

6. Implementation and Monitoring

6.1 Introduction

The Arctic National Wildlife Refuge (Arctic Refuge, Refuge) Revised Comprehensive Conservation Plan (Plan, Revised Plan) will be implemented through the goals, objectives, management guidelines and policies, and specific actions described in Chapters 2 and 3. The Refuge will also use various step-down management plans described in Section 6.3 to implement the Revised Plan. Each step-down plan has its own focus, and each identifies and directs the implementation of specific actions, techniques, and tools designed to achieve the objectives outlined in this Plan (Service Manual 602 FW 1.5).

The vision and goals adopted in the Revised Plan are intended to guide management of Arctic Refuge for the next 15 years. The objectives and management actions adopted in the Plan are the concrete steps that the Refuge would take to reach those goals, and they serve an integral role in implementation. The intent is for these objectives to be a measure of real progress toward goals for Arctic Refuge. Because opportunities and needs for new objectives will most likely arise, the U.S. Fish and Wildlife Service (Service) considers these objectives dynamic and responsive to changing environmental and social conditions and management situations, such as those anticipated from accelerating climate change or infrastructure development in local communities. Implementation is also dependent on future Service budgets and regional funding allocations. Plan adjustments and amendments might be needed depending on the nature of unfolding concerns or opportunities (Section 6.7).

Implementing this Plan will require the Refuge to coordinate closely with partners throughout the region and with the State. We will also need to identify new partnership opportunities as they arise (Section 6.4) to carry out strategies for accomplishing objectives. The Plan's objectives identify numerous monitoring activities that would directly or indirectly provide feedback on the effects of the Revised Plan on Refuge resources and operations (Section 6.6). The Plan is scheduled for full revision in 15 years.

6.2 Current Step-Down Plans

Step-down plans deal with specific management topics. They describe strategies and implementation schedules and provide details necessary to implement goals and objectives in this Plan.

6.2.1 Fire Management Plan

Service wildland fire management planning is a complex activity incorporating: interagency fire management obligations and coordination at local, regional, and national levels; the mission of the Service and the National Wildlife Refuge System (Refuge System); and local Refuge management. It must also be consistent with overall Refuge System planning processes.



Every unit managed by the Service that has burnable vegetation must have an approved Fire Management Plan (FMP), unless exempted in writing by the regional director. An approved FMP ensures consistency with the Comprehensive Conservation Plan and other management plans, and allows a manager to consider a wide range of management responses to wildfires and to conduct prescribed fires.

FMPs are intended to be dynamic and reflect current situations and policies; therefore, to remain up-to-date, FMPs must be reviewed each year using a nationally established annual review process. Plans must be revised when substantial changes occur or substantial changes in management are proposed. Minor plan revisions may be accomplished through an amendment added to the plan and signed by the line officer and servicing fire management officer. Major scheduled revisions to fire management plans will follow the 15-year Comprehensive Conservation Plan revision cycle to provide consistency in objectives and management strategy formulation. Without a current FMP, prescribed fires cannot be conducted, and response to unplanned ignitions can only consider suppression strategies. Preparedness and prevention activities can continue in the interim period as outlined in the expired plan. An Arctic FMP was completed in 2007, approved in 2008, and has been reviewed annually since then. A major revision of the FMP will be completed within one year of approval of the Revised Plan and thereafter in conjunction with future Comprehensive Conservation Plan revisions.

6.3 Future Step-Down Plans

The following sections provide more detail on the step-down plans mentioned in this Plan's objectives (Section 2.1); included is an estimated schedule for their completion (Table 6-1).

6.3.1 Visitor Use Management Plan

The Visitor Use Management Plan (VUMP) is a step-down plan that will develop a visitor management framework to protect, and restore where necessary, desired conditions and visitor experience opportunities of Arctic Refuge and preserve its wilderness characteristics. The planning process will help managers decide the specific conditions and visitor experiences that will be available to the public across the Refuge. The VUMP will develop condition goals, indicators, and standards, which will help measure the success of plan implementation; the visitor plan will also identify thresholds that trigger management actions to ensure management goals are maintained.

