Appendix G

Draft Compatibility Determinations for Hunting

USE: Hunting

REFUGE NAME: Pathfinder NWR

COUNTY: Carbon and Natrona counties, Wyoming

ESTABLISHING AND ACQUISITION AUTHORITY: Executive Order 7425

REFUGE PURPOSES:

"As a refuge and breeding ground for birds and other wildlife." (Executive Order 7425, dated August 1, 1936)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Use

The use would be continuation of the existing hunting program, which includes ducks, coots, mergansers, deer, and pronghorn in accordance with dates and regulations established by the Wyoming Game and Fish Commission. The use would be conducted over the entire refuge.

Hunting is one of the six wildlife-dependent, priority public uses specified in the Improvement Act. It can be allowed at the refuge without interfering with the migratory bird resource.

When would the use be conducted?

Late-season upland game bird hunting and small game hunting would open on the day following the deer gun season. The upland game bird hunting season would close when the state season closes. The small game hunting season would close on March 31 to reduce disturbance to waterfowl and other migratory birds.

How would the use be conducted?

A state-issued unit permit would be required to hunt deer. All hunters must follow state regulations for hunted species. The refuge is closed to all other hunting activities.

Availability of Resources

Resources involved in the administration and management of the use: None.

Special equipment, facilities, or improvements necessary to support the use: None.

Maintenance costs: None.

Monitoring costs: None.

Offsetting revenues: None.

Anticipated Impacts of the Use

Short-term impacts: There may be temporary disturbance to nontarget wildlife near the activity. Animals surplus to populations would be removed by hunting, which may help ensure populations remain beneath the carrying capacity of available habitats.

Long-term impacts: Higher-quality habitats capable of supporting healthy populations of wildlife would result if animal populations (especially deer) remain beneath carrying capacity.

Cumulative impacts: There would be no direct or indirect cumulative impacts anticipated with this use.

Public Review and Comment

This compatibility determination was prepared concurrently with the draft CCP and EA for the refuge. Public review and comment will be achieved concurrently with the public review and comment period for the draft CCP and EA.

Determination

Hunting is a compatible use at Pathfinder NWR.

Stipulations Necessary to Ensure Compatibility

Stipulations for the hunting program would be made available in the refuge's hunting "tear sheet."

Justification

Hunting is a traditional and legislated wildlife-dependent, priority public use. The current staff levels are inadequate to ensure the activity takes place with minimum negative impacts to the refuge and its associated wildlife. Use will be appropriately managed in cooperation with WGFD. Hunting at the refuge is a legitimate and necessary wildlife management tool that can be used to keep wild animal populations at healthy levels.

Signature

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Ann Timberman Date
Project Leader, Arapaho NWR Complex
USFWS, Region 6

Review

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Lloyd Jones Date
Regional Compatibility Coordinator
USFWS, Region 6

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Bud Oliveira Date
Refuge Supervisor
USFWS, Region 6

Mandatory 15-Year Reevaluation Date: 2023

Concurrence

_____

Richard A. Coleman, PhD Date
Assistant Regional Director
National Wildlife Refuge System
USFWS, Region 6

Appendix H

Draft Compatibility Determination for Wildlife Observation and Photography

USES: Wildlife observation and photography

REFUGE NAME: Pathfinder NWR

COUNTY: Carbon and Natrona counties, Wyoming

ESTABLISHING AND ACQUISITION AUTHORITY: Executive Order 7425

REFUGE PURPOSES:

"As a refuge and breeding ground for birds and other wildlife." (Executive Order 7425, dated August 1, 1936)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Uses

The uses would be a continuation of existing public use programs and activities of and related to wildlife observation and photography.

This draft CCP proposes to continue the above uses and add the following to improve wildlife observation and photography:

- Update and improve refuge signs.
- Update existing brochures to the Service's graphic standards.

Wildlife observation and photography would be allowed year-round. However, access into the refuge would be limited during the deer gun and muzzleloader seasons; only hunters or those accompanying hunters (details in the "tear sheet") would be allowed at the refuge during these seasons.

The uses would occur over the entire refuge. Vehicle access would be restricted to the parking area at the interpretive overlook located off Highway 220. Supporting use (access) would be controlled and regulated through the publication of refuge "tear sheets" and brochures, and through information posted at the kiosks.

Wildlife observation and photography are two of the six wildlife-dependent, priority public uses specified in the Improvement Act. These uses and their supporting access-related uses can be allowed at the refuge without interfering with the migratory bird resource.

Availability of Resources

Currently, the programs for wildlife observation and photography are administered using available resources. Implementing new programs, activities, and facilities outlined in this CCP is tied to funding requests in the form of RONS and SAMMS projects.

Resources involved in the administration and management of the uses: None.

Special equipment, facilities, or improvements necessary to support the uses: None.

Maintenance costs: None.

Monitoring costs: None.

Offsetting revenues: None.

