



**620 FW 1**

## **Habitat Management Plans**

FWM#: 400 (Supersedes 620 FW 1 and Exhibit 1,12/13/91, FWM 007; 620 FW 6, 10/12/92 FWM 038; and 6 RM2,3,4,5 and 9))

Date: June 19, 2002

Series: Habitat Management

Part 620: Habitat Management Practices

Originating Office: Division of Conservation Planning and Policy

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**1.1 What is the purpose of this chapter?** This chapter establishes Fish and Wildlife Service (we or the Service) policy for planning habitat management within the National Wildlife Refuge System (System). The guidance in this chapter applies to the development of Habitat Management Plans (HMP) and Annual Habitat Work Plans (AHWP) and discusses their relationship to refuge Comprehensive Conservation Plans (CCPs). The policy and guidance in this chapter describe strategies and implementation schedules for meeting CCP goals and objectives. If a habitat management activity described in an HMP (e.g., timber harvest) produces an economic output requiring a special use permit or compatibility determination, the requirements for administration of refuge management economic activities in [603 FW 2](#) apply.

**1.2 What is the scope of this chapter?** This chapter applies to habitat management planning within the System, to the extent we have jurisdiction over habitat management. This chapter also applies to habitat management in special designation areas (e.g., wilderness, wild and scenic rivers); however, the specific provisions set forth in the special designations apply. In general, we develop an HMP for any refuge complex, refuge complex subunit, or wetland management district, including waterfowl production area, currently, or in the future, covered in whole, or in part, by a single CCP.

**1.3 What is the statutory authority for conducting habitat management planning within the System?** We derive our statutory authority from the National Wildlife Refuge System Administration Act of 1966 (Refuge Administration Act), as amended by the National Wildlife Refuge Improvement Act of 1997 (Refuge Improvement Act), 16 U.S.C. 668dd - 668ee. Section 4(a)(3) of the Refuge Improvement Act states: "With respect to the System, it is the policy of the United States that -- (A) each refuge shall be managed to fulfill the mission of the System, as well as the specific purposes for which that refuge was established ..." and Section 4(a)(4) states: "In administering the System, the Secretary shall -- (N) monitor the status and trends of fish, wildlife, and plants in each refuge." The Refuge Improvement Act provides the Service the authority to establish policies, regulations, and guidelines governing habitat management planning within the System.

**1.4 What are the definitions for some terms used in this chapter?**

**A. Adaptive Management.** The rigorous application of management, research, and monitoring to gain information and experience necessary to assess and modify management activities. A process that uses feedback from refuge research and monitoring and evaluation of management actions to support or modify objectives and strategies at all planning levels.

**B. Annual Habitat Work Plan (AHWP).** The specific habitat management strategies and prescriptions applied during a single year's work plan. A process that provides specific information to refuge managers for implementation and fulfillment of habitat management objectives or strategies identified and set forth in HMPs.

**C. Comprehensive Conservation Plan (CCP).** A document that describes the desired future conditions of a refuge or planning unit and provides long-range guidance and management direction to achieve the purpose(s) of the refuge; helps fulfill the mission of the System; maintains and, where appropriate, restores the biological integrity, diversity, and environmental health of each refuge and the System; helps achieve the goals of the National Wilderness Preservation System, if appropriate; and meets other mandates.

**D. Habitat Management Plan.** A dynamic working document that provides refuge managers a decisionmaking process; guidance for the management of refuge habitat; and long-term vision, continuity, and consistency for habitat management on refuge lands. Each plan incorporates the role of refuge habitat in international, national, regional, tribal, State, ecosystem, and refuge goals and objectives; guides analysis and selection of specific habitat management strategies to achieve those habitat goals and objectives; and utilizes key data, scientific literature, expert opinion, and staff expertise.

**E. Invasive Species.** Invasive species are alien species whose introduction does or is likely to cause economic or environmental harm, or harm to human health. Alien species, or nonindigenous species, are species that are not native to a particular ecosystem. We are prohibited by Executive Order, law, and policy from authorizing, funding, or carrying out actions that are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere.