The VUMP will address visitor use issues identified during the Revised Plan's public involvement phases, and additional public involvement will be conducted during the development of the visitor plan. We will assess visitor use issues and information needs such as levels of use, timing and distribution of use, and activities and behaviors of visitors. Managers may use outreach, site management, regulation, enforcement, and rationing or allocation to manage visitor use at Arctic Refuge.

The VUMP would begin immediately upon implementation of the Revised Plan and be completed within three to five years. Since the visitor plan will comprehensively address visitor use throughout the Refuge and across special designations (e.g., designated Wilderness), the effort will be coordinated with the Wilderness Stewardship Plan (WSP) through concurrent scoping, preplanning, data collecting, public involvement, and planning decisions. Additionally, the VUMP will be coordinated with and/or inform other planning efforts, including Comprehensive River Management Plans (CRMPs) and the Ecological Inventory and Monitoring Plan (I&M Plan). The Refuge manager has identified the Visitor Use Management and Wilderness Stewardship plans as the highest priority for step-down planning.

The VUMP would be reviewed every three to five years, coincident with Refuge staff review of the Revised Plan. We will consider public comments, local and State government recommendations, research studies, and other sources, to determine if revisions to the VUMP are necessary. If major changes are proposed, public meetings may be held, and new environmental analyses may be necessary. Thereafter, the VUMP will be fully reviewed and revised every 15 years, coincident with Refuge comprehensive planning (see Section 6.6).

6.3.2 Wilderness Stewardship Plan

The Wilderness Stewardship Plan (WSP) is a step-down management plan that provides detailed strategies and implementation schedules for meeting the broader Wilderness goals and objectives identified in the Revised Plan. Service policy requires that refuges develop a WSP for all congressionally designated Wilderness areas. A WSP is used to guide the preservation, stewardship, and use of a particular Wilderness area (Service Manual 610 FW 3).

The WSP will identify adverse impacts on Wilderness character and develop indicators and standards for measuring the condition of Wilderness. Additionally, the plan will identify thresholds that will trigger management actions to reduce or prevent impacts. It will evaluate ongoing and needed monitoring and research, and appropriate and compatible uses and commercial services in Wilderness. It will also contain Minimum Requirement Analyses (MRAs) needed for Refuge management activities. Wilderness is a composite resource with physical, ecological, and experiential components. Therefore, many of the issues the WSP will address will be coordinated with other planning efforts addressing similar issues such as the VUMP, CRMP, and the Ecological Inventory and Monitoring Plan (I&M Plan). The Refuge will coordinate the Wilderness Stewardship and Visitor Use Management planning processes (Objective 5.4) through concurrent scoping, preplanning, data collecting, public involvement, and planning decisions.

The WSP for Arctic Refuge would begin immediately upon approval of the Revised Plan and would be conducted with the VUMP through concurrent scoping, preplanning, data collecting, public involvement, and planning decisions (Table 6-1). The WSP will be completed in three to five years. The Refuge manager has identified the concurrent WSP and VUMP as the highest planning priority.

6.3.3 Ecological Inventory & Monitoring Plan

The Ecological Inventory & Monitoring Plan (I&M Plan) is a step-down plan that will guide an annual program for collection of data on species of management concern to the Refuge (Service Manual 701 FW 2). Service policy requires each refuge to develop an I&M Plan to document selection of species to survey, field protocols, analyses, data management, reporting, and, where appropriate, measurable thresholds for initiating specific management actions. The I&M Plan is effectively a compilation of approved and current survey procedures.

Refuge staff prepared a draft I&M Plan in 2000, but it was not finalized. Alaska Region policy mirrors national policy by requiring development of an I&M Plan for each refuge. The policy further requires that each plan be reviewed at two-year intervals by the Refuge and at 5-8-year intervals by the regional office. The I&M Plan is a “living document” that is subject to revision based on these reviews.

Arctic Refuge will begin drafting an I&M Plan upon approval of the Revised Plan. The draft I&M Plan will be subject to peer review through an ecological review of the Refuge’s biological program three years after approval of the Revised Plan, and will be finalized within four years of approval of the Revised Plan.

