



Figure 1: A bumblebee covered in pollen from a native prairie dock flower. Photo by Mike Budd/USFWS.

POLLINATOR ACTION PLAN

U.S. Fish and Wildlife Service's Center for Pollinator Conservation

A place for land managers, decision and policy makers, scientists, program leaders and others to explore, coordinate and share best practices and approaches.

Authored by 175 Member of the Pollinator Community

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Sanctioned by U.S. Fish and Wildlife Service's Center for Pollinator Conservation

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The findings and conclusions in this document are those of the author(s) and do not necessarily represent the views of the U.S. Fish and Wildlife Service.

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Figure 2: Hummingbird moth drinking nectar from a purple flower. Photo by Tom Koerner/USFWS.

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Executive Summary

Pollinators face a growing crisis of declining populations with serious implications for our natural ecosystems, our agricultural security, and our economy. Habitat loss and degradation, pesticide use, and changing climate conditions are increasing species vulnerabilities and declines, leading to less resilient systems. Iconic species, like the monarch butterfly and the American bumble bee, are joined by a growing list of at-risk pollinators that require urgent science-based solutions and innovative collaborations.

There are many organizations, agencies, and institutions already doing work for pollinator conservation. The U.S. Fish and Wildlife Service's Center for Pollinator Conservation (Center) hosted a series of virtual action planning workshops to collectively find common ground in the pollinator conservation community for building a pollinator conservation action plan to increase pollinator habitat for the next two to five years. The Center's intent was to create connection and community and to identify and begin to address the most immediate and difficult challenges the pollinator community collectively faces in leading pollinator conservation. From the five virtual workshops that attracted more than 175 participants, the following six focus areas to address barriers were identified:

1. Cultivating Public and Private Support
2. Expanding Availability of Native Seeds and Plants
3. Improving Access to and Addressing Limitations in Available Data
4. Increasing Resources and Building Capacity
5. Streamlining Regulatory Challenges for Pollinator Habitat
6. Strengthening Coordination Among Partners and Initiatives

Following the workshops, the facilitator synthesized the content from the 175 participants and the champions into a single draft document. The draft document was then reviewed by the champions for each of the focus areas, where additional edits and refinements to the actions and tasks were made. With the edits incorporated into the document, the Center reviewed the final content.

This Pollinator Action Plan reflects the collective efforts of the 175 participants and eight champions. It outlines six focus areas, each supported by specific actions and corresponding tasks. The Pollinator Action Plan represents a plan developed by the pollinator community for the pollinator community.

**The focus area Cultivating Public and Private Support currently does not have a champion. Individuals interested in becoming a champion for this focus area are encouraged to reach out to the Center.*

Center for Pollinator Conservation

Conserving pollinators with you and for everyone.

The Center for Pollinator Conservation was created within the U.S. Fish and Wildlife Service (Service) to collaborate across federal, state, and Tribal governments, non-governmental organizations, academia, and private industry. The Center's purpose is to develop and implement solutions to issues threatening pollinators, to invest in adaptive learning and making information accessible, and to inspire conservation through communication in the U.S. and North America. By focusing on its three primary functions, applied science, collaboration, and engagement, the Center will help address these issues by creating a collaborative space across agencies, partnering organizations, and by aligning and mobilizing expertise. The Center will co-develop and implement strategic initiatives, provide value-added leadership and coordination capacity, connect and amplify on-going successes and learn from challenges, deliver solutions for the American people and pollinators, inspire conservation actions through strategic communication campaigns, and accelerate the development of the future conservation workforce (Center for Pollinator Conservation Strategy, September 2023).

Planning Team

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Figure 3: Monarch caterpillar eating milkweed seed pod. Photo by Courtney Celley/USFWS.

Pollinator Action Plan

The Pollinator Action Plan is a proactive, community-led action plan that builds on or amplifies current and ongoing efforts in the pollinator community to address the most immediate and difficult challenges the pollinator community collectively faces in increasing native pollinator habitat. The Pollinator Action Plan represents the collective efforts of the 175 participants and eight champions to identify six focus areas, each supported by specific actions and corresponding tasks. The breadth of participation for this process includes Western Landowners Alliance, U.S. Department of Agriculture, Maine Department of Inland Fisheries and Wildlife, Syngenta, University of Oklahoma, Electric Power Research Institute, Xerces Society for Invertebrate Conservation.

Development of the Pollinator Action Plan

In 2023, the Center hosted a series of five virtual action planning workshops, led by a facilitator, to collectively identify and begin addressing how the conservation community and others interested could increase native pollinator habitat in the next two to five years. A total of 175 community members participated in the workshops. Together, the participants identified significant barriers to increasing native pollinator habitat and drafted six focus areas to address the barriers to increasing native pollinator habitat. During this time, a small group of participants (8) volunteered to take on a leadership role as “champions.” The champions were responsible for guiding the participants in developing potential actions for their designated focus area that the pollinator community could commit to take in the next two to five years. Once the actions were identified, the champions led the discussion to develop subsequent tasks to achieve the actions.

The facilitator consolidated all the input from the workshops into a single draft document. This draft was shared with the champions for review. During this phase, each of the eight champions representing the focus areas participated in meetings to review the content, provide feedback, and suggest changes. The facilitator incorporated these edits, and the Center conducted a final review to ensure the document reflected the community's collective input accurately.

