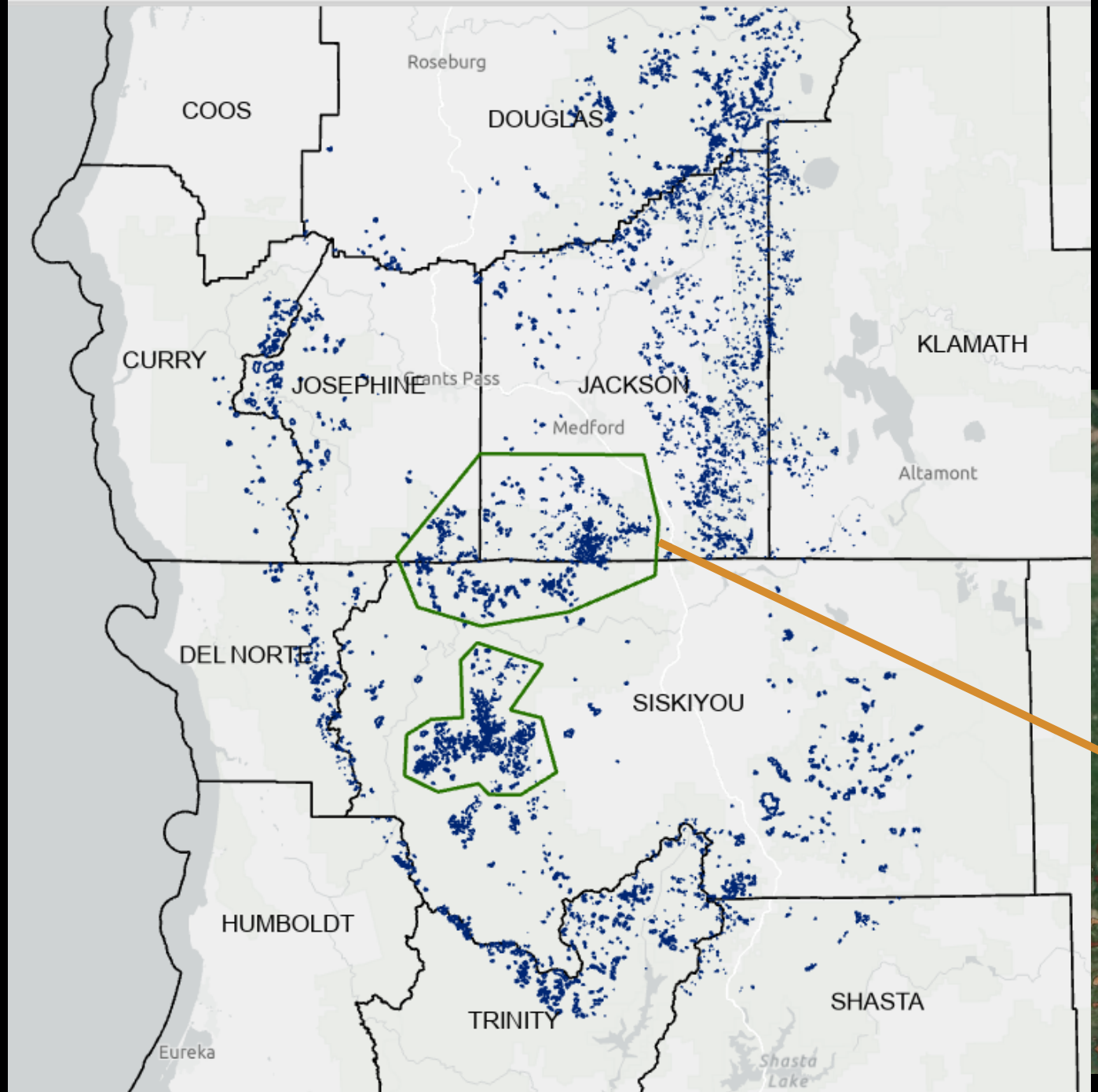
- Core team review SSA
- Finalize SSA report addressing comments

IMPORTANT!!

The SSA itself is **not** a decision document

Finding Franklin's bumble bee





Factors influencing the species

Disease

Pesticides

Regulation

Competition from non-native bees

Small population dynamics

Synergistic effects of multiple stressors have likely exacerbated the influence of these factors on *Bombus* species

Habitat Alterations

Grazing

Agricultural Intensification

Urban development

Natural and man-made Fire

Exotic species

Climate change

Provisional Working Draft!

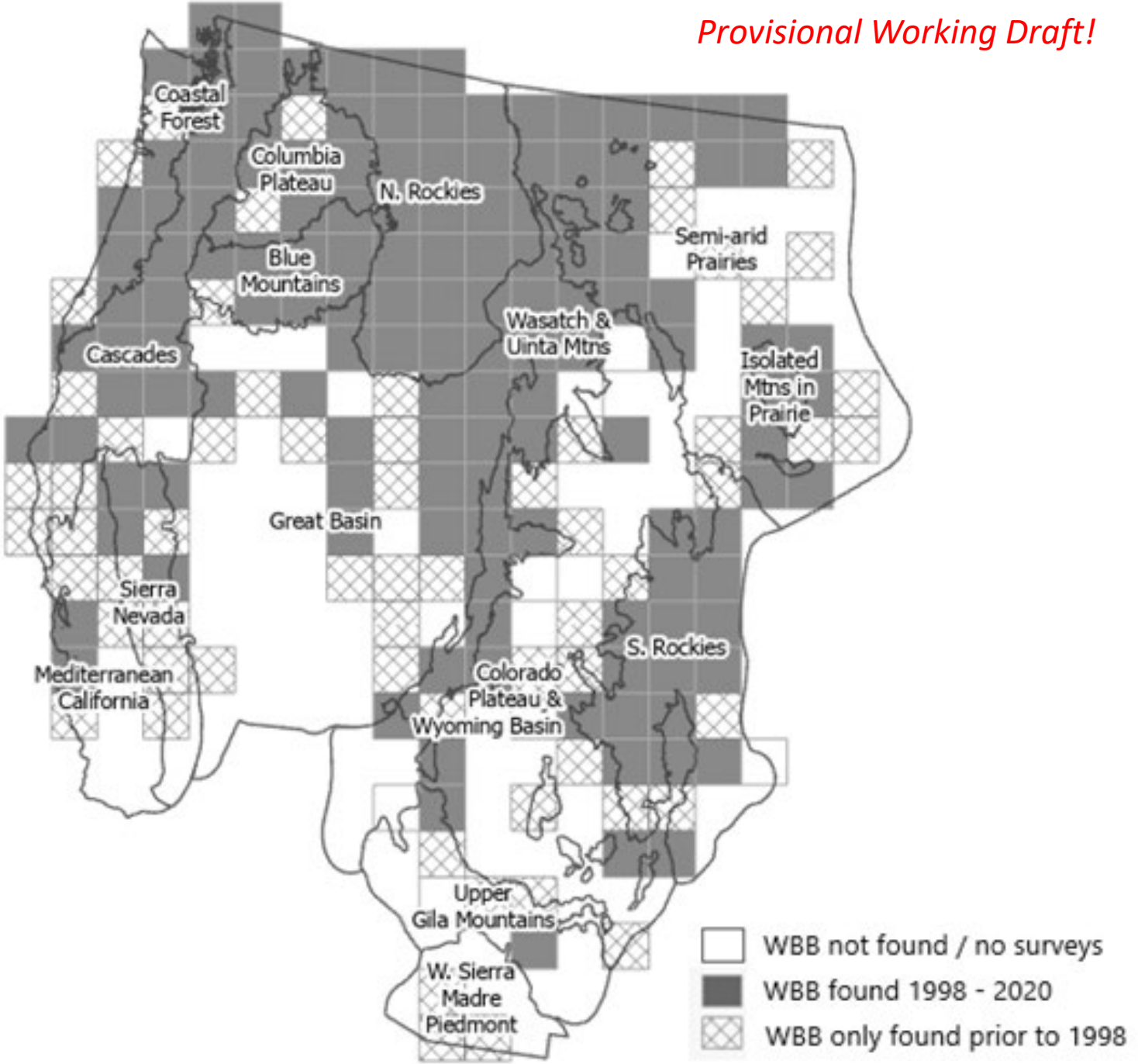
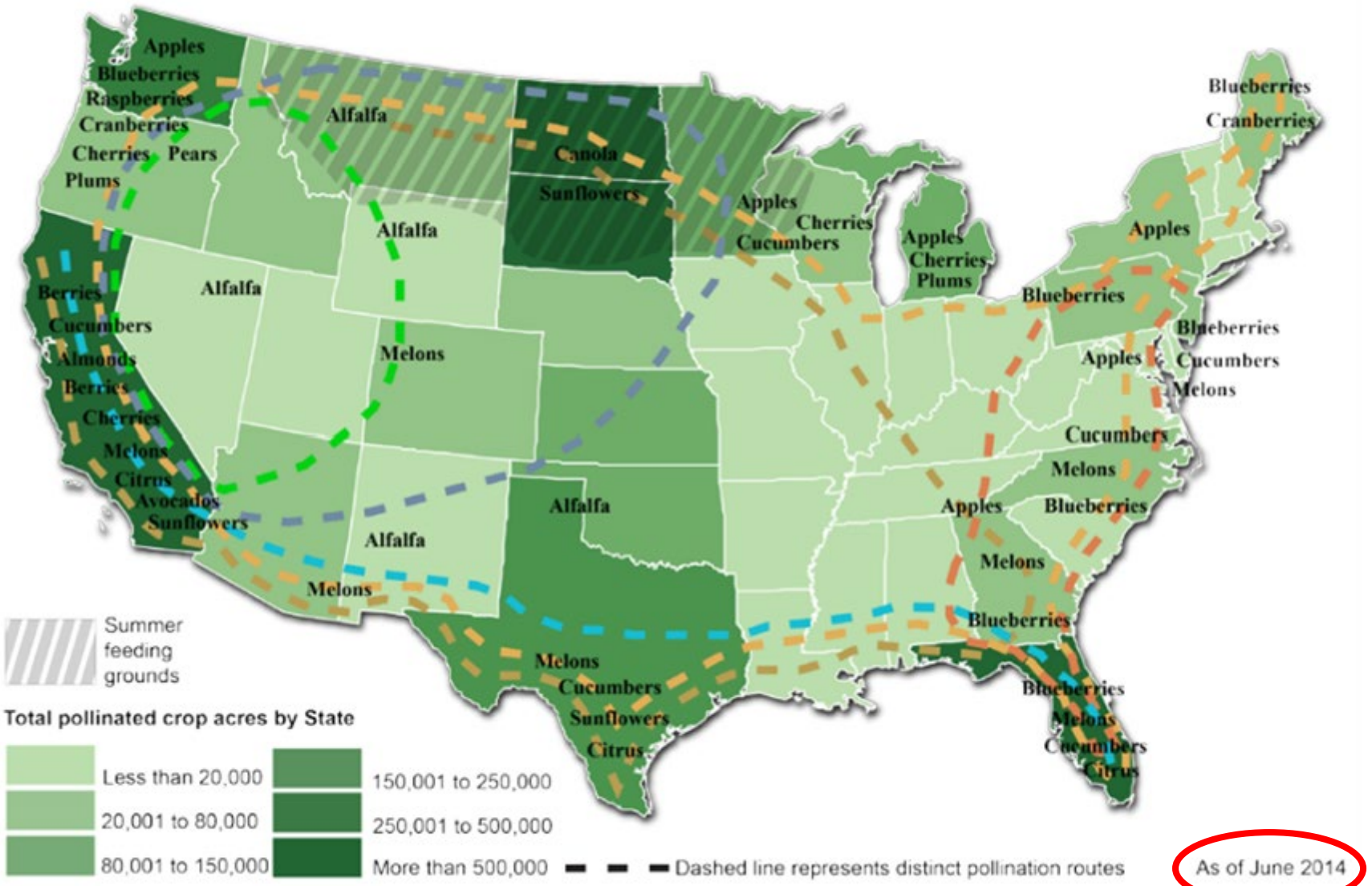


Fig.12 WBB observations used to calculate apparent decline for historical condition

FWS photo

Next: peer and partner review of the draft SSA…

Figure 1: Pollinator movements and crops in the United States



Source: Adapted by USDA, Economic Research Service from Kautzmann (2011), with input from commercial beekeepers and apiculture experts, including Dr. Jeff Pettis and Dr. David Epstein, an entomologist and authority on pollinators with the USDA's Office of Pest Management Policy. Crop production acres are from USDA, NASS, 2012 Agricultural Census, 2014.

Bombus impatiens – common eastern bumble bee

YOU :

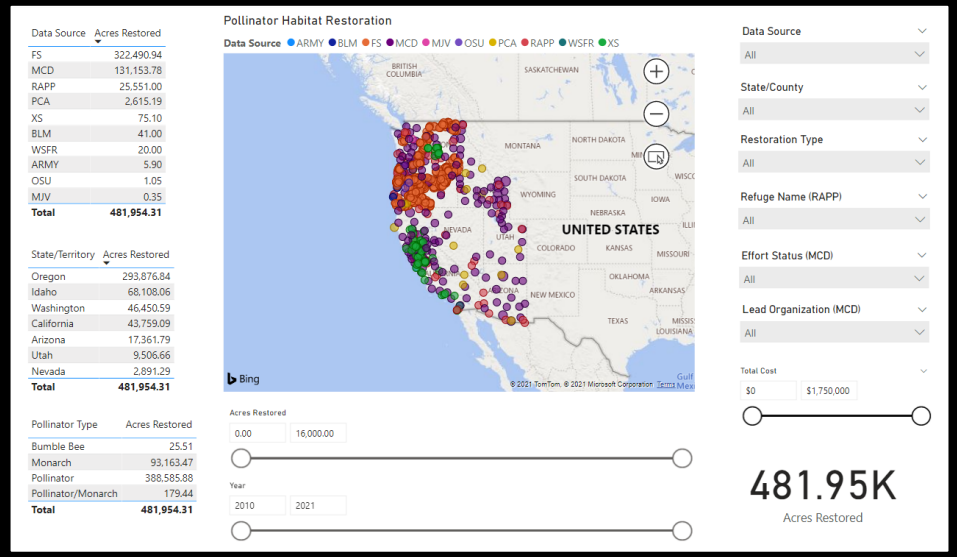
- *To support and participate in the atlas projects!*
- *To report sightings of target species!!*
- *Sanitize your survey equipment!!!*

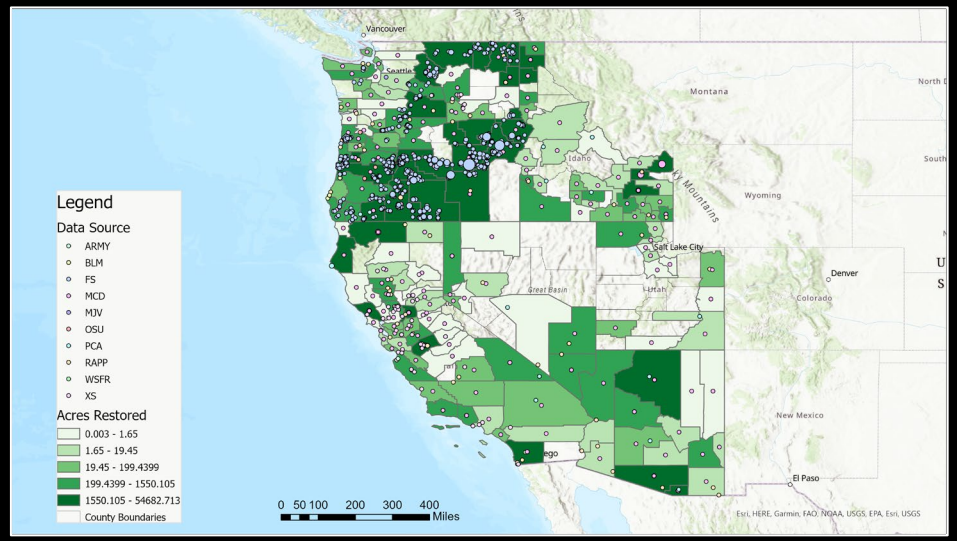
PACIFIC NORTHWEST BUMBLE BEE ATLAS

I'm collecting bees for the OREGON BEE ATLAS
Ask me about Oregon's amazing NATIVE BEES!!!

