

Glossary

abiotic—Pertaining to nonliving things.

accessible—Pertaining to physical access to areas and activities for people of different abilities, especially those with physical impairments.

adaptive management—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 research, monitoring, and evaluation of management actions to support or modify objectives and strategies at all planning levels; a process in which policy decisions are carried out within a framework of scientifically driven experiments to test predictions and assumptions inherent in a management plan. Analysis of results helps managers determine whether current management should continue as is or whether it should be modified to achieve desired conditions.

Administration Act—National Wildlife Refuge System Administration Act of 1966.

alternatives—Different sets of objectives and strategies or means of achieving refuge purposes and goals, helping fulfill the Refuge System mission and resolving issues.

amphibian—Class of cold-blooded vertebrates including frogs, toads or salamanders.

APHIS—Animal and Plant Health Inspection Service; agency of the U.S. Department of Agriculture.

avifauna or avifaunal biome—A physiographic area defined by the Partners in Flight program that represents all the living components needed by a group of birds.

baseline—Set of critical observations, data, or information used for comparison or a control.

biological control, also biocontrol—Reduction in numbers or elimination of unwanted species by the introduction of natural predators, parasites, or diseases.

biological diversity, also biodiversity—Variety of life and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur (“U.S. Fish and Wildlife Service Manual” 052 FW 1.12B). The National Wildlife Refuge System’s focus is on endemic species, biotic communities, and ecological processes.

biological integrity—Composition, structure, and function at the genetic, organism, and community levels consistent with natural conditions and the biological processes that shape genomes, organisms, and communities.

biomass—Total amount of living material, plants and animals, above and below the ground in a particular habitat or area.

biotic—Pertaining to life or living organisms.

breeding habitat—Habitat used by migratory birds or other animals during the breeding season.

canopy—Layer of foliage, generally the uppermost layer, in a vegetative stand; midlevel or understory vegetation in multilayered stands. Canopy closure (*also* canopy cover) is an estimate of the amount of overhead vegetative cover.

CAR—Community at risk.

CCP—See *comprehensive conservation plan*.

CFR—See *Code of Federal Regulations*.

cfs—Cubic feet per second.

climax—Community that has reached a steady state under a particular set of environmental conditions; a relatively stable plant community; the final stage in ecological succession.

Code of Federal Regulations (CFR)—Codification of the general and permanent rules published in the *Federal Register* by the executive departments and agencies of the federal government. Each volume of the CFR is updated once each calendar year.

community—Area or locality in which a group of people lives and shares the same government.

compatible use—Wildlife-dependent recreational use or any other use of a refuge that, in the sound professional judgment of the director of the U.S. Fish and Wildlife Service, will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge (“Draft U.S. Fish and Wildlife Service Manual” 603 FW 3.6). A compatibility determination supports the selection of compatible uses and identified stipulations or limits necessary to ensure compatibility.

comprehensive conservation plan (CCP)—A document that describes the desired future conditions of the refuge and provides long-range guidance and management direction for the refuge manager to accomplish the purposes of the refuge, contribute to the mission of the Refuge System, and to meet other relevant mandates (“Draft U.S. Fish and Wildlife Service Manual” 602 FW 1.5).

concern—See *issue*.

conservation—Management of natural resources to prevent loss or waste. Management actions may include preservation, restoration, and enhancement.

conservation easement—Perpetual agreement entered into by a landowner and the Service by which a landowner gives up or sells one or more of the rights on their property for conservation purposes, with terms set by the Service. In return for a single lump-sum payment, the landowner agrees not to drain, burn, level, or fill habitats covered by the easement. Conservation easements generally prohibit the cultivation of grassland and wetland habitats while still permitting the landowner traditional grazing uses. A single-habitat conservation easement is often referred to as either a “wetland easement” or a “grassland easement.”

conspicuous—An individual belonging to the same species as another.

cool-season grass—Grass that begins growth earlier in the season and often become dormant in the summer; will germinate at lower temperatures (65–85°F). Examples are western wheatgrass, needle and thread, and green needlegrass.

cooperative agreement—Legal instrument used when the principal purpose of the transaction is the transfer of money, property, services or anything of value to a recipient in order to accomplish a public purpose authorized by federal statute and substantial involvement between the Service and the recipient is anticipated.

coordination area—Wildlife management area made available to a state, by “(A) cooperative agreement between the United States Fish and Wildlife Service and the state fish and game agency pursuant to Section 4 of the Fish and Wildlife Coordination Act (16 USC 664); of (B) by long-term leases or agreements pursuant to the Bankhead–Jones Farm Tenant Act (50 Stat. 525; 7 USC 1010 et seq.).” States manage coordination areas, but they are part of the Refuge System. CCPs are not required for coordination areas.

coteau—A hilly upland including the divide between two valleys; a divide; the side of a valley.

coulee—A deep ravine or gulch with sloping sides, often dry, that has been formed by running water.

cover, also cover type, canopy cover—Present vegetation of an area.

cultural resources—Sites, buildings, structures, and objects that are the result of human activities and are more than 50 years old: prehistoric, historic, and architectural sites, artifacts, historic records, and traditional cultural properties including traditional use areas for Native Americans that may or may not have material evidence.

cultural resource inventory—Professionally conducted study designed to locate and evaluate evidence of cultural resources present within a defined area. Inventories may involve various levels including background literature search (class 1), sample inventory of project site distribution and density over a larger area (class 2), or comprehensive field examination to identify all exposed physical manifestation of cultural resources (class 3).

CWCS—Comprehensive wildlife conservation strategy.

CWD—Chronic wasting disease.

CWPP—Community wildfire protection plan.

database—Collection of data arranged for ease and speed of analysis and retrieval, usually computerized.

deciduous—Pertaining to any plant organ or group of organs that is shed annually; perennial plants that are leafless for sometime during the year.

defoliation—Removing of vegetative parts; to strip vegetation of leaves; removal can be caused by weather, mechanical, animals, and fire.

demography—Quantitative analysis of population structure and trend.

dense nesting cover (DNC)—Composition of grasses and forbs that allows for a dense stand of vegetation that protects nesting birds from the view of predators, usually consisting of one to two species of wheatgrass, alfalfa, and sweetclover.

district—See *wetland management district*.

disturbance—Significant alteration of habitat structure or composition. May be natural (for example, fire) or human-caused events (for example, timber harvest).

DNC—See *dense nesting cover*.

DOI—U.S. Department of the Interior.

drawdown—Manipulating water levels in an impoundment to allow for the natural drying-out cycle of a wetland.

duck, dabbling—Duck that mainly feeds on vegetable matter by “upending” on the water surface, or by grazing, and only rarely dives.

duck, diving—Duck that mainly feeds by diving through the water.

EA—See *environmental assessment*.

ecological succession—Orderly progression of an area through time from one vegetative community to another in the absence of disturbance. For example, an area may proceed from grass-forb through aspen forest to mixed-conifer forest.

ecosystem—Dynamic and interrelating complex of plant and animal communities and their associated nonliving environment; a biological community, together with its environment, functioning as a unit. For administrative purposes, the Service has designated 53 ecosystems covering the United States and its possessions. These ecosystems generally correspond with watershed boundaries and their sizes and ecological complexity vary.

emergent—Plant rooted in shallow water and having most of the vegetative growth above water such as cattail and hardstem bulrush.

endangered species, federal—Plant or animal species listed under the Endangered Species Act of 1973, as amended, that is in danger of extinction throughout all or a significant portion of its range.

endangered species, state—Plant or animal species in danger of becoming extinct or extirpated in a particular state within the near future if factors contributing to its decline continue. Populations of these species are at critically low levels or their habitats have been degraded or depleted to a significant degree.

endemic species—Plants or animals that occur naturally in a certain region and whose distribution is relatively limited to a particular locality.

environmental assessment (EA)—Concise public document, prepared in compliance with the National Environmental Policy Act, that briefly discusses the purpose and need for an action and alternatives to such action, and provides sufficient evidence and analysis of impacts to determine whether to prepare an environmental impact statement or finding of no significant impact (40 CFR 1508.9).

environmental education—Education aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution.

environmental health—Natural composition, structure, and functioning of the physical, chemical, and other abiotic elements, and the abiotic processes that shape the physical environment.

EO—Executive order.

extinction—Complete disappearance of a species from the earth; no longer existing.

fauna—All the vertebrate and invertebrate animals of an area.

federal land—Public land owned by the federal government, including lands such as national forests, national parks, and national wildlife refuges.

federally listed species—Species listed under the federal Endangered Species Act of 1973, as amended, either as endangered, threatened, or species at risk (formerly candidate species).

fee title—Acquisition of most or all of the rights to a tract of land.

finding of no significant impact (FONSI)—Document prepared in compliance with the National Environmental Policy Act, supported by an environmental assessment, that briefly presents why a federal action will have no significant effects on the human environment and for which an environmental impact statement will not be prepared (40 CFR 1508.13).

fire regime—Description of the frequency, severity, and extent of fire that typically occurs in an area or vegetative type.

flora—All the plant species of an area.

FMP—Fire management plan.

FONSI—See *finding of no significant impact*.

forb—A broad-leaved, herbaceous plant; a seed-producing annual, biennial, or perennial plant that does not develop persistent woody tissue but dies down at the end of the growing season.

forest—Group of trees with their crown overlapping (generally forming 60%–100% cover).

fragmentation—The alteration of a large block of habitat that creates isolated patches of the original habitat that are interspersed with a variety of other habitat types; the process of reducing the size and connectivity of habitat patches, making movement of individuals or genetic information between parcels difficult or impossible.

FTE—See *full-time equivalent*.

full-time equivalent (FTE)—One or more job positions with tours of duty that, when combined, equate to one person employed for the standard government work-year.

geographic information system (GIS)—Computer system capable of storing and manipulating spatial data; a set of computer hardware and software for analyzing and displaying spatially referenced features (points, lines and polygons) with nongeographic attributes such as species and age.

GIS—See *geographic information system*.

glacial till—Unstratified sediment (clay, sand, and rocks) deposited by melting glaciers or ice sheets.

Global Positioning System (GPS)—System that, by using satellite telemetry, can pinpoint exact locations of places on the ground.

goal—Descriptive, open-ended, and often broad statement of desired future conditions that conveys a purpose but does not define measurable units (“Draft U.S. Fish and Wildlife Service Manual” 620 FW 1.5).

GPS—See *global positioning system*.

GS—General schedule (pay rate schedule for certain federal positions).

guild—A group of species that use a common resource base in a similar fashion within an ecological community. A guild can be generally defined (for example, grassland birds) or specifically defined (for example, seed-eating small mammals).

habitat—Suite of existing environmental conditions required by an organism for survival and reproduction; the place where an organism typically lives and grows.

habitat conservation—Protection of animal or plant habitat to ensure that the use of that habitat by the animal or plant is not altered or reduced.

habitat disturbance—Significant alteration of habitat structure or composition; may be natural (for example, wildland fire) or human-caused events (for example, timber harvest and disking).

habitat type, also vegetation type, cover type—Land classification system based on the concept of distinct plant associations.

HAPET—Habitat and Population Evaluation Team.

hemi-marsh—The emergent phase of a seasonal or semipermanent wetland where the ratio of open-water area to emergent vegetation cover is about 50:50, and vegetation and open-water areas are highly interspersed.

herbivore—Animal feeding on plants.

herbivory—The eating of plants, especially ones that are still living.

HPAI—Highly pathogenic avian influenza.

impoundment—A body of water created by collection and confinement within a series of levees or dikes, creating separate management units although not always independent of one another.

Improvement Act—National Wildlife Refuge System Improvement Act of 1997.

integrated pest management (IPM)—Methods of managing undesirable species such as invasive plants; education, prevention, physical or mechanical methods of control, biological control, responsible chemical use, and cultural methods.

“interseed”—Mechanical seeding of one or several plant species into existing stands of established vegetation.

introduced species—A nonnative plant or animal species that is intentionally or accidentally released into an ecosystem where it was not previously adapted.

introduction—Intentional or unintentional escape, release, dissemination, or placement of a species into an ecosystem as a result of human activity.

invasive plant, also noxious weed—Species that is nonnative to the ecosystem under consideration and whose introduction causes, or is likely to cause, economic or environmental harm or harm to human health.

inviolate sanctuary—Place of refuge or protection where animals and birds may not be hunted.

IPM—See *integrated pest management*.

ISST—Invasive species strike team.

issue—Any unsettled matter that requires a management decision; for example, a Service initiative, opportunity, resource management problem, a threat to the resources of the unit, conflict in uses, public concern, or the presence of an undesirable resource condition (“Draft U.S. Fish and Wildlife Service Manual” 602 FW 1.5).

lacustrine—Relating to, formed in, living in, or growing in lakes.

local agencies—Municipal governments, regional planning commissions, or conservation groups.

macrophyte—Plant, especially a marine plant, that is large enough to be visible to the naked eye.

management alternatives—See *alternatives*.

management plan—Plan that guides future land management practices on a tract of land. See *cooperative agreement*.

mechanical control—Reduction in numbers or elimination of unwanted species through the use of mechanical equipment such as mowers and clippers.

microhabitat—Habitat features at a fine scale; often identifies a unique set of local habitat features.

migration—Regular extensive, seasonal movements of birds between their breeding regions and their wintering regions; to pass usually periodically from one region or climate to another for feeding or breeding.

migratory bird—Bird species that follow a seasonal movement from their breeding grounds to their wintering grounds. Waterfowl, shorebirds, raptors, and songbirds are all migratory birds.

migratory game bird—Bird species, regulated under the Migratory Bird Treaty Act and state laws (legally hunted, including ducks, geese, woodcock, and rails).

mission—Succinct statement of purpose or reason for being.

mitigation—Measure designed to counteract an environmental impact or to make an impact less severe.

mixed-grass prairie—Transition zone between the tall-grass prairie and the short-grass prairie dominated by grasses of medium height that are approximately 2–4 feet tall. Soils are not as rich as the tall-grass prairie and moisture levels are less.

monitoring—Process of collecting information to track changes of selected parameters over time.

monotypic—Having only one type or representative.

moraine—Mass of earth and rock debris carried by an advancing glacier and left at its front and side edges as it retreats.

NABCI—North American Bird Conservation Initiative.

national wildlife refuge (NWR)—Designated area of land, water, or an interest in land or water within the Refuge System, but does not include coordination areas; a complete listing of all units of the Refuge System is in the current “Annual Report of Lands Under Control of the U.S. Fish and Wildlife Service.”

National Wildlife Refuge System (Refuge System)—Various categories of areas administered by the Secretary of the Interior for the conservation of fish and wildlife including species threatened with extinction, all lands, waters, and interests therein administered by the Secretary as wildlife refuges, areas for the protection and conservation of fish and wildlife that are threatened with extinction, wildlife ranges, game ranges, wildlife management areas, and waterfowl production areas.

National Wildlife Refuge System Improvement Act of 1997 (Improvement Act)—Sets the mission and the administrative policy for all refuges in the Refuge System; defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation, photography, environmental education, and interpretation); establishes a formal process for determining appropriateness and compatibility; establish the responsibilities of the Secretary of the Interior for managing and protecting the Refuge System; requires a comprehensive conservation plan for each refuge by the year 2012. This Act amended portions

of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

native species—Species that, other than as a result of an introduction, historically occurred or currently occurs in that ecosystem.

NDGF—North Dakota Game and Fish Department.

Neotropical migrant, also Neotropical migratory bird—Bird species that breeds north of the United States–Mexico border and winters primarily south of this border.

NEPA—National Environmental Policy Act.

nest success—Percentage of nests that successfully hatch one or more eggs of the total number of nests started in an area.

NHPA—National Historic Preservation Act.

nongovernmental organization—Any group that does not include federal, state, tribal, county, city, town, local, or other governmental entities.