A Research Plan will be developed concurrently with the I&M Plan and will be incorporated as an appendix to the I&M Plan. The Research Plan will identify and prioritize research needs, partnership opportunities, and potential funding resources. Research projects will address specific biological hypotheses. For example, while monitoring projects will identify species population trends, research projects will investigate the causes of observed trends and may support development of conservation measures for the Refuge. The Research Plan will be completed within four years of approval of the Revised Plan, after completion of the ecological review.

The Refuge manager has identified the I&M and Research Plans as the second-highest priority step-down planning effort.

6.3.4 Land Protection Plan

A Land Protection Plan (LPP) is a step-down plan that focuses on private lands within the Refuges boundaries with the goal of identifying and conserving high-quality habitat on those lands. It provides a framework for Refuge and private landowner cooperation. Land conservation measures will be pursued only with landowners who are willing to work with the Service, and LPPs do not obligate the Refuge or landowners to undertake any of the measures identified in the plan. The Refuge must consider management goals, priorities, and availability of funds when approached by private landowners with land conservation proposals. An LPP for Arctic Refuge is scheduled to be initiated within one to two years of approval of the Revised Plan and will likely take two years to complete. The Refuge manager has identified the LPP as the third planning priority.

6.3.5 Comprehensive River Management Plans

Comprehensive River Management Plans (CRMPs) apply only to rivers included in the National Wild and Scenic Rivers System. A CRMP is a step-down plan that: includes a detailed description of the river's outstandingly remarkable values; addresses development of lands and facilities; defines the goals and desired conditions for protecting river values; addresses user capacities; addresses water quality issues and in-stream flow requirements; reflects a collaborative approach with all stakeholders; identifies regulatory authorities of other governmental agencies that assist in protecting river values; and includes a monitoring strategy to maintain desired conditions (Wild and Scenic Rivers Act 16 U.S.C. 1271-1287).

A CRMP for each of the three currently designated wild rivers in Arctic Refuge is number four on the Refuge manager's priority list; they are scheduled to be initiated within five years of approval of the Revised Plan. CRMPs will also be completed within three years of designation for any river(s) recommended suitable through the Plan and subsequently designated by Congress. CRMPs will be consistent with Refuge-wide management objectives identified in the Visitor Use Management and Wilderness Stewardship step-down plans. The Refuge manager has identified developing CRMPs as the fourth planning priority, along with Land Protection planning (Section 6.3.4).



6.3.6 Integrated Cultural Resources Management Plan

An Integrated Cultural Resource Management Plan (ICRMP) is a step-down plan that will assist Refuge staff in meeting legal requirements to protect and manage the cultural resources of the Refuge. It provides a ready reference to cultural resource laws and regulations, the Service Manual and the Cultural Resource Management Handbook. The ICRMP outlines a program for implementing Section 110 of the National Historic Preservation Act and Section 14 of the Archaeological Resources Protection Act requirements to determine the nature and extent of cultural resources on the Refuge and evaluate them for eligibility to the National Register of Historic Places. The plan will identify funding needs and possible timetables for completion of identified work.

The ICRMP for Arctic Refuge is scheduled to begin within three years of approval of the Revised Plan with tribal consultations and an overview of literature, authorities, responsibilities, and compliance requirements. The Plan will be completed within six years of approval of the Revised Plan. This plan is fifth on the Refuge manager's step-down plan priority list. The ICRMP will be consistent with CRMPs, protecting cultural values of the Refuge's Wild and Scenic Rivers, however, most of the work on the ICRMP will be conducted in the Services regional office.

Table 6-1. Timeline for start and completion dates of future step-down plans of Arctic Refuge.

Future Step-Down Plans	Priority	Start Date	Estimated Completion Date
Visitor Use Management Plan (VUMP) ¹	1	2013	2018
Wilderness Stewardship Plan (WSP) ¹	1	2013	2018
Ecological Inventory and Monitoring Plan (I&M Plan) and Research Plan ²	2	2013	2017
Land Protection Plan (LPP)	3	2013	2016
Comprehensive River Management Plans (CRMPs)	4	2017	2020
Integrated Cultural Resources Management Plan (ICRMP)	5	2015	2018

¹ These plans will be done concurrently and could be combined into a single planning effort.