CALIFORNIA BUMBLE BEE ATLAS

Pollinator Restoration Mapper



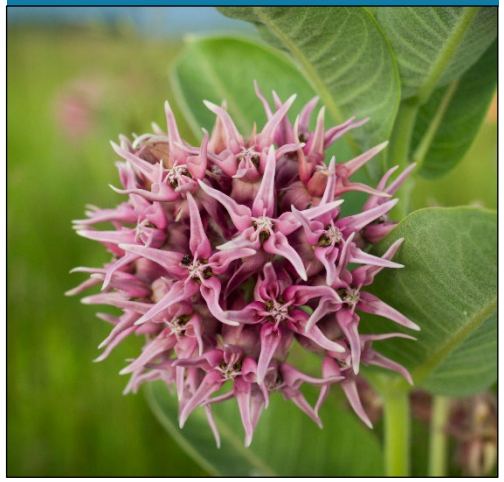


Objective: An interactive mapper of pollinator restoration projects for the western states (AZ, CA, ID, NV, OR, UT, WA).

Progress: USFWS intern began compiling and mapping restoration projects from existing databases in summer 2021. A second USFWS intern will continue the work in summer 2022

Request: If your agency or organization has projects related to pollinator habitat restoration, enhancement, or protection, please reach out to **Alan Yanahan (alan_yanahan@fws.gov)**.

Report monarchs and milkweeds in the West



Photos from left: Justin Meissen/Flickr; Ken Slade/Flickr; Stephanie McKnight/Xerces Society.

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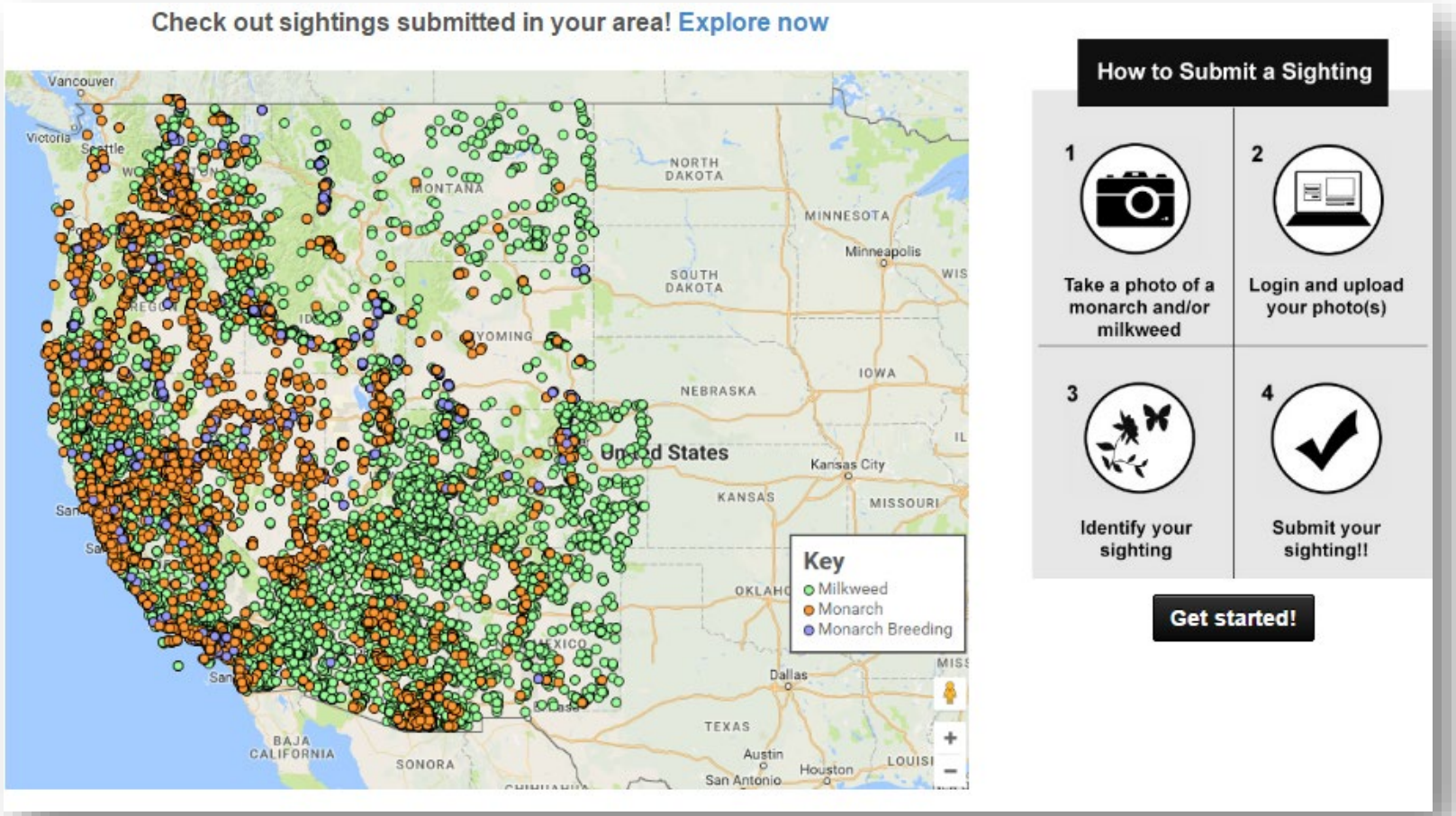
Western Monarch Milkweed Mapper

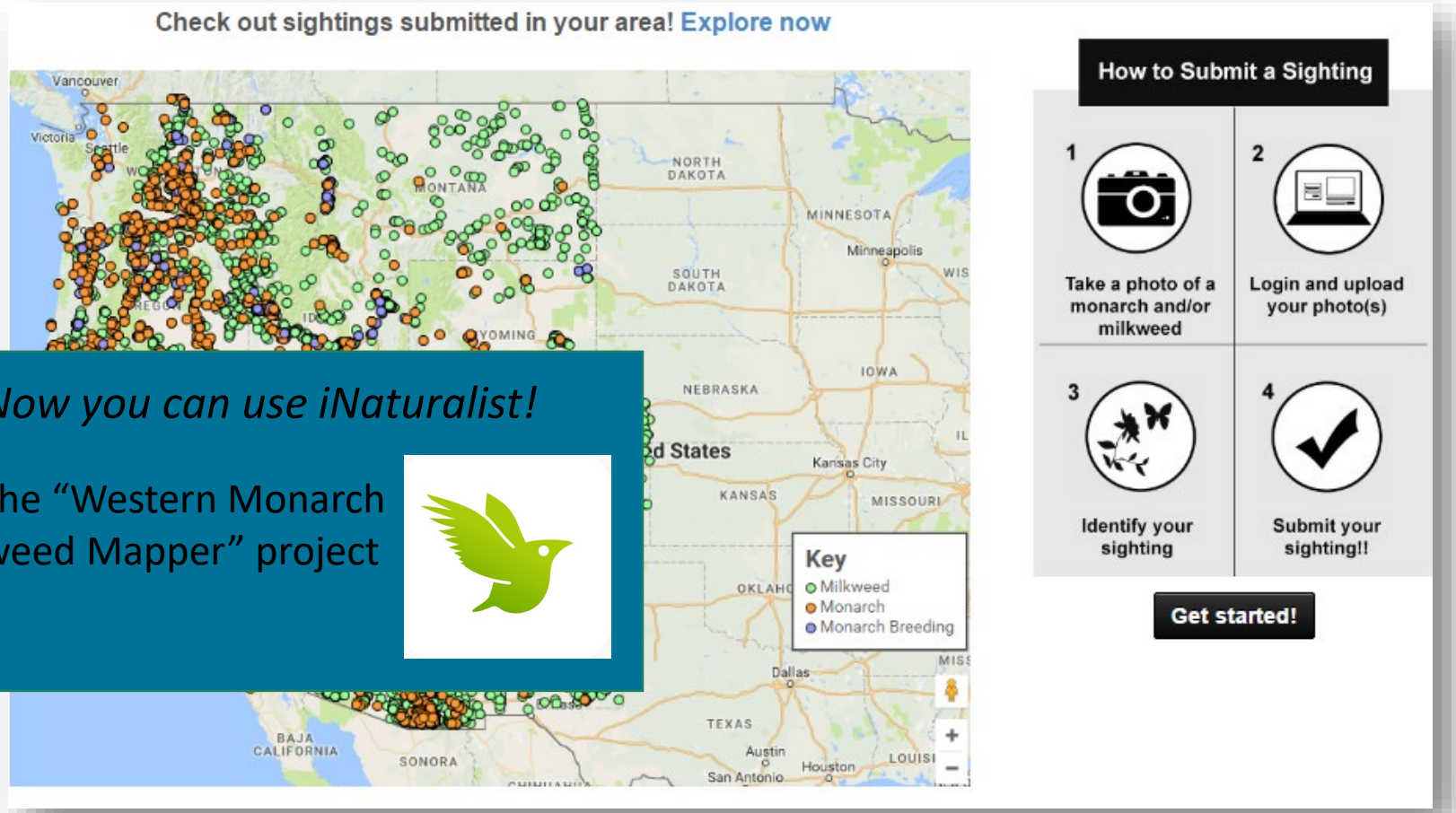


WESTERN MONARCH MILKWEED MAPPER

monarchmilkweedmapper.org

xerces.org

Western Monarch Milkweed Mapper



Now you can use iNaturalist!

Join the "Western Monarch Milkweed Mapper" project

WESTERN MONARCH MILKWEED MAPPER

monarchmilkweedmapper.org

xerces.org

iNaturalist

1. App

Works On All Your Devices

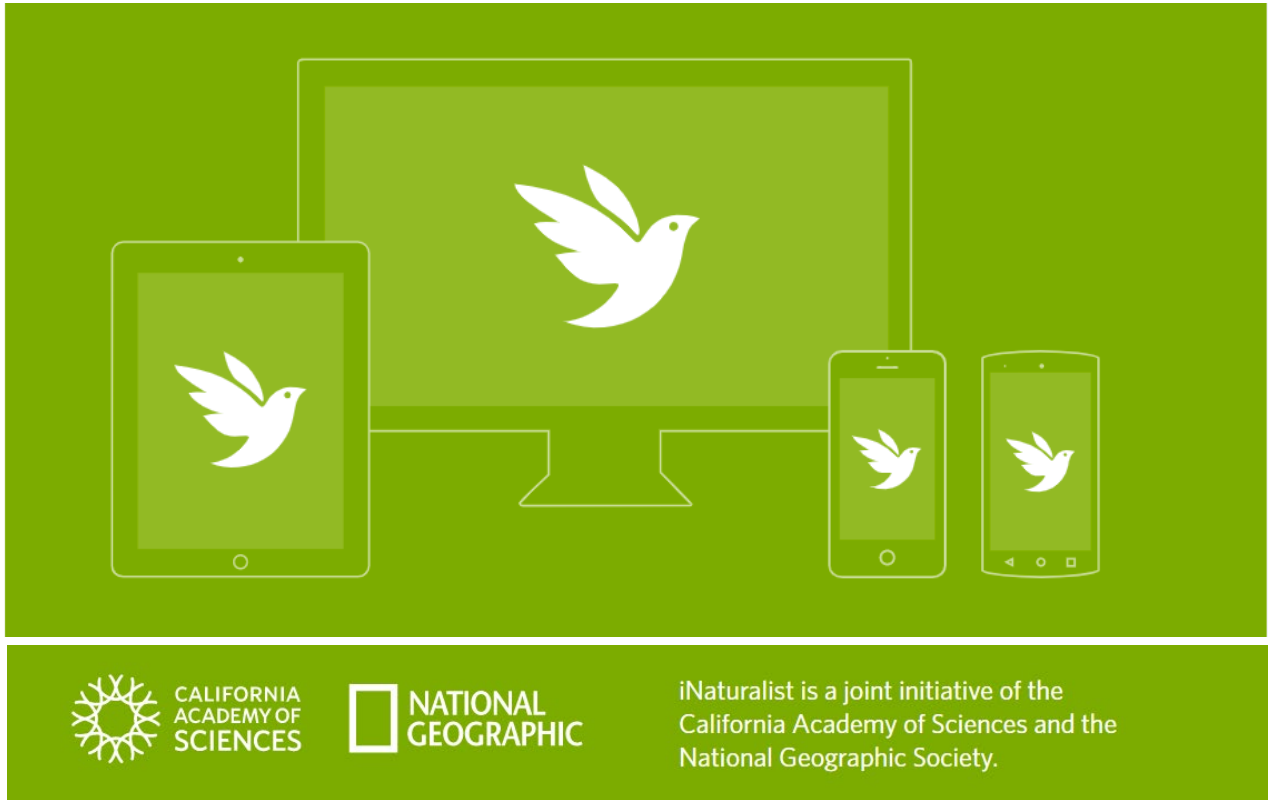
Install our mobile apps so you can always observe, even without cell reception or wifi.