The resulting Pollinator Action Plan reflects the collaborative efforts of 175 participants, guided by the eight champions. It outlines six focus areas, each accompanied by specific actions, which are further broken down into detailed tasks.

Implementation of the Pollinator Action Plan

The Pollinator Action Plan represents a plan developed by the pollinator community for the pollinator community. As such, the successful completion of the tasks and actions in the Pollinator Action Plan depends on the work of the champions and volunteers to achieve the identified tasks and actions. This means that the Pollinator Action Plan's contents, including the actions and tasks, are not considered prescriptive. Rather, the actions and tasks are expected to change as the champions and interested parties work together to achieve the identified successes for each of the focus areas.

To achieve the actions and tasks outlined in the Pollinator Action Plan, there are three key roles with differing responsibilities:

The Center for Pollinator Conservation

The Center is responsible for collaborating with the champions to review the action plan alongside the Center's existing projects to determine which of the actions the Center's staff can help facilitate or provide additional support. The Center will also provide administrative support to the champions. This includes hosting rolling notes for the Champions to access and being the point of contact for potential volunteers and champions. In addition, the Center will host the following: biannual meetings for champions in 2025 and 2026, annual meetings in 2027 and 2028, and an annual review of the Pollinator Action Plan in 2029.

Champions

Champions are self-identified volunteers that are leading the work with individuals, agencies and partners to implement the tasks and actions presented in the Pollinator Action Plan. In this role, champions are responsible for tracking progress of the tasks and actions, measuring successes, identifying potential volunteers, nominating volunteers to become new champions, and coordinating the volunteers to achieve tasks and actions. The champions will also work directly with the Center and attend meetings.

Volunteers

A volunteer can be an individual representing an agency, organization or themselves. Volunteers are responsible for supporting the champions in completing the actions and tasks. The level of involvement for volunteers is flexible and depends on their availability and capacity.

Note: Champions and volunteers working on the Pollinator Action Plan are not representatives of the Center for Pollinator Conservation or the U.S. Fish and Wildlife Service. Any opinions, actions, or statements made by the champions or volunteers are their own and do not necessarily reflect the views, policies, or official positions of the Center or the Service. Champions and volunteers are independent contributors and act in a personal capacity to support the actions and tasks identified in the Pollinator Action Plan.

Progress Reporting

Tracking and reporting the progress of the Pollinator Action Plan are necessary to ensure accountability, provide transparency, celebrate successes and adapt to changing pollinator community needs. Implementation of the actions identified in this document will be monitored by the champions, and progress will be reported to the Center annually. The Center will share that progress with the larger pollinator conservation community annually. The effectiveness of implementing actions identified in this document will require an assessment process that includes 'before and after' collaborative evaluation. The Center will be hosting progress check-in meetings with champions to assess progress on the following schedule:

- Center will host biannual meetings for 2025 and 2026.
- Center will host annual meetings in 2027 and 2028.
- Center will host an analysis in 2029 for the Pollinator Action Plan.

Organization of the Pollinator Action Plan

The Pollination Action Plan is organized around the six focus areas that were identified through the collaborative efforts of 175 participants, guided by the eight champions. Each focus area has one or more actions to promote implementation of the focus area along with success metrics. Each action has one or more discrete tasks which are identified in an appendix. The Pollinator Action Plan is intended to be a

living document. This means that the document will be continuously updated and revised to ensure that it remains relevant and adaptive to the ongoing input from the champions and volunteers.

Readers interested in volunteering or becoming a champion are encouraged to reach out to the Center for Pollinator Conservation.



Figure 4:Digger bee pollinating photo by Tom Koerner/USFWS

Expanding Availability of Native Seeds and Plants

Native seeds and plants play a pivotal role in sustaining native pollinator populations. The availability of native seeds and plants, however, faces key challenges such as a limited availability of native plant materials, likes seeds, plugs, etc., limited funding available for or difficulty in securing sufficient funding for habitat restoration and native seed purchases, and the lack of affordable and diverse forb seeds for local restoration efforts. A coordinated approach is needed to navigate the hurdles of these challenges and stress the importance of habitat restoration efforts for the community. The long-term success of translating increased native seed and plant availability into pollinator habitat also depends on prioritizing projects for the incorporation of native seeds and plants, e.g., some sites may benefit from management alone based on the existing seed bank and plant community, and a long-term commitment to implementing appropriate management practices following restoration.

Action 1: Improving Coordination with Existing Efforts to Increase Native Seed and Plant Availability

To successfully increase native pollinator habitat, this action focuses on improving coordination with existing efforts to increase native seed and plant availability for forbs, such as nectar plants, pollen plants, host plants, and refuge plants. This action recognizes that there are multiple existing programs and initiatives currently in place that are working to increase native seed and plant availability, prompting the need for effective coordination. The purpose of this action is to strategically align partners and amplify the work that is currently being done rather than to duplicate current and ongoing efforts.

Assessing the Implementation of the Action

Effectively implementing this action requires determining the optimal selection of forbs to provide essential resources needed by pollinators; implementation will also require consideration of weather extremes and the impacts of changing environmental conditions. For this reason, research becomes crucial to identifying seeds suitable for specific locations, as does securing funding for the collection and sorting phases of seed propagation. There are multiple existing programs, including those for other taxa, that could address these challenges.