² The Research Plan is an appendix to the I&M Plan and not a separate planning effort.

6.4 Partnership Opportunities

Partnerships with other organizations are among the ways the Service fulfills its mission of “working with others to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.”

Arctic Refuge is a dynamic ecosystem. Many of the resources in the Refuge are of regional, State, national, and international importance. The Service recognizes that the public, organizations, and other governmental agencies have interests in the Refuge and the work of the Service. Successful implementation of many Refuge programs requires involvement from these interested parties. Partnerships are among the best ways for the Refuge to accomplish its work and fulfill its mission. We seek opportunities with others to do that work, including but not limited to the following:

- State of Alaska – Alaska Department of Fish and Game (ADFG), Alaska Department of Natural Resources (ADNR), Board of Fisheries, Board of Game, Alaska State Troopers and Division of Wildlife Protection, and the State Historic Preservation Office
- Tribal Governments
- Native organizations such as Doyon, Arctic Slope Regional Corporation (ASRC), Kaktovik Iñupiat Corporation (KIC), Council of Athabascan Tribal Governments (CATG), and Tanana Chiefs Conference (TCC)
- Local village and city councils
- Local municipalities and cities
- North Slope Borough
- Other Federal agencies – such as the U.S. Geological Survey (USGS), the National Oceanic and Atmospheric Administration (NOAA), the National Park Service (NPS), the Bureau of Land Management (BLM), the National Aeronautics and Atmospheric Administration (NASA), the U.S. Coast Guard, and Department of Homeland Security
- Other branches of the U.S. Fish and Wildlife Service
- Landscape Conservation Cooperatives (LCCs)
- Canadian Partners including Parks Canada, Canadian Wildlife Service, and Environment Yukon
- Arctic Borderlands Ecological Knowledge Cooperative
- Migratory Bird Co-management Council
- Various co-management committees and groups
- Universities and museums
- Non-governmental organizations
- Local businesses
- Commercial recreation and hunting interests
- Nanuuq Commission (MMPA)
- Kaktovik Whaling Captains’ Association (Eskimo Whaling Commission)

6.5 Implementation Schedule

The Refuge is committed to implementing the projects and studies identified in the Plan's objectives (Chapter 2, Section 2.1). These projects and studies are summarized in Table 6-2 along with their associated timelines. Ongoing efforts, such as outreach, monitoring and research activities, or partnerships, are not included. For more details, refer to the Refuge's goals and objectives.

Table 6-2. Projects and studies to be implemented by Arctic Refuge.

Date	Activities	Objective ¹	Comments
2012	Initiate water resource inventory and assessment	3.3	Complete in 2013
	Incorporate patrols of at-risk cultural sites into law enforcement patrols	8.2	
	Establish legal protection for water quality and quantity	3.2	Annually until Federal water rights reservations are adjudicated by the State of Alaska
	Evaluate potential effects of climate change on Refuge resources	6.1	Complete in 2017, revise periodically thereafter
2013	Develop Wilderness checklist for Refuge operations	2.1	
	Establish partnerships for village harvest monitoring program	4.4	
	Develop protocols and priorities for scientific research by cooperators	7.3	
	Develop Refuge land status map with 17(b) easements	5.6	
	Interview and document elders and residents in preparation for traditional access study	4.6	
	Compile subsistence use data	4.5	
	Train staff about Wilderness and wild and scenic rivers	2.3	Repeat as needed
	Revise the Visitor Study	5.8	Monitoring intervals to be determined through VUMP/WSP
2014	Implement village harvest monitoring program	4.4	Annually thereafter
	Conduct cultural resource training	8.2	
	Conduct archival research and compile cultural inventories, reports, and data	8.3	

