Supporting Bee Conservation in Alaska through Community Science

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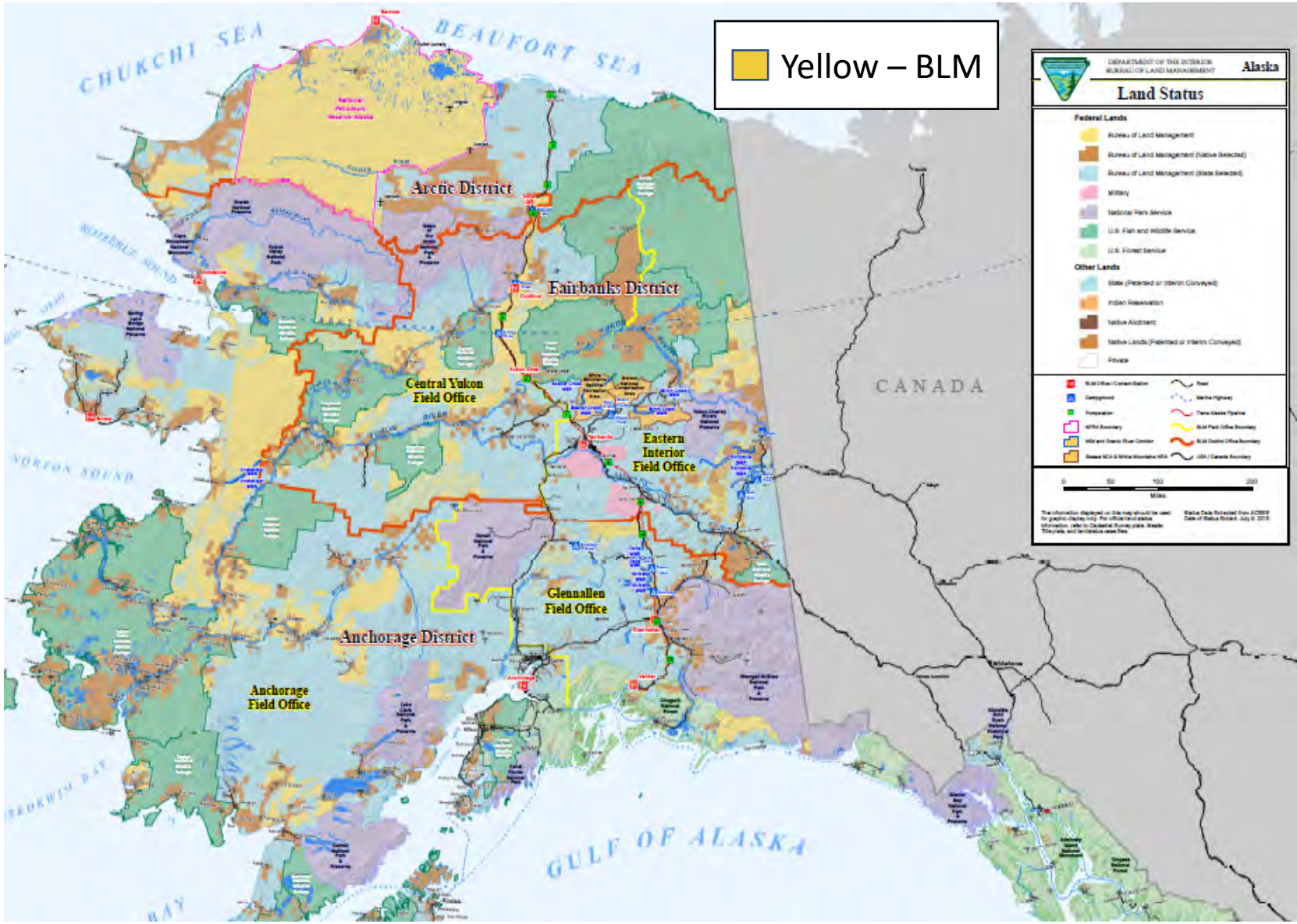
Jenell Larsen Tempel – Endangered Species Biologist, Alaska Department of Fish and Game

Bureau of Land Management (BLM)