**F. National Wildlife Refuge System (System) lands.** All lands, waters, and interests therein administered by the Fish and Wildlife Service as wildlife refuges, wildlife ranges, wildlife management areas, waterfowl production areas, and other areas for the protection and conservation of fish and wildlife including those threatened with extinction, as determined in writing by the Director or so directed by Presidential or Secretarial Order. The Director may not delegate the determination.

**G. Resources of Concern.** All plant and/or animal species, species groups, or communities specifically identified in refuge purpose(s), System mission, or international, national, regional, State, or ecosystem conservation plans or acts. For example, waterfowl and shorebirds are a resource of concern on a refuge whose purpose is to protect "migrating waterfowl and shorebirds." Federal or State threatened and endangered species on that same refuge are also a resource of concern under terms of the respective endangered species acts.

**H. You.** For the purpose of generating an HMP, "you" refers to the refuge manager or their designee responsible for developing the plan.

**1.5 What is Service policy for developing Habitat Management Plans and Annual Habitat Work Plans?** We will manage all refuge habitats in accordance with approved CCPs and HMPs that, when

implemented, will help achieve refuge purposes, fulfill the System mission, and meet other mandates. This policy requires that an HMP and, where appropriate, an AHWP be developed for each refuge in the System. An HMP is a step-down management plan of the refuge CCP, and the AHWP is an annual work plan that provides specific guidance in support of HMPs. Habitat Management Plans and AHWPs comply with all applicable laws, regulations, and policies governing the management of System lands. The lifespan of an HMP is 15 years and parallels that of refuge CCPs. Habitat Management Plans are reviewed every 5 years utilizing peer review recommendations, as appropriate, in the HMP revision process or when initiating refuge CCPs. Annual Habitat Work Plans are reviewed each year, and restructured based on results and observations of previous years' work plans and goals and objectives outlined in refuge CCPs and HMPs. If active manipulation is not necessary on an annual basis, AHWPs may not be necessary on all refuges to meet habitat goals and objectives outlined in refuge CCPs or HMPs. [Exhibit 1](#) outlines and provides guidance on developing HMPs; [Exhibit 2](#) outlines and provides guidance on AHWPs.

## **1.6 Who is responsible for developing Habitat Management Plans within the System?**

### **A. The Director:**

- (1)** Establishes national policy and guidance for habitat management planning within the System.
- (2)** Ensures compliance with all applicable authorities.

### **B. Regional Directors will:**

- (1)** Ensure refuge managers follow all applicable laws and regulations when developing HMPs and AHWPs.
- (2)** Notify the Director of controversial or complex habitat management decisions.

### **C. Regional Chiefs will:**

- (1)** Approve and authorize implementation of HMPs and major plan modifications.
- (2)** Ensure HMPs meet national policy guidelines.
- (3)** Ensure periodic peer review (e.g., Regional, State, academic, etc).

### **D. Refuge Supervisors will:**

- (1)** Ensure refuge managers follow policy and guidelines when preparing HMPs.
- (2)** Ensure refuge managers attain appropriate public and State conservation agency involvement.

- (3)** Approve HMPs and major plan modifications.
- (4)** Submit HMPs to the Regional Chief for final approval.

**E. Refuge Managers will:**

- (1)** Develop, implement, monitor, evaluate, and revise HMPs.
- (2)** Ensure we attain appropriate public involvement.
- (3)** Invite participation by, and consultation with, the appropriate State conservation agencies.
- (4)** Submit HMPs to the refuge supervisor for first level approval.
- (5)** Develop AHWPs, as appropriate.

**1.7 What guiding principles should I use to develop HMPs and AHWPs?**

**A.** Use available biological information and ecological principles to provide the foundation for developing habitat goals, objectives, and subsequent management strategies and decisions. The conservation of fish, wildlife, and plant populations depends upon integration of biological information into management decisions.