To prevent duplication of efforts, identifying the numerous current and ongoing efforts to increase native seed and plant availability is crucial. For example:

1. Various tools, such as vendor maps from Monarch Joint Venture and Xerces Society for Invertebrate Conservation's milkweed finder, facilitate demand-side coordination.
2. The Natural Resource Conservation Service plant selection tool, along with the assistance incentives to grow native plants rather than rely on wholesale seed availability, provides a practical avenue for expanding availability of native seed and plants.
3. Monarch Watch has several milkweed distribution programs.
4. Most state and regional monarch plans include a need for native seed and plant availability and many groups have suggested plant lists.

Furthermore, there are opportunities to align and amplify programs. For example, the Seeds of Success program from the Bureau of Land Management could be tied into the National Seed Strategy which offers a robust framework for multi-agency involvement. For this reason, leveraging existing programs,

particularly those designed for other taxa, offers a strategy to successfully increase native plant and seed availability.

Success is defined as:

- Increased availability and affordability of native plant materials for pollinators.
- Increased coordination and alignment among partners working to increase native seed and plant availability.
- Increased quantity of pollinator habitat using native plant materials.

Action 2: Promote the Coordination Effort for Native Seeds and Plants

This action focuses on promoting the national strategy for native seed and plant availability by sharing case studies, including challenges and lessons learned and success stories to demonstrate the implementation of native seed and plant strategies across various regions. These case studies will provide concrete examples of the actions' benefits and effectiveness, helping land managers and seed growers understand practical applications. In addition to case studies, highlighting success stories that connect the national strategy with broader conservation goals of increasing native pollinator habitat is essential. These stories should illustrate how environmental sustainability, economic development, and habitat restoration can be addressed simultaneously, demonstrating the strategy's versatility and reinforcing its value across different sectors.

Another important aspect of promoting the national strategy is fostering greater connection and awareness among stakeholders, communities, and decision makers. Raising awareness of the strategy's potential impact will encourage greater participation and support for the initiative. By focusing on case studies, success stories, and increasing engagement, the national strategy can gain the widespread support necessary to encourage meaningful conservation efforts and increase native pollinator habitat on a broad scale.

Assessing the Implementation of the Action

The assessment is in the process of being evaluated by the champions and volunteers.

Success is defined as:

- To be determined by the champions.

Improving Access to and Addressing Limitations in Available Data

Effective conservation planning for pollinators faces several significant barriers related to data and information availability. Comprehensive data on pollinator populations is limited by insufficient sampling efforts, which results in gaps in the distribution and representation of diverse species. In addition, there's a lack of consistent evaluation methods to determine whether conservation initiatives are effectively benefiting pollinator populations. Establishing baseline data for both species and habitats is crucial but often lacking. Furthermore, the lack of spatial habitat data limits precision in conservation strategies. Understanding the fundamental biology and requirements of at-risk pollinators is also essential for successful conservation efforts. Addressing these barriers is pivotal for increasing native pollinator habitat.

Action 1: Develop Language to Motivate Data Sharing

To enhance data sharing within the conservation community, this action focuses on developing language to promote data sharing. To start, champions will circulate the Service's current language on data sharing and compatibility. Language will be modified if needed to advocate for improved data management and centralization in grant applications and requests for proposals. This includes developing clear frameworks and protocols for collecting and sharing data collaboratively. The intent is to establish accountability measures to ensure adherence to data-sharing practices and enhance transparency and effectiveness in our conservation initiatives.

Assessing the Implementation of the Action

The assessment is in the process of being evaluated by the champions and volunteers.

Success is defined as:

- More insect occurrence data becomes publicly accessible.

Action 2: Enhance Pollinator Data Access and Coordination

To successfully increase native pollinator habitat and reduce data limitations, this action focuses on understanding data gaps and what is happening in the landscape to inform management actions. This action is intended to identify data gaps in species occurrence and habitat quality and availability. Once this data is assessed, broad themes will be identified and prioritized based on habitat or location. This will allow for management actions to be informed.

Assessing the Implementation of the Action

Effectively implementing this action requires sharing data and information about specific pollinators including threatened and endangered species. Sharing data and information requires the support of researchers and organizations and agencies that are collecting data. There are examples of data sharing currently with a work group focusing on Mojave poppy bee and western bumble bee that are an example of collaborative efforts in addressing ecological concerns and data limitations.

How will the collaborative know it is successful?

- Communicate with land manager organizations, public and private, to take appropriate actions BEFORE requiring remediation.

- Incentivize pollinator management activities and include tracking guidance and policies make policy accountable to these practices.



Figure 5 Ruddy Copper *Lycaena rubidus* at Seedskaidee National Wildlife Refuge Wyoming. Photo by Tom Koerner/USFWS

Increasing Resources and Building Capacity

Navigating the landscape between research priorities and conservation planning is challenging. For those interested in supporting and conducting research there are discrepancies. Within the academic sphere, providing researchers with opportunities for working in coordination or collaboration beyond individual institutions is also a challenge. Furthermore, opportunities are lost or missed to align research to management actions. Moreover, the necessity for monitoring over time requires more than just motivating efforts to increase native pollinator habitat.

