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

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Table of Contents

Acronyms used in this document

ACCS	Alaska Center for Conservation Science
ADFG	Alaska Department of Fish & Game
APCG	Alaska Pollinator Coordination Group
BLM	Bureau of Land Management
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

INTRODUCTION

Insect pollinators play a key role in the Alaska ecosystem by directly and indirectly affecting wildlife and their habitat. Land and species managers in Alaska are missing critical information on the diversity, distribution, and habitat needs of bees on the lands they manage. Community science is a tool we can use to address this problem because it is an efficient approach to collect the needed data to facilitate pollinator conservation and management in Alaska.

Alaska's Insect Pollinators

Many plant species in Alaska are reliant on pollinators for fruit and seed production, including those that are used for subsistence purposes by Alaskans. Additionally, pollinators are important for local gardens and crops in Alaska. Insect pollinators are facing steep population declines worldwide due to habitat loss, climate change, and improper pesticide use. Unfortunately, scientists are missing information about insect pollinators in Alaska. New species to science, and the state, are still being discovered in the region. The data on Alaska pollinators are mostly limited to populated areas and the road system. Furthermore, habitat data and floral associations for these pollinator species are minimal. Overall, these limitations restrict habitat management, pollinator conservation, and status assessments for those species proposed under the Endangered Species Act.

Alaska Bee Atlas

The Alaska Bee Atlas is a collaborative program to collect bees and associated habitat data by federal and state biologists in Alaska. Participating scientists are filling data gaps on Alaska's insect pollinators. Participation was broad in 2020 and 2021 with individuals representing ten different state and federal agencies. The Alaska Bee Atlas is managed by the Alaska Center for Conservation Science (ACCS) at the University of Alaska Anchorage and created by ACCS and the Bureau of Land Management (BLM) with input from the Alaska Pollinator Coordination Group (APCG). This program leverages agency biologists who are already in the field for other purposes, to sample areas with poor data. The creators of the Alaska Bee Atlas recognize all pollinators are significant and lacking data, but we are first focusing data collection on bees.

Opening the Alaska Bee Atlas to community scientists would expand the sampling efforts across Alaska to fill in more data gaps. It also provides opportunities to educate the public about the importance of Alaska's pollinators and to engage the public in meaningful science. In the spring of 2021, the authors of this Community Science Plan attended a community science workshop focused on pollinators from the Schoodic Institute at Acadia National Park. This document details the results of the workshop by the team 'Bee-laska'. The authors envision this plan will serve as a guide for building and expanding the initiative across the state. The authors anticipate the plan will evolve and be updated in the future.

Goals: Evaluation and Measures of Success

2021 Goals

1. Pilot two community science projects
2. Train four community science project leaders
3. Engage eight community science volunteers in field work
4. Sample four locations/grids

2022 Goals

1. Initiate two new community science projects and retain 2021 projects, for a total of four projects.
2. Train four new community science project leaders and retain 2021 leaders to have eight total leaders.
3. Engage eight new community science volunteers in field work and retain the eight volunteers from 2021 to have sixteen total volunteers.
4. Sample eight locations/grids.

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

Potential Barriers to Success and Solutions

The team highlighted three potential pitfalls to this community science initiative and outlined how to avoid them. In future years, the team will identify lessons learned and add them to this document.

Problem 1: The Alaska Bee Atlas becomes a lower priority due to staff workload and we lose volunteer engagement

Solutions:

a. Follow the communication plan
b. Make the project a significant event to increase excitement and interest
c. Engage with volunteers post sampling event or community event
d. Continue engagement with stakeholders (individual and group level)
    i. Check-in post sampling with reminders
    ii. Questions for second round of sampling
e. Ensure redundancy in sampling staff (more than one person can do the job)
f. Secure project-specific funding

Problem 2: Inconsistent data collection (i.e. noncomparable data)

Solutions:

a. Create a standard data sampling sheet
    i. Sampling sheet already developed for the Bee Survey Manual
    ii. Create an all-star sample sheet for reference
b. Host pre-season training, both in person and online

c. Provide feedback on data quality after the first sampling, before the second
d. Share a photo-specific how-to or online video
    iii. Share existing link to Pacific Northwest bumblebee atlas protocol

