## Great Plains Bumble Bee Atlas Update





#### **Slides presented by Mace Vaughan**

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### Xerces Bumble Bee Atlas Projects



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NORTH CAROLINA

RESOURCES COMMISSION



### Community Science

### **Establish Baseline datasets**

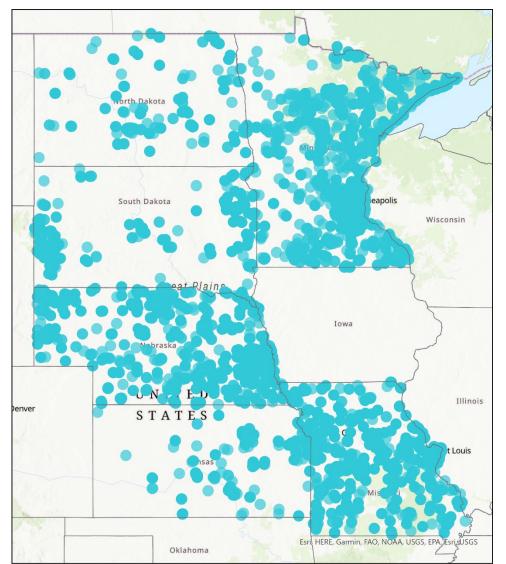
- Monitor population changes
- Monitor distribution of species
- Fill knowledge gaps regarding habitat associations

# Form evidence-based recommendations



### Effort to Date

#### 31,000 Observations, 27 Species



Launched:

NE: 2019

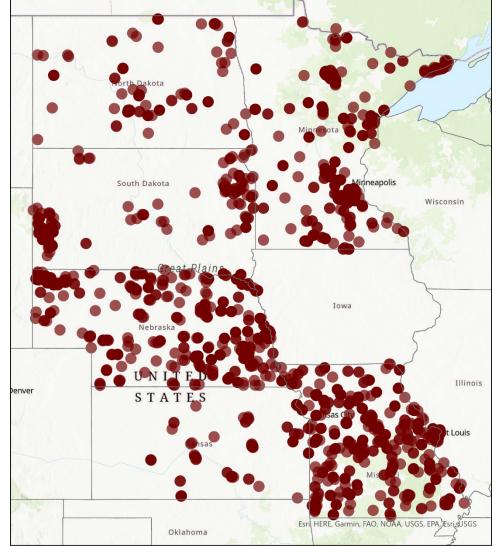
MO: 2020

MN: 2020

ND: 2022

SD: 2022

KS: 2022



1,800+ Surveys by 400 People

#### **SGCN Species** American bumble bee Half-black bumble bee South Dakota Rusty patch bumble bee Southern Plains bumble bee Western bumble bee Yellow-banded bumble bee Iowa Survey Illinois BUMBLE BEE Oklahoma Esri, HERE, Garmin, FAO, NOAA, USGS, EPA Oklahoma City Map: Xerces Society, February 2023 Data: Bumble Bee Watch 2018-2022 Memphis

### SGCNs (2018-2022)

#### **Species of Greatest Conservation Need**

- 1. Rusty patch (*B. affinis*) Federally endangered as of 2017
- 2. Western (*B. occidentalis*) Petitioned 2015; listed in NE SWAP
- 3. American (B. pensylvanicus) Petitioned 2021
- **4. Southern Plains (***B. fraternus***)** Petitioned 2022; listed in NE and MO SWAP
- **5. Yellow-banded (***B. terricola***)** Petitioned, Not Warranted 2019
- **6.** Half-black (*B. vagans*) Listed in MO SWAP (assumed extirpated prior to Atlas)