**B.** Derive habitat goals, objectives, and management strategies from the individual refuge purpose(s) and System mission that provides a foundation to conserve and protect functional communities of native fish, wildlife, and plants, and explicitly link international, national, regional, State, and ecosystem goals and objectives, as appropriate. Additionally, derive HMPs from and ensure their consistency with other conservation plans such as threatened and endangered species recovery plans, Service ecosystem plans, the North American Waterfowl Management Plan, State conservation plans, etc., and assist in attaining the goals and objectives of those conservation efforts, to the extent practicable.

**C.** Consider opportunities, constraints, or limitations posed by existing special designations (e.g., designated wilderness, wilderness study areas, wild and scenic rivers, Western Hemisphere Shorebird Reserve Network sites, Convention on Wetlands of International Importance [RAMSAR], research natural areas, marine protected areas, and public use natural areas) when implementing habitat goals, objectives, and applying management strategies.

**D.** View the highest measure of biological integrity, diversity, and environmental health as those intact and self-sustaining habitats and wildlife populations that existed under historic conditions (see [601 FW 3](#)). We evaluate biological integrity by examining the extent to which biological composition, structure, and function have been altered from historic conditions. Individual refuges contribute to biological integrity, diversity, and environmental health at larger landscape scales, especially when they support

populations and habitats that we have lost at an ecosystem, national, or international scale. Refuge purpose(s) may, however, compromise these components at larger landscape scales. When evaluating the appropriate management direction for refuges, refuge managers consider their refuge's contribution at multiple landscape scales.

**E.** Consider a range of habitat management strategies to meet specific wildlife or habitat management goals and objectives. To select appropriate strategies, consult with external partners such as other Federal, State, and tribal natural resource agencies and consider the natural/historic frequency and timing of processes such as flooding, fires, and grazing. Where it is not appropriate or feasible to restore ecosystem function, refuge management strategies will mimic natural processes to the extent practicable. For example, prescribed burning simulates natural fire regimes and water level management mimics natural hydrological cycles. Consider constraints and potential positive and negative effects on wildlife, plants, and other resources. Use the least intrusive and intensive management strategies to achieve desired habitat management objectives, as appropriate.

**F.** Use adaptive management to assess and modify management strategies to achieve habitat objectives. For further guidance on adaptive management, refer to [paragraph 1.14B](#) .

**G.** Manage invasive species to improve or stabilize biotic communities to minimize unacceptable change to ecosystem structure and function and prevent new and expanded infestations of invasive species. Conduct refuge habitat management activities to prevent, control, or eradicate invasive species using techniques described through an integrated pest management plan, or other similar management plan, which comprehensively evaluates all potential integrated management options including defining threshold/risk levels that will initiate the implementation of proposed management actions. Evaluate native habitat management activities with respect to their potential to accidentally introduce or increase the spread of invasive species and modify our habitat management operations to prevent increasing invasive species populations. Refuge integrated pest management planning will address the abilities and limitations of potential techniques including chemical, biological, mechanical, and cultural techniques. We manage invasive species on refuges under the guidance of the National Strategy for Invasive Species Management and within the context of applicable policy.

**H.** Use peer review to provide credible, independent, and expert assessment of refuge habitat management and ensure that we use appropriate techniques, protocols, and processes in the management of refuge habitats. Use and incorporate consultation and assistance from outside conservation interests, such as State conservation agencies, tribal governments, or nongovernmental organizations, where appropriate.

**1.8 What is the relationship of HMPs to CCPs?** Comprehensive Conservation Plans identify refuge management goals, objectives, and strategies. An HMP "steps down" the direction provided in a CCP to provide refuge managers specific guidance for the implementation of habitat management strategies on refuge lands. If a CCP has been completed, incorporate habitat goals, objectives, and management strategies from the CCP into the HMP. The HMP provides specific details for implementing strategies identified in the CCP. If you have not completed a CCP, the HMP includes development of refuge habitat goals, objectives, and management strategies and the process for implementation of those strategies (see Section IVB, [Exhibit 1](#)) . When initiating the CCP process, you should reexamine the

HMP as part of the CCP and incorporate and revise information from the HMP into the CCP, as appropriate.