Anticipated Impacts of the Uses

Short-term impacts: Temporary disturbance may exist to wildlife near the activity. Direct, short-term impacts may include minor damage from traffic to refuge roads when wet and muddy.

Long-term impacts: None.

Cumulative impacts: There would be no direct or indirect cumulative impacts anticipated with these uses.

Public Review and Comment

This compatibility determination was prepared concurrently with the draft CCP and EA for the

refuge. Public review and comment will be achieved concurrently with the public review and comment period for the draft CCP and EA.

Determination

Wildlife observation and photography, along with their supporting uses, are compatible uses at Pathfinder NWR.

Stipulations Necessary to Ensure Compatibility

Stipulations regarding the public use program would be made available in published refuge brochures. Dates, closed areas, and other information would be specified.

Justification

Wildlife observation and photography are priority wildlife-dependent public uses acknowledged in the Improvement Act. These uses promote an appreciation for the natural resources at the refuge. Increased public stewardship will support and complement the Service's actions in achieving the purposes of the refuge and the mission of the National Wildlife Refuge System.

The refuge contains unique habitats and supports wildlife populations—particularly migratory birds, upland game birds, and big game animals—in excess of what can be observed on neighboring private lands. These uses promote an appreciation for the natural resources at the refuge. Access into the refuge would be restricted during the deer gun and muzzleloader seasons for safety reasons.

No significant adverse impacts to the wildlife resource are expected from the primary or supporting uses.

Signature

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Ann Timberman Date
Project Leader, Arapaho NWR Complex
USFWS, Region 6

Review

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Lloyd Jones Date
Regional Compatibility Coordinator
USFWS, Region 6

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Bud Oliveira Date
Refuge Supervisor
USFWS, Region 6

Mandatory 15-Year Reevaluation Date: 2023

Concurrence

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Richard A. Coleman, PhD Date
Assistant Regional Director
National Wildlife Refuge System
USFWS, Region 6

Appendix I

Draft Compatibility Determination for Environmental Education and Interpretation

USE: Environmental education and interpretation

REFUGE NAME: Pathfinder NWR

COUNTY: Carbon and Natrona counties, Wyoming

ESTABLISHING AND ACQUISITION AUTHORITY: Executive Order 7425

REFUGE PURPOSES:

"As a refuge and breeding ground for birds and other wildlife." (Executive Order 7425, dated August 1, 1936)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Uses

The uses would be a continuation of environmental education and interpretative programs at current levels. Environmental education consists of activities conducted by refuge staff and partnerships. Interpretation occurs in less formal activities through exhibits, signs, and brochures. Visiting school and nonprofit groups would use the refuge as an outdoor classroom and tour site.

This draft CCP proposes to continue with the above uses and add the following to improve environmental education and interpretation activities for visitors:

- Update and improve refuge signs.
- Update existing brochures to the Service's graphic standards.

These activities would be held during the daytime, most frequently while school is in session (September–May). Less frequently, nonprofit groups would be hosted during the summer months.

Refuge staff would provide the instruction and host classroom tours in most cases. When someone other than refuge personnel leads activities, a special use permit may be issued. Most activities would be at the interpretive overlook located off State Highway 220. Occasionally, small groups would be led to interior portions of the refuge such as the riparian and wetland habitat areas.

Environmental education and interpretation are two of the six wildlife-dependent public uses specified in the Improvement Act. These uses can be allowed at the refuge without interfering with the migratory bird resource.

Availability of Resources

Currently, environmental education and interpretation programs are conducted using available resources. Implementing new programs, activities, and facilities outlined in this CCP is tied to funding requests in the form of RONS and SAMMS projects.

Resources involved in the administration and management of the uses: None.

Special equipment, facilities, or improvements necessary to support the uses: None.

Maintenance costs: None.

Monitoring costs: None.

Offsetting revenues: None.

Anticipated Impacts of the Uses

Short-term impacts: Temporary disturbance may exist to wildlife near the activities. Minimal disturbance to wildlife and wildlife habitat will result from these uses at the current and proposed levels. Adverse impacts are minimized through careful timing and placement of activities. Minor damage to vegetation, littering, and increased maintenance may occur. These activities will have only minor impacts

on wildlife and will not detract from the primary purposes of the refuge.

Long-term impacts: These activities would increase local support of the refuge and increase knowledge of stewardship of natural resources to students young and old.

Cumulative impacts: There would be no direct nor indirect cumulative impacts anticipated with the continuation of these uses.

Public Review and Comment

This compatibility determination was prepared concurrently with the draft CCP and EA for the refuge. Public review and comment will be achieved concurrently with the public review and comment period for the draft CCP and EA.

Determination

Environmental education and interpretation are compatible uses at Pathfinder NWR.

Stipulations Necessary to Ensure Compatibility

Anticipated impacts are assumed to be light; however, disturbance is almost an unavoidable impact of the interpretive and environmental education programs. However, it is through these activities that visitors would receive an understanding of proper etiquette and the impact people have on habitat and wildlife. This information and refuge-specific regulations would be available through visitor contacts, brochures, and kiosks. Periodic law enforcement would ensure compliance with regulations and area closures.