Problem 3: Bad weather

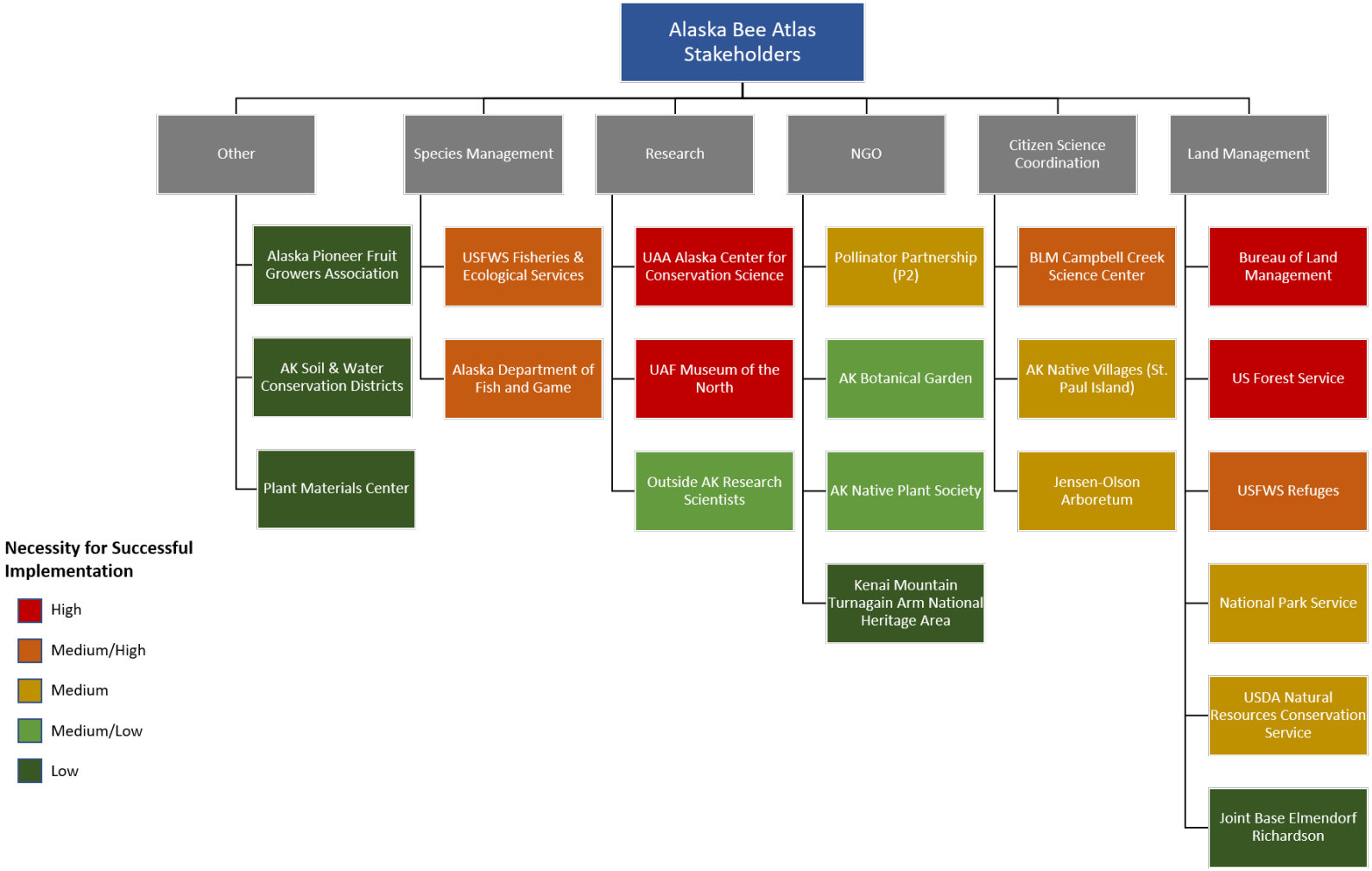
Solutions:

a. Instead of picking a sampling day one month in advance, choose a sampling week. Once that week arrives, select the best 24-hr weather window.
b. For public events, we should advertise the need for weather flexibility when they are being promoted.
c. Include weather data in the sampling sheet to account for abnormalities/zeros in data.