ANDROID APP ON Google Play

Download on the App Store

2. Browser

inaturalist.org



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iNaturalist

How It Works

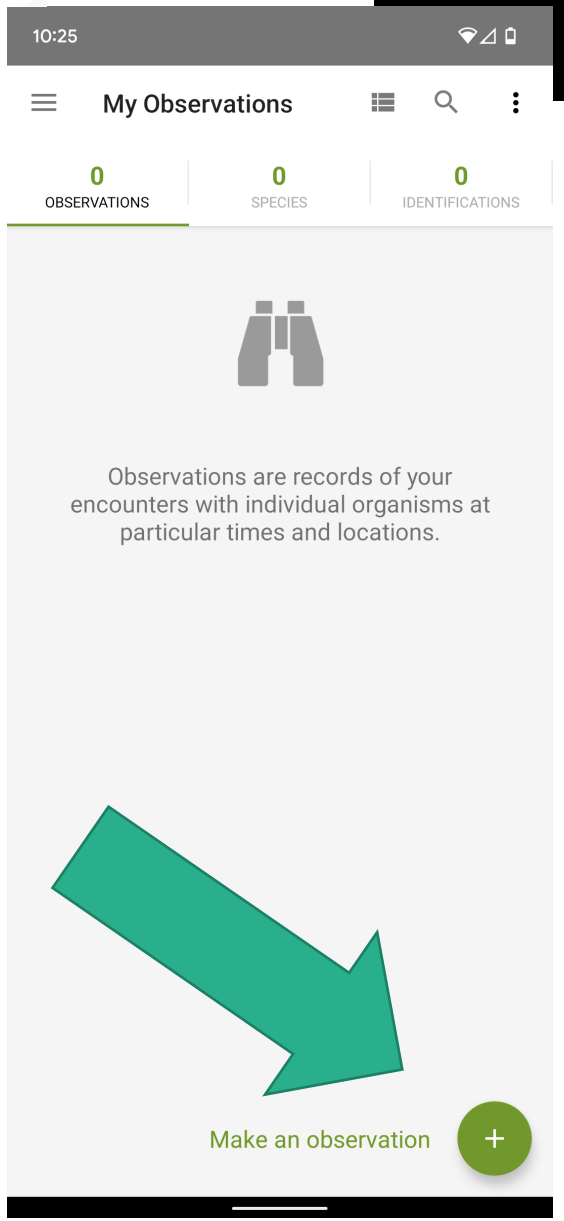
Record your observations

Share with fellow naturalists

Discuss your findings

xerces.org

1. Install & open app



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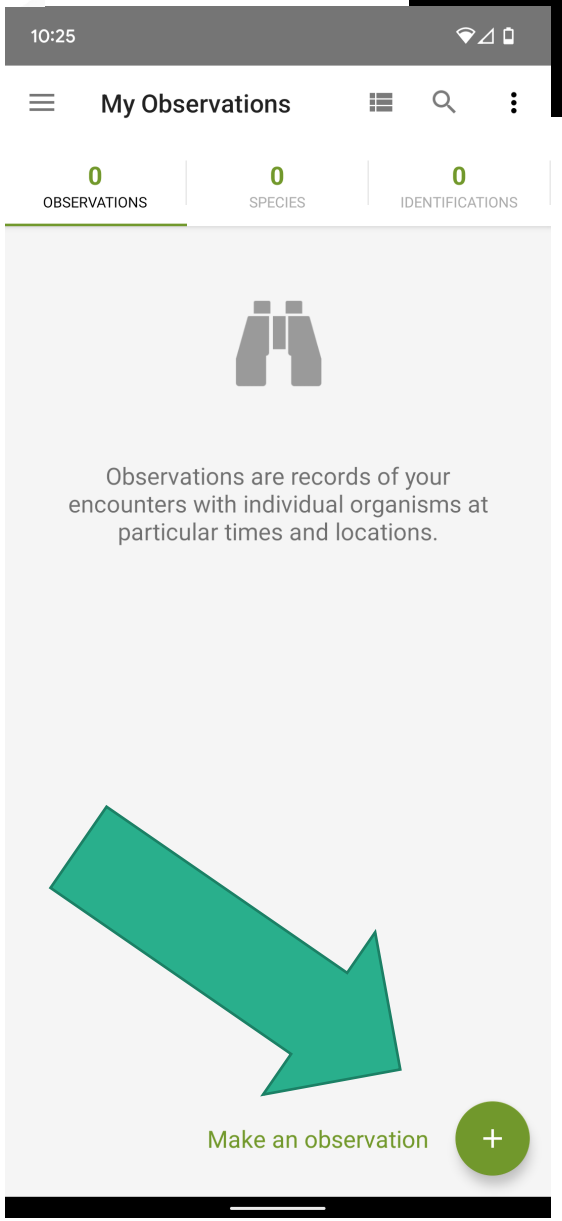
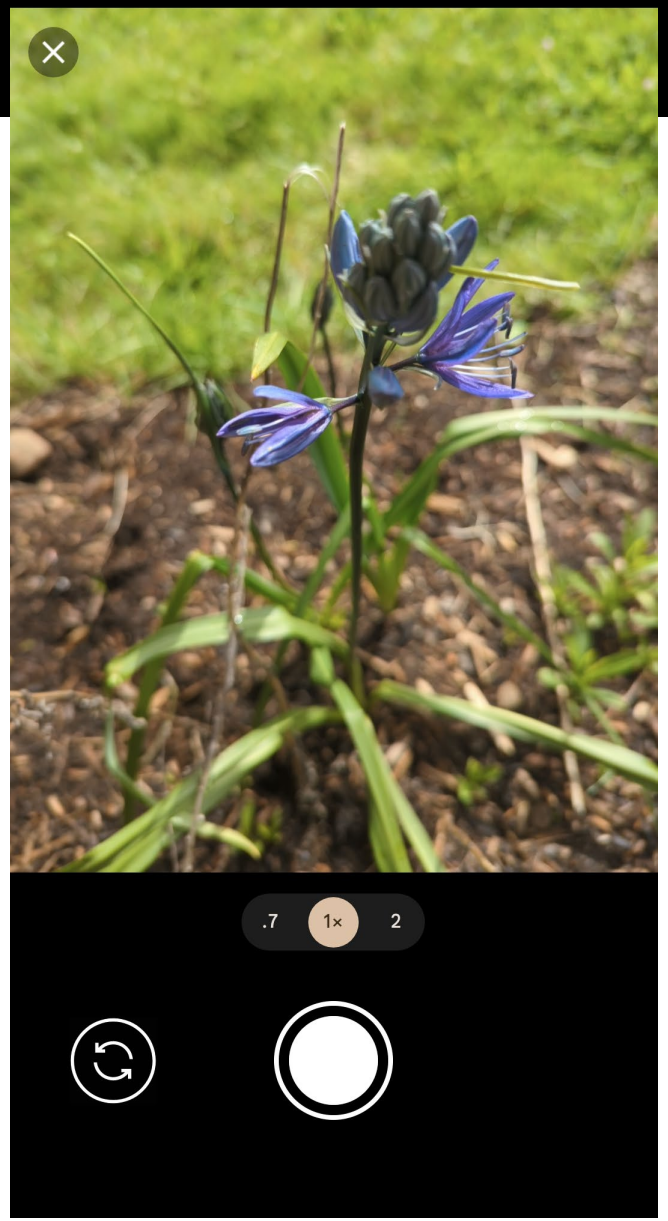


2. Take (or select) photo



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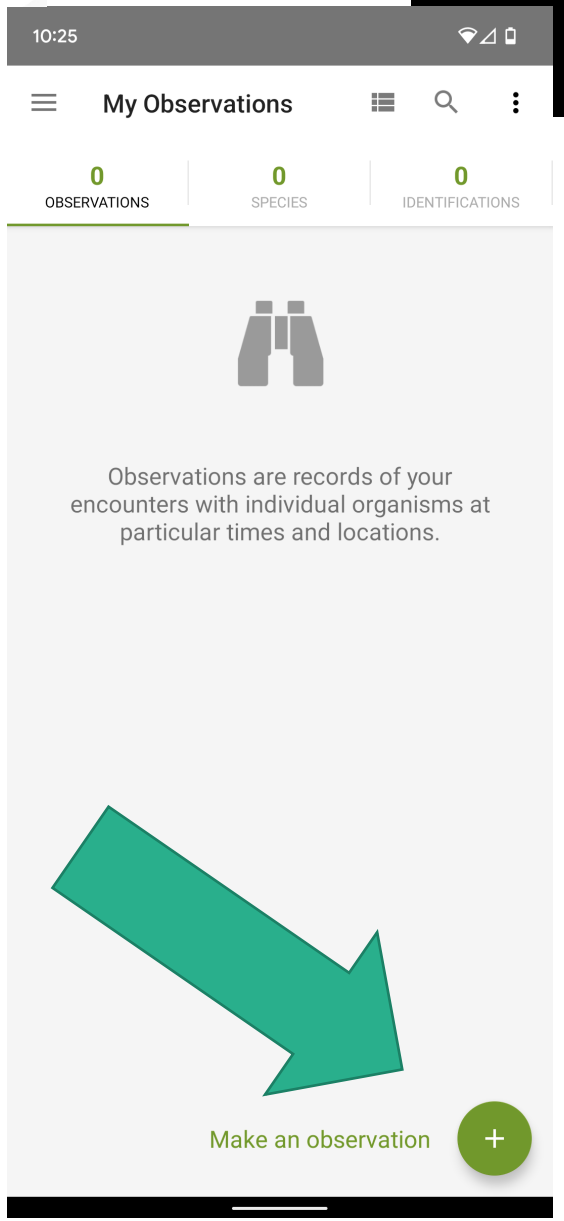
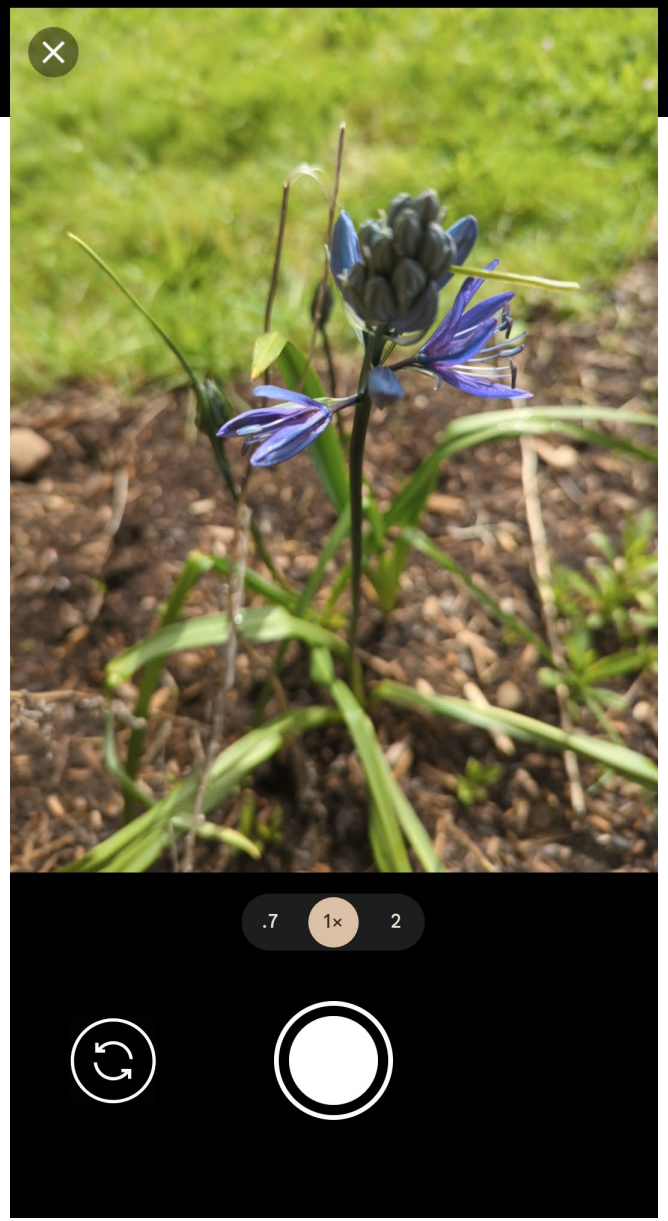
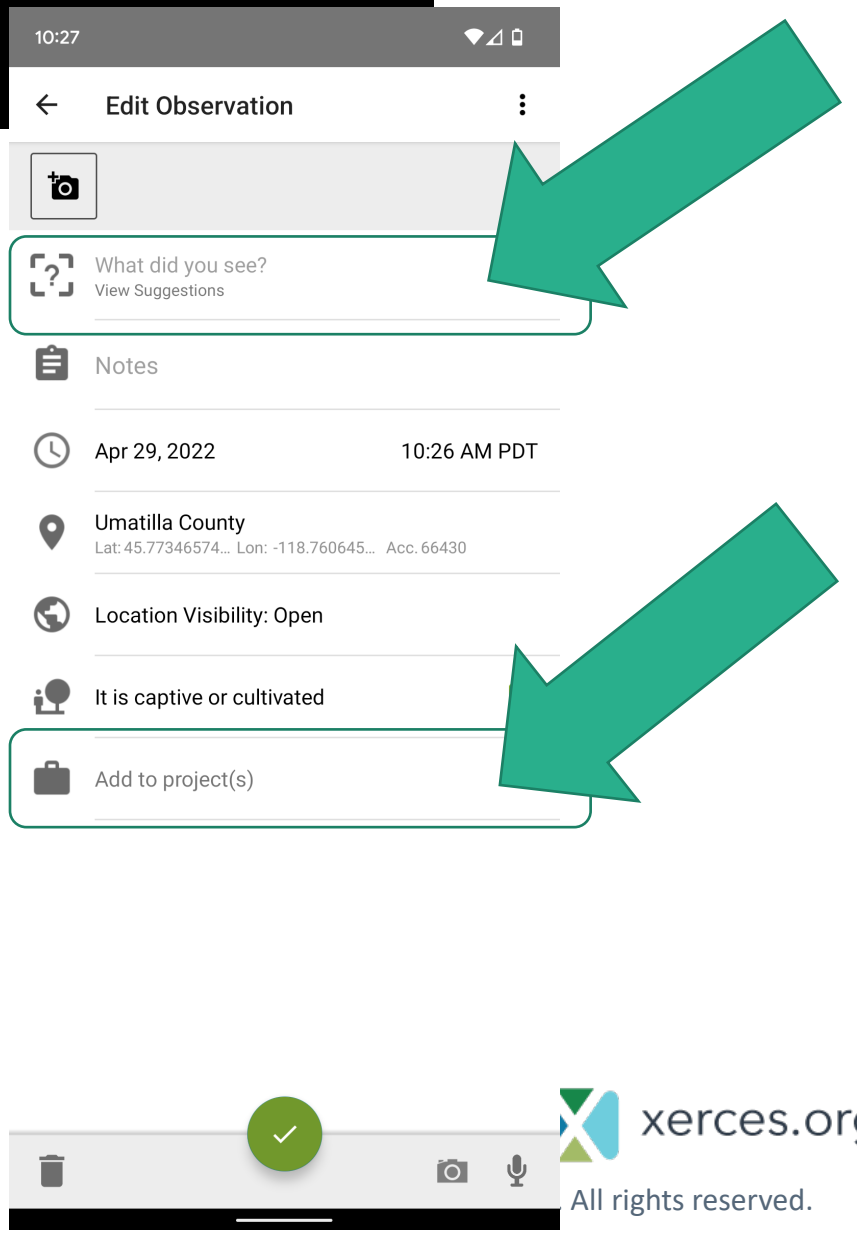


2. Take (or select) photo



3. Identify what you saw & add to project



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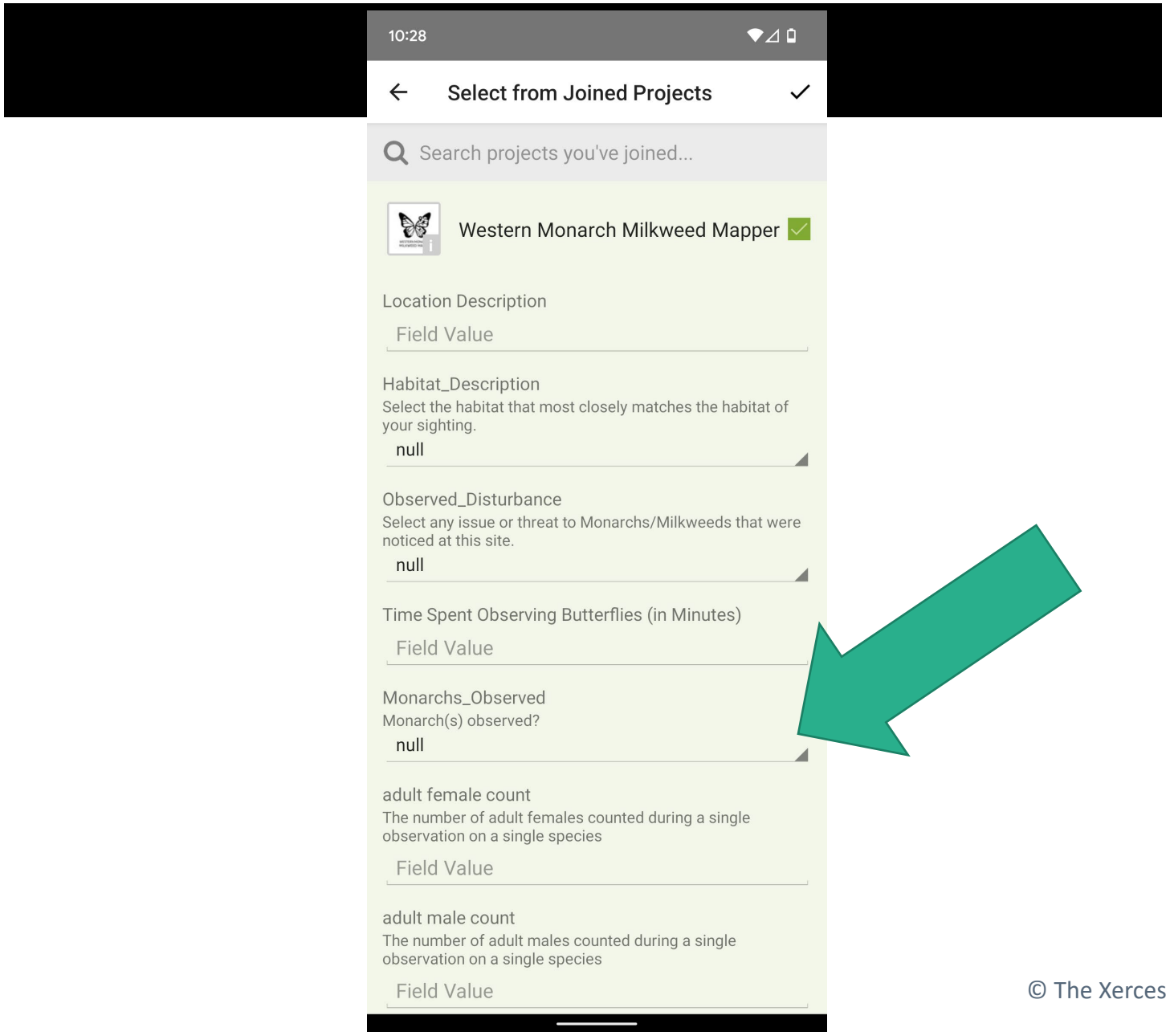
4. “Western Monarch Milkweed Mapper” project and fill in details (optional)