- BLM's mission is to *sustain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations.*

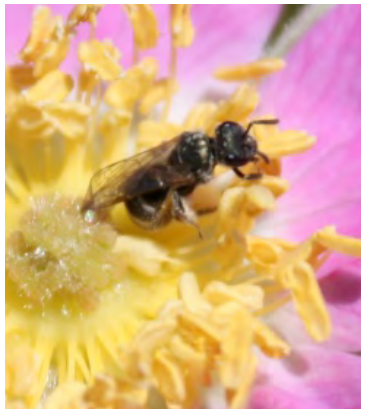
- The BLM manages 10% of surface land and ~30% of the minerals in the US.
  - In Alaska, 70 million acres of forests, mountains, wetlands, glaciers, lakes, rivers, and tundra.

- Department Of Interior Priorities:
  - *Working to conserve at least 30% each of our lands and waters by the year 2030.*
    - *We will work to protect biodiversity, slow extinction rates and help leverage natural climate solutions…*



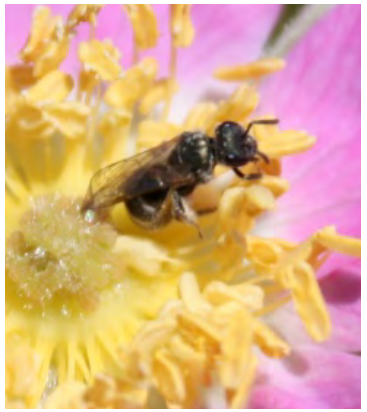
Pollination

- What is pollination?
  - Transferring pollen from the female to the male part of a flower to produce viable seeds
- Who are our pollinators?
  - Bees, flies, butterflies, moths, beetles, wasps, hummingbirds
  - Alaska – 104 known bee species, including 22 bumblebees
- Pollinators are critical
  - Ecosystem function
    - Next generation of plants
    - Food for wildlife
    - Ecological web
  - Subsistence resources
    - Berries
    - Healthy ecosystems for game
  - Farm and garden pollination
    - Pollination services for crops



Pollination

- Many data gaps!
  - New species recently discovered
  - Rural/remote regions
  - What we lack…
- Without proper information it's difficult to:
  - Conserve pollinators
  - Manage habitat
    - assess impacts / threats
    - restore habitat
  - Make endangered species listing decisions