STAKEHOLDERS

Stakeholder Map

Mapping stakeholders allows us to identify organizations that may be affected by our work, have influence over the work, or might benefit from the information collected.



Roles and Responsibilities

Justin Fulkerson – Bee protocol technical primary Point of Contact (POC), field supplies POC, Project-specific POC, Outreach

Casey Burns – Bee protocol technical secondary POC, Project-specific POC, Outreach

Sabrina Farmer – Liaison to APCG Outreach and Education Team, Project-specific POC, Outreach

Jenell Larsen Tempel – Southeast Alaska coordination, Project-specific POC, Outreach

What Does Success Look Like for the Authors?

UAA Alaska Center for Conservation Science:

Documenting bee occurrence and diversity statewide with natural history data to inform conservation status.

Bureau of Land Management:

Having adequate information to document potential impacts of proposed actions and inform land management decisions in order to maintain bee populations, habitat, and pollination services.

USFWS Fisheries and Ecological Services:

Increased knowledge of species ranges, habitat and floral associations, and threats to inform threatened/endangered species concerns (ESA listings) and conservation initiatives.

Alaska Department of Fish and Game:

Having data on species' abundances, distributions, and habitat associations so that we can provide biological information to our federal partners making listing decisions.

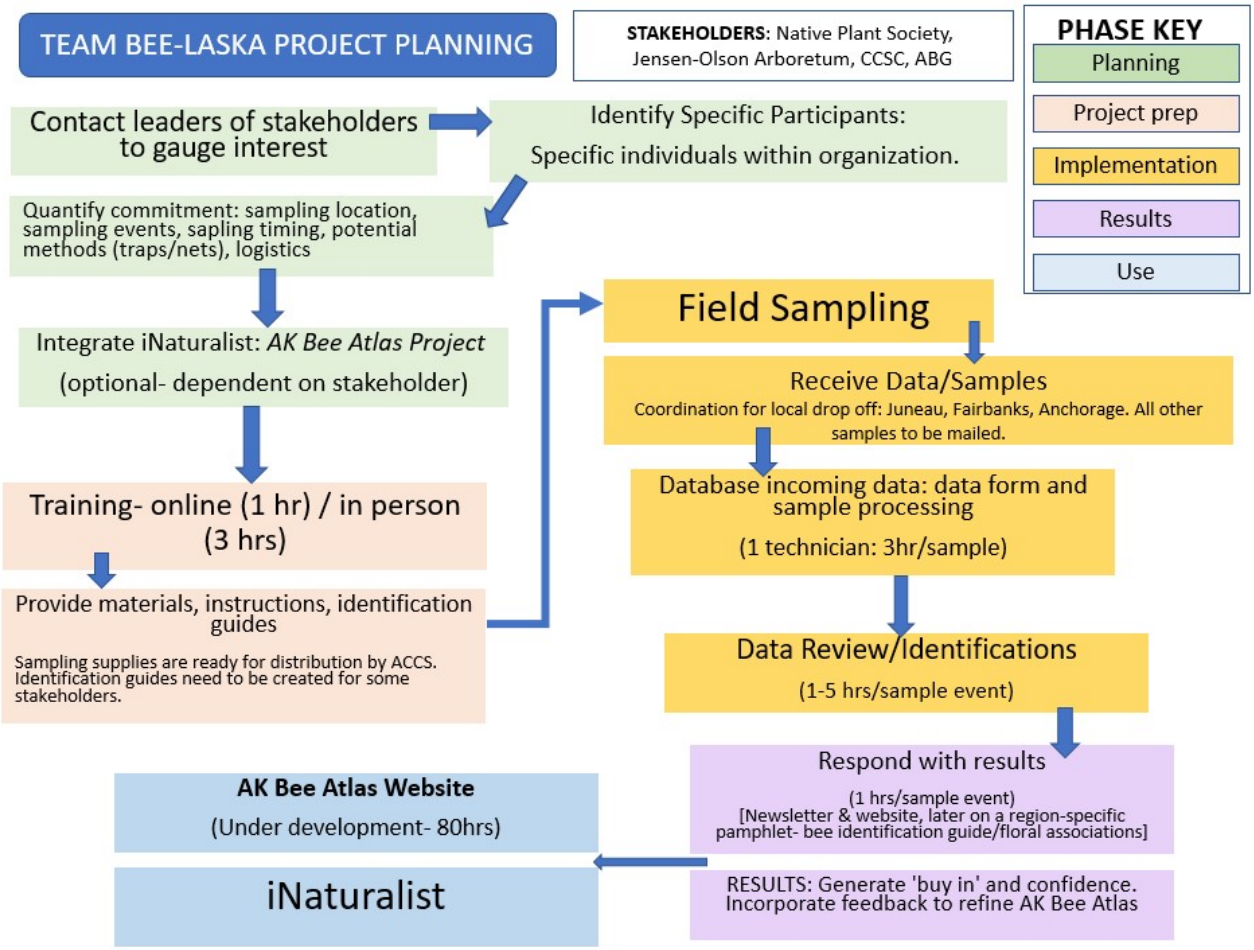
Reaching Out to Stakeholders

Initial conversations have occurred with Alaska Native Plant Society, St. Paul Island, Jensen-Olson Arboretum, Campbell Creek Science Center, Backcountry Hunters and Anglers, and Alaska Botanical Garden regarding pilot bee monitoring community science work this summer. We will work with staff at these organizations to train them on the protocols, so they buy into the effort and are comfortable coordinating bee monitoring community science efforts in 2022. All these organizations have an interest in conducting environmental education and/or obtaining location-specific bee information. The community science efforts will be part of a larger educational program on native pollinator monitoring and conservation coordinated by the APCG.

We will conduct additional outreach to expand the community science program in the future, as we learn from this first round of initiatives in 2021/2022.

Project Planning & Timeline

The flow chart below demonstrates the order of planning events in a typical year for the Bee-laska community science project.