North American Waterfowl Management Plan—North American Waterfowl Management Plan, signed in 1986, recognizes that the recovery and perpetuation of waterfowl populations depends on restoring wetlands and associated ecosystems throughout the United States and Canada. It established cooperative international efforts and joint ventures comprised of individuals; corporations; conservation organizations; and local, state, provincial, and federal agencies drawn together by common conservation objectives.

notice of intent—Notice that an environmental impact statement will be prepared and considered (40 CFR 1508.22); published in the *Federal Register*.

noxious weed, also invasive plant—Any living stage (including seeds and reproductive parts) of a parasitic or other plant of a kind that is of foreign origin (new to or not widely prevalent in the U.S.) and can directly or indirectly injure crops, other useful plants, livestock, poultry, other interests of agriculture, including irrigation, navigation, fish and wildlife resources, or public health. According to the Federal Noxious Weed Act (PL 93-639), a noxious weed (invasive plant) is one that causes disease or has adverse effects on humans or the human environment and, therefore, is detrimental to the agriculture and commerce of the United States and to public health.

NRCS—Natural Resources Conservation Service; agency of the U.S. Department of Agriculture.

NWR—See *national wildlife refuge*.

objective—Concise statement of what is to be achieved, when and where it is to be achieved, and who is responsible for the work. Objectives are derived from goals and provide the basis for determining management strategies. Objectives should be attainable, time-specific, and measurable.

Partners in Flight (PIF) program—Western Hemisphere program designed to conserve Neotropical migratory birds and officially endorsed by numerous federal and state agencies and nongovernmental organizations; also known as the Neotropical Migratory Bird Conservation Program.

partnership—Contract or agreement entered into by two or more individuals, groups of individuals, organizations or agencies in which each agrees to furnish a part of the capital or some in-kind service, such as labor, for a mutually beneficial enterprise.

patch—Area distinct from that around it; an area distinguished from its surroundings by environmental conditions.

perennial—Lasting or active through the year or through many years; a plant species that has a life span of more than 2 years.

phenology—The relationship between plant or animal development and climatic conditions.

PIF—See *Partners in Flight program*.

PL—Public law.

planning team—Team that prepares the comprehensive conservation plan. Planning teams are interdisciplinary in membership and function. A team generally consists of a planning team leader; refuge manager and staff biologist; staff specialists or other representatives of Service programs, ecosystems or regional offices; and state partnering wildlife agencies as appropriate.

planning team leader—Typically a professional planner or natural resource specialist knowledgeable of the requirements of National Environmental Policy Act and who has planning experience. The planning team leader manages the refuge planning process and ensures compliance with applicable regulatory and policy requirements.

planning unit—Single refuge, an ecologically or administratively related refuge complex, or distinct unit of a refuge. The planning unit also may include lands currently outside refuge boundaries.

plant association—Classification of plant communities based on the similarity in dominants of all layers of vascular species in a climax community.

plant community—Assemblage of plant species unique in its composition; occurs in particular locations under particular influences; a reflection or integration of the environmental influences on the site such as soil, temperature, elevation, solar radiation, slope, aspect, and rainfall; denotes a general kind of climax plant community (ponderosa pine or bunchgrass).

PPJV—Prairie Pothole Joint Venture.

predation—Mode of life in which food is primarily obtained by the killing or consuming of animals.

prescribed fire—Skillful application of fire to natural fuels under conditions such as weather, fuel moisture, and soil moisture that allow confinement of the fire to a predetermined area and produces the intensity of heat and rate of spread to accomplish planned benefits to one or more objectives of habitat management, wildlife management, or hazard reduction.

priority public use—See *wildlife-dependent recreational use*.

pristine—Typical of original conditions.

private land—Land that is owned by a private individual, a group of individuals, or a nongovernmental organization.

private landowner—Any individual, group of individuals, or nongovernmental organization that owns land.

private organization—Any nongovernmental organization.

proposed action—Alternative proposed to best achieve the purpose, vision, and goals of a refuge (contributes to the Refuge System mission, addresses the significant issues, and is consistent with principles of sound fish and wildlife management). The draft comprehensive conservation plan.

public—Individuals, organizations, and groups; officials of federal, state, and local government agencies; Indian tribes; and foreign nations. It may include anyone outside the core planning team. It includes those who may or may not have indicated an interest in Service issues and those who do or do not realize that Service decisions may affect them.

public involvement—Process that offers affected and interested individuals and organizations an opportunity to become informed about, and to express their opinions on, Service actions and policies. In the process, these views are studied thoroughly and thoughtful consideration of public views is given in shaping decisions for refuge management.

public land—Land that is owned by the local, state, or federal government.

purpose of the refuge—Purpose specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing authorization or expanding a refuge or district subunit (“Draft U.S. Fish and Wildlife Service Manual” 602 FW 1.5).

recruitment—The process of bringing hatch-year young into the adult population.

Refuge Operations Needs System—National database that contains the unfunded operational needs of each refuge. Projects included are those required to carry

out approved plans and meet goals, objectives, and legal mandates.

refuge purpose—See *purpose of the refuge*.

Refuge System—See *National Wildlife Refuge System*.

region 6—Mountain-Prairie Region of the U.S. Fish and Wildlife Service, which administers Service programs in Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Wyoming, and Utah.

rest—Free from biological, mechanical, or chemical manipulation, in reference to refuge lands.

restoration—Artificial manipulation of a habitat to restore it to something close to its natural state. Involves taking a degraded grassland and reestablishing habitat for native plants and animals. Restoration usually involves the planting of native grasses and forbs, and may include shrub removal and the use of prescribed fire.

rhizomatous—A plant having rhizomes.

rhizome—A continuously growing, horizontal, underground stem that produces roots and sends shoots upward at intervals (for example, many iris species).

riparian area or **riparian zone**—Area or habitat that is transitional from terrestrial to aquatic ecosystems including streams, lakes, wet areas, and adjacent plant communities and their associated soils that have free water at or near the surface; an area whose components are directly or indirectly attributed to the influence of water; or of relating to a river; specifically applied to ecology, “riparian” describes the land immediately adjoining and directly influenced by streams. For example, riparian vegetation includes all plant life growing on the land adjoining a stream and directly influenced by the stream.

RLGIS—Refuge lands geographic information system.

“roundouts”—Odd shapes in boundaries of Refuge System lands that are “straightened” by the purchase of land tracts.

runoff—Water from rain, melted snow, or agricultural or landscape irrigation that flows over the land surface into a waterbody.

sandhills—Sand dunes created by wind and wave action following the melting of large glaciers about 8,000–10,000 years ago. Soils are sand and silt. Local relief exceeds 80 feet in some places.

scoping—Process of obtaining information from the public for input into the planning process.

sediment—Material deposited by water, wind, and glaciers.

Service—See *U.S. Fish and Wildlife Service*.

Service Asset Maintenance Management System—National database that contains the unfunded maintenance needs of each refuge; projects include those required to maintain existing equipment and buildings, correct safety deficiencies for the implementation of approved plans, and meet goals, objectives, and legal mandates.

shelterbelt—Single to multiple rows of trees and shrubs planted around cropland or buildings to block or slow down the wind.

shorebird—Any of a suborder (Charadrii) of birds such as a plover or a snipe that frequent the seashore or mud flat areas.

sound professional judgment—Finding, determination, or decision that is consistent with principles of sound fish and wildlife management and administration, available science and resources, and adherence to the requirements of the National Wildlife Refuge System Administration Act and other applicable laws.

spatial—Relating to, occupying, or having the character of space.

special status species—Plants or animals that have been identified through federal law, state law, or agency policy as requiring special protection of monitoring. Examples include federally listed endangered, threatened, proposed, or candidate species; state-listed endangered, threatened, candidate, or monitor species; the Service’s species of management concern; and species identified by the Partners in Flight program as being of extreme or moderately high conservation concern.

special use permit—Permit for special authorization from the refuge manager required for any refuge service, facility, privilege, or product of the soil provided at refuge expense and not usually available to the general public through authorizations in Title 50 CFR or other public regulations (“National Wildlife Refuge System Manual” 5 RM 17.6).

species of concern—Those plant and animal species, while not falling under the definition of special status species, that are of management interest by virtue of being federal trust species such as migratory birds, important game species, or significant keystone species; species that have documented or apparent population declines, small or restricted populations, or dependence on restricted or vulnerable habitats. Species that: (1) are documented or have apparent population declines; (2) are small or restricted populations; or (3) depend on restricted or vulnerable habitats.

stand—Any homogenous area of vegetation with more or less uniform soils, landform, and vegetation. Typically used to refer to forested areas.

step-down management plan—Plan that provides the details necessary to carry out management strategies

identified in the comprehensive conservation plan (“Draft U.S. Fish and Wildlife Service Manual” 602 FW 1.5).

strategy—Specific action, tool, or technique or combination of actions, tools, and techniques used to meet unit objectives (“Draft U.S. Fish and Wildlife Service Manual” 602 FW 1.5).

submergent—Vascular or nonvascular hydrophyte, either rooted or nonrooted, that lies entirely beneath the water surface, except for flowering parts in some species.

succession—See *ecological succession*.

SWG—State Wildlife Grant.

threatened species, federal—Species listed under the Endangered Species Act of 1973, as amended, that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.

threatened species, state—Plant or animal species likely to become endangered in a particular state within the near future if factors contributing to population decline or habitat degradation or loss continue.

trust resource—Resource that, through law or administrative act, is held in trust for the people by the government. A federal trust resource is one for which trust responsibility is given in part to the federal government through federal legislation or administrative act. Generally, federal trust resources are those considered to be of national or international importance no matter where they occur, such as endangered species and species such as migratory birds and fish that regularly move across state lines. In addition to species, trust resources include cultural resources protected through federal historic preservation laws, nationally important and threatened habitats, notably wetlands, navigable waters, and public lands such as state parks and national wildlife refuges.

trust species—See *trust resource*.

understory—Any vegetation whose canopy (foliage) is below, or closer to the ground than canopies of other plants.

upland—Dry ground; other than wetlands.

USC—United States Code.

USDA—U.S. Department of Agriculture.

U.S. Fish and Wildlife Service (Service, USFWS)—Principal federal agency responsible for conserving, protecting, and enhancing fish and wildlife and their habitats for the continuing benefit of the American people. The Service manages the 93-million-acre National Wildlife Refuge System comprised of more than 530 national wildlife refuges and thousands

of waterfowl production areas. It also operates 65 national fish hatcheries and 78 ecological service field stations, the agency enforces federal wildlife laws, manages migratory bird populations, restores national significant fisheries, conserves and restores wildlife habitat such as wetlands, administers the Endangered Species Act, and helps foreign governments with their conservation efforts. It also oversees the federal aid program that distributes millions of dollars in excise taxes on fishing and hunting equipment to state wildlife agencies.

U.S. Fish and Wildlife Service mission—The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.

USFWS—See *U.S. Fish and Wildlife Service*.

U.S. Geological Survey (USGS)—Federal agency whose mission is to provide reliable scientific information to describe and understand the earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.

USGS—See *U.S. Geological Survey*.

vision statement—Concise statement of what the planning unit should be, or what the Service hopes to do, based primarily on the Refuge System mission, specific refuge purposes, and other mandates. In addition, the vision statement is tied to the maintenance and restoration of biological integrity, diversity, and environmental health of each refuge and the Refuge System.

visual obstruction—Pertaining to the density of a plant community; the height of vegetation that blocks the view of predators and conspecifics to a nest.

visual obstruction reading (VOR)—Measurement of the density of a plant community; the height of vegetation that blocks the view of predators to a nest.

VOR—See *visual obstruction reading*.

wading birds—Birds having long legs that enable them to wade in shallow water. Includes egrets, great blue herons, black-crowned night-herons, and bitterns.

warm-season grass—Grass that begins growth later in the season (early June); require warmer soil temperatures to germinate and actively grow when temperatures are warmer (85–95°F). Examples are Indiangrass, switchgrass, and big bluestem.

waterfowl—Category of birds that includes ducks, geese, and swans.

watershed—Geographic area within which water drains into a particular river, stream or body of

water. A watershed includes both the land and the body of water into which the land drains.

wetland—Land transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water.

wetland management district (district, WMD)—Administrative unit that provides oversight in a multicounty area for all of the U.S. Fish and Wildlife Service’s small land tracts.

WG—Wage grade schedule (pay rate schedule for certain federal positions).

wilderness—“A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain” (Wilderness Act of 1964 Section 2c [PL 88-577]). This legal definition places wilderness in the “untrammelled” or “primeval” end of the environmental modification spectrum. Wilderness is roadless lands, legally classified as component areas of the National Wilderness Preservation System, and managed to protect its qualities of naturalness, solitude, and opportunity for primitive types of recreation.

wildfire—Free-burning fire requiring a suppression response; all fire other than prescribed fire that occurs in wildlands (“U.S. Fish and Wildlife Service Manual” 621 FW 1.7).

wildland fire—Every wildland fire is either a wildfire or a prescribed fire (“U.S. Fish and Wildlife Service Manual” 621 FW 1.3).

wildlife-dependent recreational use—Use of a refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation. These are the six priority public uses of the Refuge System as established in the National Wildlife Refuge System Administration Act, as amended. Wildlife-dependent recreational uses, other than the six priority public uses, are those that depend on the presence of wildlife.

wildlife management—Practice of manipulating wildlife populations either directly through regulating the numbers, ages, and sex ratios harvested, or indirectly by providing favorable habitat conditions and alleviating limiting factors.

WMD—See *wetland management district*.

woodland—Open stands of trees with crowns not usually touching, generally forming 25%–60% cover.

WUI—Wildland–urban interface.

Appendix A

Key Legislation and Policies

Administration of units of the National Wildlife Refuge System is governed by (1) bills passed by the U.S. Congress and signed into law by the president of the United States, and (2) by regulations developed by the various branches of the government. Following are brief descriptions of some of the most pertinent laws and statutes establishing legal parameters and policy direction for the Refuge System.

In alphabetical order of the name of the act, order, or regulation.

Americans with Disabilities Act (1992): Prohibits discrimination in public accommodations and services.

Antiquities Act (June 8, 1906; 16 USC 431–3; 34 Stat. 225): Authorizes the president to designate as national monuments objects or areas of historic or scientific interest on lands owned or controlled by the United States. Requires that a permit be obtained for examination of ruins, excavation of archaeological sites, and the gathering of objects of antiquity on lands under the jurisdiction of the Secretaries of Interior, Agriculture, and Army, and provided penalties for violations.

Archaeological Resources Protection Act (Public Law [PL] 96-95; October 31, 1979; 16 USC 470aa–II; 93 Stat. 721): Largely supplants the resource protection provisions of the Antiquities Act for archaeological items. Establishes detailed requirements for issuance of permits for any excavation for or removal of archaeological resources from federal or Indian lands. Establishes civil and criminal penalties for the unauthorized excavation, removal, or damage of any such resources; for any trafficking in such resources removed from federal or Indian land in violation of any provision of federal law; and for interstate and foreign commerce in such resources acquired, transported, or received in violation of any state or local law. In addition, PL 100-588 (November 3, 1988; 102 Stat. 2983) lowers the threshold value of artifacts triggering the felony provisions of the act from \$5,000 to \$500, makes attempting to commit an action prohibited by the act a violation, and requires the land managing agencies to establish public awareness programs regarding the value of archaeological resources to the nation.

Architectural Barriers Act (1968): Requires federally owned, leased, or funded buildings and facilities to be accessible to persons with disabilities.

Archeological and Historic Preservation Act (PL 86-523; June 27, 1960; 16 USC 469–469c; 74 Stat. 220 [as amended by PL 93-291; May 24, 1974; 88 Stat. 174]): Carries out the policy established by the Historic Sites Act; directs federal agencies to notify the Secretary of the Interior whenever they find a federal or federally assisted, licensed, or permitted project may cause loss or destruction of significant scientific, prehistoric, or archaeological data. Authorizes use of appropriated, donated, and transferred money for the recovery, protection, and preservation of such data.

Clean Water Act (1977): Requires consultation with the U.S. Army Corps of Engineers for major wetland modifications.

Criminal Code of Provisions of 1940 (as amended, 18 USC 41): States the intent of Congress to protect all wildlife within federal sanctuaries, refuges, fish hatcheries, and breeding grounds. Provides that anyone (except in compliance with rules and regulations promulgated by authority of law) who hunts, traps, or willfully disturbs any such wildlife, or willfully injures, molests, or destroys any property of the United States on such land or water, shall be fined up to \$500 or imprisoned for not more than 6 months or both.