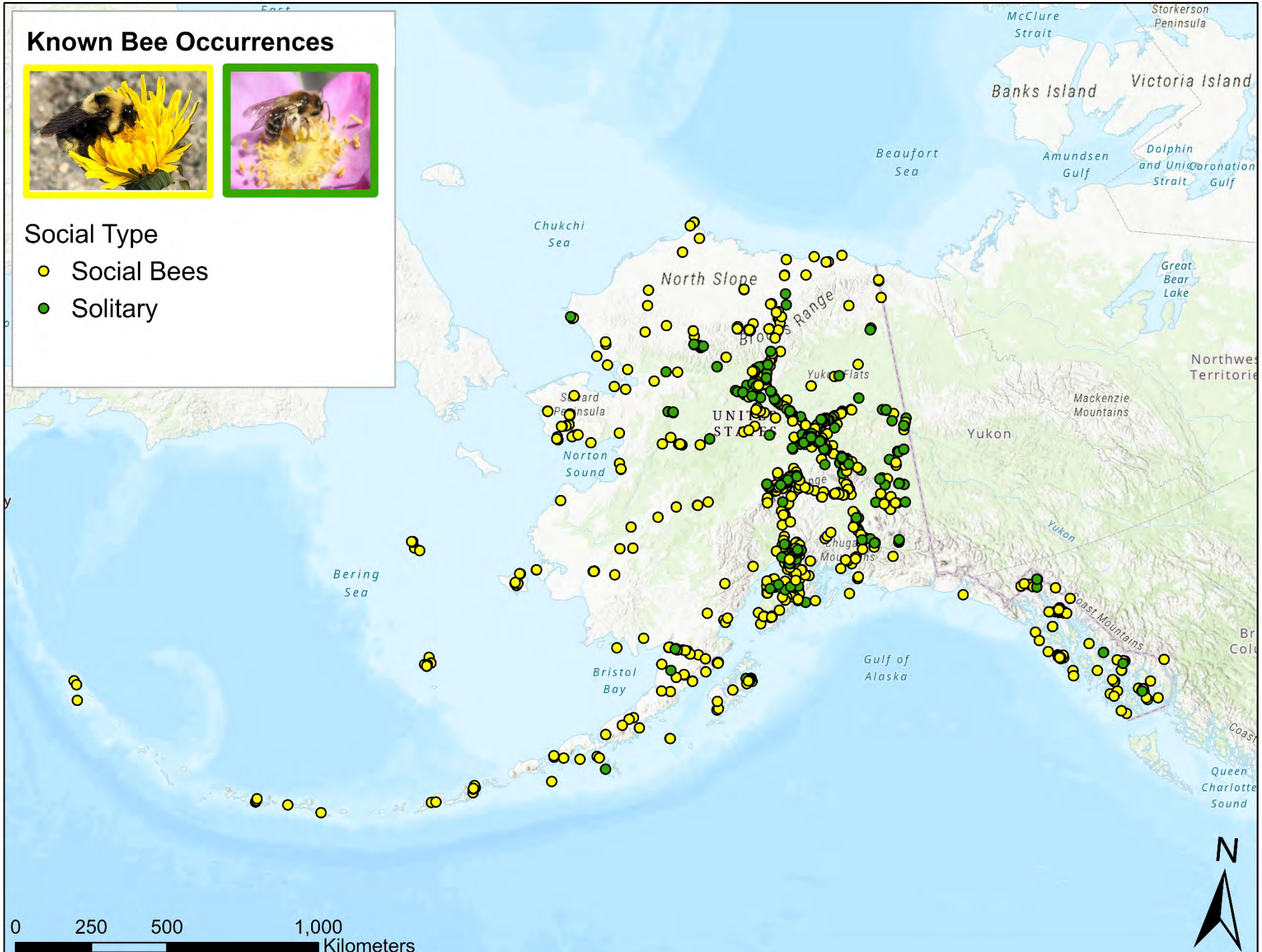


Monitoring in the Arctic and Boreal Forest

- Remote
- Vast
- Expensive
- Difficult field conditions
- Little current info / no baseline

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

Alaska Bee Sampling



Alaska Bee Atlas

- Statewide plan and protocol to:
  - Sample for bees around Alaska using consistent methodology
  - Gather associated habitat data
  - Provide information for all to use
  - Non-lethal sampling options
- Sampling May-Aug
- Sampling techniques
  - Aerial netting
  - Pan Trapping and Blue Vane Traps

- Fits into national and international bee monitoring efforts
- Cost effective and collaborative
  - Pilot- 2020
  - Federal and State biologists- 2021
  - Community Science pilot- 2021
  - Open to community scientists- 2022

Alaska Bee Atlas

Inventory and Monitoring Plan and Protocol

Justin R. Fulkerson[1], Matthew L. Carlson[1], and Casey T. Burns[2]

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University of Alaska Anchorage
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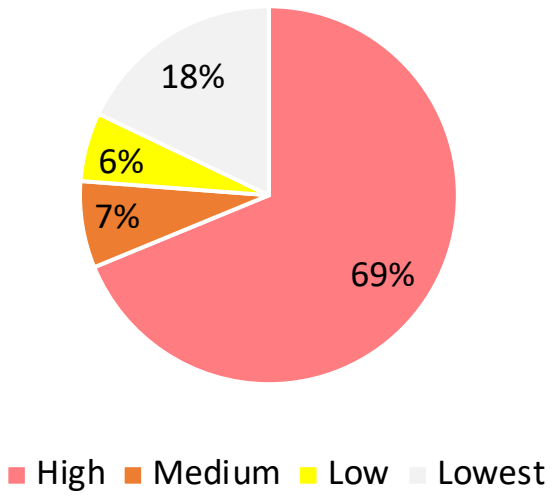
222 W. 7th Avenue, #13, Anchorage, AK 99513