Communication Activities Annual Timeline

1. Advertise to Project leaders- February-March
2. Train Project leaders- April-May (earlier in SE Alaska)
3. Project leaders advertise the opportunity to participants- April-May
4. Support project leaders with field sampling- May-early August
5. Follow up with leaders/participants- August-September
    a. Work up preliminary results- August-September
    b. Ask participants to evaluate and provide feedback- August-September
    c. Share preliminary results with participants- October-November
6. Core team meets and conducts annual assessment- September-October
    a. Goes over results of study and surveys
    b. Assesses inventory and monitoring needs
    c. Delegates responsibilities for sharing info with participants (newsletter)

d. Reviews funding needs and opportunities

7. Core team meets to prepare and plan for following sampling season- February
    a. Discuss target audience (retention or expansion of volunteers)
    b. Update any training protocols, videos, tools and upload to a central location
    c. Plan for in person trainings and advertising if needed

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

- Interest in learning about Alaska's pollinators and plants
- Attention to detail
- Leadership
- Ability to train others
- Good communication
- Ability to work a few hours outdoors on uneven terrain in adverse weather
- Bear safety awareness (training may be available if needed)

Bonus skills: knowledge of Alaska's plant and insect species

Additional Notes

COVID-19 safety guidelines may be applied depending on the current status and state/local regulations
This position is not recommended for individuals with extreme bee allergies
Bring your own water and snacks

Reviewed By:		Date:	
Approved By:		Date:	
Last Updated By:		Date:	

Project Leader Time Commitment:

- Recommended one year of prior experience as a volunteer community scientist (time commitment below)
- Recruiting and training scientist team
- Consider the number of sampling events
- Ensure submission of samples

Approximate time commitment = 8 hours per month, March-September

Community Scientist Individual Time Commitment:

- Training = 1 hour online, 3 hours in the field
- Preparation = 1 hour
- Field component = 2 hours over 2 days per sampling event
- Sample submission = 1 hour

Total commitment = 5 hours minimum. Travel time is variable

Communication Plan

Near-Term Goal

Establish connections and train project leaders across the state to run a pilot monitoring protocol in 2021, followed by opportunities for greater public involvement in successive years.