Action 1: Develop a Streamlined Resource for Research and Management Action Opportunities

To successfully increase native pollinator habitat, this action focuses on creating a real time updated resource that gathers information on all research opportunities and national-level conservation priorities for pollinators. The purpose of this action is to maximize coordination and collaboration for research and habitat creation and habitat improvement, including by identifying non-pollinator-specific opportunities that could be applied to pollinators. This action will require a broadly representative group of individuals from various organizations working in a collaborative workshop setting to identify shared priorities and demonstrate that there is consensus among experts regarding what the main needs are for pollinators, clarify the actions for coordination or amplifying efforts, and find opportunities for positive feedback loops.

Assessing the Implementation of the Action

Effectively implementing this action would require developing a tool or a platform to host the research opportunities. To be useful, that tool would need to be kept up-to-date, and the deadlines would need to be explicit. In addition, the tool would need to consider regionally appropriate adjustments to be inclusive of a broad suite of restoration projects. This action can amplify efforts already in place. For example, it can promote State Wildlife Action Plans, national conservation planning efforts and support the U.S. Department of Agriculture's "latest buzz" email.

Success is defined as:

- A practical way for practitioners and contributors to find research opportunities that connect to conservation priorities to increase efficiencies and effectiveness.
- Understanding / being informed on the threats to pollinators from research will increase sustainability of pollinator habitat management actions.
- Prioritize/modify the actions that we are taking for habitat.
- Develop informed management strategies for habitat.

Streamlining Regulatory Challenges for Pollinator Habitat

A key barrier to increasing native pollinator habitat was identified as the fear of, and regulatory complexities that come with, future regulations associated with species that are/potentially could be listed under the Endangered Species Act. The fear of future regulatory requirements can create hesitation among interested parties to actively engage in conservation initiatives to improve native pollinator habitat, as there is concern about what future requirements associated with the listing process may entail. Once listed, navigating complexities of endangered species regulations can disincentivize landowner engagement in conservation. Furthermore, the interplay between urban planning and zoning policies introduces another layer of complexity, influencing the feasibility and implementation of initiatives to improve pollinator habitat. Understanding and addressing these multifaceted concerns is crucial for developing effective strategies to increase native pollinator habitat.

Action 1: Convening Thought Leaders

To successfully increase native pollinator habitat, and reduce concerns associated with regulatory requirements, this action focuses on convening thought leaders to identify opportunities for overcoming regulatory challenges. This action recognizes that regulations are complex, and a significant barrier to their effective implementation sometimes is as simple as knowing how to get started. At the same time numerous templates, examples, and conservation guidance documents already exist. Therefore, the focus of this action is on increasing the awareness and accessibility of existing templates, providing guidance to simplify understanding of regulatory requirements, and increasing collaboration among individuals and groups working to address challenges.

Assessing the Implementation of the Action

Through this process it will be important to avoid duplicating existing efforts. The intent of this action is streamlining challenges rather than creating new ones, which may include making existing tools and resources more accessible. Furthermore, for this action to be successful, it must remain within the scope of providing guidance and clarification, rather than making formal recommendations. Focusing on scope will ensure the results of this action stay within legal and procedural boundaries while still offering valuable insights.

Success is defined as:

- Increase awareness among possible participants in conservation agreements to improve native pollinator habitat.
- Increase ease among possible participants to develop conservation agreements to improve native pollinator habitat.
- Streamline the process for conservation agreements and accelerate conservation by making process easier, less costly, or time-consuming, and by engaging more participation.

Action 2: Compile or Create Model Ordinance Examples for Pollinators

To successfully increase native pollinator habitat and reduce concerns associated with requirements, this strategy focuses on compiling or creating model ordinance examples for pollinators. The current champion for the focus area “Streamlining Regulatory Challenges for Pollinator Habitat” will reach out to their

contacts and interested parties to see if there is a volunteer willing to lead and complete this action. Once identified, the volunteer will begin the process of identifying individuals who are focused on creating model ordinance examples and are willing to review compiled ordinance examples. Those individuals will complete the following three steps: 1) Identify a location(s) to house examples and guidelines for successful ordinances; 2) Identify opportunities for modeling tools to inform ordinance application or research and monitoring of effects; and 3) Identify leading communities that may adopt model ordinances in collaboration with existing programs.

Assessing the Implementation of the Action

The assessment is in the process of being evaluated by the champions and volunteers.

Success is defined as:

- Examples and templates of model ordinances for pollinators are created.



Figure 6: Rufous hummingbird drinking nectar from showy milkweed plant. Photo: Tom Koerner/USFWS.

Strengthening Coordination Among Partners and Initiatives

Effective collaboration and coordination rely on a connection between and among partners and programs. While coordination is critical at multiple scales and with a wide range of people and organizations, state-level coordination is important for engagement to strengthen both broader scale and more localized coordination efforts. While various coordination efforts exist currently, there is a need to strengthen the flow of information and resources, bolstering coordination and collaboration in order to maximize the effectiveness of monarch and pollinator habitat conservation efforts. To strengthen coordination, there is a need to improve networking and collaboration opportunities, as well as information sharing and resource development. Difficulty accessing information and resources in an organized/streamlined fashion can prevent effective coordination and conveyance of aligned messaging, so there is a need to improve platforms for organizing and disseminating information and collaborative opportunities.