Emergency Wetland Resources Act of 1986: Authorizes the buy of wetlands from Land and Water Conservation Fund monies, removing a prior prohibition on such acquisitions. Requires the Secretary to establish a national wetlands priority conservation plan, requires the states to include wetlands in their comprehensive outdoor recreation plans, and transfers to the Migratory Bird Conservation Fund amount equal to import duties on arms and ammunition.

Endangered Species Act of 1973 and recent amendments (16 USC 1531–43, 87 Stat. 884; as amended): Provides for conservation of threatened and endangered species of fish, wildlife, and plants by federal action and by encouraging state programs. Specific provisions include the listing and determination of critical habitat for endangered and threatened species and consultation with the

Service on any federally funded or licensed project that could affect any of these agencies; prohibition of unauthorized taking, possession, sale, transport, etc., of endangered species; an expanded program of habitat acquisition; establishment of cooperative agreements and grants-in-aid to states that establish and maintain an active, adequate program for endangered and threatened species; assessment of civil and criminal penalties for violating the act or regulations.

Environmental Education Act of 1990 (PL 101-619; November 16, 1990; 20 USC 5501–10; 104 Stat. 3325):

Establishes the Office of Environmental Education within the Environmental Protection Agency to develop and administer a federal environmental education program. Responsibilities of the office include developing and supporting programs to improve understanding of the natural and developed environment and the relationships between humans and their environment; supporting the dissemination of educational materials; developing and supporting training programs and environmental education seminars; managing a federal grant program; and administering an environmental internship and fellowship program. Requires the office to develop and support environmental programs in consultation with other federal natural resource management agencies including the Service.

EO 11644—Use of Off-road Vehicles on Public Lands (1972): Provides policy and procedures for regulating off-road vehicles.

EO 11988—Floodplain Management (May 24, 1977):

Prevents federal agencies from contributing to the “adverse impacts associated with occupancy and modification of floodplains” and the “direct or indirect support of floodplain development.” In the course of fulfilling their respective authorities, federal agencies “shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains.”

EO 11990—Protection of Wetlands.

EO 12996—Management and General Public Use of the National Wildlife Refuge System (1996): Defines the mission, purpose, and priority public uses of the Refuge System; presents four principles to guide management of the system.

EO 13007—Indian Sacred Sites (1996): Directs federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and where appropriate, maintain the confidentiality of sacred sites.

Federal Noxious Weed Act (1990): Requires the use of integrated management systems to control or contain undesirable plant species, and an

interdisciplinary approach with the cooperation of other federal and state agencies.

Federal Records Act (1950): Requires the preservation of evidence of the government’s organization, functions, policies, decisions, operations, and activities, as well as basic historical and other information.

Federal Water Pollution Control Act of 1972, Section 401 (PL 92-500, USC 1411, 86 Stat. 816.33):

Requires any applicant for a federal license or permit to conduct any activity that may result in a discharge into navigable waters to obtain a certification from the state in which the discharge originates or will originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over navigable waters at the point where the discharge originates or will originate, that the discharge will comply with applicable effluent limitations and water quality standards. Requires that a certification obtained for construction of any facility must also pertain to subsequent operation of the facility.

Federal Water Pollution Control Act of 1972, Section 404 (PL 92-500, 86 Stat. 816):

Authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits, after notice and opportunity for public hearing, for discharge of dredged or fill material into navigable waters of the United States, including wetlands, at specified disposal sites. Requires that selection of disposal sites be in accordance with guidelines developed by the Administrator of the Environmental Protection Agency in conjunction with the Secretary of the Army. States that the Administrator can prohibit or restrict use of any defined area as a disposal site whenever she/he determines, after notice and opportunity for public hearings, that discharge of such materials into such areas will have an unacceptable adverse effect on municipal water supplies, shellfish beds, fishery areas, wildlife, or recreational areas.

Fish and Wildlife Act of 1956 (16 USC 742a–742j, 70 Stat. 1119; as amended):

Establishes a comprehensive fish and wildlife policy and directs the Secretary of the Interior to provide continuing research and extension and conservation of fish and wildlife resources.

Fish and Wildlife Conservation Act of 1980 (PL 96366; September 29, 1980; 16 USC 2901–11; as amended 1986, 1988, 1990, and 1992):

Creates a mechanism for federal matching funding of the development of state conservation plans for nongame fish and wildlife. States that subsequent amendments to this law require that the Secretary monitor and assess migratory nongame birds, determine the effects of environmental changes and human activities, identify birds likely to be candidates for endangered species listing, and identify conservation actions that would prevent this from being necessary. In 1989, Congress

also directed the Secretary to identify lands and waters in the Western Hemisphere, the protection, management, or acquisition of which would foster conservation of migratory nongame birds. All of these activities are intended to assist the Secretary in fulfilling the Secretary's responsibilities under the Migratory Bird Treaty Act and the Migratory Bird Conservation Act, and provisions of the Endangered Species Act implementing the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere.

Fish and Wildlife Coordination Act (1958): Allows the U.S. Fish and Wildlife Service to enter into agreements with private landowners for wildlife management purposes.

Fish and Wildlife Improvement Act of 1978: Improves the administration of fish and wildlife programs and amends several earlier laws including the Refuge Recreation Act, the National Wildlife Refuge System Administration Act, and the Fish and Wildlife Act of 1956. Authorizes the Secretary to accept gifts and bequests of real and personal property on behalf of the United States. Authorizes the use of volunteers for Service projects and appropriations to carry out volunteer programs.

Historic Sites, Buildings and Antiquities Act (August 21, 1935; 16 USC 461–2, 464–7; 49 Stat. 666; known as the “Historic Sites Act” [as amended by PL 89-249; October 9, 1965; 79 Stat. 971]): Declares it a national policy to preserve historic sites and objects of national significance, including those located at refuges and districts. Provides procedures for designation, acquisition, administration, and protection of such sites. Provides for designation of National Historic and Natural Landmarks.

Land and Water Conservation Fund Act of 1965: Provides money from leasing bonuses, production royalties, and rental revenues for offshore oil, gas, and sulphur extraction to the Bureau of Land Management, the USDA Forest Service, the U.S. Fish and Wildlife Service, and state and local agencies for purchase of lands for parks, open space, and outdoor recreation.

Migratory Bird Conservation Act of 1929 (16 USC 715–715d, 715e, 715f–r): Establishes the Migratory Bird Conservation Commission, which consists of the Secretaries of the Interior (chair), Agriculture, and Transportation; two members from the House of Representatives; and an ex-officio member from the state in which a project is located. States that the commission approves acquisition of land and water, or interests therein, and sets the priorities for acquisition of lands by the Secretary of the Interior for sanctuaries or for other management purposes. Requires that, to acquire lands or interests therein, the state concerned must consent to such acquisition by legislation. Such legislation has been enacted by most states.

Migratory Bird Conservation Act of 1929 (16 USC 715s, 45 Stat. 1222, as amended): Authorizes acquisition, development, and maintenance of migratory bird refuges; cooperation with other agencies in conservation; and investigations and publications on North American birds. Authorizes payment of 25% of net receipts from administration of national wildlife refuges to the country or counties in which such refuges are located.

Migratory Bird Hunting and Conservation Stamp Act of 1934 (March 16, 1934; 16 USC 718–718h; 48 Stat. 51; known as The “Duck Stamp Act”; as amended): Requires each waterfowl hunter 16 years of age or older to possess a valid federal hunting stamp. Authorizes the requirement of an annual stamp for the hunting of waterfowl; proceeds go toward the purchase of habitat for waterfowl and other wildlife. Duck stamps are also bought (1) for entry into some refuges, (2) by conservationists, and (3) for stamp collections. Receipts from the sale of the stamp are deposited in a special Treasury account known as the Migratory Bird Conservation Fund and are not subject to appropriations.

Migratory Bird Treaty Act of 1918 (16 USC 703–11; 50 CFR, subchapter B; as amended): Implements treaties with Great Britain (for Canada) and Mexico for protection of migratory birds whose welfare is a federal responsibility. Provides for regulations to control taking, possession, selling, transporting, and importing of migratory birds and provides penalties for violations. Enables the setting of seasons and other regulations (including the closing of areas, federal or nonfederal) related to the hunting of migratory birds.

National and Community Service Act of 1990 (PL 101-610; November 16, 1990; 42 USC 12401; 104 Stat. 3127): Authorizes several programs to engage citizens of the United States in full and part-time projects designed to combat illiteracy and poverty, provide job skills, enhance educational skills, and fulfill environmental needs. Provides for grants to states for the creation of programs for citizens over 17 years of age. Programs must be designed to fill unmet educational, human, environmental, and public safety needs. Initially, participants will receive postemployment benefits of up to \$1,000 per year for part-time participants and \$2,500 for full-time participants.

Several provisions are of particular interest to the Service:

American Conservation and Youth Service Corps: As a federal grant program established under subtitle C of the law, the corps offers an opportunity for young adults between the ages of 16 and 25, or in the case of summer programs, between 15 and 21, to engage in approved human and natural resources projects that benefit the public or are carried out on federal or Indian lands. To be eligible

for assistance, natural resources programs will focus on improvement of wildlife habitat and recreational areas, fish culture, fishery assistance, erosion, wetlands protection, pollution control, and similar projects. A stipend of not more than 100% of the poverty level will be paid to participants. A commission established to administer the Youth Service Corps will make grants to states, the Secretaries of Agriculture and Interior, and the Director of ACTION to carry out these responsibilities.

Thousand Points of Light: Creates a nonprofit Points of Light Foundation to administer programs to encourage citizens and institutions to volunteer to solve critical social issues, discover new leaders, and develop institutions committed to serving others.

National Environmental Policy Act of 1969 (PL 91-190; January 1, 1970; 42 USC 4321–47; 83 Stat. 852 [as amended by PL 94-52; July 3, 1975; 89 Stat. 258] [as amended by PL 94-83; August 9, 1975; 89 Stat. 424]): Requires all agencies, including the Service, to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in the planning and the implementation of all actions, federal agencies must integrate the act with other planning requirements, and to prepare appropriate documents to facilitate better environmental decision making (40 CFR 1500). Declares national policy to encourage a productive and enjoyable harmony between humans and their environment.

Section 102 of that act directs that “to the fullest extent possible the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this act, and all agencies of the Federal Government shall ... insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision making along with economic technical considerations.”

Section 102(2)c of the NEPA requires all federal agencies, with respect to major federal actions significantly affecting the quality the quality of the human environment, to submit to the Council on Environmental Quality a detailed statement of the environmental impact of the proposed action; any adverse environmental effect that cannot be avoided should the proposal be carried out; alternatives to the proposed action; the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity; any irreversible and irretrievable commitments of resources that would be involved in the proposed action, should it be carried out.

National Historic Preservation Act of 1966 (PL 89-665; October 15, 1966; 16 USC 470–470b, 470c–n; 80 Stat. 915; and repeatedly amended):

Provides for preservation of significant historical features (buildings, objects, and sites) through a grants-in-aid program to the states. Establishes the National Register of Historic Places and a program of matching grants under the existing National Trust for Historic Preservation (16 USC 468–468d). Establishes the Advisory Council on Historic Preservation, which was made a permanent independent agency in PL 94-422 (September 28, 1976; 90 Stat. 1319). That act creates the Historic Preservation Fund. Directs federal agencies to take into account the effects of their actions on items or sites listed or eligible for listing in the National Register.

National Wildlife Refuge System Administration Act of 1966 (PL 89-669; 16 USC 668dd–ee; 80 Stat. 929; as amended):

Defines the Refuge System as including wildlife refuges, areas for protection and conservation of fish and wildlife that are threatened with extinction, wildlife ranges, game ranges, wildlife management areas, and waterfowl production areas. Authorizes the Secretary to permit any use of an area provided such use is compatible with the major purposes for which such area was established. States that purchase considerations for rights-of-way go into the Migratory Bird Conservation Fund for the acquisition of lands. By regulation, up to 40% of an area acquired for a migratory bird sanctuary may be opened to migratory bird hunting unless the Secretary finds that the taking of any species of migratory game birds in more than 40% of such area would be beneficial to the species. Requires an act of Congress for the divestiture of lands in the system, except for (1) lands acquired with Migratory Bird Conservation Commission money, and (2) lands that can be removed from the system by land exchange, or if brought into the system by a cooperative agreement, then pursuant to the terms of the agreement.

National Wildlife Refuge System Improvement Act of 1997 (PL 105-57; October 9, 1997; Amendment to the National Wildlife Refuge System Administration Act of 1966):

Sets the mission and the administrative policy for all units in the Refuge System. Clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation, photography, environmental education, and interpretation); establishes a formal process for determining appropriateness and compatibility; establishes the responsibilities of the Secretary of the Interior for managing and protecting the Refuge System; and requires a CCP for each refuge by the year 2012. Also amended portions of the Refuge Recreation Act and the National Wildlife Refuge System Administration Act of 1966.

Key provisions include the following:

- A requirement that the Secretary of the Interior ensures maintenance of the biological integrity, diversity, and environmental health of the Refuge System.
- The definition of compatible wildlife-dependent recreation as “legitimate and appropriate general public use of the [National Wildlife Refuge] System.”
- The establishment of hunting, fishing, wildlife observation, photography, environmental education, and interpretation as “priority public uses” where compatible with the mission and purpose of individual national wildlife refuges.
- The refuge managers’ authority to use sound professional judgment in determining which public uses are compatible at national wildlife refuges and whether or not they will be allowed (a formal process for determining “compatible use” is currently being developed).
- The requirement of open public involvement in decisions to allow new uses of national wildlife refuges and renew existing ones, as well as in the development of CCPs for national wildlife refuges.

National Wildlife Refuge Regulations (50 CFR 25-35, 43 CFR 3103.2 and 3120.3–3): Provides regulations for administration and management of national wildlife refuges including mineral leasing, exploration, and development.

Rights-of-way General Regulations (50 CFR 29.21; 34 FR 19907, December 19, 1969):

Provides for procedures for filing applications. Provides terms and conditions under which rights-of-way over, above, and across lands administered by the Service may be granted.

Wilderness Preservation and Management (50 CFR 35; 16 USC 1131-1136; 43 USC 1201; 78 Stat. 890): Provides procedures for establishing wilderness units under the Wilderness Act of 1964 at units of the Refuge System.

National Wildlife Refuge System Volunteer and Community Partnership Enhancement Act of 1998 (PL 105-242, 112 Stat. 1575): Encourages the use of volunteers to assist the Service in the management of refuges within the Refuge System. Facilitates partnerships between the Refuge System and nonfederal entities to promote public awareness of the resources of the Refuge System and public participation in the conservation of those resources. Encourages donations and other contributions by persons and organizations to the Refuge System.

North American Wetlands Conservation Act (PL 101-233; December 13, 1989; 16 USC 4401–12; 103 Stat. 1968): Provides for the conservation of North American wetland ecosystems, waterfowl and other migratory birds, fish, and wildlife that depend on

such habitats. Establishes a council to review project proposals and provided funding for the projects. Provides funding and administrative direction for implementation of the North American Waterfowl Management Plan and the Tripartite Agreement on wetlands between Canada, United States, and Mexico. Converts the Pittman–Robertson account into a trust fund, with the interest available without appropriation through the year 2006 to carry out the programs authorized by the act, along with an authorization for annual appropriation of \$15 million plus an amount equal to the fines and forfeitures collected under the Migratory Bird Treaty Act. Available money may be expended, upon approval of the Migratory Bird Conservation Commission, for payment of not to exceed 50% of the United States share of the cost of wetlands conservation projects in Canada, Mexico, or the United States (or 100% of the cost of projects on federal lands). At least 50% and no more than 70% of the money received is to go to Canada and Mexico each year.

Refuge Recreation Act of 1962: Authorizes the Secretary of the Interior to administer refuges, hatcheries, and other conservation areas for recreational use, when such uses do not interfere with the areas’ primary purposes. Authorizes construction and maintenance of recreational facilities and the acquisition of land for incidental fish and wildlife oriented recreational development or protection of natural resources. Authorizes the charging of fees for public uses.