Communication Activities

1. **Advertise to project leaders**
    a. Identify potential project leaders across the state.
    b. Create an advertising flier to share with project leaders.
    c. Reach out to individuals/groups that are interested and explain the project goals and time commitment.
2. **Train project leaders**
    a. Communicate with project leaders about available training opportunities/dates
    b. Host training for project leaders to share information about:
        i. Goals of the project
        ii. Monitoring procedure
        iii. Ideal timeline for monitoring
        iv. Learning outcomes for participants
3. **Project leaders advertise the opportunity to participants**
    a. Supply project leaders with outreach language and materials about the project.
4. **Support project leaders with their field sampling**
    a. Provide support for project leaders as they choose their sampling location.
    b. Answer questions and provide materials about the sampling procedure to project leaders as they implement it in the field and gain experience/comfort with the protocol.
5. **Follow up with the leaders/participants**
    a. Obtain a participant list from all project leaders.
    b. Work up baseline of results from the year and put them in a shareable format for the participants. Format will be newsletter and online story map at Alaska Bee Atlas
        i. # of participants, # of communities/locations, samples collected, interesting finds or observations, funny stories from the field, pictures
    c. Send out newsletter with updates from the field season, any notable new information about pollinators in the state, and basic results. In spring, encourage participation in the next season.

Target Audience

- Project leaders- Educators, conservationists, naturalists, and scientists that have an interest in pollinators, environmental education, and community engagement. Ideally, individuals will be dispersed around the state and focused on under-sampled regions/habitats.
- Project participants- People from communities across the state of Alaska that have an interest in nature, pollinators, and/or conservation.

Key Communication Messages

- Land and species managers in Alaska need more data on the diversity, distribution, habitat, and floral associations of bees/pollinators on their lands.
- Participate in authentic science while learning more about insect pollinators and the role they play supporting Alaska's wildlife.
- Alaskans can play an important role in pollinator conservation by helping fill in data gaps. The data will help guide land management decisions on pollinators and their habitat.

Staff and Financial Resources

- Lead by ACCS, BLM, USFWS, ADFG and USFS with support from the Alaska Pollinator Coordination Group's Research and Monitoring & Outreach and Education Action Teams.
- Primary project funding from BLM and ACCS, with in-kind support from ADFG, USFWS, USFS. Field supplies are primarily covered for community scientists, but some minor supplies may be needed locally. Additional funding is needed to expand the project.
- Training opportunities are provided for interested project leaders. One-hour virtual trainings and half day in-person training will be offered.

Materials & Activities

- Bee identification guide
- Survey protocol materials
- Alaska Bee Atlas website
- Online training videos

Media Types

It is up to the individual project leader to advertise their monitoring program and associated activities. They are welcome to use any of the content provided in this plan or in the resources section.

Outreach Flyer

ALASKA BEE ATLAS

BEECOME A SCIENTIST

Help researchers fill data gaps about pollinators!

LEARN HOW TO SURVEY FOR BEES

Interested in learning about bees and participating in meaningful science? We are looking for nature lovers to lead local bee surveys in the summer. Volunteers will be guided by bee experts to independently collect data about bees in their communities.

SCAN ME

Read more about the Alaska Bee Atlas at
https://accs.uaa.alaska.edu/wildlife/pollinator-diversity/

Email Justin Fulkerson at jrfulkerson@alska.edu to lead a survey.

ALASKA POLLINATOR COORDINATION GROUP

Budget/Funding

BLM has contributed funding to ACCS through agreements to design survey protocols and implement the Alaska Bee Atlas. USFWS and ADFG are currently using in-kind funds (staff time and field operation funds) to contribute. Community science volunteers will not be compensated but supplies will be provided by ACCS. The community science specimen processing will be funded by BLM in 2021, but additional funding will be necessary as the program expands in 2022.

Resources

The following materials may be useful in planning a survey and/or developing a community science event. Project leaders can use the materials to educate participants, generate support for pollinators in the community, and advertise the events.

Field Methods Resources

- Online videos
    - UAA Green Gold News- you tube video on pollinators- informational https://www.youtube.com/watch?v=XTvQD6c1v50
    - Survey protocols
- Online documents
    - Alaska Bee Atlas survey methods
    - Bee identification guide
- Informational flyer about the project