Action 1: Assessing the Current Status of State Coordination

The first step in strengthening coordination efforts at the state level is to assess the current status of state level engagement. This includes direct points of contact for state pollinator efforts as well as organized collaborations at the state level. Once an initial network list is compiled, the champions will assess the level of interest and ideas of the individuals on the network list regarding what would be useful in a network or gathering space. Some partners already have or are working on models of functioning state collaborative efforts. These types of resources may be of interest to share with the established network.

Assessing the Implementation of the Action

Effectively implementing this action requires the establishment of a common understanding and shared definition of what constitutes a "successful" collaboration among partners. This foundational definition becomes essential in guiding collaborative efforts and designing an effective example of collaboration. The action assumes that state-level organizations recognize the value of collaboration to increase native pollinator habitat. Cultivating a collaborative mindset and fostering a unified vision among existing state-level organizations to fully leverage the potential benefits of the proposed action will be essential.

Success is defined as:

- An assessment of the desire for network space to support a community of practice for state-level coordination and an initial invitation list for engagement.

Appendix A: Expanding Availability of Native Seeds and Plants

Action 1 Tasks: Improving Coordination with Existing Efforts to Increase Native Seed and Plant Availability

The Expanding Availability of Native Seeds and Plants focus area is supported by one action and four corresponding tasks. The following text describes the tasks associated with Action 1: Improving Coordination with Existing Efforts to Increase Native Seed and Plant Availability as outlined by the champions in September 2024. These tasks are subject to change as the champions and interested parties in the pollinator community work to achieve Action 1.

Task 1: Review Current Case Studies and Success Stories

To successfully develop strategies to improve coordination with existing efforts and increase native seed and plant availability, the champions will focus on identifying gaps and opportunities that support collaboration and partnerships, especially in the context of ecologically relevant spatial scales and collaboration across state boundaries. The champions recognize and acknowledge that important work is already being done on multiple scales throughout the nation, and they do not want to duplicate efforts.

The champions will work with interested members of the pollinator conservation community to develop case studies that highlight the challenges and successes of ongoing efforts; these will provide useful information for new and/or expanded efforts. General themes to address needs at the national level include:

- **Habitat Connectivity:** Connecting habitat allows pollinators to move between suitable habitats to access food, shelter, and breeding sites. This movement supports biodiversity and sustains populations.
- **Connecting People and Management:** Connecting people and management is essential to sustaining efforts. This includes fostering communication and coordination, particularly in addressing challenges such as invasive species or coordinating management activities such as prescribed fire or mowing.
- **Cross-Property Collaboration:** Highlighting the benefits of collaborative land management across property boundaries shows the benefits of working together. This approach not only improves the ability to manage land but also helps reduce the costs associated with land management.

Task 2: Identify What Resources Are Needed

This task will use information on gaps identified from *Task 1: Review Current Case Studies and Success Stories* to describe resources needed to facilitate new and/or expanded efforts. The primary purpose of identifying what resources are needed will be to ensure efforts are not duplicated at regional and national levels. As decision makers work on a larger, broader scale, the resources can be directed to enhance cooperation across various efforts, ultimately improving the coordination of native seed availability and supporting more comprehensive seed and plant availability strategies. The champions and team members will work to assess and determine what resources may be needed.

Although the focus of this action and specific task are regional and national-level resources that provide overarching guidance, the champions recognize there is also a need to consider the specifics of smaller-scale initiatives.

Task 3: Reach Out to Native Seed and Plant Growers and Non-Governmental Organizations

To effectively develop resources for improving coordination and native seed availability, it is crucial to include native seed and plant growers, non-governmental organizations, and other important groups that are not currently engaged or represented in the process. Understanding the constraints and limitations of all parties involved is critical for identifying resources to support the availability of native seeds and plants. This foundational information will ensure that developed resources address the real issues faced by native seed and plant growers and other partners. A survey could be conducted to collect feedback on specific topics and questions from the native seed and plant growers. The findings from the survey could then be recorded in a report or detailed paper to be shared and incorporated into the development of resources. Additional surveys could be developed for other stakeholders as needed.

Task 4: Aligning with the National Seed Strategy

This task involves reviewing the existing National Seed Strategy to align with the content from Tasks 1-3. This will improve the functionality and efficiency with implementing the strategy. An essential aspect will be linking land and habitat availability with associated economic costs to ensure that landowners and practitioners can make informed decisions regarding land use, habitat restoration and long-term sustainability.

Elements to consider aligning may include:

- Engagement Process: Identify a clear process for engaging stakeholders, focusing on who to approach first to effectively build partnerships and collaborations.
- Audience Identification: Define and differentiate between various audiences, such as urban-focused or landscape-oriented groups. Recognize that different stakeholders face distinct challenges which may necessitate the creation of multiple approaches to address the needs of different sectors, such as agriculture.
- Defining Scale: Clearly outline the scale of conservation efforts, highlighting successful examples across various contexts to inform future strategies.
- Template Development: Develop geographically specific and state-based approaches that offer tailored recommendations for collaboration, ensuring that efforts are customized to meet the needs of different regions.
- Consideration of Native American Tribes: Include Tribes in the strategy, ensuring their perspectives and actions are integrated into collaboration and partnership efforts.

These recommendations will guide the development of effective frameworks that can be adapted to different regions and contexts, promoting consistency in native seed and plant efforts across various landscapes.