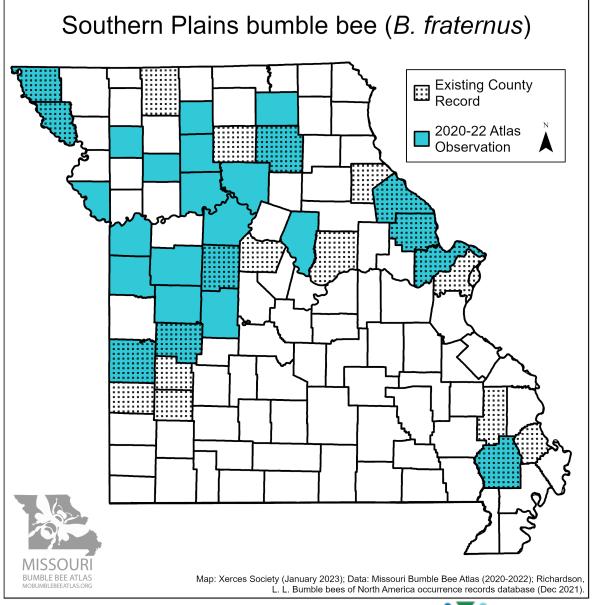


### New County Records

Southern Plains bumble bee (B. fraternus)

- 67 observations by 24 people
- 15 new county records
  - 5 in 2020
  - 5 in 2021
  - 5 in 2022







### **Native Plants**

### In Missouri, 80% of visited plants were native!

#### Southern Plains Bumble Bee:

- 67 individuals documented
- All recorded on a native plant
- Only found where a diversity of native plants were present
- Partridge pea, Gray-headed coneflower, Field thistle



### **Native Plants**

### In Missouri, 80% of visited plants were native!

#### American Bumble Bee:

- 481 individuals documented
- 78% recorded on a native plant
  - 60% of non-natives were red clover
- ~100% found where at least 3 other native plant species in bloom
- 24% of individuals were observed on thistle