Refuge Recreation Act of 1966 (PL 87-714, 16 USC 460k et seq., 76 Stat. 653–4): Authorizes appropriate, incidental, or secondary recreational use at conservation areas administered by the Secretary of the Interior for fish and wildlife purposes.

Refuge Recreation Act of 1969 [16 USC 460k–k4], as amended.

Refuge Revenue Sharing Act, Section 401 (June 15, 1935; 16 USC 715s; 49 Stat. 383): Provides for payments to counties in lieu of taxes, using revenues derived from the sale of products from refuges. Related legislation follows:

PL 88-523 (August 30, 1964; 78 Stat. 701):

Makes major revisions by requiring that all revenues received from refuge products such as animals, timber and minerals, or from leases or other privileges, be deposited in a special Treasury account and net receipts distributed to counties for public schools and roads.

PL 93-509 (December 3, 1974; 88 Stat. 1603):

Requires that monies remaining in the fund after payments be transferred to the Migratory Bird Conservation Fund for land acquisition under provisions of the Migratory Bird Conservation Act.

PL 95-469 (October 17, 1978; 92 Stat. 1319):

Expands the revenue-sharing system to include

national fish hatcheries and Service research stations. Includes in the Refuge Revenue Sharing Fund receipts from the sale of salmonid carcasses. Establishes payments to counties as follows:

On acquired land, the greatest amount calculated on the basis of 75 cents per acre, $\frac{3}{4}$ of 1% of the appraised value, or 25% of the net receipts produced from the land.

On land withdrawn from the public domain, 25% of net receipts and basic payments under PL 94-565 (31 USC 1601–1607, 90 Stat. 2662), payment in lieu of taxes on public lands.

This amendment also authorizes appropriations to make up any difference between the amount in the fund and the amount scheduled for payment in any year. The stipulation that payments be used for schools and roads was removed, but counties were required to pass payments along to other units of local government within the county that suffer losses in revenues due to the establishment of Service areas.

Refuge Revenue Sharing Act of 1978 (PL 95-469; October 17, 1978; amended 16 USC 715s; 50 CFR, part 34):

Changes the provisions for sharing revenues with counties in a number of ways. Makes revenue sharing applicable to all lands administered by the Service, whereas previously it was applicable only to areas in the Refuge System. Makes payments available for any governmental purpose, whereas the old law restricted the use of payments to roads and schools. For lands acquired in fee simple, provides a payment of 75 cents per acre, $\frac{3}{4}$ of 1% of fair market value or 25% of net receipts, whichever is greatest, whereas the old law provided a payment of $\frac{3}{4}$ of 1% adjustment cost or 25% of net receipts, whichever was greater. Makes reserve (public domain) lands entitlement lands under PL 94-565 (16 USC 1601–1607) and provides for a payment of 25% of net receipts. Authorizes appropriations to make up any shortfall in net receipts, to make payments in the full amount for which counties are eligible. The old law provided that if net receipts were insufficient to make full payment, payment to each county would be reduced proportionality.

Refuge Trespass Act of June 28, 1906 (18 USC 41, 43 Stat. 98; 18 USC 145): Provides the first federal protection for wildlife at national wildlife refuges. Makes it unlawful to hunt, trap, capture, willfully

disturb, or kill any bird or wild animal, or take or destroy the eggs of any such birds, on any lands of the United States set apart or reserved as refuges or breeding grounds for such birds or animals by any law, proclamation, or executive order, except under rules and regulations of the Secretary. The act also protects government property on such lands.

Refuge Trespass Act of June 25, 1948 (18 USC 41, Stat. 686; Section 41 of the Criminal Code, Title 18):

Consolidates the penalty provisions of various acts from January 24, 1905 (16 USC 684–687, 33 Stat. 614) through March 10, 1934 (16 USC 694–694b, 48 Stat. 400) and restates the intent of Congress to protect all wildlife within federal sanctuaries, refuges, fish hatcheries, and breeding grounds. Provides that anyone (except in compliance with rules and regulations promulgated by authority of law) who hunts, traps, or willfully disturbs any wildlife on such areas, or willfully injures, molests, or destroys any property of the United States on such lands or waters, shall be fined, imprisoned, or both.

Rehabilitation Act of 1973 (October 1, 1973; 29 USC 794 [as amended by PL 93-112, Title 5; 87 Stat. 355]):

Prohibits discrimination on the basis of handicap under any program or activity receiving federal financial assistance.

Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948:

Provides that, upon determination by the Administrator of the General Services Administration, real property no longer needed by a federal agency can be transferred without reimbursement to the Secretary of the Interior if the land has particular value for migratory birds, or to a state agency for other wildlife conservation purposes.

U.S. Department of the Interior Order No. 3226

(January 19, 2001): Directs bureaus and offices of the Department to analyze the potential effects on climate change when undertaking long-range planning, when setting priorities for scientific research, and when making major decisions about use of resources.

Wilderness Act of 1964 (PL 88-577; September 3,

1964): Directs the Secretary of the Interior, within 10 years, to review every roadless area of 5,000 or more acres and every roadless island (regardless of size) within the Refuge System and National Park Service for inclusion in the National Wilderness Preservation System.

Laws and Executive Orders that Regulate Recreational Use on the Refuge System

Alaska National Interest Lands Conservation Act of 1980 (16 USC 410 hh3233 and 43 USC 1602–1784)

Alaska Native Claims Settlement Act (43 USC 1601–24)

Antiques Act of 1906 (16 USC 431–3)

Archaeological and Historic Preservation Act of 1960 (16 USC 469–469c), as amended

Archaeological Resources Protection Act of 1979 (16 USC 470aa–mm)

Comprehensive Environmental Responses, Compensation and Liability Act of 1980

Endangered Species Act of 1973 (16 USC 1531–44), as amended

Executive Order 11593—Protection and Enhancement of the Cultural Environment

Executive Order 11593—Protection of Historical, Archaeological, and Scientific Properties

Executive Order 11644—Use of Off-road Vehicles on Public Lands

Executive Order 11988—Floodplain Management

Executive Order 11990—Protection of Wetlands

Executive Order 12372—Intergovernmental Review of Federal Program

Executive Order 12962—Recreational Fisheries

Executive Order 12996—Management and General Public Use of the National Wildlife Refuge System

Executive Order 13006—Locating Federal Facilities On Historic Properties In Our Nation’s Central Cities

Executive Order 13007—Indian Sacred Sites

Executive Order 13287—Preserve America

The Fish and Wildlife Act of 1956 (16 USC 742f [a] [4]), as amended

Fish and Wildlife Conservation Act (16 USC 2901–11), as amended

The Fish and Wildlife Coordination Act (16 USC 661[1]–662[c])

Fish and Wildlife Improvement Act of 1978 (16 USC 7421)

Historic Sites, Building and Antiquities Act of 1935 (16 USC 461–2, 464–7)

Land and Water Conservation Fund (16 USC 460[1–4]–[1–11]), as amended.

Migratory Bird Conservation Act of 1929 (16 USC 715–715d, 715e, 715f–r), as amended

National Wildlife Refuge System Administration Act of 1966 (16 USC 668dd–669ee), as amended

National Wildlife Refuge System Improvement Act of 1997

Natural Historic Preservation Act of 1966 (16 USC 470–470b, 470c–n), as amended

Refuge Recreation Act of 1962 (16 USC 460k–k4), as amended

Refuge Recreation Act of 1969 (16 USC 460k–k4), as amended

Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970, as amended

Wild and Scenic Rivers Act (16 USC 1271–87), as amended

Wilderness Act of 1964 (16 USC 1131–6)

Appendix B

Preparers and Contributors

This document is the result of extensive, collaborative, and enthusiastic efforts by the members of the planning team for the 12 North Dakota national wildlife refuges. Many others contributed insight and support.

PLANNING TEAM

The planning team comprises the project leaders for the Refuge System units that administer the refuges, a biology subteam, a visitor services subteam, and extended team members—all listed below.

Refuge System Project Leaders

<i>Team Member</i>	<i>Position</i>	<i>Work Unit</i>
David Gillund	Project leader	Lostwood Wetland Management District Complex
Kim Hanson	Project leader	Arrowwood National Wildlife Refuge Complex
Roger Hollevoet	Project leader	Devils Lake Wetland Management District Complex
Lloyd Jones	Project leader	Audubon National Wildlife Refuge Complex

Biology Subteam

<i>Team Member</i>	<i>Position</i>	<i>Work Unit</i>
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Cami Dixon	Wildlife biologist	Devils Lake Wetland Management District Complex
Mike Goos	Wetland management district manager	Audubon National Wildlife Refuge Complex
Tim Kessler	Wetland management district manager	Crosby Wetland Management District
Paulette Scherr	Wildlife biologist	Arrowwood National Wildlife Refuge Complex
Richard Schroeder	Wildlife biologist	USGS–Biological Survey, Fort Collins, CO

Visitor Services Subteam

<i>Team Member</i>	<i>Position</i>	<i>Work Unit</i>
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Stacy Hoehn	Refuge operations specialist	Valley City Wetland Management District
Jackie Jacobson	Outdoor recreation planner	Audubon National Wildlife Refuge Complex
Shapins Associates	Consultants	Boulder, CO
Cindy Souders	Outdoor recreational program specialist	USFWS, regional office, Lakewood, CO
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Extended Team Members

<i>Team Member</i>	<i>Position</i>	<i>Work Unit</i>
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Kurt Tompkins	Refuge manager	Kellys Slough National Wildlife Refuge

<i>Team Member</i>	<i>Position</i>	<i>Work Unit</i>
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CONTRIBUTORS

The Service acknowledges the efforts of the following individuals and organizations toward the completion of this draft CCP and EA. The diversity, talents, and knowledge they contributed dramatically improved the vision and completeness of this document.

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Appendix C

Public Involvement

Public scoping was started for the 12 North Dakota national wildlife refuges with a notice of intent published in the *Federal Register* on February 28, 2007. The notice announced the Service's intent to prepare a CCP and EA for the refuges and to obtain suggestions and information on the scope of issues to be considered in the planning process.

Public meetings were held in various locations throughout North Dakota starting on March 26, 2007, and ending on April 11, 2007. Numerous written comments were received during the open comment period. Comments received identified biological, social, and economic concerns about refuge management. The mailing list for the draft CCP and EA follows.

FEDERAL OFFICIALS

U.S. Senator Byron L. Dorgan, Washington DC
Sen. Dorgan's area director, Bismarck, ND
U.S. Senator Kent Conrad, Washington DC
Sen. Conrad's area director, Bismarck, ND
U.S. Representative Earl Pomeroy, Washington DC
Rep. Pomeroy's area director, Bismarck, ND

FEDERAL AGENCIES

Bureau of Reclamation, Bismarck, ND
National Park Service, Omaha, NE
USDA-APHIS, Bismarck, ND
USDA-Farm Service Agency, Bottineau, ND
USDA-Farm Service Agency, Rugby, ND
USDA-Farm Service Agency, Towner, ND
USDA-Natural Resources Conservation Service (NRCS), Bismarck, ND
USDA-NRCS, Bottineau, ND
USDA-NRCS, Copperstown, ND
USDA-NRCS, Linton, ND
USDA-NRCS, Mohall, ND
USDA-NRCS, Rolla, ND
USDA-NRCS, Rugby, ND
USDA-NRCS, Steel, ND
USDA-NRCS, Valley City, ND
USFWS, Ecological Services, Bismarck, ND
USFWS, National Wildlife Refuge System—
Albuquerque, NM; Anchorage, AK; Arlington, VA;
Atlanta, GA; Fort Snelling, MN; Hadley, MA;
Portland, OR; Rawlins, WY; Sacramento, CA;
Shepherdstown, WV; Washington DC
USGS-Fort Collins Science Center, Ft. Collins, CO

TRIBES

Three Affiliated Tribes, New Town, ND
Standing Rock Sioux Tribe, Fort Yates, ND
Spirit Lake Tribal Council, Fort Totten, ND
Sisseton-Wahpeton Oyate, Agency Village, SD
Turtle Mountain Band of Chippewa, Belcourt, ND
White Earth Band of Chippewa, White Earth, MN

STATE OFFICIALS

Governor John Hoeven, Bismarck, ND
North Dakota State Representatives and Senators
(139)

STATE AGENCIES

North Dakota Forest Service, Bismarck, ND
NDGF, Bismarck, ND
North Dakota State Historical Preservation Office,
Bismarck, ND
North Dakota State Land Board, Bismarck, ND
North Dakota State University Extension Service,
Bismarck, ND
North Dakota State University Extension Service,
Linton, ND
North Dakota State University Extension Service,
Steele, ND
North Dakota State Water Commission

LOCAL GOVERNMENT

County Commissioners (33)
Mayors (7)
Resource Conservation Districts (8)
Weed Board Offices (19)

ORGANIZATIONS

American Bird Conservancy, Plains, VA
American Rivers, Washington DC
Animal Protection Institute, Sacramento, CA
Beyond Pesticides, Washington DC
Defenders of Wildlife, Washington DC
Duck Unlimited, Great Plains Office, Bismarck, ND
Fund for Animals, Silver Springs, MD
Izaak Walton League, Gaithersburg, MD
Murie Audubon Society, Casper, WY
National Audubon Society, Fargo, ND
National Audubon Society—Washington DC; New
York, NY

National Trappers Association, New Martinsville, WV
National Wildlife Federation, Reston, VA
National Wildlife Refuge Association, Washington DC
National Wild Turkey Federation, Bismarck, ND
The Nature Conservancy, Minneapolis, MN
Sierra Club—San Francisco, CA; Sheridan, WY
Union Pacific Railroad, Omaha, NE
The U.S. Humane Society, Washington DC
The Wilderness Society, Washington DC
Wildlife Management Institute—Fort Collins, CO;
Corvallis, OR; Washington DC

UNIVERSITIES AND COLLEGES

Bismarck State College
Minot State University
Northwestern University

MEDIA

Newspapers (57)
Radio stations (4)
TV stations (2)

INDIVIDUALS

Individuals (631)

Appendix D

Draft Compatibility Determinations for Wildlife-dependent Recreational Uses, Grazing, Haying, and Farming

Refuge Names

Audubon National Wildlife Refuge
Chase Lake National Wildlife Refuge
Lake Alice National Wildlife Refuge
Lake Ilo National Wildlife Refuge
Lake Nettie National Wildlife Refuge
Lake Zahl National Wildlife Refuge
McLean National Wildlife Refuge
Kellys Slough National Wildlife Refuge
Shell Lake National Wildlife Refuge
Stewart Lake National Wildlife Refuge

Establishing and Acquisition Authorities

- Audubon National Wildlife Refuge (USC 664—Fish and Wildlife Coordination Act)
- Chase Lake National Wildlife Refuge (EO 932)
- Lake Alice National Wildlife Refuge (USC 715d—Migratory Bird Conservation Act)
- Lake Ilo National Wildlife Refuge (EO 8154)
- Lake Nettie National Wildlife Refuge (EO 8155)
- Lake Zahl National Wildlife Refuge (EO 8158)
- McLean National Wildlife Refuge (USC 715d—Migratory Bird Conservation Act)
- Kellys Slough National Wildlife Refuge (EO 8650)
- Shell Lake National Wildlife Refuge (EO 8166)
- Stewart Lake National Wildlife Refuge (EO 8662)

Purposes

“As a refuge and breeding ground for migratory birds and other wildlife.”

Executive orders

“For use as an inviolate sanctuary, or for any other management purpose, for migratory birds.”

USC 715d—Migratory Bird Conservation Act

“Shall be administered by [Secretary of the Interior] directly or in accordance with cooperative agreements ... and in accordance with such rules and regulations

for the conservation, maintenance, and management of wildlife, resources thereof, and its habitat thereon.”
16 USC 664—Fish and Wildlife Coordination Act

National Wildlife Refuge System Mission

The mission of the 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:

Recreational Hunting

The Service would continue to provide recreational hunting at Audubon, Chase Lake, Lake Alice, Lake Nettie, and Lake Zahl national wildlife refuges and expand programs. These five refuges are open to recreational public hunting in accordance with state seasons and regulations established for each refuge.