Tasks 1 -4 will require the following expertise to be successful:

- Horticultural industry (seed producers, growers)
- Economics of cost effectiveness (supply and demand)
- Plant/pollinator expertise (what forbs to focus on)

- Restoration and management (maintaining habitat after creation)
- Engage Local/State/Federal partners (to identify gaps and incorporate policies)

Tasks 1 -4 will require the following resources to be successful:

- Native Seed Strategy
- To be determined by the champions.



Figure 7 Sweat bees on Nuttall's Sunflower at Seedskaadee NWR. Photo by Tom Koerner/USFWS

Appendix B: Improving Access to and Addressing Limitations in Available Data

The Improving Access to and Addressing Limitations in Available Data focus area is supported by two actions. The champions are currently working to develop the tasks for Action 1: Develop Language to Motivate Data Sharing and have described three corresponding tasks for Action 2: Enhance Pollinator Data Access and Coordination.

Action 1 Tasks: Develop Language to Motivate Data Sharing

The champions and volunteers are currently working to develop language to promote data sharing. They have circulated the current language on data sharing and compatibility for consideration.

Tasks will require the following expertise to be successful:

- States, Tribes, communities, academics,
- NatureServe
- Local conservation GIS expertise
- Natural Resource Conservation Service's Natural Resource Program Center
- Status of Butterflies in the U.S.
- National Science Foundation's Research Coordination Network
- U.S. Geological Survey's Bee Lab and other public database managers, e.g., Global Biodiversity Information Facility, Symbiota)

Action 2 Tasks: Enhance Pollinator Data Access and Coordination

The following text describes the tasks associated with Action 2: Enhance Pollinator Data Access and Coordination as outlined by the champions in September 2024. These tasks are subject to change as the champions and interested parties in the pollinator community work to achieve Action 2.

Task 1: Identify Barriers and Solutions to Accessing and Utilizing Pollinator Data

To identify the barriers and solutions to accessing and utilizing pollinator data, the champions and identified volunteers will consult with experts familiar with synthesizing disparate pollinator datasets. Using the recent Status of Butterflies and the National Native Bee Research Coordination Network as examples, the group will identify opportunities to overcome barriers that arise from fragmented datasets, a lack of standardized data collection, or challenges in sharing data among organizations. Identifying solutions ensures that conservation efforts are informed by accurate, comprehensive data, enabling targeted management strategies and conservation practices for pollinators nationwide. This also includes data as it relates to habitat. Accessing habitat datasets, like the Midwest Conservation Blueprint or the Conservation and Restoration Priorities for Wild Pollinator Habitat, will need to be considered to strategically implement Task 3: Guidance on management activities for at-risk pollinator species.

Through this process, the group will generate a list of large datasets on pollinators, recommendations on how to modify existing datasets to improve compatibility, and how to format new datasets in keeping with

common standards. The group will recommend databases for long-term data storage and sharing, e.g., Global Biodiversity Information Facility, and identify next steps or opportunities to support the integration of existing datasets into the recommended database(s). Support may include hosting or creating tutorials, building this capacity into programs as it grows, or other means.

Task 2: Create a Pollinator Data Management Working Group

Creating a pollinator data management working group is essential to ensure consistent, reliable and accessible data across pollinator datasets nationwide. This group would oversee the standardization of data collection protocols, promote data sharing, and ensure that methods adhere to the Center for Pollinator Conservation's data standards. This group may be a product or extension of Task 1's work, whereby key interested parties develop a framework for collaboration and data infrastructure. This group would be available to review or vet new datasets/databases, develop and share best practices for data collection, and regularly assess the quality and comprehensiveness of pollinator data.

Task 3: Guidance on management activities for at-risk pollinator species

The information from Tasks 1 - 3 will be used to establish a baseline understanding of the data needed to inform effective management strategies for habitats supporting at-risk species. In this task, the champions and identified volunteers will focus on developing avenues to communicate this baseline with both public and private land management organizations, to encourage them to take appropriate, preemptive actions before remediation becomes necessary. This proactive approach aims to mitigate habitat degradation and species loss by addressing potential issues early on.

Tasks 1 -2 will require the following resources to be successful:

- U.S. Geological Survey
- Science Applications, U.S. Fish and Wildlife Service
- Natural Resources Conservation Service

Tasks 1 -2 will require the following expertise to be successful:

- Research community including taxonomists, entomologists, individuals who understand species' life histories, individuals who have investigated threats
- Individuals with expertise in extinction risk assessment, potentially modeling expertise
- U.S. Geological Survey
- State agencies
- Online data sharing facilitators

Appendix C: Increasing Resources and Building Capacity

Action 1 Tasks: Develop a Streamlined Resource for Research and Management Action Opportunities

The Increasing Resources and Building Capacity focus area is supported by one action and three corresponding tasks. The following text describes the tasks associated with Action 1: Develop a Streamlined Resource for Research and Management Action Opportunities as outlined by the champions in September 2024. These tasks are subject to change as the champions and interested parties in the pollinator community work to achieve Action 1.