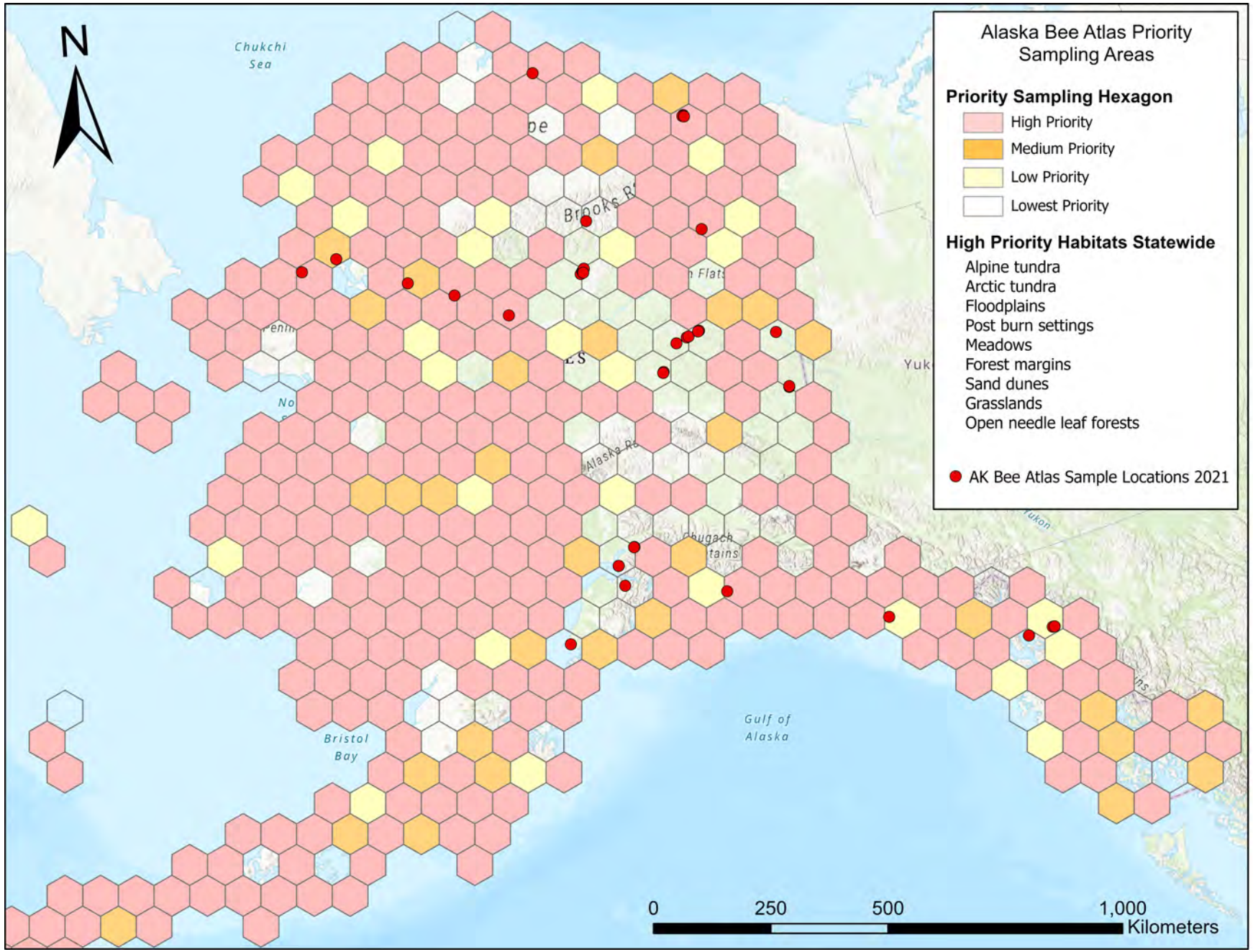
Sampling Priority

Habitats of Interest

- **Alpine**
- **Arctic tundra**
- Floodplains
- Post burn areas
- Meadows
- Forest margins
- Sand dunes
- Grasslands