Justification

Environmental education and interpretation are legislated, wildlife-dependent, priority public uses. Other than minor disturbance, they would have no impact to the resource. These uses would contribute to the mission of the Refuge System by increasing knowledge and support of the stewardship of natural resources.

The refuge contains unique habitats and supports wildlife populations—particularly migratory birds, upland game birds, and big game animals—in excess of what can be observed on neighboring private lands. These uses promote an appreciation for natural resources and support for conservation programs at the refuge.

Signature

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Ann Timberman Date
Project Leader, Arapaho NWR Complex
USFWS, Region 6

Review

_____

Lloyd Jones Date
Regional Compatibility Coordinator
USFWS, Region 6

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Bud Oliveira Date
Refuge Supervisor
USFWS, Region 6

Mandatory 15-Year Reevaluation Date: 2023

Concurrence

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Richard A. Coleman, PhD Date
Assistant Regional Director
National Wildlife Refuge System
USFWS, Region 6

Appendix J

Draft Compatibility Determination for Prescribed Grazing

USE: Prescribed grazing

REFUGE NAME: Pathfinder NWR

COUNTY: Carbon and Natrona counties, Wyoming

ESTABLISHING AND ACQUISITION AUTHORITY:

Migratory Bird Conservation Act, Executive Order 7425

REFUGE PURPOSES:

"*As a refuge and breeding ground for birds and other wildlife.*" (Executive Order 7425, dated August 1, 1936)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Uses

Prescribed grazing is the use of livestock, usually cattle, to remove standing vegetation, reduce vegetative litter, suppress woody vegetation or noxious weeds, open up vegetation-choked wetlands, or open up areas to sunlight and encourage native grass seedlings and growth. Prescribed grazing is carefully timed, and usually of short duration (usually 2–4 weeks), to target certain species for grazing impacts in order to benefit other species for growth after the competing vegetation has been removed.

Fence construction and maintenance (often a temporary electric fence) and control and rotation of the livestock are the responsibility of the cooperating private party. Market rate grazing fees are determined by the regional office, but may include standard deductions for fence construction and maintenance, frequent livestock rotations, construction of water gaps, or hauling/providing additional water in dry pasture.

This CCP proposes to continue with the above use and add the following to improve management of refuge upland habitats:

- Conduct upland vegetation surveys.
- Evaluate grazing program to determine appropriate stocking rates, duration, and so forth of grazing program.
- Install and maintain fencing, where appropriate, to manage grazing program.

Availability of Resources

Developing grazing plans and special use permits (SUPs) and monitoring compliance and biological effects require some Service resources. Most grazing management costs (fencing labor, monitoring and moving livestock, hauling water) are provided by the cooperator or permittee. Evaluating the grasslands for grazing prescriptions and grassland response is part of the refuge grassland management responsibilities. Some alternative form of grassland management, prescribed burning, or haying may be used if the areas are not treated with prescribed grazing.

Managing grasslands through permitted haying has comparable costs to managing a prescribed grazing program. Managed mowing would be more expensive, since all labor costs would be assumed by the Service. Prescribed fire can be an effective grassland management tool, but there are personnel and weather limitations on a burning program, as well the fact that some tracts are not suited to burning management. In addition, there is an ecological benefit to rotating grassland management techniques, such as grazing, burning, and haying, at different seasons, rather than just relying on one technique.

Anticipated Impacts of the Uses

Grazing by domestic livestock has the short-term effect of removing some or much of the standing vegetation from a tract of grassland. Properly prescribed, the effect of this removal of vegetation increases the vigor of the grassland, stimulates the growth of desired species of grass and forbs, and reduces the abundance of targeted species such as cool-season exotics, woody species, invasive species, or cattails. Grazing in the spring may cause the loss

of some bird nests due to trampling, and may cause some birds not to nest in areas being grazed. Grazing on public wildlife lands can create an aesthetic issue of concern for some people or visitors who do not understand grassland management. Prescribed grazing is usually of short duration and ultimately enhances the diversity and vigor of grassland habitats. Grazing livestock may create a minor and temporary disturbance to wildlife, but generally do no harm. There is a slight potential for conflict between the visiting public and the livestock or the permittee.

Public Review and Comment

This compatibility determination was prepared concurrently with the draft CCP and EA for the refuge. Public review and comment will be achieved concurrently with the public review and comment period for the draft CCP and EA.

Determination

As this activity is an economic use, it must meet the compatibility threshold of "contributing to the Mission and Purposes" of the Refuge System and refuge area. Prescribed grazing is used to improve and manage grassland habitats on refuges and benefit the migratory birds and other wildlife that use these habitats.

The use of grazing as a habitat management tool is compatible at Pathfinder NWR with the following stipulations.