Educational Materials

- Pollinators 101
    - https://www.USFWS.gov/pollinators/#ff
- Alaska Pollinator Coloring Book
    - https://www.nps.gov/dena/learn/nature/upload/DENA-pollinator-coloring-pages.pdf
- USFWS Alaska Pollinator Blog Series
    - Bees: https://alaskausUSFWS.medium.com/alaskas-100-bees-a97ccf90be07
    - Flower Flies: https://medium.com/usUSFWS/alaskas-wanna-bees-1651e59d118e
    - Hummingbirds:https://medium.com/usUSFWS/alaskas-fast-and-furious-3c9a62e64b5d
    - Pollinators in Winter: https://medium.com/usfws/fall-leaves-and-winter-queens-973a56ec3111
- 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
    - https://www.nps.gov/articles/000/alaska-bees.htm
    - https://www.atlasobscura.com/articles/alaska-bumblebee-pollinator-bee-atlas

Educational Materials Continued

- Alaska Bee Atlas Community Science Podcast
    - https://www.blm.gov/blog/2021-07-22/podcast-help-pollinators-bee-community-scientist

DATA MANAGEMENT PLAN

Data Collection

What data will you collect or create?

The Alaska Bee Dataset contains data originating from the following sources:

Historical Data- These are data originating from literature and museum collections. Data are gathered from sources and converted to Alaska Bee Atlas database standard.

Bee Atlas Data- These are new data originating from the statewide survey and monitoring efforts. Data are collected in Survey123 or paper data sheets.

Data are stored in an Excel spreadsheet with a related tables structure. The database is updated in spatial format for ArcGIS. Both database structures are secure and easily convertible to other formats. Both data are sharable in standardized formats.

The Alaska Bee Dataset is managed by the Alaska Center for Conservation Science (ACCS). Following table is draft of Alaska Bee Dataset.

Data Field	Description
Source	Where is the data originated? Institution, literature, observation project
Institution	Where are the original data affiliated with?
Institution Catalog Number	What catalog or accession numbers originating from the data source are associated with this record?
Other Catalog Numbers	Other catalog or accession numbers associated with this data?
Record Type	Pinned, Observation, Literature source
Social Type	Is the bee social or solitary in nature?
Family	Scientific classification
Genus	Scientific classification
Subgenus	Scientific classification
Taxon	Scientific classification

Data Field	Description
Sex	Male or female specimen
Caste	Scientific classification
Collected By	Who collected or observed this record?
Det. By	Who identified this record?
Collection Method	How was the record collected? Trap, net, other?
Date	Date of record collection
Day	Day of record collection
Month	Month of record collection
Year	Year of record collection
Verbatim Date	Date as recorded by source
Borough	Alaska Borough organization if known
Locality	General or specific locality where data was recorded
Habitat	Habitat description of where record was recorded
Floral Resource	Name of plant bee was collected on.
Elevation (m)	Elevation in meters of record
Elevation (ft)	Elevation in feet of record
Coordinates Uncertainty (m)	Error or uncertainty of GPS coordinates of record
Lat	Latitude (dd)
Lon	Longitude (dd)

How will the data be collected or created?

Historical Data: Data from literature are static and have been queried once. Data are collected by yearly queries from University of Alaska Museum of the North Insect Collection (UAM), GBIF, iDigBio, and USGS BISON. Data from UAM are delivered by request to ACCS. Data from other sources require a query using the location terms "Alaska" and scientific family terms "Andrenidae, Apidae, Colletidae, Halictidae, OR Megachilidae". Data license agreements and digital object identifier (DOI) links are saved/recorded with associated data. All data must be downloaded from sources then edited to fit the format of the Alaska Bee Dataset. For each dataset, include an instruction guide to format and transfer mandatory fields to relatable the Alaska Bee Dataset.

Data hierarchy is structured by source and archive Folder. Each source folder contains recent data download, agreement terms, literature if applicable, and associated archive folder. Archive folders contain previous versions of data. All data sources contain the month and date of download in file name, e.g. UAM_Mar2021. Original data are stored in the excel spreadsheet with "'data name'_original". Manipulated and curated data occur in a copied spreadsheet of the original data with "data name_edited".

Bee Atlas Data: data are submitted with samples in the summer/fall to ACCS. File structure will contain the main spreadsheet and archive folder. The excel file will have the month and year of last update, e.g. "_Mar2021". At the end of the month, or as needed, a new copy of the database is created with the new date format and the old file is placed in the archive folder.

Data from both sources are combined with related tables to form the Alaska Bee Dataset, managed by ACCS.

Documentation and Metadata

What documentation and metadata will accompany the data?