Percent of Cells by Priority

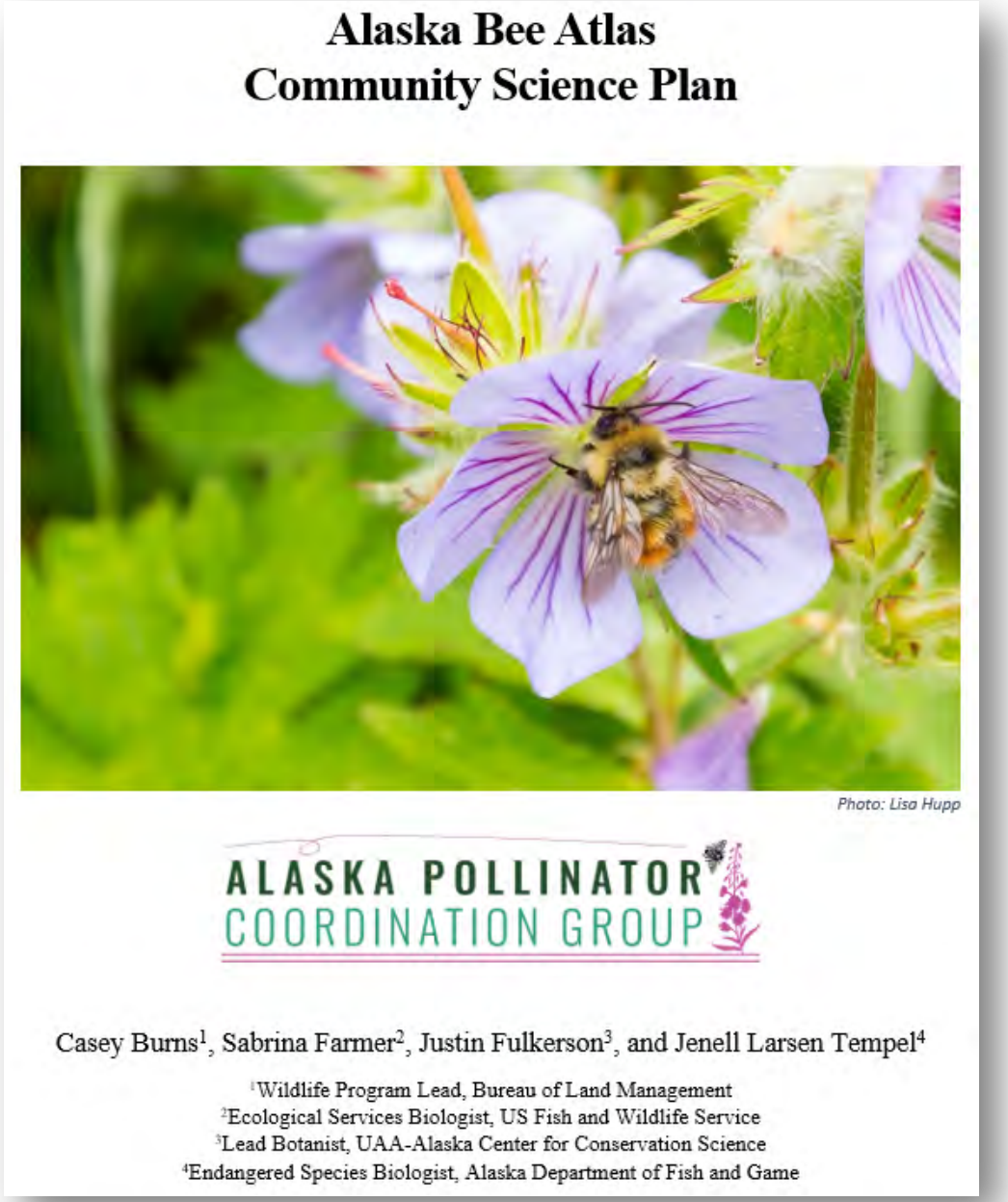




Community Science Plan

- Interagency collaborative effort
- Training: “Citizen Science Workshop: Focus on Pollinators” by Schoodic Institute in Spring 2021

- Alaska Bee Atlas – Community Science Plan
  - Goals
  - Stakeholders
  - Project Planning and Timeline
  - Job Description
  - Communication Plan
  - Budget / Funding
  - Resources
  - Data Management