Stipulations Necessary to Ensure Compatibility

- SUPs will specify the stocking rates, dates of use, and timing for each unit or grazing cell on the refuge.
- The standard grazing fee, as determined for each state by the regional office, and any standard deductions for any labor or work done on Service lands will be included on the SUP.
- Grazing permittees must comply with all applicable state livestock health laws.
- No supplemental feeding will be allowed without authorization from the project leader/ refuge manager.
- Control and confinement of livestock will be the responsibility of the permittee.
- The permit is issued subject to the revocation and appeals procedure contained in Title 50, Part 25 of the CFR.

Justification

Controlled grazing by domestic livestock will not materially interfere or detract from the purposes for which the refuge was established. Prescribed livestock grazing creates temporary disturbances to vegetation. Many of these disturbances are desirable for grassland management. Grazing produces an undesirable but short-term impact to grassland nesting birds and site aesthetics. In the long term, prescribed grazing increases grassland vigor, species diversity, and habitat quality. Prescribed grazing is an alternative management tool that can be used to replace or complement prescribed fire, mowing, or haying of Service grasslands. Without periodic disturbance caused by grazing the health of the grassland community would decline.

Signature

Ann Timberman Date
Project Leader, Arapaho NWR Complex
USFWS, Region 6

Review

Bud Oliveira Date
Refuge Supervisor
USFWS, Region 6

Mandatory 15-Year Reevaluation Date: 2023

Concurrence

Richard A. Coleman, PhD Date
Assistant Regional Director
National Wildlife Refuge System
USFWS, Region 6

Appendix K

Fire Management Program

The Service has administrative and fire management for 16,806 acres located within the boundaries of Pathfinder NWR in central Wyoming.

THE ROLE OF FIRE

Vegetation within the Wyoming Basin has evolved under periodic disturbance and defoliation from grazing, fire, drought, and floods. This periodic disturbance is what kept the ecosystem diverse and healthy while maintaining significant biodiversity for thousands of years.

Historically, natural fire and Native American ignitions played an important disturbance role in many ecosystems by removing fuel accumulations, decreasing the impacts of insects and diseases, stimulating regeneration, cycling nutrients, and providing a diversity of habitats for plants and wildlife.

When fire is excluded from shrub–steppe landscape, the fuel loading increases due the continued growth and increase in shrub size and density. This creates a decadent stand of tall dense shrubs that reduce species diversity by shading understory plants. It also increases fuel loading which leads to an increase in a fire's resistance to control. This increase in resistance to control threatens firefighter and public safety as well as private and federal properties.

However, fire when properly used, can:

- reduce hazardous fuels build-up in both wildland–urban interface (WUI) and non-WUI areas;
- improve wildlife habitats by reducing density of vegetation
- and/or changing plant species composition;
- sustain and/or increase biological diversity;
- improve woodlands and shrublands by reducing plant density;
- reduce susceptibility of plants to insect and disease outbreaks;
- improve quality and quantity of livestock forage;
- and improve the quantity of water available for municipalities and activities dependent on wildlands for their water supply.

WILDLAND FIRE MANAGEMENT POLICY AND GUIDANCE

In 2001, an update of the 1995 "Federal Fire Policy" was completed and approved by the Secretaries of Interior and Agriculture. The 2001 "Federal Wildland Fire Management Policy" directs federal agencies to achieve a balance between fire suppression to protect life, property, and resources and fire use to regulate fuels and maintain healthy ecosystems. In addition, it directs agencies to use the appropriate management response for all wildland fire regardless of the ignition source. This policy provides eight guiding principles that are fundamental to the success of the fire management program:

- Firefighter and public safety is the first priority in every fire management activity.
- The role of wildland fires as an ecological process and natural change agent will be incorporated into the planning process.
- Fire management plans (FMPs), programs, and activities support land and resource management plans and their implementation.
- Sound risk management is a foundation for all fire management activities.
- Fire management programs and activities are economically viable, based on values to be protected, costs, and land and resource management objectives.
- FMPs and activities are to be based on the best available science.
- FMPs and activities incorporate public health and environmental quality consideration.
- Federal, state, tribal, local, interagency, and international coordination and cooperation are essential.
- Standardization of policies and procedures among federal agencies is an ongoing objective.

The fire management considerations, guidance, and direction should be addressed in the land use resource plans (for example, the CCP). FMPs are step-down processes from the land use plans and habitat plans, with more detail on fire suppression, fire use, and fire management activities.