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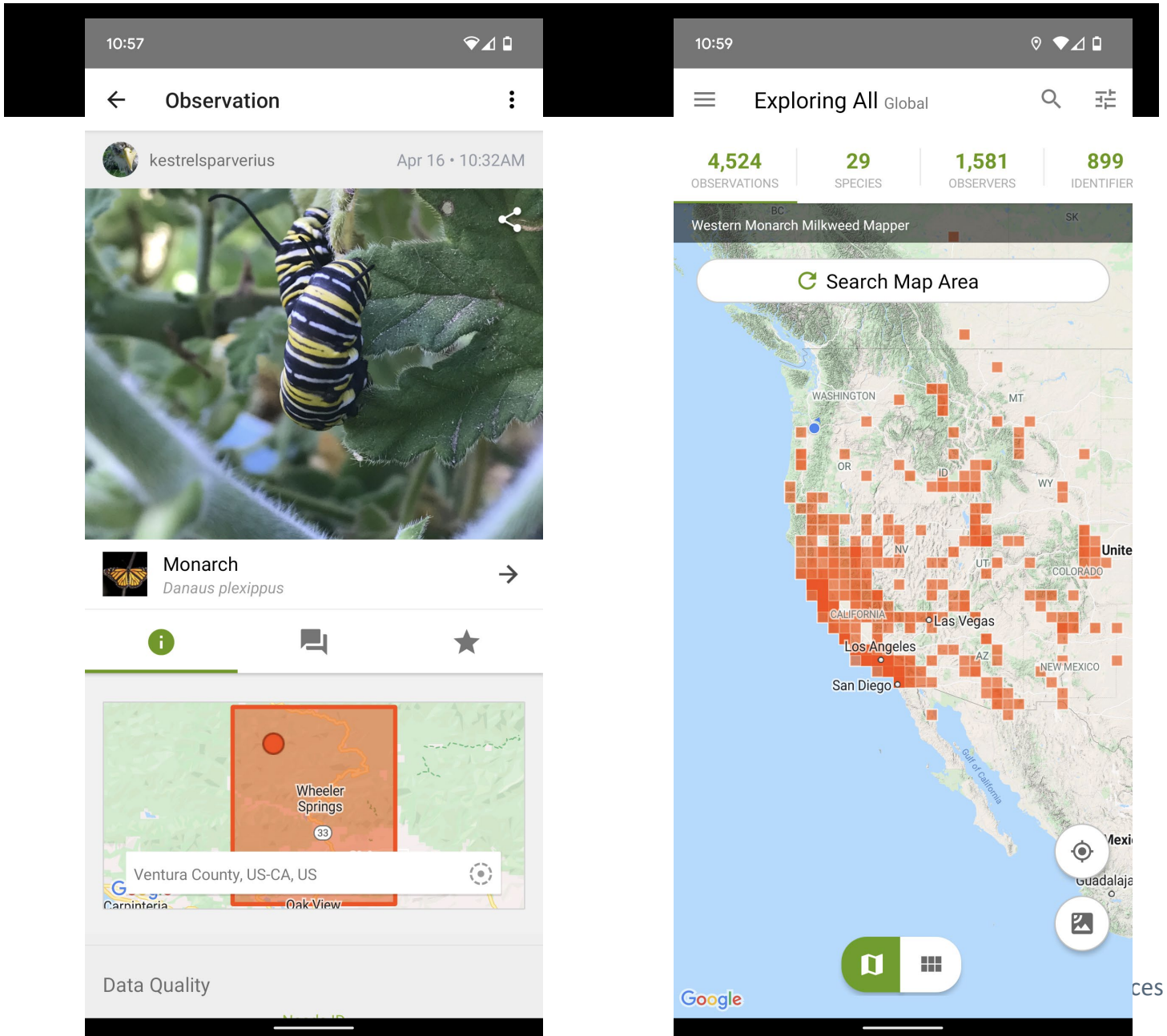
5. View your (and others') observations



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Bonus: report other butterflies

Recent study finds western butterflies have declined 1.6%/year over the last 40 years (Forister et al 2021)

eButterfly

Photos: (Left: checkered white, Middle: mourning cloak) Eric Laws; (Right: fiery skipper) Anne Stine/The Xerces Society

xerces.org

Thank you!

monarchs@xerces.org

Photo: Stephanie McKnight/The Xerces Society

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Bumble Bee Watching for Conservation

Western Pollinator Conservation Webinar

Rich Hatfield

Senior Conservation Biologist

IUCN Bumble Bee Specialist Group Red List Authority

rich.hatfield@xerces.org

xerces.org

Photo by R. Hatfield / the Xerces Society

Why do we need to monitor bumble bees?

Photo: Rich Hatfield, the Xerces Society

xerces.org

Baseline Datasets

Dr. Robbin Thorp's monitoring in Northern California and Southern Oregon provided a warning signal for bumble bees.

Without this monitoring, where would we be?

Photo: The Xerces Society/Rich Hatfield

xerces.org

Modeling requires accurate datasets

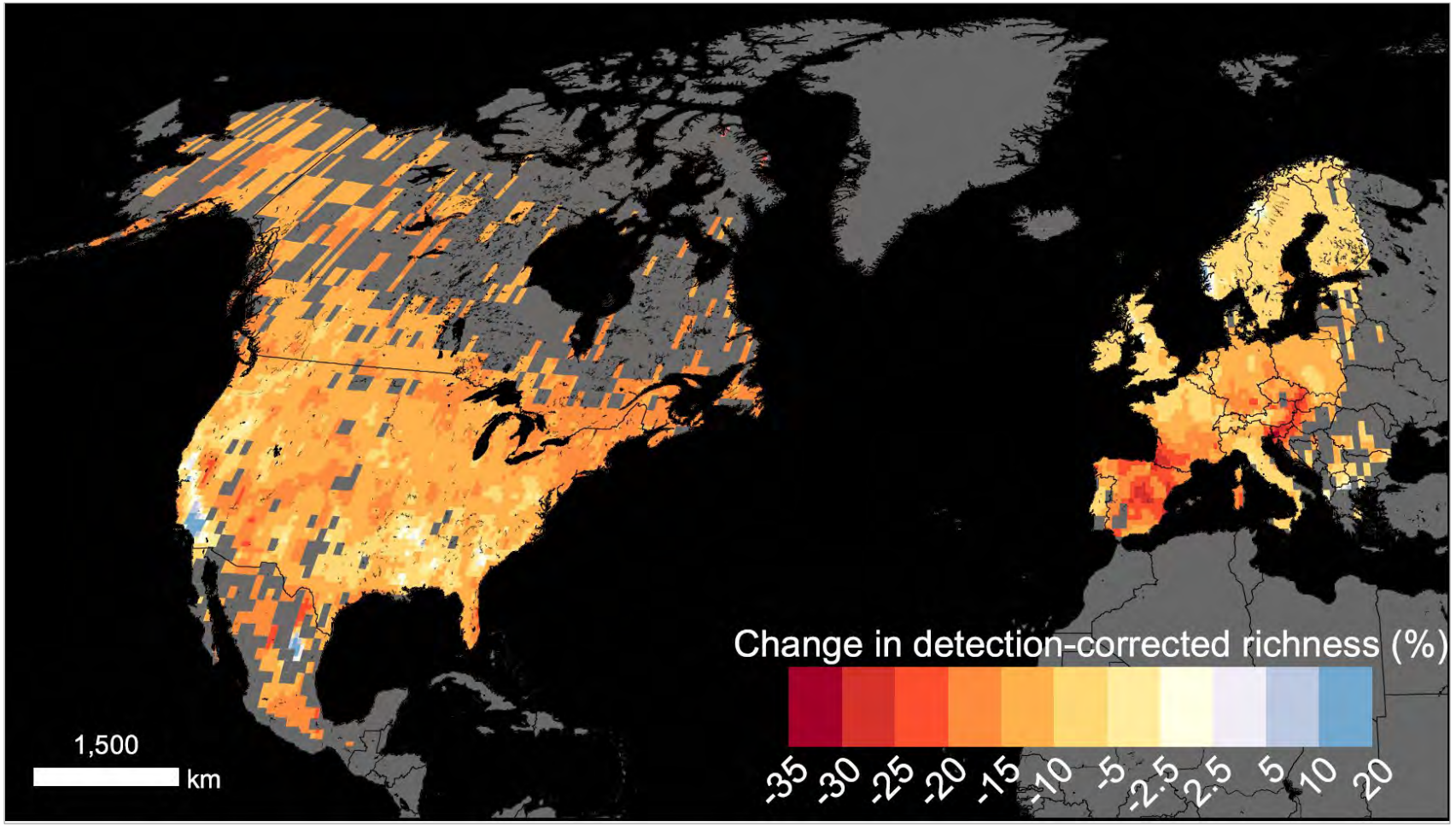

Figure: Soroye P, Newbold T, Kerr J. 2020. Climate change contributes to widespread declines among bumble bees across continents. Science **367**:685–688.

Conservation Action Depends on Data

- In order to respond to challenges facing species into the future, we need baseline data.
- Historic data was NOT collected for the purpose of assessing species' ranges.

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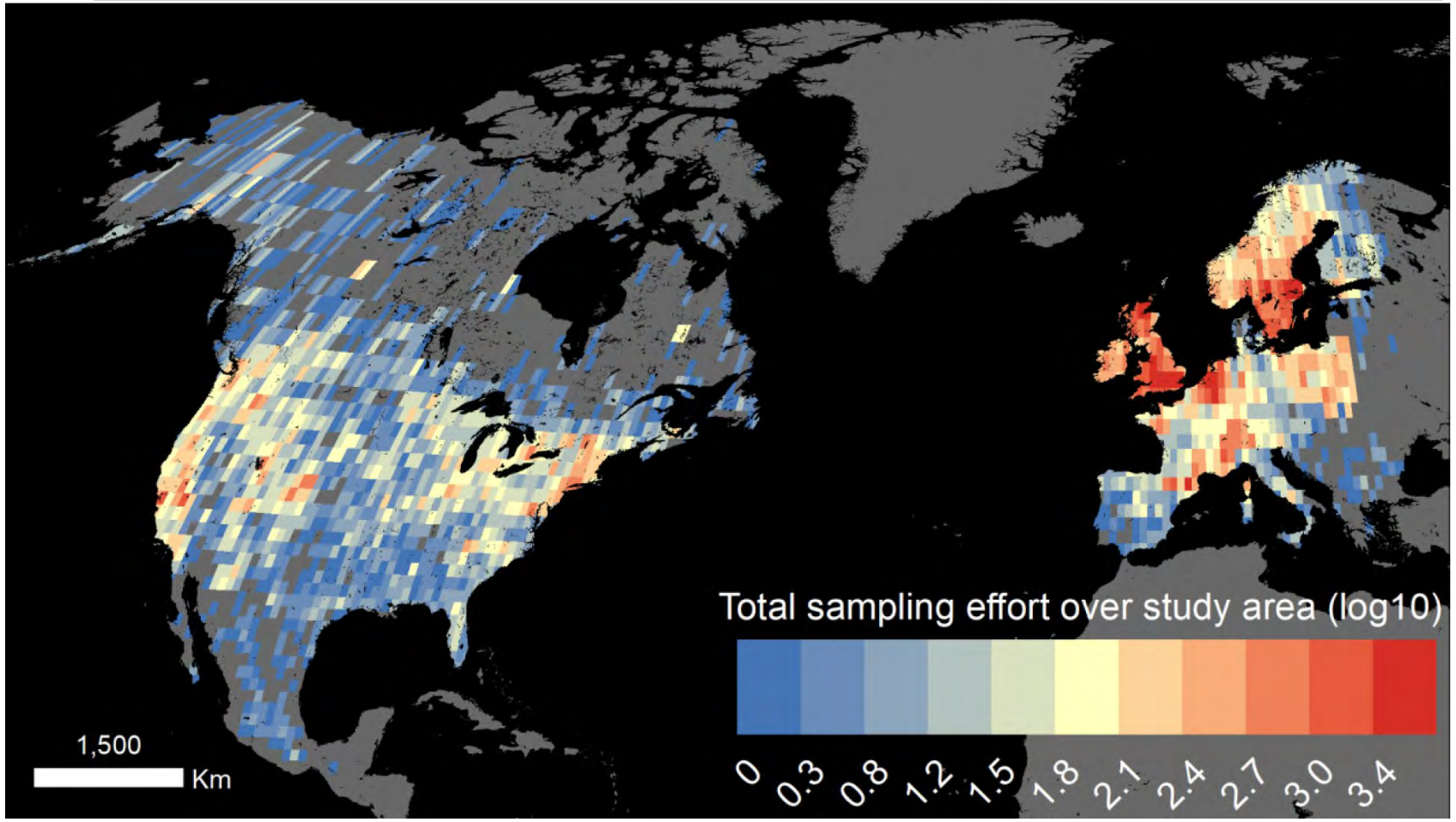
Modeling requires accurate datasets



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As do regulatory decisions…

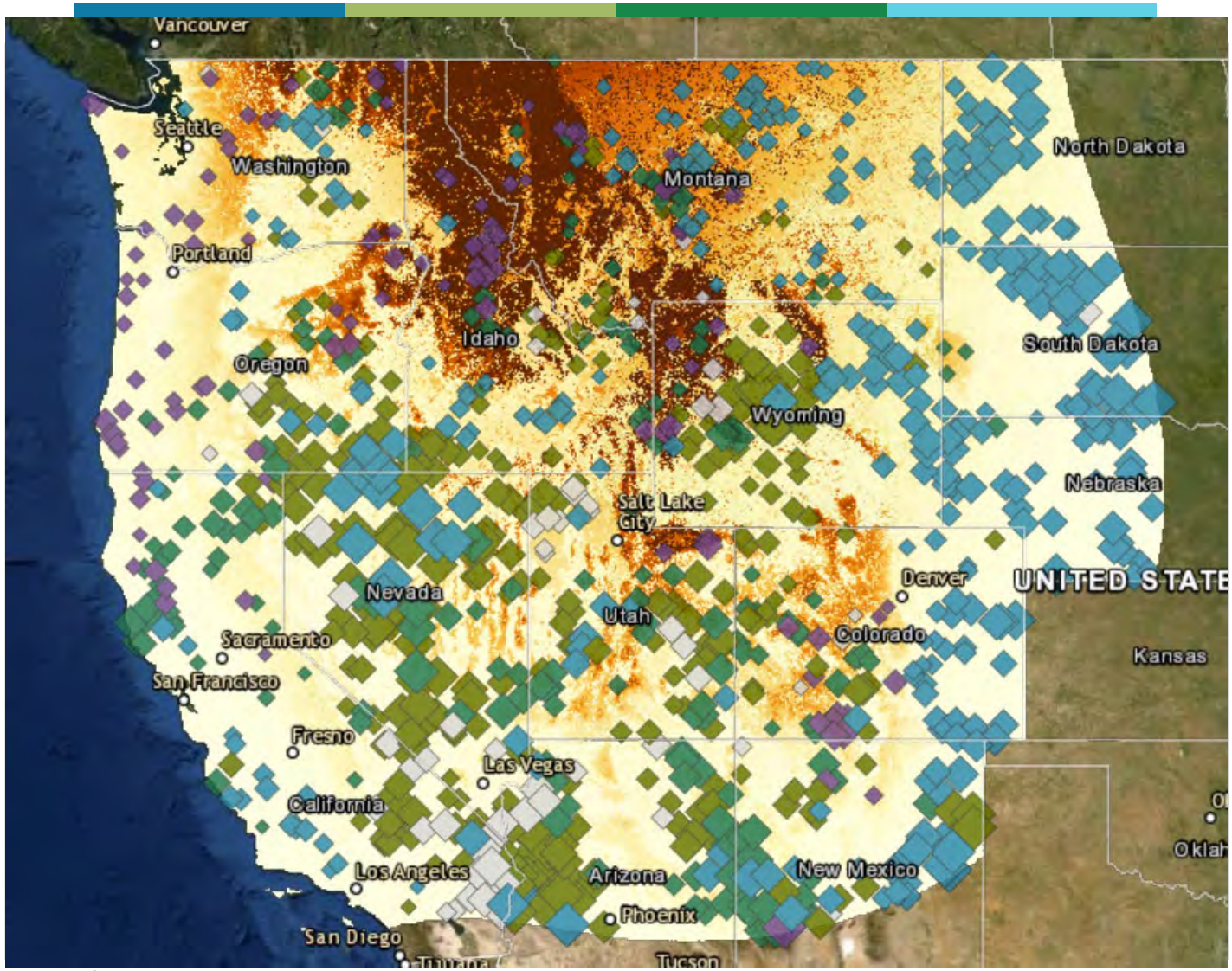

Figure from Graves et al. 2020: Western bumble bee: Declines in United States and range-wide information gaps

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…and conservation decisions/actions.

IUCN SSC BUMBLEBEE SPECIALIST GROUP

B. pensylvanicus	*B. morrisoni*	*B. fraternus*	*B. crotchii*	*B. suckleyi*
				
Vulnerable	Vulnerable	Endangered	Endangered	Critically Endangered

B. occidentalis	*B. franklini*	*B. terricola*	*B. affinis*	*B. variabilis*
				
Vulnerable	Critically Endangered	Vulnerable	Critically Endangered	Critically Endangered

Photos (clockwise from UL): Katie Lamke (Xerces), Rich Hatfield (Xerces), Ted Kyster, Gary Zamzow, Cory Sheffield, Sam Droege (USGS BIML), Jen Knutson, Leif Richardson (Xerces), Pete Schroeder, Pat Michaels.