Alaska Bee Atlas
Community Science Plan

Photo: Lisa Hupp

ALASKA POLLINATOR COORDINATION GROUP

Casey Burns[1], Sabrina Farmer[2], Justin Fulkerson[3], and Jenell Larsen Tempel[4]

[1]Wildlife Program Lead, Bureau of Land Management
[2]Ecological Services Biologist, US Fish and Wildlife Service
[3]Lead Botanist, UAA-Alaska Center for Conservation Science
[4]Endangered Species Biologist, Alaska Department of Fish and Game

Community Science Plan: Goals

Overarching Goals:

- More information on the diversity, distribution, and habitat and floral associations of bees to make informed decisions
- Make informed assessments of the conservation status of species

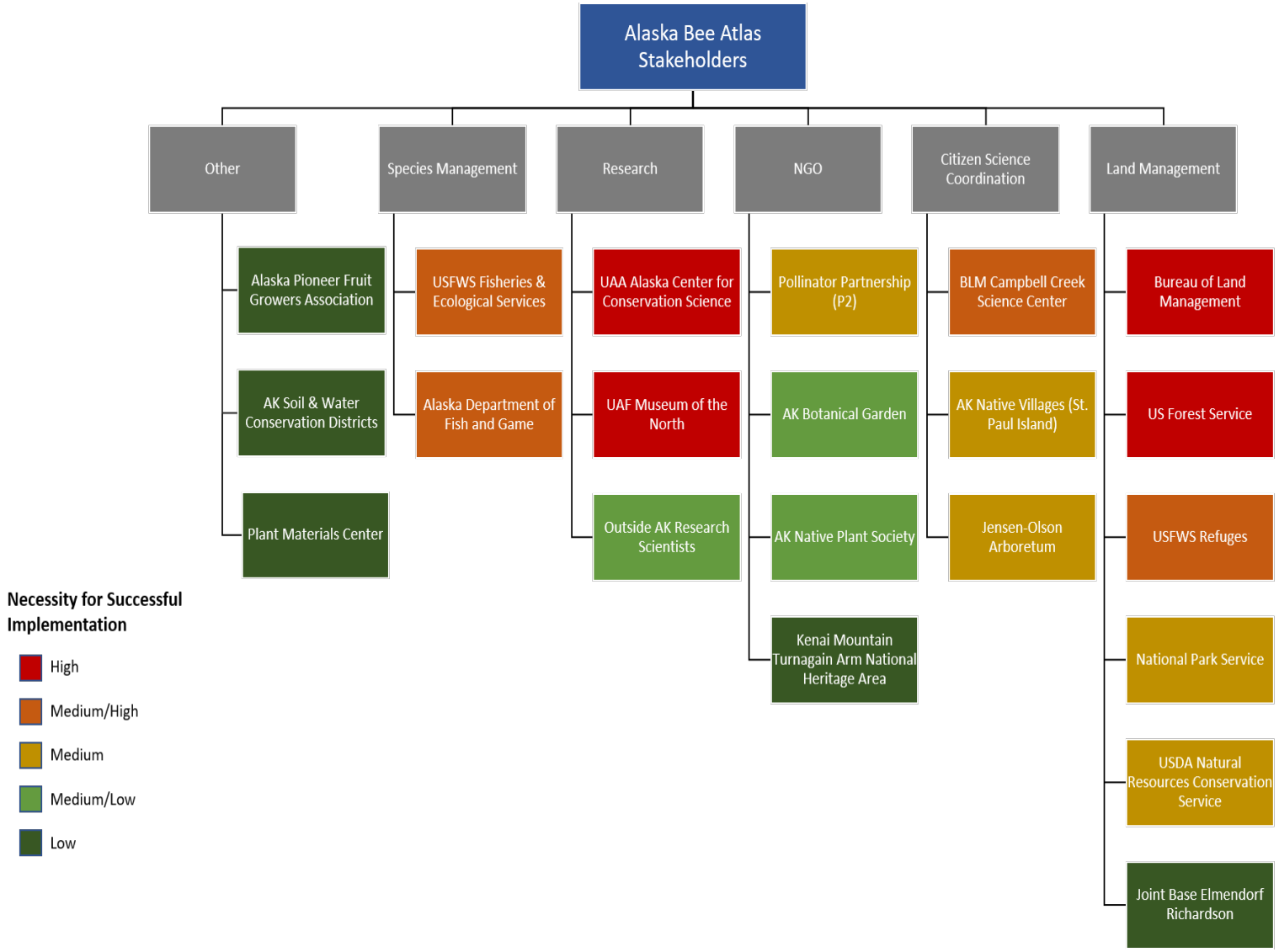
2022 Goals:

1. Initiate 2 new community science projects to have 4 total
2. Train 4 new community science project leaders to have 8 total
3. Engage 8 new community science volunteers in field work
4. Sample 8 locations using community science

Annual Goals:

1. Obtain post-field season evaluations from all community science participants
2. Host a post-field season data summary session for community science participants
3. Review and revise the plan each fall. Compile lessons learned from the field season
4. Secure additional funding for the following year

Community Science Plan: Stakeholders



Community Science Plan: Workflow

TEAM BEE-LASKA PROJECT PLANNING

STAKHOLDERS: Native Plant Society, Jensen-Olson Arboretum, CCSC, ABG

PHASE KEY
- Planning
- Project prep
- Implementation
- Results
- Use

Contact leaders of stakeholders to gauge interest

Identify Specific Participants:
Specific individuals within organization.

Quantify commitment: sampling location, sampling events, sapling timing, potential methods (traps/nets), logistics

Integrate iNaturalist: *AK Bee Atlas Project*
(optional- dependent on stakeholder)

Training- online (1 hr) / in person (3 hrs)

Provide materials, instructions, identification guides
Sampling supplies are ready for distribution by ACCS. Identification guides need to be created for some stakeholders.

Field Sampling

Receive Data/Samples
Coordination for local drop off: Juneau, Fairbanks, Anchorage. All other samples to be mailed.

Database incoming data: data form and sample processing
(1 technician: 3hr/sample)

Data Review/Identifications
(1-5 hrs/sample event)

Respond with results
(1 hrs/sample event)
[Newsletter & website, later on a region-specific pamphlet- bee identification guide/floral associations]

Generate 'buy in' and confidence. Incorporate feedback to refine AK Bee Atlas

AK Bee Atlas Website
(Under development- 80hrs)

iNaturalist

How to Get Involved?

Opportunities for Involvement

- For older students, garden clubs, conservation groups, etc.

CS Project Leader

- Engage pre-existing group or make new team
- Coordinate with project leads
- Ensure community scientists are supported
- Coordinate sample submission

CS Volunteer

- ~5 hour commitment
- Training provided
- Materials provided

Community Scientist Job Description

Learn about the roles and responsibilities involved with being a community science local project leader through the job description below.

Job Title:	Community Science Local Project Leader	**Job Category:**	
Department/Group:	Alaska Bee Atlas	**Job Code/ Req#:**	
Location:	Flexible within Alaska	**Travel Required:**	Not required, but optional
Level/Salary Range:	None. Most equipment provided	**Position Type:**	Volunteer
HR Contact:	Justin Fulkerson, Project Coordinator	**Date Posted:**	XXXX, XXXX
Will Train Applicant(s):	Yes, training required	**Posting Expires:**	YYYY, YYYY
External Posting URL:	((TBD – Bee Atlas website))		
Internal Posting URL:	((TBD – Bee Atlas website))		

Applications Accepted By:

Email: Project Coordinator: Justin Fulkerson, jrfulkerson@alaska.edu Subject Line: Alaska Bee Atlas Community Science Project Leader Application	**Mail:** n/a

Job Description

Role and Responsibilities

The Alaska Bee Atlas is looking for members of the public interested in leading local bee surveys. Learn more about insect pollinators and the important role they play supporting Alaska's wildlife and ecosystems. Volunteer scientists would work with pollinator experts to implement the Alaska Bee Atlas. Responsibilities include:

- Attend online training (1 hour) and in-person training (3 hours) (May 2021 or other times if requested)
- Assist setting up passive bee traps, under supervision of an expert
- Actively collecting bee samples using a bug net
- Collaborating with the group to identify flowering plants in the area
- Inventorying insects collected in the traps
- Conduct at least one independent sampling event (as detailed in the Alaska Bee Monitoring Manual) (summer 2021)
- Coordinate and organize volunteers and supplies (provided) for additional sampling event through communication with Alaska Bee Atlas Project Coordinator (spring 2022)
- Plan and coordinate additional sampling events (summer 2022)
- Submit monitoring datasheets/samples to Project Coordinator withing two weeks
- Ongoing communication with Project Leader

Qualifications and Education Requirements

- Ages 18 and up
- Personal transportation to access sampling location
- Must be able to tolerate insects, including biting or stinging insects

Preferred Skills

ALASKA BEE ATLAS

BEECOME A SCIENTIST

Help researchers fill data gaps about pollinators!

LEARN HOW TO IMPLEMENT A SIMPLE SURVEY PROTOCOL

Interested in learning about bees and participating in meaningful science? We are looking for nature lovers to lead local bee surveys. Volunteers scientists would work with bee experts to perform a simple survey in a high priority survey area of Alaska.

Email Justin Fulkerson at jrfulkerson@alska.edu for more information

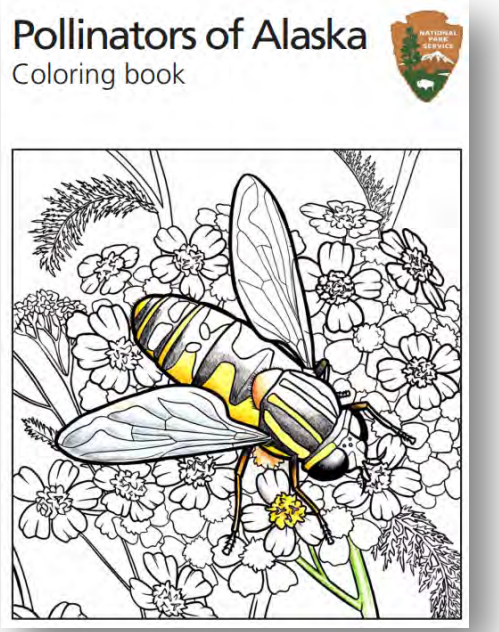
ALASKA POLLINATOR COORDINATION GROUP

Supporting Bee Conservation

- Providing information on potential impacts of actions and inform land management decisions in order to maintain bee populations, habitat, and pollination services.
- Documenting bee occurrence and diversity statewide with natural history data to inform conservation status.
- Using funds efficiently to gather information over a large area.
- Engaging the public to increase understanding of the ecological role of pollinators and the importance of their conservation.

More Alaska Pollinator Info

- ACCS Pollinator Page (AK Bee Atlas and much more): https://accs.uaa.alaska.edu/wildlife/pollinator-diversity/
- Pollinator 101: https://www.fws.gov/pollinators/#ff
- Alaska Pollinator Coloring Book: https://www.nps.gov/dena/learn/nature/upload/DENA-pollinator-coloring-pages.pdf
- Alaska Pollinator Blog Series:
  - Bees: https://alaskausfws.medium.com/alaskas-100-bees-a97ccf90be07
  - Flower Flies: https://medium.com/usfws/alaskas-wanna-bees-1651e59d118e
  - Hummingbirds: https://medium.com/usfws/alaskas-fast-and-furious-3c9a62e64b5d
- Pollinator Impersonator Activity: https://www.blm.gov/sites/blm.gov/files/documents/files/Learn_CCSC_Nature-Learning-Downloads_Be-a-Pollinator-Impersonator.pdf
- Alaska's Bumblebees Atlas Obscura article: https://www.atlasobscura.com/articles/alaska-bumblebee-pollinator-bee-atlas
- AK Bee Atlas Community Science Podcast: Help pollinators, "bee" a community scientist
- AK Bee Atlas TV segment on Wildlife Nation with Jeff Corwin (to air on ABC winter 2022)



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Thank You!

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