MANAGEMENT DIRECTION

The Arapaho NWRC will protect life, property, and other resources from wildland fire by safely suppressing all wildfires. Prescribed fire and manual and mechanical fuel treatments will be used in an ecosystem context for habitat management purposes, and to protect both federal and private property. Fuels reduction activities will be applied in collaboration with federal, state, private, and NGO partners. In addition, fuel treatments will be prioritized based on the guidance for prioritization established in the goals and strategies outlined in the "U.S. Fish and Wildlife Service National Wildlife Refuge System Wildland Fire Management Program Strategic Plan 2003–2010" and the "R6 Refuges Regional Priorities FY07–11." For WUI treatments, areas with community wildfire protection plans (CWPPs) and communities at risk (CARs) will be the primary focus. On August 17, 2001, the "Federal Register" published a list of CARs throughout the nation. In the area near Pathfinder NWR, no communities were identified in the list. Any additions or deletions to the CARs list are the responsibility of the state through coordination with interagency partners. Wyoming has determined to complete CWPPs on a county basis. Natrona and Carbon counties have completed CWPPs. The Service will place a high priority in collaborating with our neighboring partners to reduce the risk of wildfire using fuels reduction projects.

All aspects of the fire management program will be conducted in a manner consistent with applicable laws, policies, and regulations. The Arapaho NWRC will maintain an FMP to accomplish the fire management goals described below. Prescribed fire and manual and mechanical fuel treatments will be applied in a scientific way under selected weather and environmental conditions.

Fire Management Goals

The goals and strategies of the "U.S. Fish and Wildlife Service National Wildlife Refuge System Wildland Fire Management Program Strategic Plan" are consistent with Department of Interior and Service policies, National Fire Plan direction, President Bush's Healthy Forest Initiative, the 10-Year Comprehensive Strategy and Implementation Plan, National Wildfire Coordinating Group (NWCG) guidelines, initiatives of the Wildland Fire Leadership Council, and Interagency Standards for Fire and Aviation Operations.

The "R6 Refuges Regional Priorities FY07–11" are consistent with region 6's refuges vision statement: "to maintain and improve the biological integrity of the region, ensure the ecological condition of the region's public and private lands are better understood, and endorse sustainable use of habitats that support native wildlife and people's livelihoods." The fire management goals for the Pathfinder NWR are to use prescribed fire and manual and mechanical fuel treatments to (1) reduce the threat to life and property; and (2) meet the habitat goals and objectives identified in this CCP.

Fire Management Objective

The objective of the fire management program is to use prescribed fire and manual and mechanical methods to treat refuge lands for hazardous fuels and habitat management purposes.

Strategies

Strategies and tactics that emphasize public and firefighter safety as well as resource values at risk will be used. Wildland fire suppression, prescribed fire methods, manual and mechanical means, timing, and monitoring are described in more detail within the step-down FMP.

All management actions would use prescribed fire and manual and/or mechanical means to reduce hazardous fuels, restore and maintain desired habitat conditions, control nonnative vegetation, and control the spread of woody vegetation within the upland and wetland habitats. The fuels treatment program will be outlined in the FMP for the wetland management district. Site-specific prescribed fire burn plans will be developed following the Interagency Prescribed Fire Planning and Implementation Procedures Reference Guide (2006) template.

Prescribed fire temporarily reduces air quality by reducing visibility and releasing components through combustion. Pathfinder NWR will meet the Clean Air Act emission standards by adhering to the "Wyoming State Implementation Plan" requirements during all prescribed fire activities.

Fire Management Rationale

Pathfinder NWR does not have any recorded fire history since its establishment in 1909. Landfire has identified the shrub–steppe community within and around Pathfinder NWR as a Fire Regime IV, which means historically these areas burned every 35–100+ years and were stand-replacement fires. Some areas within the refuge boundary are identified as a Fire Regime III (35–100+ years and mixed-severity fires). Because fires have not occurred on Pathfinder NWR since its establishment, these habitat types are nearing or have reached the point where they maybe outside their historic fire return interval. Since settlement of the area, wildfires that have occurred have been suppressed (Landfire).

Fire Management Organization, Contacts, and Cooperation

Qualified fire management technical oversight for the refuges will be established by region 6 of the Service, using the fire management district approach. Under this approach, fire management staff will be determined by established modeling systems based on the fire management workload of a group of Service lands (refuges, wetland management districts, fish hatcheries), and possibly that of interagency partners. The fire management workload consists of historical wildland fire suppression activities as well as historical and planned fuels treatments.

Depending on budgets, fire management staffing and support equipment may be located at the administrative station or at other locations within the fire management district and shared between all units. Fire management activities will be conducted in a coordinated and collaborative manner with federal and nonfederal partners.

On approval of this CCP, a new FMP would be developed for Pathfinder NWR as (1) an FMP that covers the wetland management district, (2) an FMP that covers the fire management district, (3) an FMP that covers the Arapaho NWR Complex, or (4) an interagency FMP.

Appendix L

List of Occurring Plant Species

The following vascular plant species were documented on Pathfinder NWR during a rare survey of plants (Fertig 2000). Nonnative species are indicated by an asterisk (*). In addition, slender spiderplant (*Cleome multicaulis*), a state species of concern, is found on the Sweetwater Arm Unit of the refuge.