Audubon National Wildlife Refuge—The Service would continue to allow recreational hunting of deer, ring-necked pheasant, sharp-tailed grouse, and partridge.

Chase Lake National Wildlife Refuge—The Service would continue to allow recreational hunting of deer.

Lake Alice National Wildlife Refuge—The Service would continue to allow recreational hunting of deer, ring-necked pheasant, sharp-tailed grouse, partridge, and waterfowl.

Lake Nettie National Wildlife Refuge—The Service would continue to allow recreational hunting of deer.

Lake Zahl National Wildlife Refuge—The Service would continue to allow recreational hunting of deer, ring-necked pheasant, sharp-tailed grouse, and partridge.

Availability of Resources

Sufficient resources are available to maintain the existing recreational hunting program. The NDGF helps the refuges with law enforcement coverage.

Anticipated Impacts of Use

During annual reviews of hunting programs, the refuge staffs evaluate what effect the diversion of funding and staff would have on their abilities to manage habitat. Because the Service would direct the limited funding and staff first toward habitat management, there may be a resulting decrease in hunting opportunities or facilities. Restrictions on the timing of seasons and areas open to hunting would ensure that hunting activities do not interfere with the purposes of the refuges or attainment of Refuge System objectives.

Temporary disturbance to wildlife would occur near the activity. Hunting would remove animals that are surplus to populations. A temporary decrease in populations of wild animals may help ensure that carrying capacity (especially for big-game species) is not exceeded. There would be no negative effects on threatened and endangered species.

The restriction of vehicle use to designated purposes, times, and established roads, trails, and parking lots would protect habitats from damage and minimize disturbance to wildlife. Closed areas would provide sanctuary for game and nongame species, minimize conflicts between hunters and other visitors, and provide safety zones around communities and administrative areas.

There would be no negative effects on cultural resources.

Determination

Recreational hunting is a compatible wildlife-dependent recreational use at Audubon, Chase Lake, Lake Alice, Lake Nettie, and Lake Zahl national wildlife refuges.

Stipulations Necessary to Ensure Compatibility

- Require the use of nontoxic shot, in accordance with current regulations for hunting migratory birds and upland game.
- Limit use of motorized vehicles to designated parking areas, access trails, and public roads.
- Prohibit all-terrain vehicles.
- Prohibit camping, overnight use, and fires.
- Require that hunting be conducted in accordance with federal and state regulations.
- Promote sound hunting practices for hunter safety and quality experiences.
- Prohibit collecting, injuring, disturbing, destroying, or harming any animal or plant except legally taken game animals.
- Prohibit search for or disturbance or collection of prehistoric or historic artifacts.
- Require that trash, including shell casings, be packed out so the areas remain clean, natural, and enjoyable.

Justification

The Improvement Act identified hunting at national wildlife refuges as a wildlife-dependent recreational use. Hunting is a legitimate wildlife management tool that can be used to manage populations. Hunting harvests a small percentage of the renewable resources, which is in accordance with wildlife objectives and principles.

Based on the biological impacts anticipated above and in the EA, it is determined that recreational hunting at Audubon, Chase Lake, Lake Alice, Lake Nettie, and Lake Zahl national wildlife refuges would not detract from the purposes for which these refuges were established or their habitat goals and objectives.

There would be no negative effects on cultural resources or threatened and endangered species.

Mandatory 15-year Reevaluation Date: 2023

Description of Use: Recreational Fishing

The Service would continue to provide recreational fishing at designated areas at Lake Audubon and Lake Ilo national wildlife refuges. The primary game fish found at both refuges are northern pike, walleye, and perch. Fishing visitation is dependent on success, which weather cycles influence. Generally, fishing is good during wet cycles and poor during extended dry periods due to the marginal nature of the wetlands and lakes involved (shallow depths and harsh winters subject wetlands of marginal depths to frequent winterkill of fish resources).

Audubon National Wildlife Refuge—The Service permits only ice fishing at the refuge, when ice covers the water. Anglers must remove fish houses from the refuge by March 15; however, anglers can continue to use portable fish houses if they are removed daily. The refuge closes to ice fishing March 31. All vehicles, including snowmobiles and all-terrain vehicles, must stay on public roads and use designated ice access points only. There are six designated points where vehicles may access the ice; ice access points are marked with brown signs.

Lake Ilo National Wildlife Refuge—Portions of Lake Ilo are open to fishing and boating in accordance with state and refuge regulations. The Service allows fishing and wildlife-oriented boating from May 1 through September 30. Signs, marker buoys, and the refuge map designate areas open to fishing and boating. Fishing from the shoreline is open year-round in areas open to public fishing on Lake Ilo. Ice fishing is open from October 1 through March 31. Boat motors are restricted to idle speed only. An accessible fishing pier is located in Lake Ilo Park, and a boat ramp and courtesy dock are available on the

north shore. The Lake Ilo dam spillway, emergency spillway, and islands are closed to all public use.

Availability of Resources

Both refuges have adequate administrative and managerial staffs to maintain their fishing programs.

The refuges need annual funding for seasonal workforce salaries and for supplies to maintain fishing facilities (including mowing, painting, repair, litter pickup, restroom cleaning, and periodic pumping of vaulted toilets). In addition, funding is needed for a maintenance worker's salary and equipment to maintain fishing areas and facilities.

Funding is needed for law enforcement staff salaries, fuel costs, repair and maintenance of patrol vehicles, and associated costs to support the law enforcement program. Routine law enforcement patrols occur year-round. Both refuges also receive assistance from local, state district wardens.

To carry out improvements or expand fishing opportunities, refuge staffs would describe the details in step-down management plans and address these activities through future funding requests.

Anticipated Impacts of Use

Fishing and other human activities cause disturbance to wildlife. Restriction of fishing to designated areas would minimize disturbance to migratory birds and other wildlife. In areas of relatively low use by migratory birds, such as large permanent lakes, fishing programs can provide recreation and have relatively little effect on the refuges' other objectives and programs. There would be no negative effects on cultural resources or threatened and endangered species.

Determination

Recreational fishing is a compatible wildlife-dependent recreational use at Audubon and Lake Ilo national wildlife refuges.

Stipulations Necessary to Ensure Compatibility

- Require that fishing follow state and federal regulations.
- Confine fishing to designated areas.
- Monitor existing use to ensure that facilities are adequate and disturbance to wildlife continues to be minimal.

Justification

The Improvement Act identified fishing at national wildlife refuges as a wildlife-dependent recreational use. Based on the biological impacts anticipated above and in the EA, it is determined that recreational fishing at Audubon and Lake Ilo national wildlife refuges would not detract from the purposes for

which these refuges were established or their habitat goals and objectives.

Mandatory 15-year Reevaluation Date: 2023

Description of Use:

Wildlife Observation and Photography

The Service would continue to provide opportunities that support wildlife-dependent recreation at Audubon, Chase Lake, Lake Alice, Lake Ilo, Lake Nettie, Lake Zahl, McLean, Kellys Slough, Shell Lake, and Stewart Lake national wildlife refuges. Auto tour routes, hiking trails, and wildlife observation pullouts facilitate wildlife observation and photography at these refuges. In addition, the draft CCP proposes placement of portable blinds to improve the viewing access at areas with exceptional wildlife-viewing opportunities.

Availability of Resources

The Service would update existing program aspects, such as refuge signs and brochures, with available resources. Implementation of new facilities would be closely tied to funding requests through the Refuge Operation Needs System and Service Asset Maintenance Management System.

Anticipated Impacts of Use

Wildlife observation and photography can cause disturbance to wildlife; however, restricted access to designated areas would minimize the disturbance to migratory birds and other wildlife. In areas of low use by migratory birds, nonconsumptive recreation can have little effect on the refuges' other objectives and programs. There would be no negative effects on cultural resources or threatened and endangered species.

Determination

Wildlife observation and photography are compatible wildlife-dependent recreational uses at Audubon, Chase Lake, Lake Alice, Lake Ilo, Lake Nettie, Lake Zahl, McLean, Kellys Slough, Shell Lake, and Stewart Lake national wildlife refuges.

Stipulations Necessary to Ensure Compatibility

- Restrict vehicles to designated roads and trails.
- Monitor use, regulate access, and maintain necessary facilities to prevent habitat degradation and minimize wildlife disturbance.

Justification

Wildlife observation and photography are wildlife-dependent recreational uses listed in the Improvement Act. Through these uses, visitors would gain knowledge and an appreciation of fish

and wildlife, which would lead to increased public stewardship of wildlife and their habitats. Increased public stewardship would support and complement the Service's actions in achieving the purposes of the refuges and the mission of the Refuge System.

Based on the biological impacts anticipated above and in the EA, it is determined that wildlife observation and photography at the ten refuges listed above would not detract from the purposes for which these refuges were established or their habitat goals and objectives.

Mandatory 15-year Reevaluation date: 2023

Description of Use:

Environmental Education and Interpretation

The Service would continue to provide opportunities for environmental education and interpretation at Audubon, Chase Lake, Lake Alice, Lake Ilo, Lake Nettie, Lake Zahl, McLean, Kellys Slough, Shell Lake, and Stewart Lake national wildlife refuges. Environmental education consists of activities conducted by refuge staffs, volunteers, and teachers. Interpretation occurs in less formal activities with refuge staffs and volunteers or through exhibits, educational trunks, signs, programs, and brochures. Currently, environmental education and interpretation activities are conducted at refuge offices and off-site locations where activities and programs are presented.

The draft CCP proposes to continue with current uses as well as improve environmental education and interpretation for all visitors through the following improvements:

- Conduct visitor services events such as teacher workshops and waterfowl identification on a 3-year rotation among the refuges.
- Develop "friends groups" associated with the refuges.
- Improve and expand programs for youth and conservation groups on a 3-year rotation among the refuges.
- Conduct limited outreach to wildlife groups, conservation and community groups, and teachers and students.
- Annually conduct media outreach.
- Annually review brochures and publications; complete updates as needed.
- Construct a new administration and learning center for Audubon National Wildlife Refuge.
- Initiate and expand environmental education programs for Kellys Slough and Lake Alice national wildlife refuges.

- Restore public use facilities and construct new kiosks and interpretive panels at Lake Alice National Wildlife Refuge.

Availability of Resources

The Service would update existing program aspects, such as refuge signs and brochures, with available resources. Implementation of new facilities would be closely tied to funding requests through the Refuge Operation Needs System and Service Asset Maintenance Management System.

Anticipated Impacts of Use

Minimal disturbance to wildlife and habitat would result from these uses at the current and proposed levels. Some disturbance to wildlife would occur in areas frequented by visitors. There would be littering and minor damage to vegetation; increased maintenance would be necessary. Location and time limitations placed on environmental education and interpretation activities would ensure that these activities would have only minor impacts on wildlife and would not detract from the primary purposes of the refuges. There would be no negative effects on cultural resources or threatened and endangered species.

Determination

Environmental education and interpretation are compatible wildlife-dependent recreational uses at Audubon, Chase Lake, Lake Alice, Lake Ilo, Lake Nettie, Lake Zahl, McLean, Kellys Slough, Shell Lake, and Stewart Lake national wildlife refuges.

Stipulations Necessary to Ensure Compatibility

- Allow environmental education and interpretation only in designated areas or under the guidance of refuge personnel, volunteers, or trained teachers to ensure minimal disturbance to wildlife, minimal damage to vegetation, and minimal conflicts between groups.
- Annually review environmental education and interpretation programs to ensure related activities are compatible.

Justification

Environmental education and interpretation are wildlife-dependent recreational uses listed in the Improvement Act. Through environmental education and interpretation, visitors would gain knowledge and an appreciation of fish, wildlife, and their habitats, which would lead to increased public awareness and stewardship of natural resources. Increased appreciation for natural resources would support and complement the Service's actions in achieving the purposes of the refuge and the mission of the Refuge System.

Based on the biological impacts anticipated above and in the EA, it is determined that environmental education and interpretation the ten refuges listed above would not detract from the purposes for which these refuges were established or their habitat goals and objectives.

Mandatory 15-year Reevaluation date: 2023

Description of Use:

Research

The Service would continue to provide opportunities for research at Audubon, Chase Lake, Lake Alice, Lake Ilo, Lake Nettie, Lake Zahl, McLean, Kellys Slough, Shell Lake, and Stewart Lake national wildlife refuges.

The refuges receive periodic requests to conduct scientific research. Some requests are specific to an individual refuge and others are part of landscape-level projects that require authorization from multiple refuges. In addition, the refuges often collaborate with other agencies and private partners to conduct field research and studies that advance the attainment of the refuges' goals and objectives.

Other than situations that involve emerging threats to human health and safety (which would be addressed in a separate disease contingency plan), priority would be given to research proposals that support a refuge's purposes, goals, and objectives. This would include, for example, studies that contribute to the enhancement, protection, use, preservation, and management of native wildlife populations and their habitats; studies would include cultural resources. Research applicants would submit a proposal that would outline the following:

- objectives of the study
- justification for the study
- detailed methodology and schedule
- potential effects on refuge wildlife and habitat, including short- and long-term disturbance, injury, or mortality
- personnel required
- costs to the refuge, if any
- end products such as reports and publications

Refuge staffs, the regional office branch of refuge biology, and others would review research proposals as appropriate. Evaluation criteria would include, but not be limited to, the following:

- Research that will contribute to priority management activities has higher priority than other requests.
- The Service may not grant research that will conflict with higher priority research, monitoring, or management.

- The Service will be less likely to approve research projects that can be done off-site.
- The Service will likely not grant research that causes undue disturbance or is intrusive; the Service will weigh the level and type of disturbance when evaluating a request.
- The Service will determine if any effort has been made to minimize disturbance through study design, including considering adjusting location, timing, scope, number of permittees, study methods, and number of study sites.
- The Service may deny a proposal when it is impossible for the refuge staff to monitor researcher activity.
- The Service will consider and agree with the length of the project before approval. Projects will not be open-ended, and the Service will do annual reviews (as a minimum).

As more and more health threats arise (for example, West Nile virus, CWD, and bird flu) research may be essential to prevent, or at least manage, disease outbreaks. Access to researchers and partners may be mandated in order to monitor and assess the prevalence, transmission, control, and specific characteristics of these and other potential threats to human health. In some cases, the refuge staffs may become involved in the research and monitoring. In other cases, other agency personnel may take the lead to develop and follow standard operating procedures, which would reduce the role of a refuge's staff. However, close coordination would assure that any operation minimizes the impact to trust resources and their habitats.

In general, the Dakota Working Group coordinates proposals that involve multiple refuges. The Service reviews and authorizes proposals with one of the following:

- Letter—if studies are simple, shorter than 1 year, and only require access.
- Special use permit—if studies are more complex, will take longer than 1 year, and have the potential to disturb, stress, or remove vegetation or individuals of a wildlife population.

Refuge staff would coordinate all operations essential to maintenance of human health and safety through an approved disease contingency plan. These threats are an exception to the normal process of authorization of research at refuges.

Availability of Resources

Direct costs to administer research activities are primarily in the form of staff time and transportation. Current staffs would likely be adequate to manage small and short-term research projects. The Service would only accept proposals if funding and personnel

are available to adequately monitor all research activities.

Anticipated Impacts of Use

Minimal impact to wildlife and habitats would be expected with research studies, because most researchers would need to enter areas that are normally closed to the public and may collect samples or handle wildlife. A special use permit would include conditions to ensure that impact to wildlife and habitats are kept to a minimum. There would be no negative effects on cultural resources or threatened and endangered species.

Determination

Research is a compatible use at Audubon, Chase Lake, Lake Alice, Lake Ilo, Lake Nettie, Lake Zahl, McLean, Kellys Slough, Shell Lake, and Stewart Lake national wildlife refuges.