A metadata standard for the Alaska Bee Dataset is embedded within the geospatial database that is distributed to land managers. This will use metadata standard ISO 19115, as this is used for all ACCS products.

Document of data aggregation for historical data states the methods of data acquisition, file structure, and methods for processing into the Alaska Bee Dataset for each source.

Ethics and Legal Compliance

How will you manage any ethical issues?

Historical data originate from literature and museum records. These records are citied within the database following the recommended citation format by the data source (e.g. doi link, literature citation). Data from the Alaska Bee Atlas project are cited by collector and ACCS.

Participants in the Alaska Bee Atlas acknowledge data sharing and data use as a prerequisite for participation. Data can be anonymized to participants affiliation if desired, otherwise the field of Data Collector will contain the last name and initial of first name (e.g. Smith, J.). Contact information of participants is withheld for internal use at ACCS and not distributed. Affiliation to state or federal agency will be displayed. Community scientist information will only contain collector last name and initial of first name.

Versions and derived products of the Alaska Bee Dataset published online by ACCS acknowledge data sources and limitations and provide the explicit License use (e.g. Creative Commons Attribution Share-Alike). The Alaska Bee Dataset is shared in a geospatial format with explicit data sharing and limitations within metadata shared with land managers.

Professionals that are not land managers may request the data but must agree to the ACCS data use acknowledgement:

Alaska Center for Conservation Science, 2021

APPROPRIATE DATA USE ACKNOWLEDGEMENT

1. Alaska Center for Conservation Science (ACCS) products and services are based on biological data and the objective interpretation of those data by professional scientists. ACCS does not advocate any particular philosophy of natural resource protection, management, development, or public policy.
2. ACCS has no natural resource management or regulatory authority. Products, statements, and services from ACCS are intended to inform parties as to the state of scientific knowledge about certain natural resources, and to further develop that knowledge. They are not intended as natural resource management guidelines or prescriptions. ACCS recommends consultation with appropriate state, federal, and tribal resource management agencies and authorities in the area where your project is located.
3. Information on the status and spatial distribution of species and biological resources produced by ACCS are objective extrapolations of credible data. These products are intended to inform parties of the known occurrence or the likelihood of the presence of those resources, to guide future surveys for those resources, and to test hypotheses regarding habitat quality and abundance. These products are not intended to substitute for field-collected data, nor are they intended to be the sole basis for natural resource management decisions.
4. ACCS does not portray our databases as exhaustive or comprehensive inventories of rare species or of significant natural features. Field verification of the absence or presence of sensitive species will always be an important obligation of users of our data.
5. ACCS staff and contractors do not cross or survey privately-owned lands without express permission from the landowner. However, the program cannot guarantee that information provided to us by others was obtained under adherence to this policy.
6. Sources of our data include museum specimens, published and unpublished scientific literature, field surveys, and knowledgeable individuals. ACCS actively solicits and encourages additions, corrections and updates, new observations or collections, and comments on any of the data we provide.
7. ACCS staff are available and should be consulted with questions regarding the interpretation or appropriate use of the data that we provide.
8. ACCS responds equally to all requests for products and services.
9. The information provided to you by ACCS is intended for distribution or use only within your department, agency, or business. Subcontractors may have access to the data during the course of any given project, but should not be given a copy for their use on subsequent, unrelated work. ACCS data are made freely available. Duplication of hard-copy or digital ACCS products with the intent to sell is prohibited without written consent by ACCS. Should you be asked by individuals outside your organization for the type of data that we provide, please refer them to ACCS.
10. ACCS and appropriate staff members should be acknowledged as an information source in any third-party product involving ACCS data, reports, papers, publications, or in maps that

incorporate ACCS graphic elements.
11. Because ACCS constantly updates and revises its databases with new data and information, products will become outdated over time and are generally not valid after one year. Interested parties are encouraged to obtain the most current information possible from ACCS, rather than using older products. We add, delete, and change records on a daily basis. Consequently, we strongly advise that you update your ACCS data sets at a minimum of every three months for most applications of our information.

How will you manage copyright and Intellectual Property Rights (IP/IPR) issues?