Scientific Name	*Common Name*
Agrostis stolonifera	Redtop*
Alopecurus aequalis	Shortawn foxtail
Alopecurus arundinaceus	Creeping meadow foxtail*
Artemisia biennis var. *biennis*	Biennial wormwood
Artemisia cana var. *cana*	Silver sagebrush
Artemisia frigida	Prairie sagewort
Artemisia ludoviciana var. *ludoviciana*	White sagebrush
Artemisia tridentata wyomingensis	Wyoming big sagebrush
Asclepias speciosa	Showy milkweed
Aster ascendens	Western aster
Aster ericoides	Heath-leaved aster
Aster occidentalis	Western mountain aster
Astragalus agrestis	Purple milkvetch
Astragalus bodinii	Bodin's milkvetch
Atriplex rosea	Tumbling saltweed*
Atriplex subspicata	Saline saltbrush
Bassia hyssopifolia	Fivehorn smotherweed*
Bidens cernua	Nodding beggartick
Bromus inermis var. *inermis*	Smooth brome*
Bromus tectorum	Cheatgrass*
Calamagrostis inexpansa	Northern reedgrass
Cardaria pubescens	Hairy whitetop
Carex nebrascensis	Nebraska sedge
Centaurium exaltatum	Desert centaury
Chenopodium atrovirens	Pinyon goosefoot
Chenopodium glaucum var. *salinum*	Oakleaf goosefoot
Chenopodium rubrum var. *glomeratum*	Red goosefoot
Chrysothamnus nauseosus	Rubber rabbitbrush
Cirsium arvense	Canada thistle*
Cirsium tioganum var. *coloradense*	Colorado thistle
Cleome serrulata	Rocky Mountain beeplant
Conyza canadensis	Canadian horseweed

Scientific Name	*Common Name*
Distichlis stricta	Saltgrass
Echinochloa spp.	Barnyardgrass
Eleocharis spp.	Spikerush
Elymus Canadensis	Canada wildrye
Elymus lanceolatus	Thickspike wheatgrass
Elymus repens	Quackgrass*
Equisetum arvense	Field horsetail
Equisetum hyemale	Scouringrush horsetail
Equisetum laevigatum	Smooth horsetail
Gentianella amarella var. *amarella*	Autumn dwarf gentian
Glaux maritima	Sea milkwort
Glycyrrhiza lepidota	American licorice
Gnaphalium palustre	Western marsh cudweed
Grindelia squarrosa	Curlycup gumweed
Gutierrezia sarothrae	Broom snakeweed
Haplopappus uniflorus	Plantain goldenweed
Helenium autumnale var. *montanum*	Common sneezeweed
Helianthus petiolaris	Prairie sunflower
Heliotropium curassavicum var. *obovatum*	Salt heliotrope
Hippuris vulgaris	Common mare's-tail
Hordeum jubatum	Foxtail barley
Iva	Marsh elder
Iva axillaris	Povertyweed
Juncus bufonius	Toad rush
Juncus compressus	Roundfruit rush
Juncus nodosus	Knotted rush
Koeleria macrantha	Prairie Junegrass
Lactuca oblongifolia	Blue lettuce
Lactuca serriola	Prickly lettuce
Limosella aquatica	Water mudwort
Lycopus asper	Rough bugleweed
Melilotus albus	White sweetclover
Melilotus officinalis	Yellow sweetclover
Mentha arvensis	Field mint
Muhlenbergia asperifolia	Scratchgrass
Oenothera villosa	Hairy evening-primrose
Opuntia polyacantha var. *polyacantha*	Hairspine pricklypear
Oryzopsis hymenoides	Indian ricegrass
Oxytropis riparia	Oxus locoweed*
Plagiobothrys scouleri	Scouler's popcornflower
Plantago eriopoda	Redwool plantain
Poa pratensis	Kentucky bluegrass*
Polygonum amphibium var. *emersum*	Longroot smartgrass

Scientific Name	*Common Name*
Polygonum aviculare	Prostrate knotweed
Polygonum lapathifolium	Curltop knotweed
Potentilla anserina	Silverweed cinquefoil
Puccinellia nuttalliana	Nuttall's alkaligrass
Ranunculus cymbalaria	Alkali buttercup
Rorippa truncata	Buntleaf yellowcress
Rosa sayi	Prickly rose
Rumex maritimus var. *fueginus*	Golden dock
Rumex stenophyllus	Narrowleaf dock*
Sagittaria cuneata	Arumleaf arrowhead
Salicornia rubra	Red swampfire
Salix amygdaloides	Peachleaf willow
Salix exigua	Narrowleaf willow
Salix lutea	Yellow willow
Salsola australis	Prickly Russian thistle*
Sarcobatus vermiculatus	Greasewood
Scirpus acutus	Hardstem bulrush
Scirpus pungens var. *polyphyllus*	Common threesquare
Sisymbrium altissimum	Tumblemustard*
Solanum rostratum	Buffalobur nightshade
Spartina pectinata	Prairie cordgrass
Spergularia spp.	Sandspurry
Sporobolus airoides	Alkali sacaton
Stachys palustris	Marsh hedgenettle
Suaeda calceoliformis	Pursh seepweed
Symphyotrichum frondosum	Short-rayed alkali aster
Tamarix ramosissima	Saltcedar
Thelypodium integrifolium	Entireleaved thelypody
Trifolium repens	White clover
Triglochin maritimum	Seaside arrowgrass
Typha latifolia	Broadleaf cattail
Xanthium strumarium var. *canadense*	Canada cocklebur

Appendix M

List of Potentially Occurring Bird Species

The following list of bird species was compiled from other national wildlife refuges in the state of Wyoming. The species listed below potentially occur in the area, but may or may not be present at Pathfinder NWR.