Stipulations Necessary to Ensure Compatibility

- Demonstrate that the research is necessary (critical to survival of a species, enhance restoration activities of native species, help in control of invasive species, or provide valuable information to guide future refuge activities) if proposed research methods would negatively affect refuge resources (habitat or wildlife). The researcher identifies the issues in advance of the effect.
- Do not permit highly intrusive or manipulative research in order to protect native wildlife populations and habitats in which they live.
- Conduct research that does not involve birds outside of the breeding season of bird species in all possible circumstances.
- Suspend or modify conditions or terminate on-refuge research that is permitted and in progress, should unacceptable impacts or issues arise or be noted.

Justification

Research projects would contribute to the enhancement, protection, use, preservation, and management of native wildlife populations and their habitats at the refuges. Because of the potential negative effects that research activities can have on the Service's ability to achieve the refuges' purposes, there would be sufficient restrictions on the researcher to ensure that disturbance is kept to a minimum.

Mandatory 15-year Reevaluation Date: 2023

Description of Use:

Prescribed Grazing

The Service would continue to use prescribed grazing at Audubon, Chase Lake, Lake Alice, Lake Ilo, Lake Nettie, Lake Zahl, McLean, Kellys Slough, Shell Lake, and Stewart Lake national wildlife refuges.

Prescribed grazing is the use of livestock, usually cattle, to remove standing vegetation, reduce vegetative litter, suppress woody vegetation or invasive plants, open up vegetation-choked wetlands, and open up areas to sunlight and encourage native grass seeding and growth.

Prescribed grazing is carefully timed and usually of short duration (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. The frequency and duration of prescribed grazing at any refuge would be based on site-specific evaluations of the grassland under management. The prescribed grazing period generally would take place between April and September. Early spring grazing (mid-April through late May) would target cool-season invasive species and encourage warm-season native grasses and forbs. Midseason grazing (June and July), especially on nonnative grasslands, stimulates fall regrowth. Late-season grazing (August and September) removes litter and encourages spring growth of cool-season natives or other cool-season species.

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

Availability of Resources

Developing grazing plans and special use permits and monitoring compliance and biological effects would require some Service resources. Most grazing management costs—fencing labor, monitoring and moving the livestock, and hauling water—are provided by the cooperator or permittee. Evaluation of the grasslands for grazing prescriptions and grassland response is part of each refuge's grassland management responsibilities.

The Service may use some alternative form of grassland management such as prescribed burning or haying where areas are not treated with prescribed grazing. Management of grasslands through permitted haying has comparable costs to management through a prescribed grazing program. Managed mowing is more expensive since

the Service assumes all labor costs. Prescribed fire can be an effective grassland management tool, but there are personnel and weather limitations on a burning program, as well as the fact that some tracts are not suited to use of prescribed fire. In addition, there is an ecological benefit to rotation of grassland management techniques such as grazing, burning, and haying, at different seasons, rather than reliance on one technique.

Anticipated Impacts of the Use

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 vegetation removal increases the vigor of the grassland, stimulates growth of desired species of grass and forbs, and reduces the abundance of targeted species such as cool-season invasive plants, noxious weeds and other invasive plants, woody species, and 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 grazed areas. Prescribed grazing is usually of short duration with the result of enhanced, more diverse, and vigorous grassland habitats. Grazing livestock may create a minor and temporary disturbance to wildlife, but generally does no harm.

Grazing on public wildlife lands can create an aesthetic issue of concern for some people, including visitors, who do not understand grassland management. There is a slight potential for conflict between the visiting public and the livestock or the permittee, particularly during fall hunting seasons. These situations can be limited by having livestock removed by the anticipated beginning of fall hunting seasons.

To eliminate any appearance of favoritism or impropriety, managers follow “Refuge Manual” procedures for cooperator or permittee selection.

There would be no negative effects on cultural resources or threatened and endangered species.

Determination

The use of prescribed grazing is compatible at Audubon, Chase Lake, Lake Alice, Lake Ilo, Lake Nettie, Lake Zahl, McLean, Kellys Slough, Shell Lake, and Stewart Lake national wildlife refuges.

Stipulations Necessary to Ensure Compatibility

- Monitor vegetation and wildlife to assess the effects of the management tool.
- Require general and special conditions for each permit to ensure consistency with management objectives.
- Restrict the use of vehicles and motorized equipment to the minimum necessary to

conduct operations to meet management objectives.

Justification

Upland and wetland habitat conditions would deteriorate without the use of a full range of management tools. Migratory bird habitat and ecological diversity would decrease as habitat suitability declined. Invasive plant species would increase and habitat diversity would decrease if grazing practices did not continue at the refuges. To maintain and enhance habitat for migratory birds and other wildlife, habitat manipulation such as grazing needs to occur. Grazing would provide a means to restore degraded grasslands for the benefit of grassland-dependent species.

Mandatory 15-year Reevaluation Date: 2023

Description of Use:

Prescribed Haying of Grasslands

The Service would continue to use prescribed haying of grasslands at Audubon, Chase Lake, Lake Alice, Lake Ilo, Lake Nettie, Lake Zahl, McLean, Kellys Slough, Shell Lake, and Stewart Lake national wildlife refuges.

Haying is the cutting and removal, by baling and transport to an off-site location, of grass or other upland vegetation for the production of livestock forage. Haying for this purpose is typically done by a cooperating farmer acting under authority of a cooperative farming agreement or special use permit issued by the project leader or refuge manager. Prescribed haying in North Dakota averaged about 13,500 acres per year from 1996 to 2000.

Haying is an effective management tool as part of an overall grassland management plan to improve and maintain Service-managed grasslands for the benefit of migratory birds and other wildlife. Grasslands require periodic renovation to maintain vigor, diversity, and the structure necessary for migratory bird nesting. Haying can be an alternative to prescribed burning or grazing, which are the two other methods used to manage grassland habitats. If local conditions preclude the use of prescribed fire or livestock numbers are not available, removal of biomass through haying reduces unwanted overstory, including woody plants, and opens up the soil surface to sunlight. Such removal of vegetation allows for more vigorous regrowth of desirable species following the haying, although results are neither as dramatic nor positive as with fire or grazing.

Haying can be part of a strategy to seed native grass on newly acquired lands or on tame grass stands that need restoration. To reduce competition from invasive plants and minimize herbicide applications, the Service may use a cooperating farmer to apply

the native grass seed mix and “interseed” with a cover crop. As a requirement of the special use permit, the Service would require the cooperator to cut, bale, and remove the cover crop before it matures and goes to seed. The resultant hay would be used for livestock feed. In addition, haying serves the biological purpose of releasing young native grass and forb seedlings for growth with minimal competition.

A third possible use of haying on Service-managed grasslands involves the initial steps of removing unwanted vegetation prior to seeding the tract to native grasses. Haying of a nonnative cool-season stand of grass is an effective step before spraying the field with herbicide to kill all existing vegetation. Removal of the heavy grass overstory by haying allows herbicide to more effectively reach and treat the remaining target plants. Better removal of unwanted grasses, in turn, will ensure better success of planted grasses and forbs whether they are “interseeded” into the sod or into the soil turned and leveled prior to seeding.

Haying is sometimes used prior to treatment of invasive plants: the tract is hayed and after a period, the “flush” of invasive plants is treated with an herbicide application. Removal of vegetation through haying allows the herbicide to more effectively reach and treat the target plants.

A more limited application of haying on Service-managed lands involves its use to establish firebreaks for prescribed burns. The Service would permit a cooperating farmer to hay firebreak strips in the fall. Those areas would then have little standing dead vegetation in early spring, or would green up earlier in the spring, and allow use as a firebreak.

Availability of Resources

Funding and staff resources are sufficient at each field station to administer prescribed haying. Staff time would be needed to evaluate the proposed use, prepare site-specific special use permits, and ensure compliance with the permit authorization and stipulations necessary to ensure compatibility. To lessen any appearance of favoritism or impropriety, managers follow “Refuge Manual” procedures for establishing rental rates and cooperator selection.

Anticipated Impacts of the Use

Haying would result in short-term disturbances to wildlife and long-term benefits to grasslands and the wildlife species that use these grasslands. Short-term impacts would include disturbance and displacement of wildlife typical of any noisy heavy-equipment operation. Cutting and removal of standing grass would result in the short-term loss (late summer to midsummer the following year) of habitat for those species requiring taller grass for feeding and perching. The Service would typically schedule prescribed haying after July 31 to avoid impacts to

most nesting birds. Long-term benefits would accrue due to the increased vigor of regrown grasses or the establishment of highly desirable native grass and forb species, which would improve habitat conditions for the same species affected by the short-term removal of cover.

Long-term negative effects may occur to some resident wildlife species such as pheasant, which may lose overwinter habitat in hayed areas. Strict time constraints and limiting grass stands to no more than 50% being hayed at any one time would limit the anticipated effects on these species.

There would be no negative effects on cultural resources or threatened and endangered species.

Determination

The use of prescribed haying is compatible at Audubon, Chase Lake, Lake Alice, Lake Ilo, Lake Nettie, Lake Zahl, McLean, Kellys Slough, Shell Lake, and Stewart Lake national wildlife refuges.

Stipulations Necessary to Ensure Compatibility

- Schedule prescribed haying to occur after July 31 in any given year, unless there are documented management reasons for prescribing an earlier hay date.
- Issue the permit subject to the revocation and appeals procedure contained in Title 50, Part 25 of the Code of Federal Regulations.
- Allow haying on no more than 50% of a tract in any one year, unless size restrictions or habitat conditions warrant haying more than half of the area.
- Couple prescribed haying with a light disking or dragging operation or an “interseeding” of desirable species of grass or legumes to further increase the vigor of the grass stand.
- Require removal of bales or stacks by September 10.

Justification

Upland habitat conditions would deteriorate without the use of a full range of management tools. Migratory bird habitat and ecological diversity would decrease as habitat suitability declined. Invasive plant species would increase and habitat diversity would decrease if haying practices did not continue at the refuges. To maintain and enhance the habitat for migratory birds and other wildlife, habitat manipulation such as haying needs to occur. Haying would provide a means to restore degraded grasslands for the benefit of grassland-dependent species.

Mandatory 15-year Reevaluation Date: 2023

Description of Use:

Cooperative Farming

The Service would continue to use cooperative farming at Audubon, Chase Lake, Lake Alice, Lake Ilo, Lake Nettie, Lake Zahl, McLean, Kellys Slough, Shell Lake, and Stewart Lake national wildlife refuges.

Cooperative farming is the term used for cropping activities done by a third party on lands that the Service owns in fee title or controls through a conservation easement. This activity is usually done on a short-term basis (3–4 years or less) to provide an optimal seedbed for establishment of native grasses and forbs or other desirable planted cover for wildlife. Cooperative farming on certain tracts can provide a fall food source for migratory waterfowl or a winter food source for resident wildlife. A farmer acts under authority of a cooperative farming agreement or special use permit issued by the project leader or refuge manager. Terms of the agreement ensure that the farmer follows all current Service and refuge restrictions. North Dakota refuges and waterfowl production areas permitted an average of 6,400 acres of cooperative farming during 1996–2000.

Cooperative farming activities are generally limited to areas of former cropland or poor quality stands of tame or cool-season invasive grasses. Service policies do not allow tilling or cropping of highly erodible soils without an approved NRCS conservation plan.

Generally, farmed areas (before reseeding to more desirable plant species) would not cover more than 50% of the tract. Areas at the refuges that are planted for food plots would be limited to the size needed to provide sufficient food for the targeted wildlife species.

Availability of Resources

Staff time is available for development and administration of cooperative farming agreements. Most of the needed fieldwork to prepare and plan for this use would be done as part of routine grassland management duties. The decision to use a cooperating farmer would occur as part of the overall strategy for managing lands within a refuge. The additional time needed to coordinate issuance of the special use permit or cooperative farming agreement and oversight of the permit or agreement is relatively minor and within the refuges' resources. In addition, the use of a cooperating farmer would free up Service employees who would otherwise have to conduct the farming operation.

In most cases, farmers conduct cooperative farming operations on Service lands on a share basis rather than for a fee. The Service typically receives its share as (1) harvested grain used for other management purposes such as standing grain left for wildlife food,

(2) additional work such as control of invasive plants, cultivation, or additional seedbed preparation, or (3) supplies such as herbicide or grass seed to be used on the same tract of land. The Service deposits any fees or cash income related to the farming into the Refuge Revenue Sharing Account. The Service receives fair-market value consideration from cooperating farmers, but the generation of income is a secondary consideration when developing the terms and conditions of a special use permit or cooperative farming agreement. To lessen any appearance of favoritism or impropriety, managers follow "Refuge Manual" procedures for establishing rental rates and cooperator selection.

Anticipated Impacts of the Use

Cooperative farming to prepare suitable seedbeds for planting better cover and habitat would result in short-term disturbances and long-term benefits to both resident and migratory wildlife using the refuges. Short-term effects include disturbance and displacement of wildlife typical of any noisy heavy-equipment operation, and the loss of poor quality cover while the tract is farmed. Wildlife may use farmed areas as additional food sources during the farming period.

There would be long-term benefits due to the establishment of diverse or more desirable habitat for nesting, escape cover, perching, or noncrop feeding activities. The resulting habitat would generally improve conditions for most of the species negatively affected by the short period of farming activity.

There would be no negative effects on cultural resources or threatened and endangered species.

Determination

The use of cooperative farming is compatible at Audubon, Chase Lake, Lake Alice, Lake Ilo, Lake Nettie, Lake Zahl, McLean, Kellys Slough, Shell Lake, and Stewart Lake national wildlife refuges.

Stipulations Necessary to Ensure Compatibility

- Monitor vegetation and wildlife to assess the effects of the management tool.
- Require general and special conditions for each permit to ensure consistency with management objectives.
- Restrict the use of vehicles and motorized equipment to the minimum necessary to conduct operations to meet management objectives.
- Restrict farming permittees to use of approved chemicals that are less detrimental to wildlife and the environment.

Justification

Habitat conditions would deteriorate without the use of a full range of management tools. Migratory bird habitat and ecological diversity would decrease as habitat suitability declined. Invasive plant species would increase and habitat diversity would decrease

if farming practices did not continue at the refuges. To maintain and enhance habitat for migratory birds and other wildlife, habitat manipulation such as farming needs to occur.

Mandatory 15-year Reevaluation Date: 2023

Signatures

Kim Hanson Date
Project Leader
Arrowwood National Wildlife Refuge Complex
(Chase Lake National Wildlife Refuge)

Roger Hollevoet Date
Project Leader
Devils Lake Wetland Management District Complex
(Kellys Slough and Lake Alice national wildlife refuges)

Lloyd Jones Date
Project Leader
Audubon Wetland Management District Complex
(Audubon, Lake Ilo, Lake Nettie, McLean, and
Stewart Lake national wildlife refuges)

David Gillund Date
Project Leader
Lostwood Wetland Management District Complex
(Lake Zahl and Shell Lake national wildlife refuges)

Reviewed

Paul Cornes Date
Refuge Supervisor
Region 6, National Wildlife Refuge System

Approved

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

Appendix E

Fire Management Program for National Wildlife Refuges Within the Eastern North Dakota Fire District

The Service has administrative and fire management responsibility for approximately 15,322 acres in fee title in the Chase Lake, Kellys Slough, Lake Alice, Stewart Lake, Stump Lake, and White Lake national wildlife refuges, which are within the Eastern North Dakota Fire District.

The Role of Fire

In ecosystems of the Great Plains, vegetation 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 disease, stimulating regeneration, cycling nutrients, and providing a diversity of habitats for plants and wildlife.

When fire or grazing is excluded from prairie landscapes, the fuel loadings increase quickly due to a build-up of thatch and invasion of woody vegetation. This increase in fuel loadings leads to a significant increase in a fire's resistance to control, which threatens firefighter and public safety as well as private and federal properties.

However, properly used fire can

- reduce hazardous fuels buildup in both wildland-urban interface (WUI) and non-WUI environments;

- improve wildlife habitats by reducing the density of vegetation and changing plant species composition;

- sustain or increase biological diversity;

- improve woodland and shrub land by reducing plant density;

- reduce susceptibility of plants to insect and disease outbreaks;

- improve the quality and quantity of livestock forage;

- improve the quantity of water available for municipalities and activities dependent on wetlands for their water supply.