ACCS will manage the Alaska Bee Dataset and associated products. Alaska Bee Atlas data will follow the License: Attribution-NonCommercial 4.0 International. Associated products produced with the data by ACCS such as Species Conservation Assessments will follow the License: Attribution-NonCommercial-NoDerivatives 4.0 International. Data requested by non-land managers or affiliated agencies must agree to the Terms and Conditions of data usage posted on the ACCS website. Specific data use agreement acknowledgement is stated above.

Storage and Backup

*How will the data be stored and backed up during the research***?**

Data are stored on local servers by ACCS at the University of Alaska Anchorage (UAA). Servers are backed up daily and data can be restored by request by UAA information Technology Services. Additional copies of the datasets are saved in Microsoft cloud data services provided to UAA.

How will you manage access and security?

The Alaska Bee Dataset is only accessible by ACCS staff before the public or land manger version are distributed. There are no anticipated risks to data security as this is handled by UAA IT. Field data are collected using digital forms using ESRI Survey123 and delivered to ACCS securely. Field data collected via paper forms are scanned and emailed to ACCS staff. No confidential data are collected in the field.

Selection and Preservation

Which data are of long-term value and should be retained, shared, and/or preserved?

All original submitted data and edited databases will be kept in perpetuity. All data are of value and should be retained and not deleted.

> Historical data: data are not under contract or legal regulatory purposes and have no defining value of retention or need to be destroyed.
>
> Alaska Bee Atlas data: data will be managed and retained by ACCS. There are no anticipations to destroy data records or parts of a data record.

The Alaska Bee Dataset will be distributed to land managers yearly (May/June) in a geospatial database that request it. Professional scientists outside of Alaska land mangers may request data through the ACCS data portal and must agree to the terms and conditions. The most recent analyses and products from the data will be posted on the ACCS website yearly (May/June).

Future analyses may include population trends, species distributions, species associations, and seasonality of bee species.

What is the long-term preservation plan for the dataset?

Long term data storage is managed by ACCS and hosted on local servers at UAA. Data curation costs are derived from funding directly associated with the Alaska Bee Atlas, general wildlife BIOTICS funding, and internal funding from ACCS. Funding incorporates effort for data curation and storage.

Data Sharing

How will you share the data?

The Alaska Bee Dataset will be shared with land managers who request/subscribe to updates. Data will be distributed via email in May of each year. Land and species managers have these tasks associated with current grants and contracts with ACCS for the data distribution. A structured fee for the cost associated with data curation and packaging to requestors who do not have grants or contracts with ACCS. The fee covers ACCS staff time to curate and deliver the data, not for the data itself. A more detailed explanation of the fee and current rate is posted on the ACCS website. Data products on the Alaska Bee Atlas website will have and statement of when data were last refreshed.

Are any restrictions on data sharing required?

The limitations of data sharing of ACCS products fall under the common license agreement. Alaska Bee Atlas data will follow the License: Attribution-NonCommercial 4.0 International. Associated products produced with the data by ACCS such as Species Conservation Assessments will follow the License: Attribution-NonCommercial-NoDerivatives 4.0 International.

Products should be cited as originating from ACCS. The Alaska Bee Dataset distributed to land managers is not intended for sharing outside their organization and land managers follow their own policies on data management.

Data requested by other professionals must agree to the Data Use Acknowledgement stated above: *Specifically, the restrictions are the information provided by ACCS is intended for distribution or use only within your department, agency, or business. Subcontractors may have access to the data during the course of any given project, but should not be given a copy for their use on subsequent, unrelated work. ACCS data are made freely available. Duplication of hard-copy or digital ACCS products with the intent to sell is prohibited without written consent by ACCS. Should you be asked by individuals outside your organization for the type of data that we provide, please refer them to ACCS.*

Responsibilities and Resources

Who will be responsible for data management?

ACCS is the manager of the Alaska Bee Dataset. Data are curated and managed by ACCS staff. ACCS should be cited as the author of the data, not one specific ACCS staff member.

What resources will you require to deliver your plan?

No extra resources are needed for generating and maintaining the dataset outside of current funding. No special equipment or expertise is needed. Data are distributed freely to land managers and data derived products are online for free. Data requests by professionals not affiliated with land managers must agree to the terms and conditions on the ACCS Data Request Services website (https://accs.uaa.alaska.edu/services/) and pay for the data service provided to cover the cost of data distribution.