Task 1: Develop a Current List of Contributing Sources

To successfully develop a current list of contributing sources, the champion will begin by reaching out to individuals that are currently sharing research opportunities and national-level conservation priorities, such as the author and distributor of the “Latest Buzz”. Identified volunteers will work to assess the best way forward to share contributing sources and opportunities with the larger pollinator community. The focus will be on identifying effective ways to identify state, regional or specific contributing opportunities on large and small scales. Through this initial exploration phase the identified volunteers will assess the following:

- Responsible individual(s) to update and manage the information, e.g., will this be a shareable document that anyone in the community can edit, or managed by a single individual.
- Location where the list will be housed, e.g., nonprofit is better suited to hosting the list of contributing sources
- Strategies to coordinate among researchers and contributors, e.g., how can collaborative opportunities be captured on the current list.

After the initial assessment and research are completed, the next step will be “responsible individuals” (volunteers) beginning the process of developing and sharing the list of contributing resources.

Task 2: Establish a Consortium of Experts

To successfully establish a consortium of experts, the champion will begin by drafting a comprehensive summary document describing pollinator experts for the consortium of experts including the goals and types of expertise needed, e.g., topical or geographical. This document is expected to be completed and shared with four to five potential members to assess whether they are interested in participating.

Once completed, a draft charter or “behind the scenes” document that describes the logistics including the managing and maintenance of the consortium will be developed. The draft charter will reiterate the goals of the consortium including creating a coordinated effort of the research needed, focusing on outputs, and aligning that with funding opportunities.

With these two pieces of information, the experts that are selected and willing to volunteer in the consortium will begin their work together. Potential topics to discuss are as follows:

- Connecting nongovernmental organizations with contributor opportunities or outlining research priorities

- Developing a criterion to evaluate management actions, e.g., these are the issues, or what the research community has identified as needing additional research or information.
- Developing a framework for contributors, researchers and practitioners to coordinate opportunities to effectively conduct projects or research.
- Supporting an influencer for scientists to support identified research priorities or initiatives.
- Reviewing the framework and standards for other species, e.g., bees or bats to adapt for pollinator species.

The work completed by the consortium of experts and resources shared in the consortium will be circulated to practitioners and partners.

Task 3: Create a Repository of Pollinator Research and Management Priorities

To successfully create a repository of pollinator research and management priorities, the consortium of experts must be established and active. The consortium will identify shared priorities and collaborative projects that could be contributed, or opportunities for future connections. From this, a platform will be built to achieve and organize the priorities identified by the consortium of experts. Similarly to Task 1: Develop a Current List of Contributing Sources, this task will require a volunteer sponsor or a champion to implement, and will need to address key administrative and logistical issues such as:

- Identifying a responsible individual(s) to post the information.
- Identifying a location for the information to be posted electronically.
- Developing effective methods of summarizing reports, e.g., providing executive summaries.
- Categorizing research and contribution opportunities by species status, e.g., federally listed as threatened or endangered.
- Developing user-friendly features such as a search function so that users can easily locate state or regional priorities.

Tasks 1 -3 will require the following resources to be successful:

- To be determined by the champions and volunteers.

Tasks 1 -3 will require the following expertise to be successful:

- People from major contributors who are familiar with current and upcoming opportunities.
- People who are connected to or cognizant of "non-traditional" avenues of collaboration.

Appendix D: Streamlining Regulatory Challenges for Pollinator Habitat

The Streamlining Regulatory Challenges for Pollinator Habitat focus area is supported by two actions and three corresponding tasks. For Action 1: Convening Thought Leaders, the champions have described three tasks to complete, and the champions are currently working to develop Tasks for Action 2: Compile or Create Model Ordinance Examples for Pollinators.

Action 1 Tasks: Convening Thought Leaders

The following text describes the tasks associated with Action 1: Convening Thought Leaders to discuss challenges as outlined by the champions in September 2024. These tasks are subject to change as the champions and interested parties in the pollinator community work to achieve Action 1.

Task 1: Establishing a Work Group

To successfully identify the challenges with and create opportunities for streamlining regulatory challenges a group of thought leaders will be convened. The champions will begin the process by meeting in 2024 to outline the following for the group:

1. Purpose and Scope: The purpose and scope statement will provide a detailed description of the intent of the group including what topics will be addressed, and the intended outcomes. It will focus on describing “what the problem is that the group is trying to solve”. The group will be ad hoc and will provide ideas on strategies to:
 - Communicate what potential applicants can do to navigate regulations and procedures
 - Summarize existing strategies, plus areas for future exploration
 - Provide thoughts on common constraints, planning needs, and related communications.
2. Roles and Responsibilities: The roles and responsibilities of the thought leaders will describe the expectations for participating in the group.
3. Potential Thought Leaders: A list of potential thought leaders will be developed to invite to the group.

Task 2: Convene the Work Group

After the successful completion of Task 1: Establishing a Work Group, the champions will begin the process of convening and establishing the group. The members of the group will work together to address the outlined scope of work. Together, they will develop a shared understanding and awareness of the challenges with and opportunities for streamlining. Through this process they are expected to grapple with pressing questions that align with their purpose and scope, such as: “if we have the resources and templates, why are potential applicants not using them”, “how can we ensure there is access to the current guidance materials?”

Task 3: Discuss ideas with policy-makers

In this task, the ideas from the group, Task 2: Convene the Work Group, will be shared and discussed policy-makers and Service leadership. Champions will be responsible for scheduling and coordinating with the Service leadership and ensuring they have the necessary content. The information delivered will be in the form of considerations.

Tasks 1 -3 will require the following expertise to be successful:

- Individuals with knowledge of and experience with voluntary conservation agreements.