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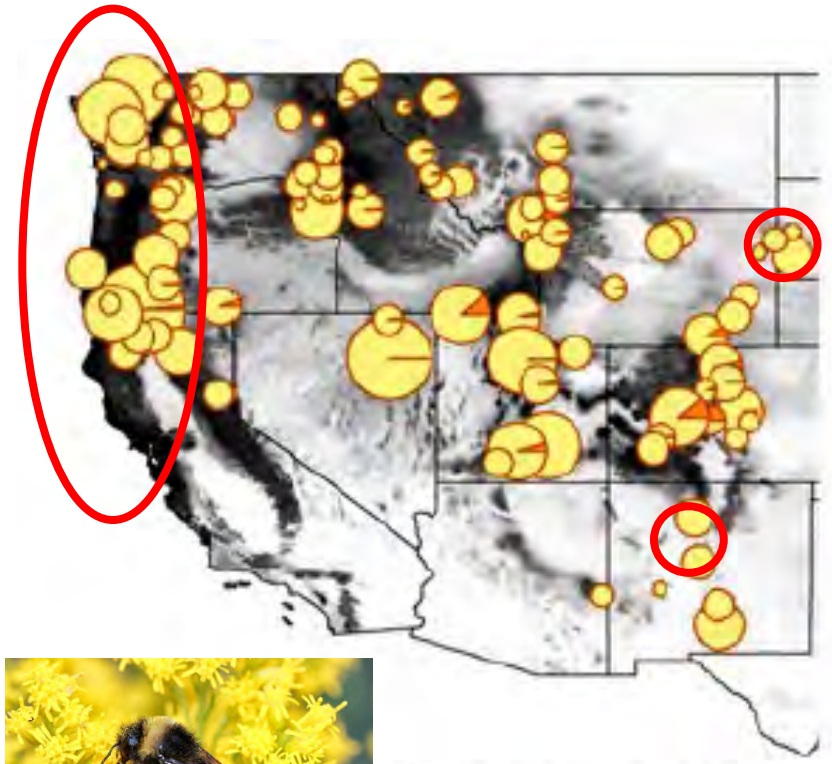
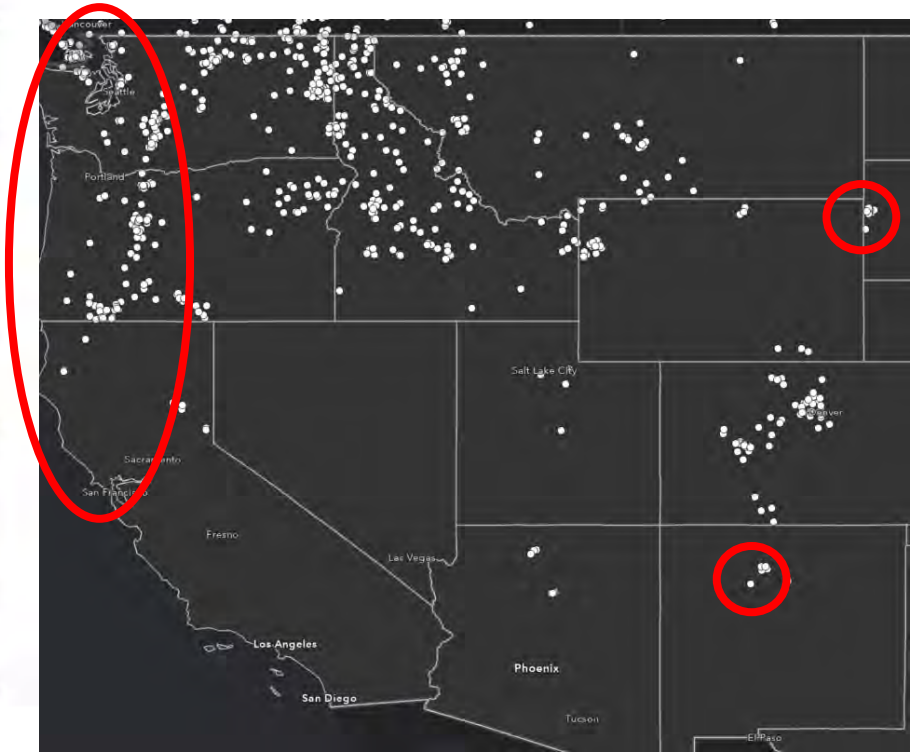
Community Science Works

The western bumble bee

Community science efforts have contributed many species records of *Bombus occidentalis*, greatly informing our current understanding of their distribution; especially along the west coast, and in NM.



B. occidentalis



Source: Cameron et al. 2011, www.BumbleBeeWatch.org; Photo: The Xerces Society/Rich Hatfield

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When to Look?

- Time your surveys to encounter the most species and most individuals.
- For most areas this is June – August
- Potentially earlier in more southerly/arid locations.
- Some species emerge earlier/later than others.

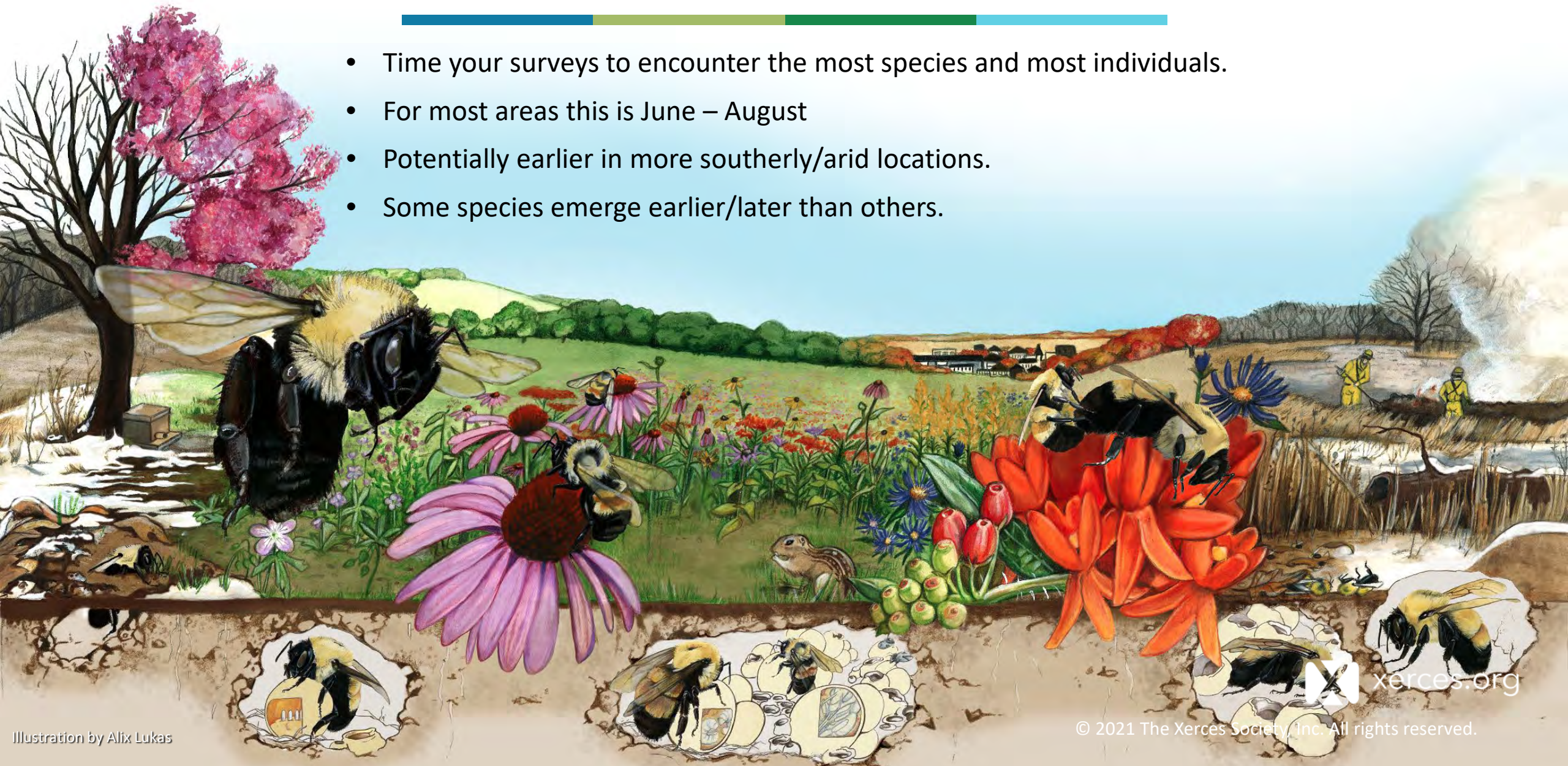

Illustration by Alix Lukas

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Photo by Rich Hatfield / the Xerces Society

How to Get Clear Photos?

1. For in-situ photos patience the answer.
2. For ID, the best thing to do is to capture the bee and follow a capture, chill and photograph protocol:
    1. Capture the bee using an insect net
    2. Put the bee into a clean jar
    3. Transfer the jar into a cooler with ice
    4. After 5-10 minutes the bee will be cold-anaesthetized
    5. Bees can safely stay in a cooler for up to 120 min.
    6. Take detailed photos (more details in the next slides)
    7. Release the bee into the shade w/i 100m of capture location
    8. Sterilize your survey equipment!

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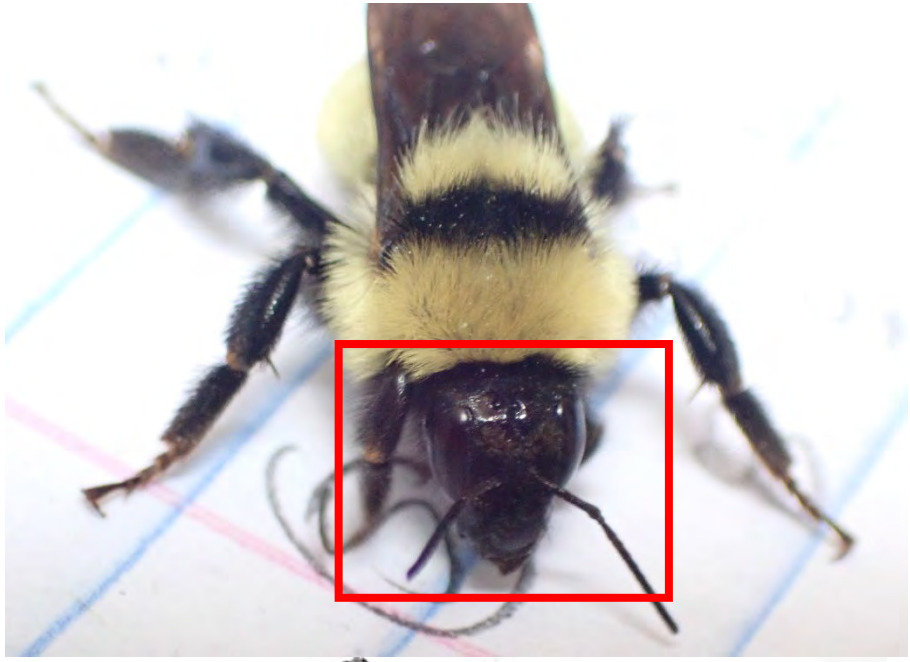
Photographing

Photos should include:

- Head:
  - ❑ Front of the face
  - ❑ Top of the head



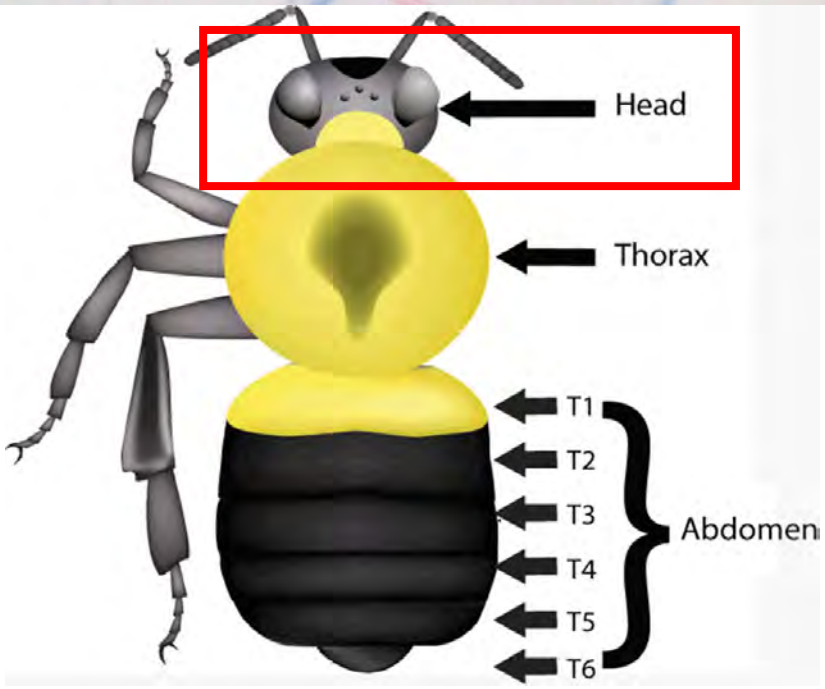
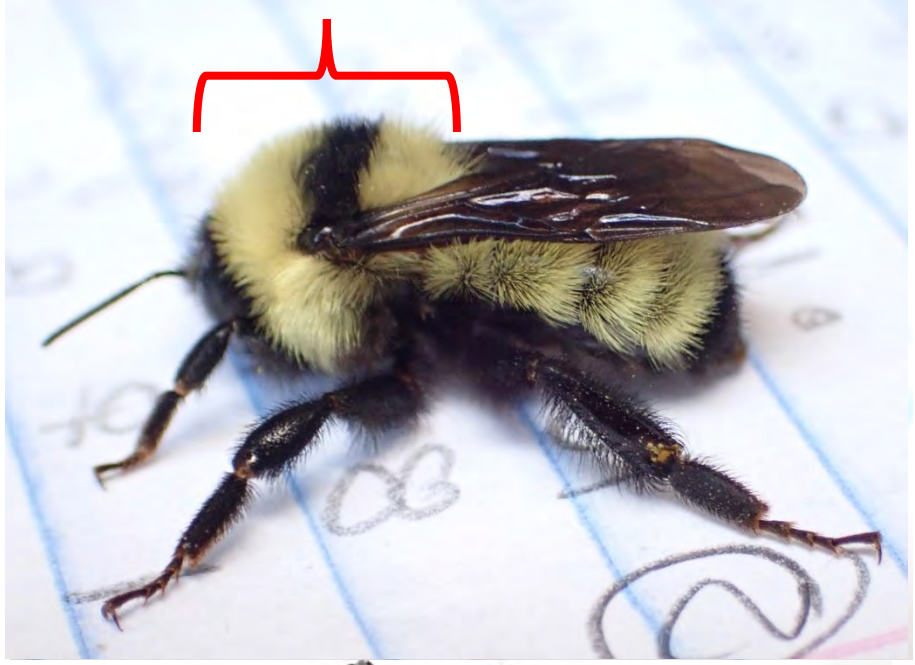


Illustration: Elaine Evans ; Photo: Xerces Society/Katie Lamke

Photographing

Photos should include:

- Head:
  - ❑ Front of the face
  - ❑ Top of the head
- Thorax:
  - ❑ Front of, between, and behind the wings
  - ❑ Side of thorax/under the wings
  - ❑ Is there a circle or stripe between the wings?
  - ❑ Is there a central black notch behind the wings?