**1.9 What is the relationship of HMPs, CCPs, and NEPA?** We require refuge managers to conduct the appropriate level of National Environmental Policy Act (NEPA) documentation and public involvement during development of HMPs. You may exclude specific habitat management strategies in an HMP from NEPA documentation if you have identified, addressed, and authorized them in a CCP. For more information on NEPA compliance, see Departmental and Service NEPA guidance in [516 DM 6, Appendix 1](#) , and [550 FW 1-3](#).

**1.10 What are the three basic scenarios describing the development of an HMP?** The following scenarios describe how HMPs relate to CCPs. In each case, the appropriate level of NEPA documentation must occur.

**A. Simultaneous development of a CCP and an HMP.** The development of the HMP within the CCP utilizes habitat management information set forth in the CCP and creates efficiency and economy by taking advantage of the concurrent public involvement, peer review, and other pertinent processes stemming from the CCP. You should prepare and include the HMP within the body of the CCP or as an appendix to the CCP.

**B. A CCP exists.** When a CCP has been completed, an HMP should restate the habitat goals, objectives, and strategies identified in the CCP. The HMP may further define the objectives outlined in the CCP and describe specific prescriptions for habitat management strategies identifying how, when, and where they will be implemented.

**C. No CCP exists.** If a CCP does not exist and is not scheduled for several years, you may develop an HMP in advance of the CCP. You should develop habitat goals, objectives, and management strategies during development of the HMP in this situation. When initiating the CCP process, you should reexamine the HMP as part of the CCP and incorporate and revise information from the HMP into the CCP, as appropriate.

**1.11 When are compatibility determinations required for refuge management activities implemented through an HMP?** We require compatibility determinations for any management activity on a national wildlife refuge resulting in generation of a commodity that we sell for income or revenue or trade for goods or services, as defined in 603 FW 2 as "refuge management economic activities." Examples include farming, grazing, haying, and timber harvesting. We do not require compatibility determinations for habitat management activities that do not result in generation of a commodity. We do not require compatibility determinations for habitat management activities described in an HMP unless the HMP proposes a habitat management activity not addressed in the CCP. If the proposed habitat management strategy results in an economic benefit for the refuge and is not part of the CCP, a revision of the CCP must occur prior to inclusion into, and approval of, the HMP. If a CCP is not completed, we require compatibility determinations for any refuge management economic activity.

**1.12 How do I develop an HMP?** [Exhibit 1](#) provides an outline and guidance for developing an HMP.



If an existing or concurrently developed CCP contains the level of specificity required in an HMP, then either restate or reference the CCP information in the HMP.

### 1.13 When is the HMP complete?

**A.** The HMP is complete after applying the policy and guidance in [paragraphs 1.1](#) - 1.11 and the process for developing an HMP in [Exhibit 1](#) . The refuge manager submits the HMP through the refuge supervisor to the Regional Chief for review and approval. Upon final review and approval, the refuge manager can implement the HMP. Keep the signed, original HMP on file at the refuge or its administrative office. Note: If you concurrently develop the HMP and CCP, the process for completion is the same.

**B.** File the signed original HMP and later revisions with dated changes and accompanying rationale or amendments at the refuge headquarters or its administrative office, providing an administrative record of the refuge's habitat management program.

### 1.14 What is the process for evaluating, monitoring, and revising HMPs?

**A. Habitat monitoring.** Develop habitat inventory and monitoring essential to the HMP in accordance with the guidance provided in the Habitat and Wildlife Inventory and Monitoring chapter ([701 FW 2](#) ). Habitat monitoring, in association with monitoring wildlife response to habitat manipulation, provides the best measure of achievement for HMP objectives. Monitoring wildlife population response to assess habitat manipulations is difficult and introduces more variability into the monitoring process. Monitoring wildlife populations as a sole indicator of wildlife habitat is not usually appropriate. Animal population changes may result from events other than habitat manipulations (e.g., biotic and abiotic conditions such as weather, disease, human intervention, and contaminants). Often these external factors can impact wildlife populations and mask benefits associated with improved habitat conditions. Thus, habitat monitoring is the primary basis for evaluating the effectiveness of management actions to achieve habitat objectives set forth in CCPs and HMPs.