Date	Activities	Objective ¹	Comments
	Complete an environmental analysis of the Lake Peters administrative cabins project	2.5	
	Conduct wild river assessment/inventories of the Refuge's three designated rivers (preplanning for CRMPs)	3.5	Through 2017
2015	Conduct ecological review	1.4	Implement by 2017
	Begin surveys, interviews, and research for Cultural Resource Atlas	8.4	
2016	Evaluate permit process for scientific permits	7.3	
2017	Conduct water quality and quantity sampling	3.4	
	Identify and determine status of rare species	1.8	
	Develop Cultural Resource Atlas and archive	8.4	
	Expand Refuge Information Technician (RIT) program to Venetie/Fort Yukon	4.3	
	Review existing MRAs	2.2	Review again in 2022 and 2027
	Complete field component of the Lake Peters administrative cabin project, if approved	2.5	
2018	Conduct traditional access study	4.6	Could take until 2020
2022	Complete an administrative history of Arctic Refuge	8.5	
	Complete Cultural Resource Atlas and Archive	8.4	
	Implement necessary changes to the Long-term Ecological Monitoring Program	1.9	
2024	Revise the National Interest Study	9.4	

¹ This column identifies the number of the objective in which we make a commitment for the activity. Please refer to Chapter 2, Section 2.1 for a complete description of goals and objectives.

6.6 Monitoring and Evaluation

Monitoring helps Refuge staff track the progress of Plan implementation. In this Plan, objectives specify numerous monitoring programs. These programs use various methods and strategies, including but not limited to surveys, inventories, censuses, and strategic frameworks. While the results from these monitoring programs pertain directly to the program areas requiring the monitoring, the data collected will also provide feedback on the Revised Plan. The Refuge monitoring programs listed in this section will indirectly monitor the impact of the Revised Plan on Refuge management, operations, and resources.

- Ecological inventory and monitoring: status and trends of populations, species, communities and ecosystems
- Baseline water quality study on coastal plain and of designated wild rivers
- Impact of climate change on Refuge resources, including vulnerable species and ecological communities
- Marine Protected Areas
- Monitoring of visitor use impacts and experience on the Kongakut River
- Aircraft impacts monitoring
- Community harvest monitoring
- Cultural resource monitoring
- Subsistence uses
- Wilderness characteristics
- Visitor Study
- National Interest Study
- Additional monitoring programs would come out of the following step-down planning efforts
 - Visitor Use Management Plan
 - Wilderness Stewardship Plan
 - Ecological Inventory and Monitoring Plan
 - Comprehensive River Management Plans

The Service will maintain flexibility in implementing the Plan to account for changing environmental conditions, policies, budgets, technologies, and opportunities for partnerships that might occur during the life of the Plan. The Service will evaluate monitoring results and amend or revise the Plan accordingly to improve wildlife conservation and Refuge management (Section 6.7).

6.7 Plan Amendment and Revision

Periodic review and change of the Plan will be necessary. As knowledge of Refuge resources, users, and uses improves, changes in management may be identified. Fish and wildlife populations, user groups, adjacent land users, and other management considerations change with time, often in unforeseen ways. Challenges may also be encountered in trying to implement the Plan.

Revisions are a necessary part of the adaptive management approach used by the Service. This means that objectives and strategies to reach goals can be adjusted. Most of the resulting changes will fine-tune the Plan. These changes will be addressed in the more detailed Refuge step-down and annual work plans. An appropriate level of public involvement and environmental analysis will be conducted for any proposed change.

To enable Refuge users; adjacent landowners; local, State, and Federal agencies; and other interested parties to express their views on how the Refuge is being managed, the Refuge might periodically hold meetings or use other techniques, such as comment cards and surveys, to solicit comments for evaluation purposes. By encouraging continuing public input, the Refuge will be better able to serve the public, determine potential problems before they occur, and take immediate action to resolve existing problems.

Every three to five years, Refuge staff will review public comments, local and State government recommendations, research studies, and other sources to determine if revisions to the Plan are necessary. If major changes are proposed, public meetings may be held, and new environmental analyses may be necessary. The Plan will be fully reviewed and revised every 15 years.