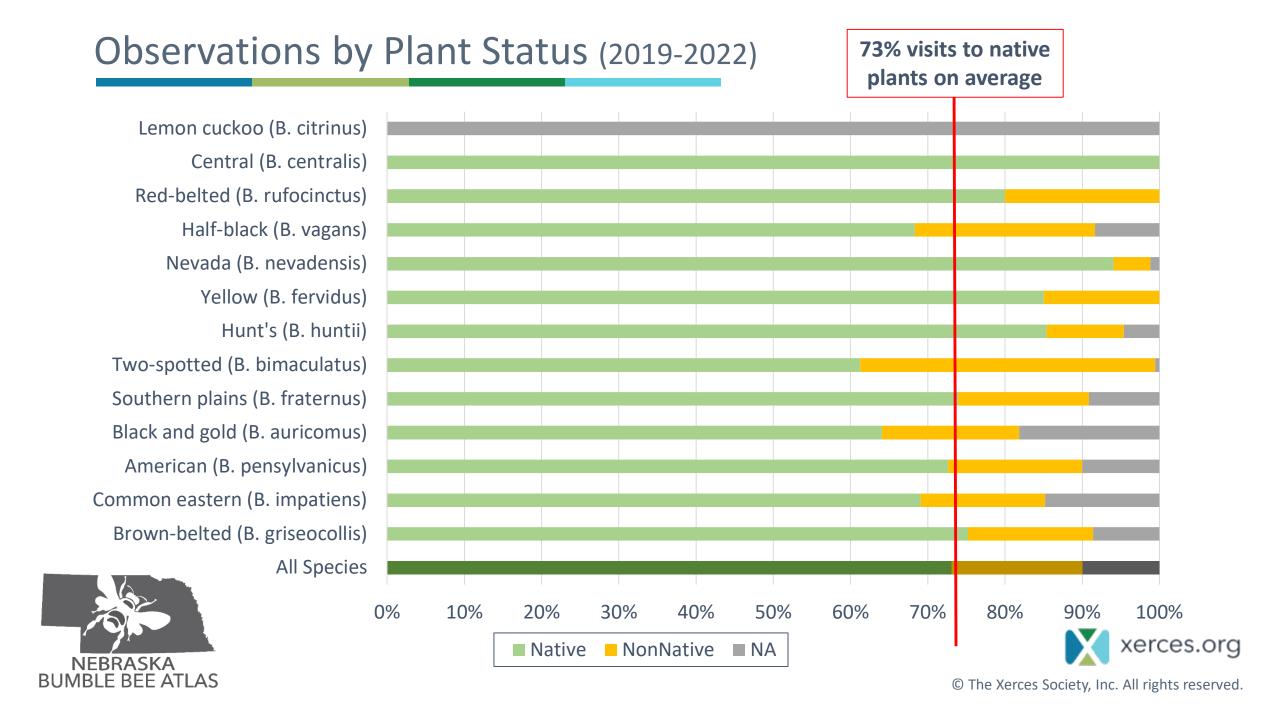
### **Native Plants**

## In Missouri, 80% of visited plants were native!

#### Black and Gold Bumble Bee:

- 228 individuals documented
- 89% recorded on a native plant
- 100% found where at least 3 other native plant species in bloom
- Bee Balm, Wild Indigo, Field Thistle





### Data to Conservation Tools

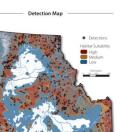


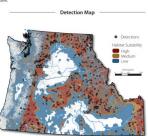


EXCOMMING ON MORE USING 2018 OF AN ADDRESS AND ASSESSED OF A DESCRIPTION O Batholith Ecoregions. Despite its prevalence, B. bifarius was largely absent from the Puget Lowland during the survey, an ecoregion with numerous historic records. Surveyors located











#### Habitat Management for Bumble Bees in Nebraska



#### Habitat Management for Bumble Bees in the Pacific Northwest



#### Introduction

many plant families, and their long tongues and unique ability to fly in inclement weather make them significant contributors to the global agricultural industry. Unfortunately, there have been alarming reports of bumble bee population declines from multiple continents. multiple continents.

The causes of these declines are not fully understood,

but the likely contributing factors are loss and fragmentation of habitat, pesticide use, climate change, improper livestock

Highlighting the need for conservation, several Bombus species have recently been identified in State Wildlife Action (SGCN). Washington and Idaho's SWAPs include the Western effectively for bumble bees

Bamble bese (Bombe upp., Aydace) secure throughout much of the confinential); Morrison (R, morrison); and Sackley Carleso of the world, particularly in the Northern Hemisphere, and R and R and R and R and R and R are the pollitation throughout their range. They are essential below R and R are the pollitation and ratural areas a pollitation to the health of wildlines and natural areas a pollitation to included as R and R and R and R are the pollitation R and R are the pollitation R and R are the R and R are the R and R are the R are the R and R are the R and R are the R and R are the R are the R and R are the R and R are the R are the R and R are the R are the R and R are the R are the R and R are the R are the R and R are the R and R are the R are the R and R are the R and R are the R are the R and R are the R and R are the R and R are the R are the R and R are the R and R are the R are the R are the R and R are the R are the R and R

Regardless of the ultimate cause of bumble bee declines, surviving populations require high quality habitat to persist. Protecting, restoring, enhancing, and creating new bumble bee habitat is the best way to conserve populations of these Historically, an incomplete picture of the habitat needs

and status of bumble bees has been a barrier to effective conservation and land management. To address this need, construince man the many paness and the particular transfer. If the particular transfer is the Pacific Northers Bumble Bee Atlas (PNWBBA) was purhogen—the latter most significantly through amplification and distribution by managed be species, including honey bees and commercial bumble bees. While each of these factors understanding bumble bee populations, their habitat needs, is a significant threat alone, it is likely the combination of two
or more of these factors working in synergy has led to
the significant declines observed in North America.

Here of the combination of two
the goal of significant declines observed in North America.

Conservation efforts. Contained in this documents specific lessons learned from the PNWBBA project as well as a synthesis of our understanding of general bumble bee needs