**B. Adaptive management.** Use adaptive management to assess and modify management strategies and prescriptions, as necessary, and to achieve habitat goals and objectives. Evaluate management strategies and prescriptions by comparing results to desired outcomes, and determine if the strategies and prescriptions were effective. The refuge manager may modify the CCP and/or HMP if significant new information suggests the plans are inadequate or refuge resources would benefit from the changes. The appropriate level of NEPA compliance is required if we propose significant changes.

**C. HMP Revision.** Modify HMP habitat objectives and management strategies, as necessary, utilizing decisions for the refuge's resources of concern from the adaptive management process. If you revise the HMP prior to its normal review period, major modifications follow the appropriate review and approval process outlined in [paragraph 1.6](#) . The appropriate level of NEPA documentation must occur. For each HMP revision, record the date and file a copy at the refuge or its administrative office (see the guidance in [paragraph 1.13B](#) on creating an administrative record). Incorporate the same changes into a working HMP copy so the latest version is current and easily available.

**1.15 How do I develop an AHWP?** The AHWP is developed with input from key refuge personnel, including management, biological, visitor service, and maintenance staff and incorporates the scope and vision of the HMP and CCP. The AHWP includes a review of the previous year's habitat management activities, analysis of monitoring and evaluation results, and recommendations for habitat management strategies and prescriptions for the next year. [Exhibit 2](#) provides an outline and guidance for developing AHWPs. In certain circumstances, AHWPs may not be necessary for all refuges. Refuge managers should use their best judgment to determine if an AHWP is necessary and appropriate.

**1.16 When is the AHWP complete?** After applying the policy and guidance in this chapter and [Exhibit 2](#), the AHWP is complete. The refuge manager authorizes staff to implement the habitat management strategies set forth in the AHWP. Keep the signed, original AHWP on file at the refuge or its administrative office.

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## Exhibit 1, 620 FW 1

# Outline and Guidance for Developing Habitat Management Plans

FWM#: 400 (Supersedes 620 FW  
1 and Exhibit 1, 12/13/91, FWM  
007; 620 FW 6, 10/12/92 FWM  
038;  
and 6 RM2,3,4,5 and 9))  
Date: June 19, 2002  
Series: Habitat Management  
Part 620: Habitat Management  
Practices  
Originating Office: Division of  
Conservation Planning and Policy

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## I. Introduction

**A. Scope and rationale.** Provide a brief discussion of the scope and rationale for developing an HMP.

**B. Legal mandates.** List the refuge purpose(s), the System mission, and any other legal mandate or responsibility that you must meet when managing specific resources on the refuge.

**C. Relationship to other plans.** Explicitly describe how the HMP is consistent with other plans (e.g., threatened and endangered species recovery plans, Service ecosystem plans, State fish and wildlife conservation plans, North American Waterfowl Management Plan, Partners in Flight plans, flyway management plans, national/regional shorebird plans, and fisheries resource plans) relevant to the refuge, and how the refuge actions will achieve refuge purpose(s), the System mission, and contribute to goals and objectives of those plans. Identify conflicts between these various sources and document resolution of conflicts. You must resolve conflicts in favor of and in priority order of refuge purpose(s), System mission, and other plans.

**II. Background.** Provide a detailed description of refuge habitats, including the historic and current condition, and changes over time. This section establishes the frame of reference, in accordance with maintaining or restoring the biological integrity, diversity, and environmental health of the refuge (see [601 FW 3](#)), for developing habitat goals and objectives and development and implementation of specific habitat management strategies.