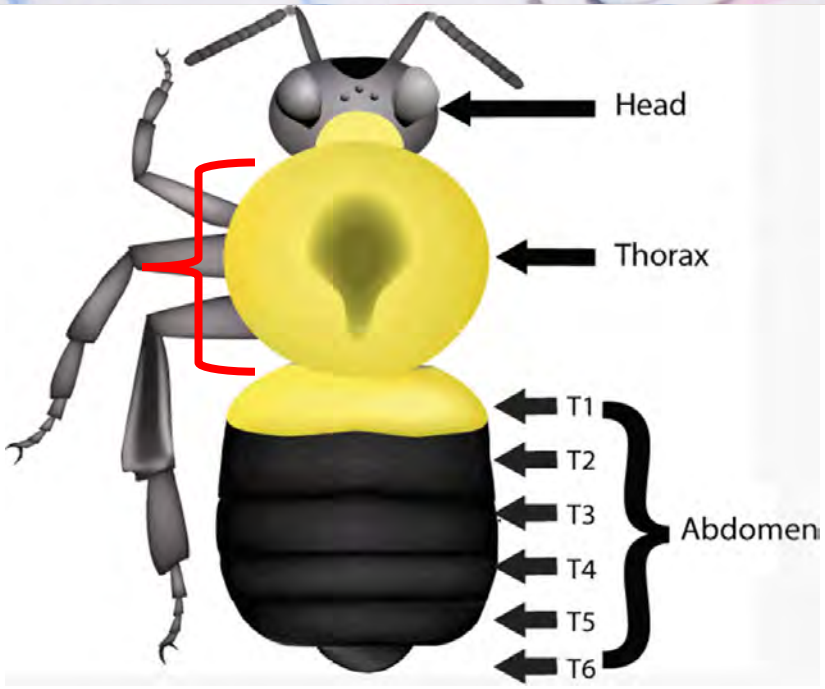


Illustration: Elaine Evans; Photo: Xerces Society/Katie Lamke

Photographing

Photos should include:

- Head:
  - ❑ Front of the face
  - ❑ Top of the head
- Thorax:
  - ❑ Front of, between, and behind the wings
  - ❑ Side of thorax/under the wings
  - ❑ Is there a circle or stripe between the wings?
  - ❑ Is there a central black notch behind the wings?
- Abdomen:
  - ❑ What color are T1-T6?
  - ❑ Does the color cover the entire tergite or is it crescent-shaped? Is there a gap of color in the middle or on the edges of one or more tergites?
  - ❑ Try to make sure the wings do not obscure the tergites.

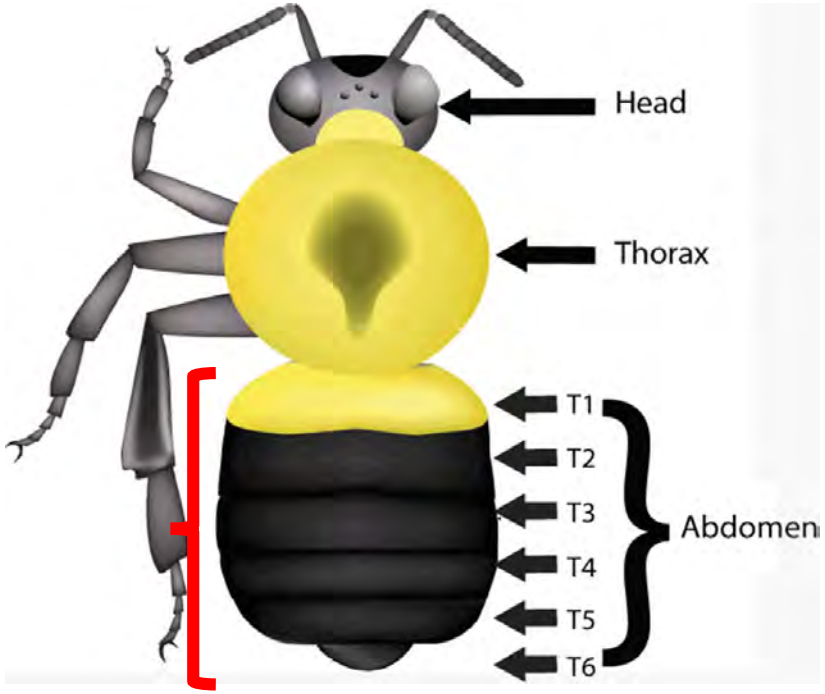


Illustration: Elaine Evans; Photo: Xerces Society/Katie Lamke

Check Your Photos!




Check to make sure your photos are clear and well lit!

xerces.org

Check Your Photos!

It’s okay to have your fingers in the photos if it helps get a better image!

xerces.org

iNaturalist

CALIFORNIA ACADEMY OF SCIENCES

NATIONAL GEOGRAPHIC

Where to Share?

Whatever you are using is the best platform to use! Ultimately the data will end up in the same place.

BUT…

If you are looking for a new platform, we recommend Bumble Bee Watch for two reasons:

1. It is easier to extract exact locations of imperiled species (they are generalized in iNaturalist).

2. Expert-based verification system vs community sourced (this has gotten much better recently thanks to Dr. John Ascher and experts active on iNaturalist…but that may not last)

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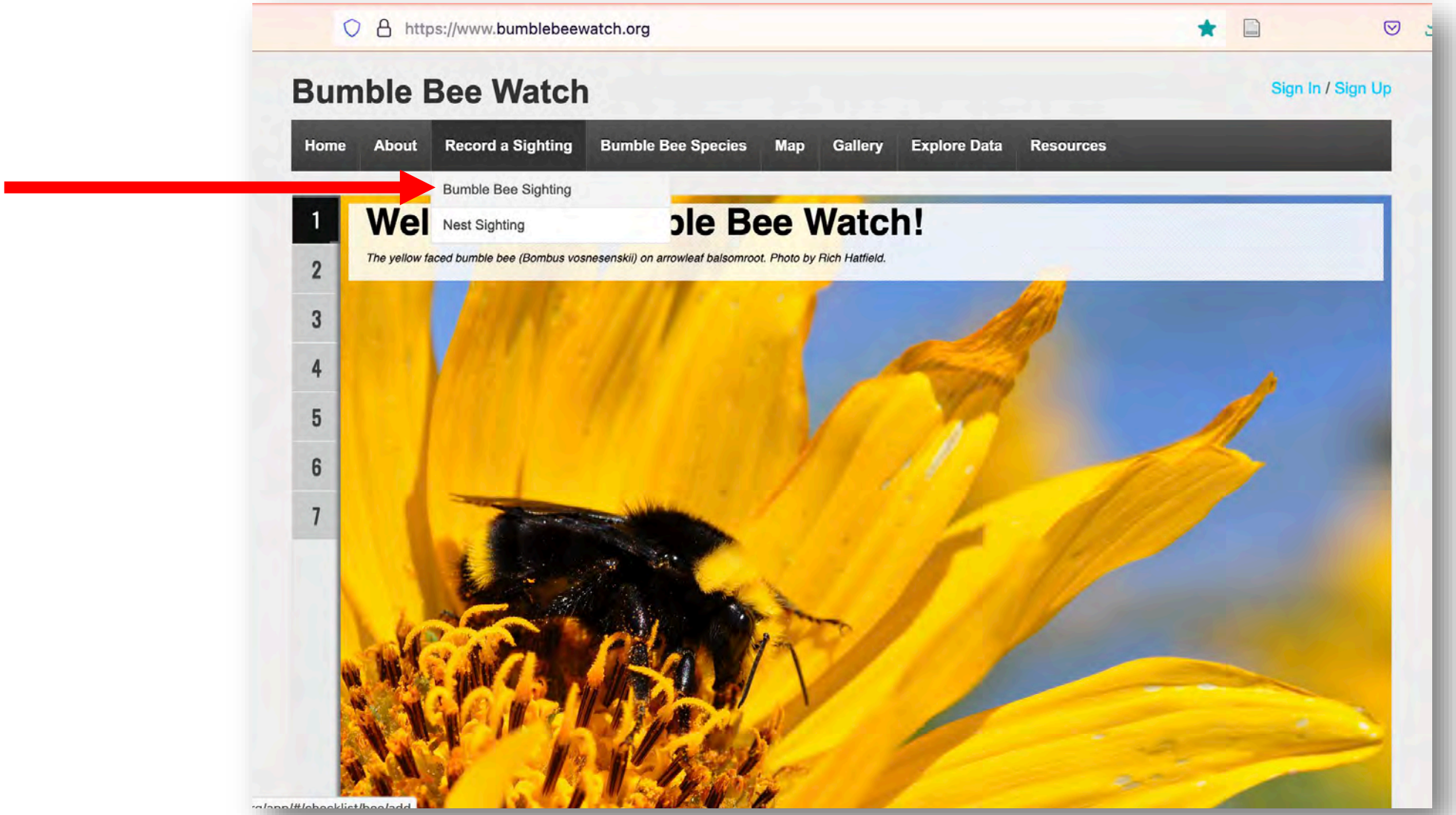
Bumble Bee Watch

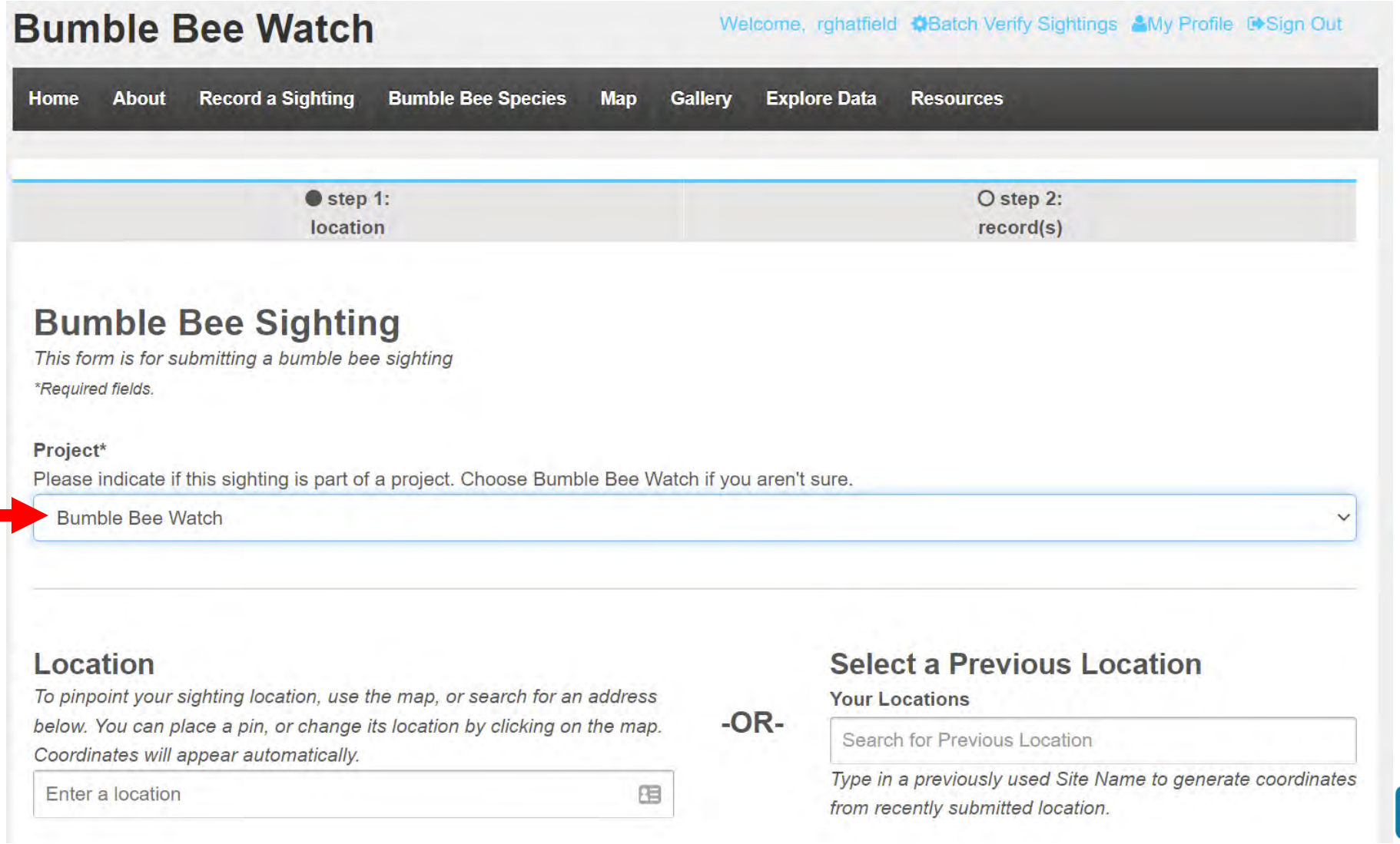
xerces.org

Bumble Bee Watch



xerces.org

Step 1: Choose Your Project



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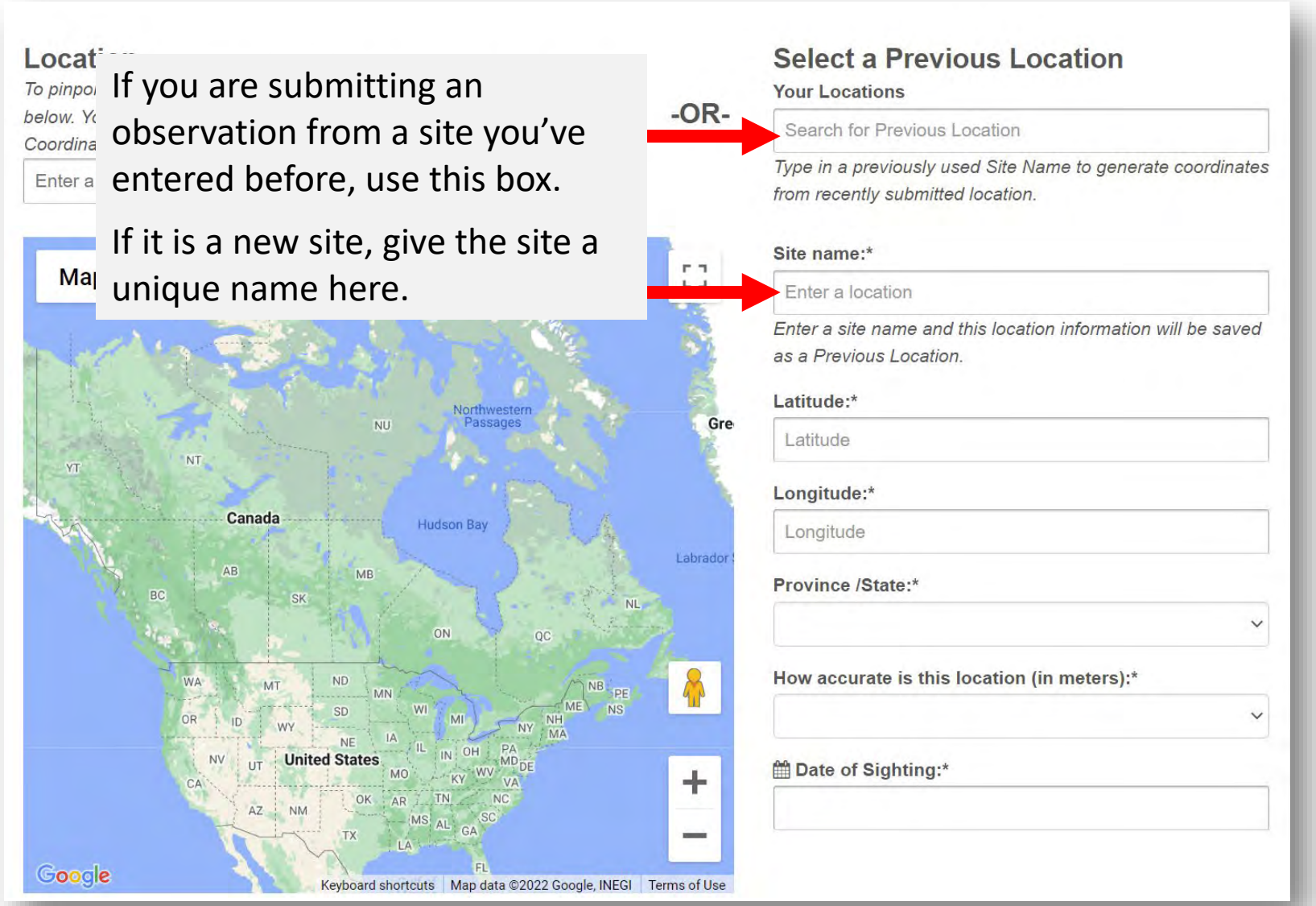
Step 2: Enter the Location/Site