Scientific Name	*Common Name*
Accipiter cooperii	Cooper's hawk
Accipiter gentilis	Northern goshawk*
Accipiter striatus	Sharp-shinned hawk*
Actitis macularia	Spotted sandpiper
Aechmophorus clarkii	Clark's grebe
Aechmophorus occidentalis	Western grebe
Agelaius phoeniceus	Red-winged blackbird
Aix sponsa	Wood duck
Anas acuta	Northern pintail
Anas americana	American wigeon
Anas carolinensis	Green-winged teal
Anas clypeata	Northern shoveler
Anas cyanoptera	Cinnamon teal
Anas discors	Blue-winged teal
Anas platyrhynchos	Mallard
Anas strepera	Gadwall
Anthus rubescens	American pipit
Aquila chrysaetos	Golden eagle
Ardea herodias	Great blue heron
Asio flammeus	Short-eared owl*
Athene cunicularia	Burrowing owl*
Aythya affinis	Lesser scaup
Aythya americana	Redhead
Aythya collaris	Ring-necked duck
Aythya marila	Greater scaup*
Aythya valisineria	Canvasback
Bombycilla cedrorum	Cedar waxwing*
Bombycilla garrulus	Bohemian waxwing*
Botaurus lentiginosus	American bittern
Branta canadensis	Canada goose
Bubo virginianus	Great horned owl*
Bubulcus ibis	Cattle egret
Bucephala albeola	Bufflehead

Scientific Name	*Common Name*
Bucephala clangula	Common goldeneye
Bucephala islandica	Barrow's goldeneye*
Buteo jamaicensis	Red-tailed hawk
Buteo lagopus	Rough-legged hawk
Buteo regalis	Ferruginous hawk
Buteo swainsoni	Swainson's hawk
Butorides virescens	Green heron*
Calamospiza melanocorys	Lark bunting
Calcarius ornatus	Chestnut-collared longspur
Calcarius sandwichensis	McGown's longspur
Calidris alba	Sanderling*
Carduelis pinus	Pine siskin
Carduelis tristis	American goldfinch
Cathartes aura	Turkey vulture
Catharus guttatus	Hermit thrush*
Charadrius montanus	Mountain plover*
Charadrius vociferus	Killdeer
Chen caerulescens	Snow goose*
Chen rossii	Ross's goose*
Chlidonias niger	Black tern
Chondestes grammacus	Lark sparrow
Chordeiles minor	Common nighthawk
Circus cyaneus	Northern harrier
Cistothorus palustris	Marsh wren
Coccothraustes vespertinus	Evening grosbeak*
Colaptes auratus	Northern flicker
Corvus brachyrhynchos	American crow
Corvus corax	Common raven
Cygnus columbianus	Tundra swan
Dendroica coronata	Yellow rumped warbler
Dendroica nigrescens	Black-throated gray warbler*
Dendroica petechia	Yellow warbler
Egretta thula	Snowy egret
Eremophila alpestris	Horned lark
Erolia alpina	Dunlin*
Erolia bairdii	Baird's sandpiper
Erolia mauri	Western sandpiper
Erolia minutilla	Least sandpiper
Euphagus carolinus	Rusty blackbird*
Euphagus cyanocephalus	Brewer's blackbird
Falco mexicanus	Prairie falcon
Falco peregrinus	Peregrine falcon
Fulica americana	American coot