### A. Inventory and description of habitat.

(1) Location -- List the distance to major cities, list county(ies) where the refuge is located, and include State(s) vicinity map.

(2) Management units -- Describe the location, size, and purpose(s) of specific management units on the refuge.

(3) Physical or geographic setting -- Describe the geologic and ecoregional setting of the refuge, the physiographic province, broad vegetation zones, hydrology, flyway, and proximity of refuge to other protected areas.

(a) Historic condition -- Identify natural plant communities and species and ecological processes that may have existed on the refuge and surrounding landscape/seascape prior to significant disturbances by humans. Use historical records, oral history, old photographs, professional judgment, or any other useful source to determine the historic condition (see [601 FW 3](#)).

(b) Current condition -- Describe current habitat(s). Identify individual plant or community types, vegetative composition, soil types, water quality, invasive species, erosion problems, hydrological and fire regimes, contaminant problems, and any other conditions affecting habitat management. Identify existing rare, declining, or unique natural communities, species, and ecological processes inside and outside refuge boundaries. These species, along with the species identified in section IIIA are important to the management of biological integrity, diversity, and environmental health on the refuge.

(c) Habitat changes from historic condition to current condition -- Summarize management practices from the historic condition to the present. Consider disturbances such as agriculture, catastrophic events, urban development, fire, hydrologic changes, contaminants, erosion, and other practices. Identify changes and provide possible or known explanations for these changes from the historic condition, including increases or decreases of various habitat types. Include natural phenomena, such as changes to a river course, as appropriate.

(4) Maps - Include map(s) of the refuge, refuge subunit, or management area for a physical frame of reference. Include cover types, physical

features, and unique resources. Use standard classification systems such as the National Wetlands Inventory and National Vegetation Classification System, and geographic information systems, where possible, to analyze potential habitat contribution of the refuge to the resources of concern (see [701 FW 2](#)).

**III. Resources of Concern.** Resources of concern are the primary focus of the HMP. The following four steps provide guidance to identify refuge priority species, species groups, and communities; identify habitat requirements; analyze the refuge's potential contribution to the habitat need of these species, species groups, or communities; and potential solutions for conflicts among species or community groups.

**A. Identification of refuge resources of concern.** Identify priority refuge plant and animal species, species groups, and communities such as those identified in refuge purpose(s). Also consider international, national, Regional, or ecosystem goals; State fish and wildlife conservation plans; threatened and endangered species; regional fisheries management plans; and biological integrity, diversity, and environmental health of these priority groups. Consider the refuge's rare, declining, or unique natural communities, species, and ecological processes ([section IIA\(3\)\(c\)](#)).

**B. Identification of habitat requirements.** Identify habitat requirements, including the quality and quantity, vegetative characteristics, timing of availability, and distribution of specific habitats and associated ecological processes necessary to support the species, species groups, and communities. Compile additional habitat information for the resources of concern from available sources, such as GAP analysis; geographic information system(s) analysis; published literature; refuge reports; and local area, species, or communities experts. Describe important information gaps for the resources of concern. Identify studies and acknowledge limitations of the available habitat information. The type of information available varies depending on the specific resource identified but may include the following:

- (1) Size, configuration, and juxtaposition of different habitats or seral stages;
- (2) Presence or absence of edge habitats;
- (3) Temporal distribution of required habitat elements or

conditions based on cyclic life history needs of a species or species group;

(4) Necessity for connectivity to other habitats in the landscape/seascape for dispersal of young, seasonal migration, and genetic flow;

(5) Need for buffers from adjacent land uses or land cover negatively impacting refuge habitat;

(6) Existence of appropriate hydrologic, edaphic, climatic, and topographic conditions to support the resources of concern; and

(7) Conservation of the remnant habitats supporting, or having the potential to support, native biological communities or processes.