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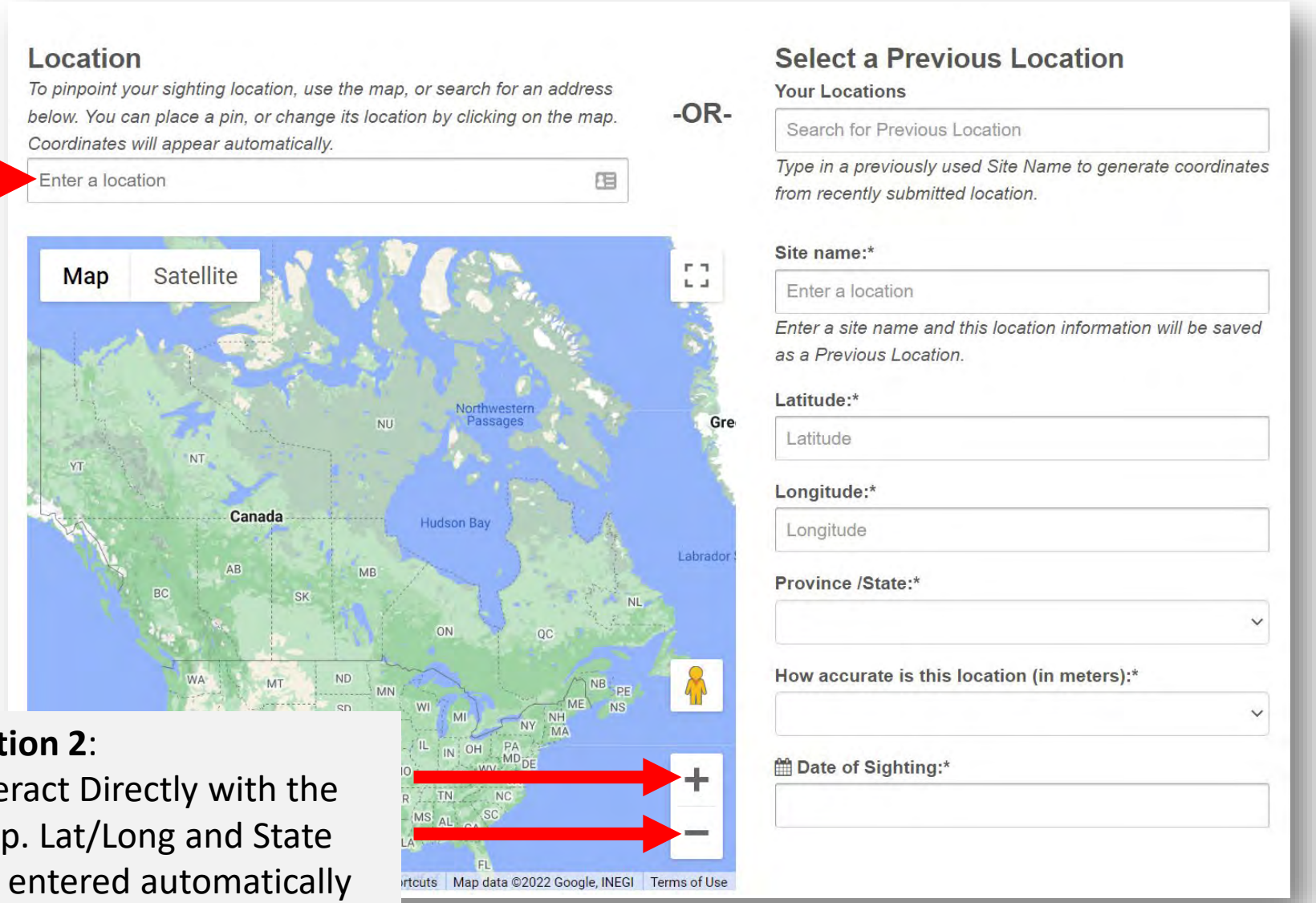
Step 2: Enter the Location/Site

Option 1: Use a Google Search to find the Location



Option 2: Interact Directly with the Map. Lat/Long and State are entered automatically

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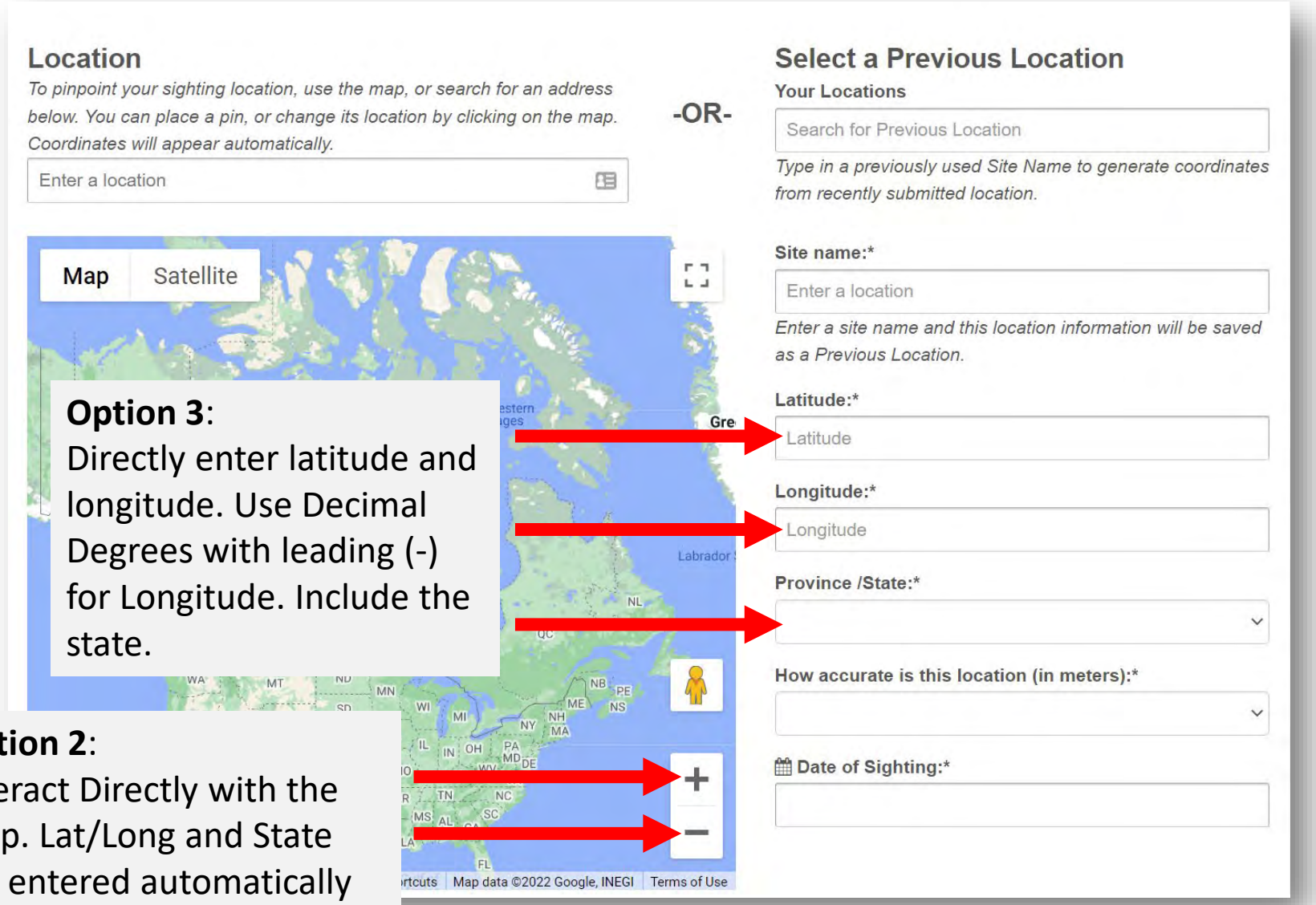
Step 2: Enter the Location/Site



Option 3:
Directly enter latitude and longitude. Use Decimal Degrees with leading (-) for Longitude. Include the state.

Option 2:
Interact Directly with the Map. Lat/Long and State are entered automatically

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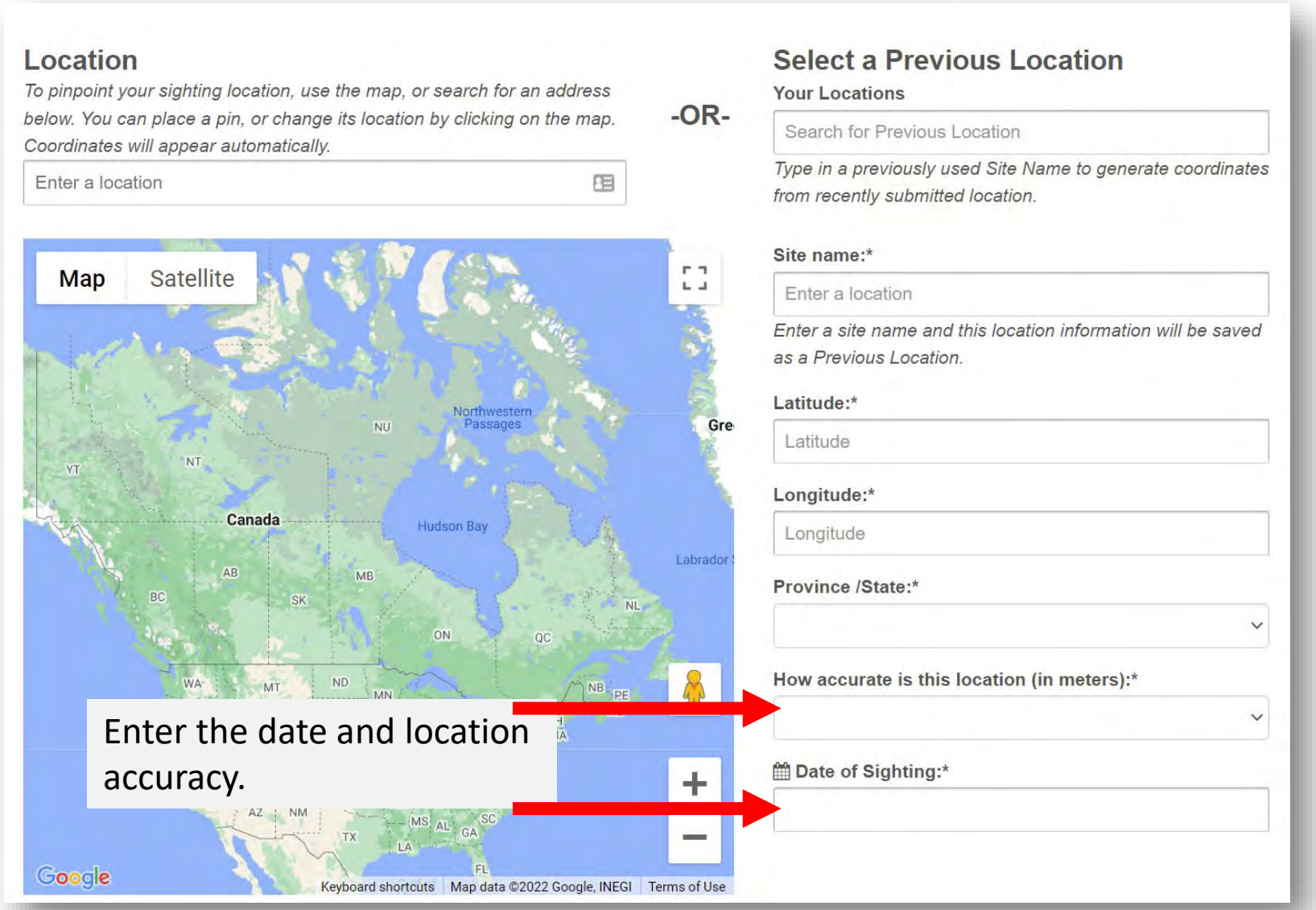
Step 2: Enter the Location/Site



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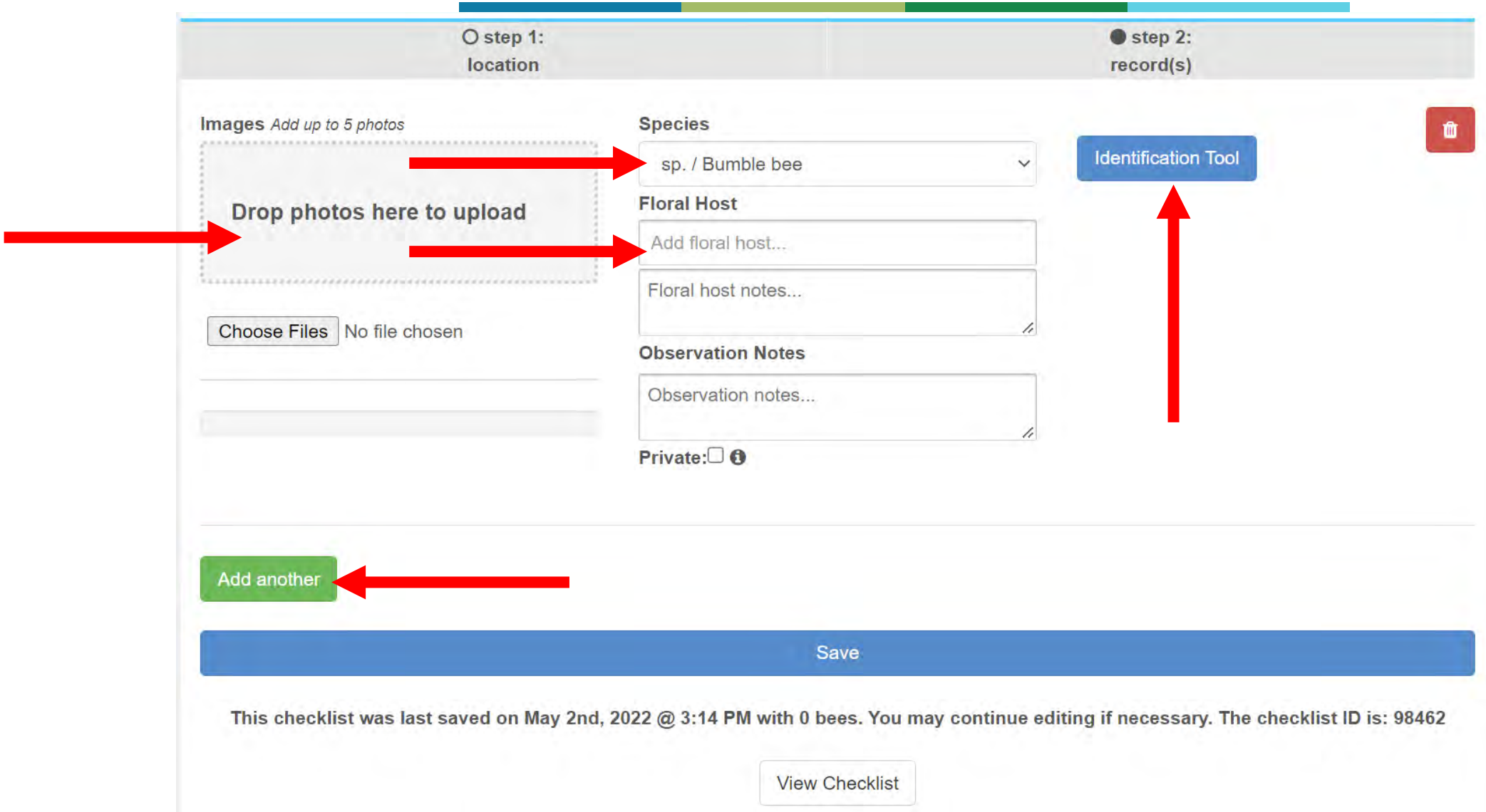
Step 3: Upload Photos