- Individuals with knowledge of Endangered Species Act, conservation planning regulations, and Service review procedures.
- Individuals with knowledge of funding resources and related programs.

Tasks 1 -3 will require the following resources to be successful:

- Ideas developed by the group.
- Active participants that can identify and share knowledge on the challenges and opportunities for streamlining regulatory challenges and procedures.
- Connect with resources and groups already working in this area, regionally and nationally.

Success for Tasks 1-3 is defined as:

- A one-page document will be shared with the identified and invited thought leaders as part of Task 2: Convene the Work Group.
- Co-create a statement or briefing of shared ideas and guidance.
- Develop guidance on the types of national conservation agreements available, and how the Service can increase interest in them.

Action 2 Tasks: Compile or Create Model Ordinance Examples for Pollinators

- To be determined by the champions and volunteers.

Action 2 will require the following resources to be successful:

- Examples and templates of model ordinances for pollinators.
- Funding to review and develop examples and templates of model ordinances for pollinators.



Figure 8 Pollinator by Tom Koerner/USFWS

Appendix E: Strengthening Coordination Among Partners and Initiatives

Action 1 Tasks: Assessing the Current Status of State Coordination

The Strengthening Coordination Among Partners and Initiatives focus area is supported by one Action and three Tasks. The following text describes the Tasks associated with Action 1: Assessing the Current Status of State Coordination as outlined by the champions in September 2024. The Center will be completing the described network analysis to supplement the work of the champions. These tasks are subject to change as the champions and interested parties in the pollinator community work to achieve Action 1.

Task 1: Identify the Existing Networks

To successfully assess the status of state-level coordination the champions will create a shared spreadsheet to begin compiling information on existing state contacts and state collaboratives. This list is expected to be completed by the end of October 2024 and will support the development of Task 2, Assess the Network Needs. The list will be provided to the participants that worked on developing this action in the initial virtual workshop series.

The Center's Work on a Network Analysis:

The Center for Pollinator Conservation will support the identification of existing networks by conducting a social network analysis. The social network analysis will collect information regarding the structure and functions of pollinator networks throughout North America, key influencers and network clusters, network gaps, and the diffusion of information across the broad pollinator conservation community. The survey effort will focus on organizational efforts in pollinator conservation; pollinator conservation collaboration efforts, including identification of collaborative organizations and collaboration types; and network characteristics, including how organizations work together and potential barriers. The information collected in this effort will be used to develop multiple products aimed at translating the data into information that can strengthen partnerships, identify gaps, and inform conservation decisions in the pollinator conservation space. The survey effort and additional project efforts are expected to be completed by the end of 2027.

The Center will require the following resources to be successful:

- Information gathering for existing contacts.

Success is defined as:

- A list of relevant points of contact will be identified to assess the network needs.

Task 2: Assess the Network Needs

After the successful completion of Task 1: Identify the Existing Networks, the champions will engage the group in designing and assessing the potential network's needs and wants. Based on this information, the group will compile the information, which can be used as a basis for a future leadership structure to begin designing the network space and implementing in Task 3: Develop a Strategy for State Network Development. Depending on the results of the assessment, the group may also provide ideas and background information for possible structures, such as a community of practice or coordination or governance structure. Once the assessment is completed, the champions or designated volunteers will sort the information into categories and identify themes and patterns that will inform the development of a structure that best supports the network's needs. The final step in this task will be to correlate the

specific needs of the groups that participated in the assessment with the types of support that will be helpful to them moving forward in a foundational report.

The questions for this assessment will be finalized prior to conducting the assessment and may include the following:

- In what ways would you find it helpful to engage with a broader network of state pollinator contacts or ongoing conservation efforts?
- Are you already engaged in a collaborative network, and if so, what works well? What could be even better?
- What types of information or resources are you most in need of to conduct more effective pollinator habitat conservation and what are your most common or most preferred ways to receive information?
- In what ways might you envision sharing your knowledge or experience with a broader network to enhance state coordination efforts?
- Approximately how much time would you have available to commit to engaging in a collaborative network space?
- Are you willing to serve in a leadership capacity to help design and lead a collaborative network?

Tasks 2 will require the following expertise to be successful:

- Volunteers willing to conduct the assessment.
- Suitable location to securely store all documents, resources, and reports related to the assessment for easy access and future reference.

Success is defined as:

- A foundational report of network wants and needs will be compiled for a future leadership structure to use in network design.

Task 3: Develop a Strategy for State Network Development

Task 3 centers on establishing a small planning and leadership team that can continue to champion and grow the network space design and implementation based on the assessment completed in Tasks 1-2. Based on the results of the assessment, the group will identify a small planning team of willing and representative members to pursue the development of a framework that best accommodates the wants/needs of the potential network. If the assessment determines that there is insufficient interest in continuing planning for this network – or there are no willing participants – the voluntary action for network development will cease. In this case, information compiled will be shared with existing networks to enhance existing network spaces, and interested participants will be encouraged to engage in existing networks. If successful, a planning team will continue with the development of an organizational structure that best suits the interests and capacity of the group. This planning team will design and implement a network design engaging a wide array of state pollinator contacts and improving statewide conservation efforts.

Tasks 1 -3 will require the following expertise to be successful:

- Association of Fish and Wildlife Agencies and regional associations
- State pollinator collaboratives, state pollinator coordinators/representatives.