Wildland Fire Management Policy and Guidance

In 2001, the Secretaries of Interior and Agriculture approved an update of the 1995 "Federal Fire Policy." 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 nine 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 fire 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 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.

Land use resource plans such as CCPs should address fire management considerations, guidance, and direction. FMPs are step-down processes from

the land use and habitat management plans, with more detail on fire suppression, fire use, and fire management activities.

Management Direction

The Eastern North Dakota Fire District will protect life, property, and other resources from wildland fire by safely suppressing all wildfires. The Service will use prescribed fire as well as manual and mechanical fuel treatments in an ecosystem context to protect federal and private property and for habitat management. The Service will apply fuels reduction activities in collaboration with federal, state, private, and nongovernmental partners. In addition, the Service will set priorities for fuels treatment based on the guidance for prioritization established in the goals and strategies outlined in the “U.S. Fish & 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. The following CARs located near the refuges were identified in the *Federal Register* (August 17, 2001):

- Fort Totten
- St. Michels
- Crow Hill
- Tokio

The development of CWPPs is an ongoing process; Griggs and Traill counties are currently undergoing the process. As of February 2008, the following counties with Service fee-title land have developed CWPPs:

- Barnes County
- Burleigh County
- Kidder County
- Stutsman County

The Service will conduct all aspects of the fire management program in compliance with applicable laws, policies, and regulations. The refuges and wetland management districts within the Eastern North Dakota Fire District will maintain an FMP to accomplish the fire management goals described below. The Service will apply prescribed fire and manual and mechanical fuel treatments in a scientific way under selected weather and environmental conditions.

FIRE MANAGEMENT GOALS

The goals and strategies of the “U.S. Fish & Wildlife Service National Wildlife Refuge System Wildland Fire Management Program Strategic Plan” are

consistent with policies of the U.S. Department of the Interior and the Service, “National Fire Plan” direction, the “President’s Healthy Forest Initiative,” the “10-Year Comprehensive Strategy and Implementation Plan,” guidelines of the National Wildfire Coordinating Group, 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 the refuges’ vision statement for region 6: “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 refuges and districts in the Eastern North Dakota Fire District are to use prescribed fire and manual and mechanical treatments to (1) reduce the threat to life and property through hazardous fuels reduction treatments, 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 treatment methods to treat between 4,000 and 8,000 acres, on average, per year.

STRATEGIES

The Service will use strategies and tactics that consider public and firefighter safety as well as resource values at risk. Wildland fire suppression, prescribed fire methods, manual and mechanical means, timing, and monitoring are described in more detail within the step-down FMP(s).

All management actions would use prescribed fire and manual 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 diverse ecosystem habitats.

The FMPs will outline the fuels treatment program for the refuges. The Service will develop site-specific prescribed fire burn plans, 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. The refuges will meet the Clean Air Act emission standards by adhering to the “North Dakota State Implementation Plan” requirements during all prescribed fire activities.

Fire Management Organization, Contacts, and Cooperation

Region 6 of the Service, using the approach of “fire management districts,” will establish qualified fire management technical oversight for the refuges. 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 (such as refuges and waterfowl production areas) and possibly that of interagency partners. The fire management workload consists of historical wildland fire suppression as well as historical and planned fuels treatments.

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

A new FMP will be developed for the entire Eastern North Dakota Fire District, which includes the six refuges listed above, as well as the other refuges and districts within this fire district.

Appendix F

Fire Management Program for National Wildlife Refuges Within the Western North Dakota Fire District

The Service has administrative and fire management responsibility for approximately 24,665 acres in fee title in the Audubon, Lake Ilo, Lake Nettie, Lake Zahl, McLean, and Shell Lake national wildlife refuges, which are within the Western North Dakota Fire District. The Service has no fire management responsibility for the approximate 292,440 acres of wetland and grassland easements it administers.

The Role of Fire

In ecosystems of the Great Plains, vegetation 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 disease, stimulating regeneration, cycling nutrients, and providing a diversity of habitats for plants and wildlife.

When fire or grazing is excluded from prairie landscapes, the fuel loadings increase quickly due to a build-up of thatch and invasion of woody vegetation. This increase in fuel loadings leads to a significant increase in a fire's resistance to control, which threatens firefighter and public safety as well as private and federal properties.

However, properly used fire can

- reduce hazardous fuels buildup in both WUI and non-WUI environments;
- improve firefighter ability to suppress unwanted wildfire;
- improve native prairie habitats by reducing competition from invasive plant species and maintaining native vegetative composition;
- reduce the encroachment of woody vegetation in prairie ecosystems;
- sustain or increase biological diversity;
- reduce susceptibility of plants to insect and disease outbreaks.

Wildland Fire Management Policy and Guidance

In 2001, the Secretaries of Interior and Agriculture approved an update of the 1995 "Federal Fire Policy." 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 nine 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 fire as an ecological process and natural "change agent" will be incorporated into the planning process.
- 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 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.

Land use resource plans such as CCPs should address fire management considerations, guidance, and direction. FMPs are step-down plans from the land use and habitat management plans, with more detail on fire suppression, fire use, and fire management activities.

Management Direction

The fire management goal for the national wildlife refuges is to use prescribed fire and manual, biological, and mechanical treatments to (1) reduce the threat to life and property through hazardous fuels reduction treatments, and (2) meet the habitat goals and objectives identified in this draft CCP.

The refuges will protect life, property, and other resources from wildland fire by reducing the threat and severity of wildland fires through fuels reduction projects and safely suppressing all wildfires on Service lands. The Service will use prescribed fire as well as manual, biological, and mechanical fuel treatments to protect federal and private property by reducing hazardous fuels and to manage wildlife habitat. The Service will apply fuels reduction activities in collaboration with federal, state, private, and nongovernmental partners. In addition, the Service will set priorities for fuels treatment based on the guidance for prioritization established in the goals and strategies outlined in the “U.S. Fish & 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 CWPPs and CARs will be the primary focus. As of February 2008, no CARs as identified in the *Federal Register* are located within the Western North Dakota Fire District. Any additions or deletions to the CAR list are the responsibility of the state through coordination with interagency partners. The development of CWPPs is an ongoing process. As of February 2008, the following counties located within the Western North Dakota Fire District have developed CWPPs:

- Bottineau County
- McHenry County
- Mountrail County
- Williams County

The Service will conduct all aspects of the fire management program in compliance with applicable laws, policies, and regulations. On approval of the final CCP, the Service will develop an FMP for all refuge lands covered by the CCP. The FMP may require a separate environmental assessment if refuge managers deem necessary. The FMP may be done as (1) an FMP that covers the national wildlife refuges, (2) an FMP that covers the fire management district, or (3) an interagency FMP.

The Service will apply prescribed fire and manual, biological, and mechanical fuel treatments using the

best available scientific guidance, given the existing weather and environmental conditions.

FIRE MANAGEMENT RATIONALE AND CONSIDERATIONS

Fire frequency in western and central North Dakota has been estimated to historically occur every 5–7 years (Barker and Whitman 1988). European settlement of North Dakota led to fire suppression or exclusion across the landscape. With this fire suppression and exclusion, woody vegetation encroached into both wetland and upland habitats.

The long-term goal of fire management across the Western North Dakota Fire District is to apply fire to the landscape at an interval that will maintain healthy native plant communities that are naturally resistant to catastrophic wildfire. Due to the suppression and exclusion of fire over the past several decades, a more aggressive approach is needed to address the buildup of hazardous fuel across the prairie.

Current fire occurrence at the refuges has not been frequent enough to completely control invading shrubs and trees and reduce accumulated thatch. Monitoring of vegetation on Service lands in the Great Plains has shown that three to four prescribed fire treatments are usually needed to successfully reduce woody plant encroachment. Experience has shown prescribed fire to be much more efficient than mechanical or biological methods for reducing and removing woody plant encroachment and accumulated thatch. In addition to initial restoration, continued maintenance through periodic prescribed fires (once every 5–7 years) and biological treatments are needed on remaining areas.

A significant problem facing the refuges in achieving fire management goals is the limited amount of qualified personnel available to plan and conduct prescribed fire and other fuels treatments. With additional staff and funding, the desired application of prescribed fire is to treat 15%–20% of the total burnable acreage with fire each year, which would return the historical fire regime to the landscape.

Prescribed fire temporarily reduces air quality by reducing visibility and releasing components through combustion. The Western North Dakota Fire District will meet the Clean Air Act emission standards by adhering to North Dakota Department of Health requirements during all prescribed fire activities.

The refuge staffs will work with partners to develop demonstrations, written information, and other methods of communicating to the public the benefits of prescribed fire. The Service will seek additional cooperative ventures for firefighter training and development of interagency agreements.

Fire Management Organization and Coordination

Region 6 of the Service, using the approach of “fire management districts,” will establish qualified fire management technical oversight for the refuges. Under this approach, fire management staff will be determined by established modeling systems (such as “Firebase”), based on the fire management workload of a group of Service lands (such as refuges, waterfowl production areas, and fish hatcheries)

and possibly that of interagency partners. The fire management workload consists of historical wildland fire suppression as well as historical and planned fuels treatments.

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



Appendix G

Bird Species of the Refuges

Species	USFWS Endangered Species List	North Dakota Species of Conservation Priority	Rare North Dakota Species	Birds of Conservation Concern				Species of Management Concern in Region 6	Game Birds Below Desired Condition	USFWS Migratory Bird Management Focal Species	PPJV Implementation Plan	PIF North American Landbird Conservation Plan	PIF Physiographic Area (PA) 37 Mixed-grass Prairie Plan	PIF PA 38 West River ES (No Plan)	PIF PA 40 Tall-grass Prairie Plan	North American Waterbird Conservation Plan	Northern Prairie and Parklands Waterbird Plan	U.S. Shorebird Plan, Northern Plains/Prairie Potholes National and Regional Priority	Breeding Bird Survey Declining Species in North Dakota (1980–2005)	Breeding Bird Survey Declining Species in “Black” Prairie (1966–2005)	Breeding Bird Survey Declining Species in Drift Prairie (1966–2005)	Breeding Bird Survey Declining Species in Glaciated Missouri Plate (1966–2005)	Breeding Bird Survey Declining Species in Great Plains Roughlands (1966–2005)	National Audubon Society Watch List for North Dakota	Birds of the Prairie Pothole Region That Warrant Attention
				BCR 11	BCR 17	Region 6	National																		
Citation Number (See end of table. *)	1	2	3	4				5				6	7	8	9	10	11	12	13	14				15	16
horned grebe		1								m		4				H									
eared grebe																M									
pie-billed grebe												4		5											X
western grebe										m						H									
American white pelican		1														M									
double-crested cormorant							X		X																
American bittern		1		X			X			m		2		7		H									X
great blue heron																M						X			
snowy egret															H										
green heron			S3																						
black-crowned night-heron																M									
white-faced ibis							X								L										
trumpeter swan								X	X					1											
wood duck								X	X					2											
American wigeon								X	X																
mallard								X	X	w															
gadwall										w															
northern pintail		2						X	X	w															
northern shoveler										w															
cinnamon teal			S3																						
blue-winged teal										w									X						
canvasback		2					X	X																	
redhead		2						X																	
lesser scaup								X	X																
ringneck								X																	
common goldeneye			S3																						
hooded merganser			S3											1											
northern harrier		2		X		X	X	X		1		2													X
Swainson’s hawk		1		X		X	X	X		1	1														
ferruginous hawk		1		X	X	X	X		X	1		6													X
golden eagle		2	S3		X	X																			
bald eagle		2	S1				X			1		5		6											
merlin			S2																						
American kestrel																			X						

Species	USFWS Endangered Species List	North Dakota Species of Conservation Priority	Rare North Dakota Species	Birds of Conservation Concern				Species of Management Concern in Region 6	Game Birds Below Desired Condition	USFWS Migratory Bird Management Focal Species	PPJV Implementation Plan	PIF North American Landbird Conservation Plan	PIF Physiographic Area (PA) 37 Mixed-grass Prairie Plan	PIF PA 38 West River ES (No Plan)	PIF PA 40 Tail-grass Prairie Plan	North American Waterbird Conservation Plan	Northern Prairie and Parklands Waterbird Plan	U.S. Shorebird Plan, Northern Plains/Prairie Potholes National and Regional Priority	Breeding Bird Survey Declining Species in North Dakota (1980–2005)	Breeding Bird Survey Declining Species in “Black” Prairie (1966–2005)	Breeding Bird Survey Declining Species in Drift Prairie (1966–2005)	Breeding Bird Survey Declining Species in Glaciated Missouri Plate (1966–2005)	Breeding Bird Survey Declining Species in Great Plains Roughlands (1966–2005)	National Audubon Society Watch List for North Dakota	Birds of the Prairie Pothole Region That Warrant Attention
				BCR 11	BCR 17	Region 6	National																		
Citation Number (See end of table. *)	1	2	3	4				5		6	7	8	9	10	11	12	13	14					15	16	
prairie falcon		2	S3		X	X	X	X																	
peregrine falcon	E	3	S1	X	X	X	X			X															
sharp-tailed grouse		2									1	1	4												
greater prairie-chicken		2	S2								1	1	1	1											
greater sage grouse		2						X																	
American coot												4							X						
Virginia rail												4	7		M									X	
sora												4	7											X	
yellow rail		1	S2	X		X	X	X		X	m	1	1		H								X	X	
whooping crane	E	3	G1																						
sandhill crane																									
American golden-plover					X	X	X			X	s							X							
piping plover	T	2	G3 S1 S2			X				X	s	1						X						X	
American avocet		2									s							X							
solitary sandpiper				X		X	X																		
willet		1		X								2												X	
upland sandpiper		1		X	X	X	X			X	s	4						X							
whimbrel							X																		
long-billed curlew		1	S2	X	X	X	X			X			X					X						X	
Hudsonian godwit				X			X			X	s							X							
marbled godwit		1		X	X	X	X	X		X	s	1	3					X					X	X	
ruddy turnstone											s							X							
red knot							X											X							
sanderling				X	X													X							
dunlin											s							X							
semipalmated sandpiper											s							X							
white-rumped sandpiper				X							s							X							
stilt sandpiper							X																		
short-billed dowitcher							X																		
buff-breasted sandpiper				X		X	X			X	s							X							
American woodcock								X	X	X	s							X							

Species	USFWS Endangered Species List	North Dakota Species of Conservation Priority	Rare North Dakota Species	Birds of Conservation Concern				Species of Management Concern in Region 6	Game Birds Below Desired Condition	USFWS Migratory Bird Management Focal Species	PPJV Implementation Plan	PIF North American Landbird Conservation Plan	PIF Physiographic Area (PA) 37 Mixed-grass Prairie Plan	PIF PA 38 West River ES (No Plan)	PIF PA 40 Tall-grass Prairie Plan	North American Waterbird Conservation Plan	Northern Prairie and Parklands Waterbird Plan	U.S. Shorebird Plan, Northern Plains/Prairie Potholes National and Regional Priority	Breeding Bird Survey Declining Species in North Dakota (1980–2005)	Breeding Bird Survey Declining Species in “Black” Prairie (1966–2005)	Breeding Bird Survey Declining Species in Drift Prairie (1966–2005)	Breeding Bird Survey Declining Species in Glaciated Missouri Plate (1966–2005)	Breeding Bird Survey Declining Species in Great Plains Roughlands (1966–2005)	National Audubon Society Watch List for North Dakota	Birds of the Prairie Pothole Region That Warrant Attention
				BCR 11	BCR 17	Region 6	National																		
Citation Number (See end of table. *)	1	2	3	4				5		6	7	8	9	10	11	12	13	14					15	16	
common snipe																			X						
Wilson’s phalarope		1		X	X	X	X	X		s		2		7			X						X	X	
Bonaparte’s gull															M										
Franklin’s gull		1								m		3		3	M	H								X	
Caspian tern									X							M									
common tern							X		X							M									
least tern	E	2	S1				X	X	X			5			H									X	
black tern		1					X	X	X	m		4		7		H			X					X	
mourning dove									X																
black-billed cuckoo		1		X	X	X	X	X	X	l		4		1					X	X			X		
short-eared owl		2		X	X	X	X		X	l	l	3												X	
burrowing owl		2		X	X	X	X		X	l		6										X		X	
northern saw-whet owl									X																
red-headed woodpecker		2		X		X	X		X	l	l	3		2				X	X						
yellow-bellied sapsucker									X																
northern flicker										l				4				X	X	X			X		
pileated woodpecker			S3																						
olive-sided flycatcher							X		X		l														
willow flycatcher										l	l	4													
eastern kingbird												4													
western kingbird												4													
loggerhead shrike		2		X		X	X		X	l		6		7										X	
warbling vireo																									
Philadelphia vireo			S3																						
Bell’s vireo			S3			X	X			l	l	l											X		
American crow								X		l															
horned lark										l								X		X		X			
northern rough-winged swallow										4									X						
bank swallow																		X							
house wren										l				5											
sedge wren		2					X		X	l		4		1										X	
marsh wren										l		4		2					X						
veery								X												X					