Scientific Name	*Common Name*
Gallinago delicata	Wilson's snipe
Gavia immer	Common loon
Geothlypis trichas	Common yellowthroat
Grus canadensis tabida	Sandhill crane
Haliaeetus leucocephalus	Bald eagle
Himantopus mexicanus	Black-necked stilt*
Hirundo rustica	Barn swallow
Hydroprogne caspia	Caspian tern*
Larus argentatus	Herring gull*
Larus californicus	California gull
Larus delawarensis	Ring-billed gull*
Larus philadelphia	Bonaparte's gull
Larus pipixcan	Franklin's gull
Lanius ludovicianus	Loggerhead shrike
Leucosticte atrata	Black rosy finch
Leucosticte australis	Brown-capped rosy finch*
Leucosticte tephrocotis	Gray-crowned rosy finch*
Limnodromus scolopaceus	Long-billed dowitcher
Limosa fedoa	Marbled godwit
Lophodytes cucullatus	Hooded merganser*
Melanitta deglandi	White-winged scoter*
Melospiza melodia	Song sparrow
Mergus merganser	Common merganser
Micropalmata himantopus	Stilt sandpiper*
Molothrus ater	Brown-headed cowbird
Numenius americanus	Long-billed curlew*
Numenius phaeopus	Whimbrel*
Nycticorax nycticorax	Black-crowned night-heron
Oreoscoptes montanus	Sage thrasher
Oxyura jamaicensis	Ruddy duck
Passer domesticus	House sparrow
Passerculus sandwichensis	Savannah sparrow
Pelecanus erythrorhynchos	American white pelican
Petrochelidon pyrrhonota	Cliff swallow
Phalacrocorax auritus	Double-crested cormorant
Phalaropus lobatus	Red-necked phalarope
Phalaropus tricolor	Wilson's phalarope
Pica hudsonia	Black-billed magpie
Pipilo chlorurus	Green-tailed towhee
Piranga ludoviciana	Western tanager
Plectrophenax nivalis	Snow bunting*
Plegadis chihi	White-faced ibis
Podiceps auritus	Horned grebe*
Podiceps grisegena	Red-necked grebe*

Scientific Name	*Common Name*
Podiceps nigricollis	Eared grebe
Podilymbus podiceps	Pied-billed grebe
Poecile atricapilla	Black-capped chickadee
Pooecetes gramineus	Vesper sparrow
Porzana carolina	Sora
Quiscalus quiscula	Common grackle
Rallus limicola	Virginia rail
Recurvirostra americana	American avocet
Riparia riparia	Bank swallow
Salpinctes obsoletus	Rock wren*
Sayornis saya	Say's phoebe
Selasphorus platycercus	Broad-tailed hummingbird
Selasphorus rufus	Rufous hummingbird
Sialia currucoides	Mountain bluebird
Spizella breweri	Brewer's sparrow
Spizella passerina	Chipping sparrow
Stelgidopteryx serripennis	Northern rough-winged swallow
Sterna forsteri	Forster's tern
Sterna hirundo	Common tern*
Sturnus vulgaris	European starling
Sturnella magna	Eastern meadowlark*
Sturnella neglecta	Western meadowlark
Tachycineta bicolor	Tree swallow
Tachycineta thalassina	Violet-green swallow
Toxostoma rufum	Brown thraser
Tringa flavipes	Lesser yellowlegs
Tringa melanoleuca	Greater yellowlegs
Tringa semipalmata	Willet
Tringa solitaria	Solitary sandpiper
Troglodytes aedon	House wren*
Turdus migratorius	American robin
Tyrannus tyrannus	Eastern kingbird
Tyrannus verticalis	Western kingbird
Xanthocephalus xanthocephalus	Yellow-headed blackbird
Zenaida macroura	Mourning dove*
Zonotrichia leucophrys	White-crowned sparrow

Asterisk (*) signifies rare sightings.

Appendix N

List of Potentially Occurring Amphibian and Reptile Species

The following list of amphibian and reptile species was compiled from other national wildlife refuges in the state of Wyoming. The species listed below potentially occur in the area, but may or may not be present at Pathfinder NWR.

Scientific Name	*Common Name*
Amphibians	
Ambystoma tigrinum	Tiger salamander
Phrynosoma platyrhinos	Horned lizard
Pseudacris triseriata maculata	Boreal chorus frog
Reptiles	
Crotalus viridis	Prairie rattlesnake
Pituophis catenifer	Bull snake

Appendix O

List of Potentially Occurring Mammal Species

The following list of mammal species was compiled from other national wildlife refuges in the state of Wyoming. The species listed below potentially occur in the area, but may or may not be present at Pathfinder NWR.

Scientific Name	*Common Name*
Antilocapra americana	Pronghorn
Canis latrans	Coyote
Cervus canadensis	Elk
Chaetodipus hispidus	Hispid pocket mouse
Cynomys leucurus	White-tailed prairie dog
Lepus townsendii	White-tailed jack rabbit
Mephitis mephitis	Striped skunk
Microtus pennsylvanicus	Meadow vole
Mustela frenata	Long-tailed weasel
Mustela vison	Mink
Myotis lucifugus	Little brown myotis
Odocoileus hemionus	Mule deer
Ondatra zibethicus	Muskrat
Perognathus fasciatus	Wyoming pocket mouse
Peromyscus maniculatus	Deer mouse
Procyon lotor	Common raccoon
Reithrodontomys megalotis	Western harvest mouse
Sorex cinereus	Masked shrew
Spermophilus elegans	Wyoming ground squirrel
Spermophilus tridecemlineatus	Thirteen-lined ground squirrel
Sylvilagus audubonii	Desert cottontail
Tamias minimus	Least chipmunk
Taxidea taxus	American badger
Thomomys talpoides	Northern pocket gopher
Vulpes vulpes	Red fox

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