**C. Potential refuge contribution to the habitat needs of the resources of concern.** Assess and identify the refuge's potential contribution to the habitat needs of the resources of concern. Consider life cycle requirements and habitats afforded by other refuges, private lands, marine protected areas, and conservation areas within the surrounding ecosystem. Consider abiotic components such as topography, geology, hydrology, water quality, and soils that support, or could potentially support, resources of concern.

**D. Reconciling conflicting habitat needs for resources of concern.** Consider the relative priority for each resource of concern using refuge purpose(s) or any other legal or biological mandate, and discuss management activities that result in the optimal management strategy for those resources. Provide discussion and rationale to resolve conflicting habitat needs. Base resolution of the conflicts should be based on the relative importance of the resources of concern considering refuge purpose(s), the System mission, and applicable laws, regulations, or plans.

**IV. Habitat Goals and Objectives.** (See Writing Refuge Management Goals and Objectives: A Handbook for more information on the qualities of good goals and objectives.)

A. Restate habitat goals and objectives from CCPs that apply to the refuge, refuge unit, or management area for which you are developing the

HMP. These habitat objectives provide the fundamental foundation for specific habitat management plans.

B. If you have completed a CCP, but habitat goals and objectives do not provide the level of specificity necessary to manage habitat on refuge lands, then restate the goals and objectives described in the CCP and add detail to those habitat objectives, as necessary, utilizing criteria outlined in [section II](#).

C. If you have not completed a CCP, develop habitat goals and objectives based on a comprehensive habitat analysis conducted for the resources of concern. These habitat objectives concisely state the habitat conditions desired for the resources of concern.

(1) Use scientific information, expert opinion, and professional judgment to clearly support each habitat goal and objective for the resources of concern. Habitat objectives contain the SMART criteria: Specific (who, what, where, when, and why); Measurable; Achievable; Results-oriented; and Time-fixed as recommended in “Writing Refuge Management Goals and Objectives: A Handbook,” as referenced in [602 FW 1](#), [602 FW 3](#) & [602 FW 4](#).

(2) Use habitat models, as appropriate, to help develop habitat objectives. A model may be simple or complex, but generally contains explicit descriptions of the relationship among the management activity, the habitat, and the resources of concern. Models provide a clear and explicit expression of the logic and assumptions used to guide management strategies, allowing improved communication and the formulation of testable management strategies for an adaptive process.

**V. Habitat Management Strategies.** Use the following steps to select specific habitat management strategies and develop prescriptions to meet habitat management objectives:

A. Potential management strategies. Identify potential management strategies for specific habitat objectives utilizing information compiled in [sections II - IV](#) (e.g., burning, water control, moist-soil management, forest management, haying, mowing, grazing, cropland management, predator or pest control). Conduct a literature review, examine limiting factors, and consult with experts to identify the most effective strategy

(ies) to accomplish habitat objectives.

**B. Management strategy constraints.** Discuss how the potential management strategy(ies) may affect the refuge's ability to successfully implement each strategy.

**C. Impacts to the resources of concern associated with the implementation of the proposed habitat management strategies.** Provide an analysis of the potential positive and negative impacts of each proposed strategy on resources of concern as well as nontarget resources. Determine the management strategies necessary to meet habitat objectives with the most positive effects on refuge resources.

**D. Management strategy selection.** Using sound professional judgment, select the specific management strategy(ies) identified above necessary to accomplish habitat objectives. Provide clear rationale for the decision.

**E. Management strategy prescriptions.** Discuss the prescription for each selected strategy, by habitat objective. Include the following, as appropriate:

(1) Location -- Identify on a map, refuge management units where each strategy may be used.

(2) Timing -- Identify the appropriate timing associated with each strategy to achieve desired habitat conditions. Consider vegetative response of the habitat and potential conflicts with other habitat and wildlife objectives. For example, time the fall burning of grasslands in order to provide early spring green-up of native grasslands for foraging sandhill cranes and geese. Prescribed burning would occur in October when staging cranes have left the refuge and grasses are sufficiently dry to provide the appropriate fire intensity. Other variables to consider include time of day and duration of the activity. Use biological criteria to define the timing when possible. Once you have considered and selected biological criteria, consider incorporating visitor services programs to maximize recreational or educational opportunities provided by the habitat management activities or to reduce habitat management activity conflicts with public use activities.