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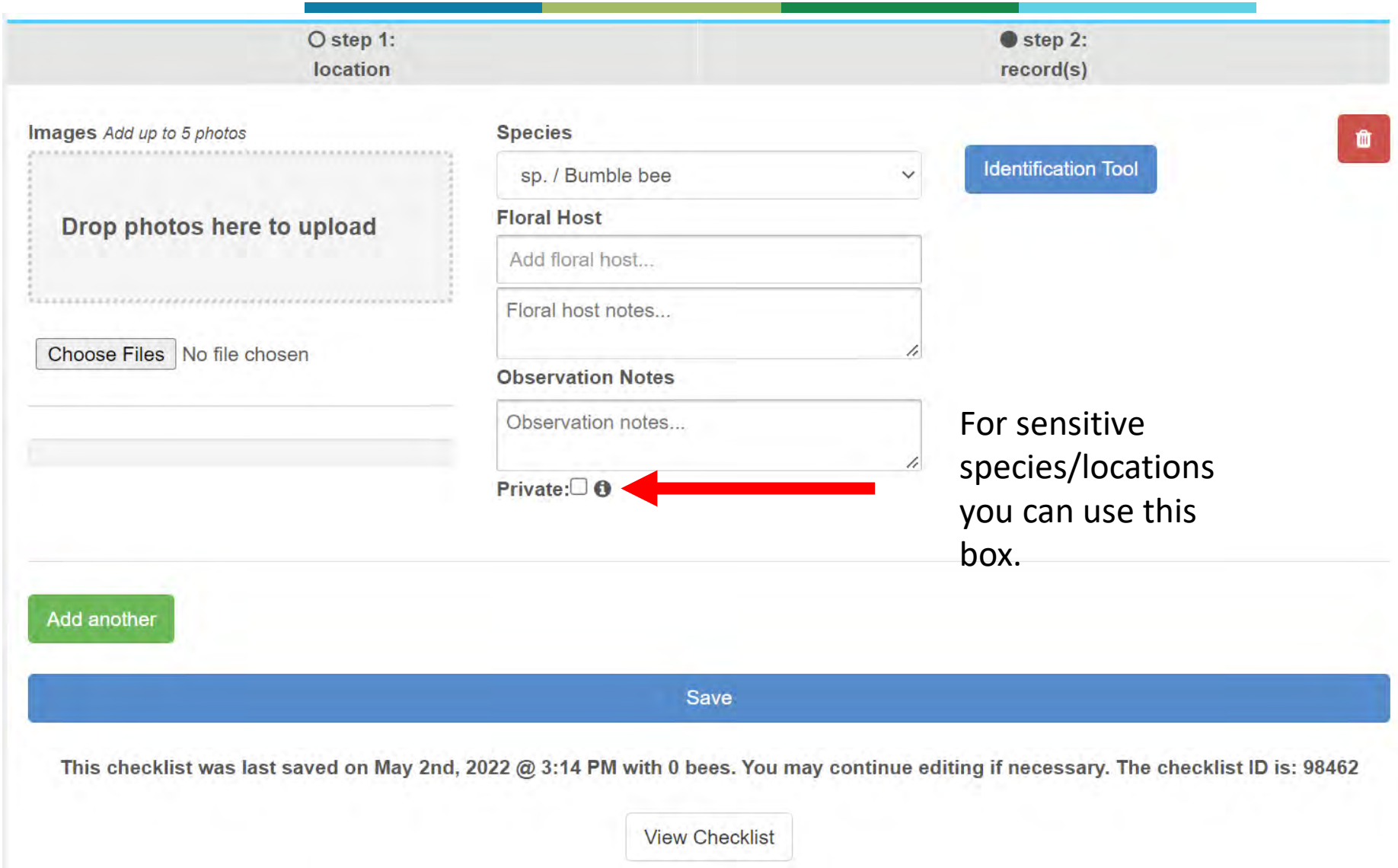
Step 3: Upload Photos



For sensitive species/locations you can use this box.

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Bumble Bee Watch ID Help

***Bombus occidentalis* (Western bumble bee)**

Edit: Checklist | Species List

Photo by Kevin Schafer
Creative Commons License: Attribution + Noncommercial (BY-NC)

Predict Species

2021-08-25
by Kevin Schafer

Sighting Activity

Changes by Kevin Schafer:
- Species set to B. occidentalis / Western bumble bee

Changes by Rich Hatfield:
- Gender changed from Not Determined to Male

Changes by Rich Hatfield:
- Sighting status changed from Pending to Verified at 2021-10-06 20:15

xerces.org

Photos: Rich Hatfield/Xerces

Share all observations!

1. Because we lack population level data for bumble bees, we often use relative abundance (or similar) as a proxy when assessing status.
2. Sharing only rare species can make them look artificially rare in these kinds of analyses.
3. Tracking all species also helps us have the data for early warning signs.

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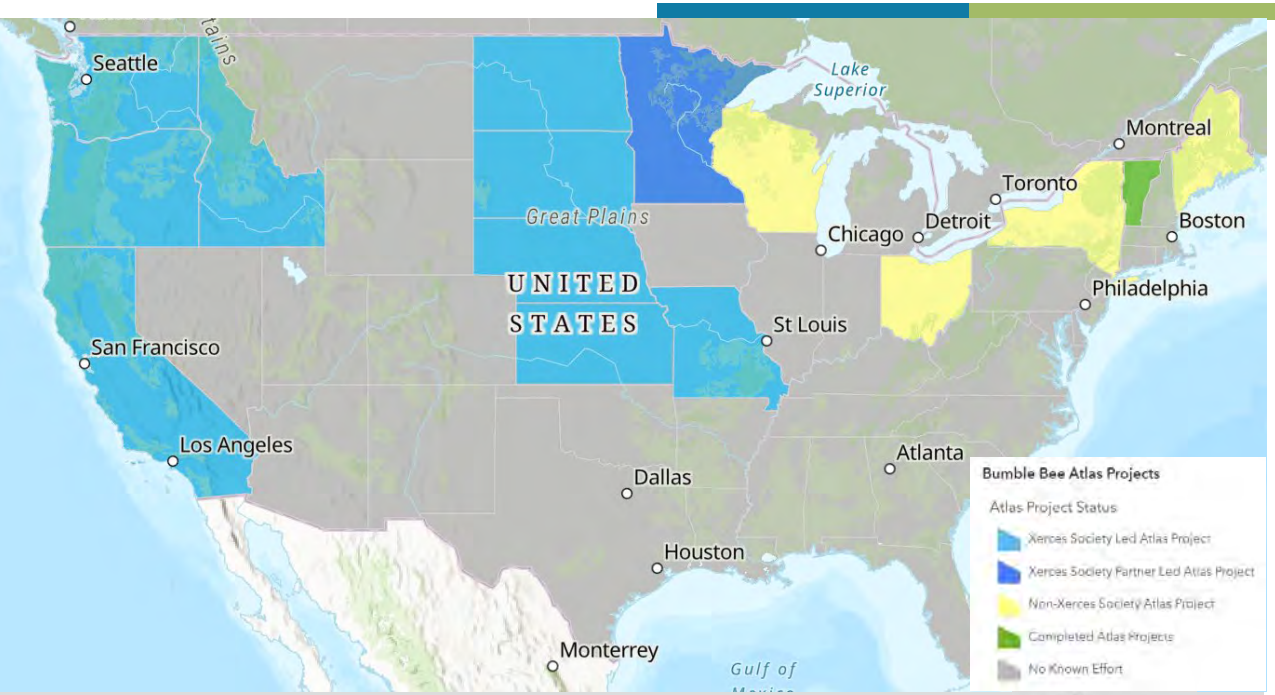
Bumble Bee Atlas Projects: BumbleBeeAtlas.org



PACIFIC NORTHWEST BUMBLE BEE ATLAS

GREAT PLAINS BUMBLE BEE ATLAS

MINNESOTA BUMBLE BEE ATLAS

CALIFORNIA BUMBLE BEE ATLAS

NEBRASKA BUMBLE BEE ATLAS
NEBUMBLEBEEATLAS.ORG

MISSOURI BUMBLE BEE ATLAS

Collaborative efforts to track and conserve bumble bees

Washington Department of FISH and WILDLIFE

IDAHO FISH & GAME

OREGON Fish & Wildlife

THE OREGON BEE PROJECT

XERCES SOCIETY for Invertebrate Conservation

PHEASANTS forever

QUAIL forever

College of Agriculture, Food & Natural Resources
University of Missouri

UNIVERSITY OF MINNESOTA EXTENSION
MINNESOTA MASTER NATURALIST

UNIVERSITY OF Nebraska Lincoln

Supported with funding from:

Oregon Conservation & Recreation Lands

Forest Service U.S. Department of Agriculture

U.S. Department of the Interior Bureau of Land Management

Wildlife & Sport Fish Restoration

FFAR

Additional support is provided by The Hind Foundation, The New-Land Foundation, Inc., The Edward Gorey Charitable Trust, and Xerces Society Members

The Nebraska Environmental Trust
"preserving NATURAL NEBRASKA™ for future generations"

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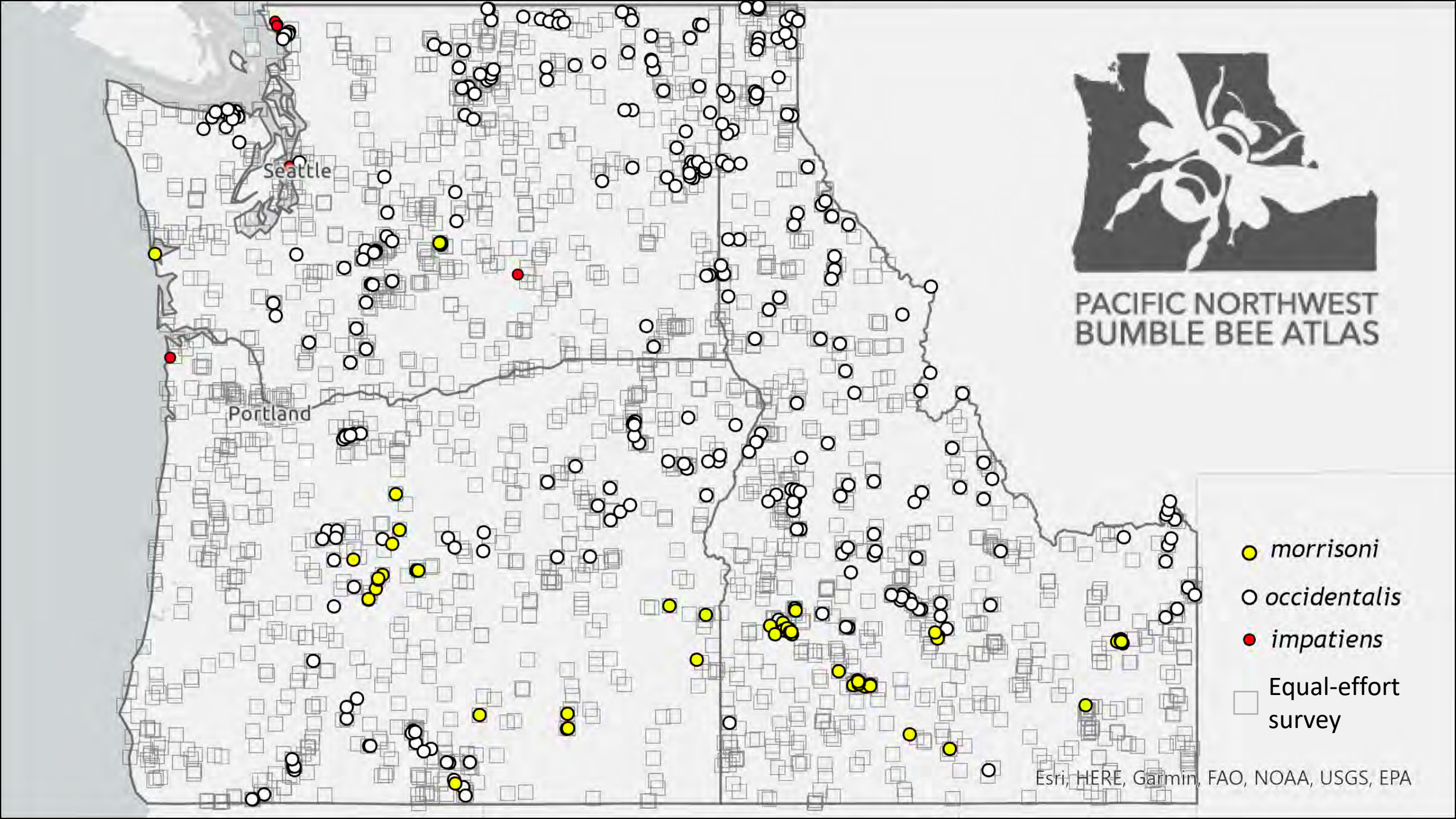
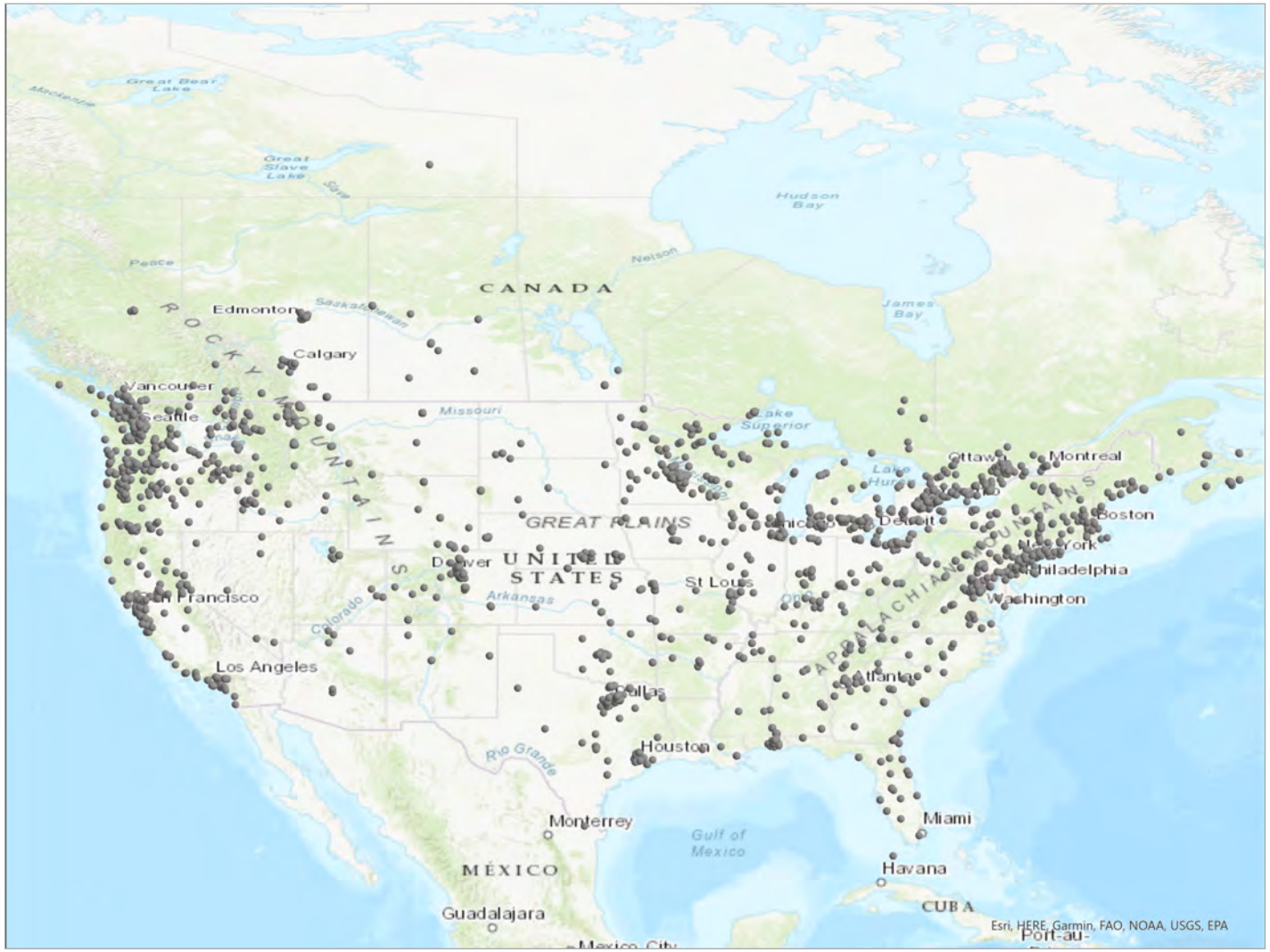

Seattle
Portland
PACIFIC NORTHWEST
BUMBLE BEE ATLAS
morrisoni
occidentalis
impatiens
Equal-effort survey
Esri, HERE, Garmin, FAO, NOAA, USGS, EPA

Changing the Pattern of Bumble Bee Observations



Data: BubmleBeeWatch.org

xerces.org

Thank you!
Rich.Hatfield@xerces.org

Reach out with questions:

1. Amanda Barth – abarth@utah.gov
2. Cat Darst – cat_darst@fws.gov
3. Jeff Everett – jeff_everett@fws.gov
4. Emma Pelton – emma.pelton@xerces.org
5. Rich Hatfield – rich.hatfield@xerces.org
6. Vicki Finn – vicki_finn@fws.gov

Resources:

1. iNaturalist – https://www.inaturalist.org/
2. Bumble Bee Watch - https://www.bumblebeewatch.org/
3. WAFWA Monarch Plan – https://wafwa.org/wpdm-package/western-monarch-butterfly-conservation-plan-2019-2069/

The recording to this webinar will be posted at the webpage below:

https://wafwa.org/committees-working-groups/monarch-working-group/