(3) Frequency -- Indicate the required frequency to achieve desired habitat conditions. Use biological criteria in determining the frequency when possible.

(4) Intensity -- Describe the intensity of the strategy required to achieve the desired habitat objective. Examples include the depth and length of



inundation, residual cover, fire intensity, etc. Use biological criteria in determining the intensity when possible.

## **F. Management strategy documents.**

(1) Necessary resources -- Identify the fiscal resources necessary to successfully implement the HMP. Include staff needs for planning, administration, implementation, and monitoring; funding needs (e.g., water, fuel, seed, contract labor, materials, physical improvements); and equipment. Include additional resources necessary to successfully implement the HMP in future budget requests (i.e., Refuge Operating Needs System) to help address staff and funding shortages precluding full, but practical, implementation of the HMP.

(2) Documentation of special uses -- Identify and document special uses (e.g., grazing, haying, cropland management, timber sales) with special use permits ([603 FW 3](#)). Include compatibility determinations for refuge management economic activities, where applicable.

(3) Documentation of compliance -- Identify and include documentation of compliance of applicable laws including permits, as necessary, to implement selected habitat management strategies (e.g., section 404, air quality permits, ESA compliance, or cultural resource clearance).

**VI. Appendices.** Include a bibliography of references related to information essential to the development of the HMP.

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**Exhibit 2, 620 FW 1**  
*Outline and Guidance for  
Developing Annual Habitat Work  
Plans*

FWM#: 400 (New)  
Date: June 19, 2002  
Series: Habitat Management  
Part 620: Habitat Management Practices  
Originating Office: Division of Conservation  
Planning and Policy

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## **I. Relationship to the HMP.**

State that the AHWP is an annual work plan that details incremental (or annual) tasks in support of goals and objectives.

## **II. Habitat Objectives.**

Identify habitat management strategies outlined in the CCP and HMP to be completed within the plan year.

## **III. Habitat Response .**

Evaluate progress toward achieving the habitat objective(s) from the present management strategies and prescriptions. This is a descriptive response of the habitat to the management strategies and prescriptions. Provide an analysis of results.

## **IV. Wildlife Response.**

Evaluate the response of the resources of concern as well as nontarget resources to the habitat management strategies and prescriptions. Provide an analysis of results identifying the positive and negative impacts of each prescribed strategy. Use this information to help select the management strategy(ies) with the most positive effect on refuge resources as a whole.

## **V. Unmet Habitat Needs.**

Describe unmet habitat needs, management shortfalls, and possible explanations.

## **VI. Strategies to Achieve Unmet Habitat Needs.**

Describe management actions (including fiscal resources) necessary to achieve

the unmet habitat needs and management shortfalls. Incorporate conclusions into future AHWPs and subsequent HMPs, as necessary.

## **VII. Management Strategy Prescriptions.**

Identify specific management strategy prescriptions from the HMP that will occur in the coming year. Include, as necessary, for each management action:

- (1) Location
- (2) Timing
- (3) Interval
- (4) Intensity

## **VIII. Create Management Strategy Documents File.**

Identify specific management strategy documents from the HMP. Include, as necessary, for each management action:

- (1) Necessary resources;
- (2) Documentation of special uses;
- (3) Documentation of compliance; and
- (4) Refuge Operations Needs System or other budgetary requests.

## **IX. Appendixes (as appropriate).**

Include any special use permits or compatibility determinations not contained in an approved CCP, as appropriate

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***For additional information regarding this Web page, contact [Krista Holloway](mailto:Krista_Holloway@fws.gov), in the Division of Policy and Directives Management, at [Krista\\_Holloway@fws.gov](mailto:Krista_Holloway@fws.gov). For information on the specific content of this chapter, contact the Division of Conservation Planning and Policy.***

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