Species	USFWS Endangered Species List	North Dakota Species of Conservation Priority	Rare North Dakota Species	Birds of Conservation Concern				Species of Management Concern in Region 6	Game Birds Below Desired Condition	USFWS Migratory Bird Management Focal Species	PPJV Implementation Plan	PIF North American Landbird Conservation Plan	PIF Physiographic Area (PA) 37 Mixed-grass Prairie Plan	PIF PA 38 West River ES (No Plan)	PIF PA 40 Tail-grass Prairie Plan	North American Waterbird Conservation Plan	Northern Prairie and Parklands Waterbird Plan	U.S. Shorebird Plan, Northern Plains/Prairie Potholes National and Regional Priority	Breeding Bird Survey Declining Species in North Dakota (1980–2005)	Breeding Bird Survey Declining Species in “Black” Prairie (1966–2005)	Breeding Bird Survey Declining Species in Drift Prairie (1966–2005)	Breeding Bird Survey Declining Species in Glaciated Missouri Plate (1966–2005)	Breeding Bird Survey Declining Species in Great Plains Roughlands (1966–2005)	National Audubon Society Watch List for North Dakota	Birds of the Prairie Pothole Region That Warrant Attention
				BCR 11	BCR 17	Region 6	National																		
Citation Number (See end of table. *)	1	2	3	4				5		6	7	8	9	10	11	12	13	14					15	16	
wood thrush							X		X														X		
Sprague’s pipit		1	S3	X	X	X	X	X	X	1	1	1								X			X	X	
chestnut-sided warbler			S3																						
ovenbird								X																	
dickeybird		2			X	X	X			1	1	3		3				X	X						
American tree sparrow										(1)	1														
clay-colored sparrow										1		4		7										X	
Brewer’s sparrow		3	S3		X	X	X															X			
Baird’s sparrow		1		X	X	X	X	X	X	1	1	1	X					X				X	X	X	
grasshopper sparrow		1		X	X	X	X	X	X	1	1	2		2				X	X			X		X	
Le Conte’s sparrow		2		X	X	X	X			1		1												X	
Henslow’s sparrow				X			X				1														
Nelson’s sharp-tailed sparrow		1		X		X	X			1	1	1		1									X	X	
vesper sparrow										1		4		5					X				X		
lark bunting		1						X		1	1	3	X					X						X	
Harris’ sparrow							X			(1)	1														
white-throated sparrow			S3																						
swamp sparrow			S3																						
McCown’s longspur		3	S2	X	X	X	X	X	X	1	1	1	X										X	X	
chestnut-collared longspur		1		X	X	X	X	X	X	1	1	4	X					X		X		X			
Smith’s longspur							X			(1)	1														
Lapland longspur										(1)	1														
western meadowlark										1									X	X					
bobolink		2				X		X	X	1		3		1										X	
brown-headed cowbird																			X	X					
yellow-headed blackbird										1									X						
red-winged blackbird										1															
rusty blackbird									X	(1)	1														
Total Number of Species	5	45	24	29	21	32	41	25	10	45	64	22	44	5	27	5	13	16	10	16	7	2	9	9	28

Species	USFWS Endangered Species List	North Dakota Species of Conservation Priority	Rare North Dakota Species	Birds of Conservation Concern				Species of Management Concern in Region 6	Game Birds Below Desired Condition	USFWS Migratory Bird Management Focal Species	PPJV Implementation Plan	PIF North American Landbird Conservation Plan	PIF Physiographic Area (PA) 37 Mixed-grass Prairie Plan	PIF PA 38 West River ES (No Plan)	PIF PA 40 Tall-grass Prairie Plan	North American Waterbird Conservation Plan	Northern Prairie and Parklands Waterbird Plan	U.S. Shorebird Plan, Northern Plains/Prairie Potholes National and Regional Priority	Breeding Bird Survey Declining Species in North Dakota (1980–2005)	Breeding Bird Survey Declining Species in “Black” Prairie (1966–2005)	Breeding Bird Survey Declining Species in Drift Prairie (1966–2005)	Breeding Bird Survey Declining Species in Glaciated Missouri Plate (1966–2005)	Breeding Bird Survey Declining Species in Great Plains Roughlands (1966–2005)	National Audubon Society Watch List for North Dakota	Birds of the Prairie Pothole Region That Warrant Attention
				BCR 11	BCR 17	Region 6	National																		
Citation Number (See end of table. *)	1	2	3	4				5	6	7	8	9	10	11	12	13	14					15	16		

*Citations 1 USFWS Endangered Species List <http://ecos.fws.gov/tess_public/StateListing.do?state=ND&status=listed>

- 2 E=endangered, T=threatened
 Comprehensive Wildlife Conservation Strategy
 Table 1. North Dakota’s 100 Species of Conservation Priority:
 Level 1=Species having a high level of conservation priority in North Dakota or across their range, or a high rate of constituting the core of the species’ breeding range, but non-“State Wildlife Grant” funding is not available to them.
 Level 2=Species having a moderate level of conservation priority or a high level of conservation priority, but a substantial amount of non-“State Wildlife Grant” funding is available to them.
 Level 3=Species having a moderate level of conservation priority, or a high level of conservation priority, but a substantial amount of non-“State Wildlife Grant” funding is available to them.
- 3 Rare North Dakota Species (North Dakota Natural Heritage Inventory 2002)
 Natural Heritage Global Banks:
 G1=Critically imperiled globally because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction.
 G2=Imperiled. Imperiled globally because of rarity or because of other factors demonstrably making it very vulnerable to extinction or elimination throughout its range.
 G3=Vulnerable. Vulnerable globally either because it is very rare and local throughout its range, found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extinction or elimination throughout its range.
- 4 Natural Heritage State Banks:
 S1=Critically imperiled in the state because of extreme rarity or because of some factor of its biology making it especially vulnerable to extirpation from the state.
 S2=Imperiled. Imperiled in the state because of rarity or because of other factors making it very vulnerable to extirpation from the state.
 S3=Vulnerable. Vulnerable in the state either because it is rare and uncommon, or found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extirpation.
- 4 Birds of Conservation Concern USFWS 2002.
- 5 USFWS Species of Management Concern 2005 <<http://www.fws.gov/migratorybirds/reports/specon/tblconts.html>>
- 6 Prairie Pothole Joint Venture 2005 Implementation Plans
 Waterfowl Plan: Focal species=w
 Shorebird Plan: Conservation priority of regularly occurring shorebird species where the region is highly important to the population=s
 Waterbird Plan: Conservation assessment of high in BCR 11=m
 Landbird Plan: Native landbird species for which ≥25% of the continental population occurs in BCR 11 and Watch List=1 or (1) for wintering
- 7 PIF North American Landbird Conservation Plan
 Part 1, Table 1. PIF Species of Continental Importance for the United States and Canada.
 Part 2, Table 7. Species of Continental Importance in the Prairie Avifaunal Biome.
- 8 PIF Bird Conservation Plan for the Northern Mixed-grass Prairie (Physiographic Area 37)—June 25, 1999
 Table 1. Partners in Flight Priority Species.
- 9 PIF Bird Conservation Plan for the Northern Tallgrass Prairie (Physiographic Area 40)—August 4, 1998
 Table 1. Partners in Flight Priority Species.
- 10 PIF West River Executive Summary (Physiographic Area 38) (no plan)
 List of priority bird populations.
- 11 North American Waterbird Conservation Plan, version 1
 Table 2. Conservation Status and Distribution of Colonial Waterbirds
- 12 Northern Prairie and Parklands Waterbird Conservation Plan—2004
 Table 7. Conservation Vulnerability Rankings (High [H] and Moderate [M] Concern)
- 13 U.S. Shorebird Plan and Northern Plains/Prairie Potholes Regional Shorebird Plan
 Table 2. National and Regional Priority Score ≥ 4
- 14 USGS North American Breeding Bird Survey Trend Results <<http://www.mbr-pwrc.usgs.gov/bbs/reglist05.html>>
- 15 National Audubon Society Watch List for North Dakota <<http://audubon2.org/webapp/watchlist/viewWatchlist.jsp>>
- 16 Conservation Planning in the Prairie Pothole Region of the United States: Integration Between an Existing Waterfowl Plan and an Emerging Non-game Bird Model (David N. Pashley and Rick Warhurst)
 Table 1. Birds of the Prairie Pothole Region That Warrant Conservation Attention

Appendix H

Primary and Secondary Bird Species of the North Dakota Prairie

The characteristic breeding birds are categorized according to relative abundance, as follows:

- Primary species that are often common or abundant.
- Secondary species that are usually fairly common.
- Tertiary, or minor, species that are uncommon or rare.

The primary and secondary bird species in North Dakota are listed by habitat type below.

Mixed-grass Prairie

PRIMARY SPECIES

gadwall
mallard
northern pintail
blue-winged teal
northern shoveler
American coot
black tern
mourning dove
horned lark
western meadowlark
red-winged blackbird
yellow-headed blackbird
brown-headed cowbird
Savannah sparrow
clay-colored sparrow
chestnut-collared longspur

SECONDARY SPECIES

eared grebe
pied-billed grebe
American bittern
black-crowned night-heron
American wigeon
green-winged teal
canvasback
redhead
ruddy duck
Swainson's hawk
red-tailed hawk
northern harrier
sharp-tailed grouse

ring-necked pheasant
gray partridge
sora
killdeer
upland plover
willet
marbled godwit
American avocet
Wilson's phalarope
Franklin's gull
ring-billed gull
black-billed cuckoo
northern flicker
eastern kingbird
western kingbird
willow flycatcher
bank swallow
barn swallow
cliff swallow
common crow
house wren
marsh wren
brown thrasher
gray catbird
American robin
cedar waxwing
yellow warbler
common yellowthroat
house sparrow
bobolink
common grackle
American goldfinch
lark bunting
Baird's sparrow
grasshopper sparrow
vesper sparrow
song sparrow
great horned owl

Tall-grass Prairie

PRIMARY SPECIES

mourning dove
horned lark
common crow
western meadowlark
common grackle
brown-headed cowbird

SECONDARY SPECIES

red-tailed hawk
 American kestrel
 killdeer
 black-billed cuckoo
 great horned owl
 northern flicker
 eastern kingbird
 western kingbird
 barn swallow
 blue jay
 house wren
 brown thrasher
 gray catbird
 American robin
 cedar waxwing
 starling
 warbling vireo
 yellow warbler
 common yellowthroat
 house sparrow
 bobolink
 red-winged blackbird
 Baltimore oriole
 American goldfinch
 dickcissel
 Savannah sparrow
 vesper sparrow
 clay-colored sparrow
 song sparrow

Turtle Mountains

PRIMARY SPECIES

mallard
 blue-winged teal
 broad-winged hawk
 red-tailed hawk
 ruffed grouse
 yellow-bellied sapsucker
 northern flicker
 least flycatcher
 common crow
 American robin
 veery
 red-eyed vireo
 yellow warbler
 American redstart
 red-winged blackbird
 brown-headed cowbird
 Baltimore oriole
 rose-breasted grosbeak
 clay-colored sparrow

SECONDARY SPECIES

common loon
 red-necked grebe
 eared grebe
 horned grebe
 pied-billed grebe
 double-crested cormorant
 American bittern
 American wigeon
 green-winged teal
 northern shoveler
 canvasback
 redhead
 ring-necked duck
 ruddy duck
 Cooper's hawk
 northern harrier
 sora
 American coot
 killdeer
 spotted sandpiper
 Wilson's phalarope
 black tern
 mourning dove
 black-billed cuckoo
 great horned owl
 common nighthawk
 belted kingfisher
 ruby-throated hummingbird
 hairy woodpecker
 eastern kingbird
 willow flycatcher
 tree swallow
 purple martin
 barn swallow
 black-capped chickadee
 house wren
 long-billed marsh wren
 short-billed marsh wren
 brown thrasher
 gray catbird
 cedar waxwing
 warbling vireo
 northern waterthrush
 common yellowthroat
 mourning warbler
 bobolink
 western meadowlark
 yellow-headed blackbird
 common grackle
 American goldfinch
 Savannah sparrow
 vesper sparrow
 chipping sparrow
 song sparrow

Appendix I

North Dakota's Threatened and Endangered Species

<i>Group</i>	<i>Common Name</i>	<i>Scientific Name</i>	<i>Status</i>
Plants	western prairie fringed orchid	<i>Platanthera praeclara</i>	threatened
Insects	Dakota skipper	<i>Hesperia dacotae</i>	candidate
Birds	interior least tern	<i>Sterna antillarum</i>	endangered
	whooping crane	<i>Grus americana</i>	endangered
	piping plover	<i>Charadrius melodus</i>	threatened
Fishes	pallid sturgeon	<i>Scaphirhynchus albus</i>	endangered
Mammals	black-footed ferret	<i>Mustela nigripes</i>	endangered
	gray wolf	<i>Canis lupus</i>	endangered

Appendix J

Priority-setting Example for Native Prairie Portions of Fee-title Lands

The following is an example of a refuge-specific step-down plan (from J. Clark Salyer Wetland Management District) for setting priorities for native prairie portions of fee-title lands. The example is based on vegetative data collected by the district staff using the belt-transect method.

(Example) Grassland Objective 1

By 3 years after CCP approval, use current vegetation inventory data and landscape considerations to prioritize each grassland tract with ≥55 acres of native prairie as either high or low management priority. Identify areas that are in the most pristine condition and areas with the highest restoration potential.

CRITERIA FOR HIGH-PRIORITY UNITS

Floristic composition: Vegetation is characterized by >30% mean frequency of pristine, native herbaceous types (plant groups 41–43, and 46–48 (Grant et al. 2004), plus native herbaceous-dominated vegetation with Kentucky bluegrass as the main subdominant (plant group 53).

Floristic potential: Vegetation is characterized by <30% mean frequency of smooth brome-dominated vegetation (plant groups 61–62).

Landscape context: (1) The unit is contiguous with the best examples of local native prairie habitat; or (2) the unit is adjacent to other high-priority, prairie tracts or tracts of native prairie adjacent to district lands under non-Service ownership (especially important if the unit has relatively little native prairie, that is <40 acres).

CRITERIA FOR LOW-PRIORITY UNITS

Floristic composition: Vegetation is characterized by <30% mean frequency of pristine, native herbaceous types (plant groups 41–43 and 46–48 (Grant et al. 2004), plus native herbaceous-dominated vegetation with Kentucky bluegrass as the main subdominant (plant group 53).

Floristic potential: Vegetation is characterized by >30% mean frequency of smooth brome-dominated vegetation (plant groups 61–62).

Landscape context: The unit is small (<100 acres) and/or is not contiguous with significant native prairie habitat.

RATIONALE

Target threshold percentages for determining high-priority units and low-priority units is subjective and based on district lands' grassland intactness or resources. Staff at J. Clark Salyer Wetland Management District used recent inventory data to set threshold percentages for floristic composition and floristic potential. As staff increases, threshold levels could be lowered as more time and resources are dedicated to restoration. Recent inventory data suggest that relatively intact native herbaceous flora is uncommon in the district—about 13% of tracts are dominated by native grasses and forbs. Native warm-season grasses are especially uncommon. Under appropriate management, warm-season grasses can displace introduced cool-season grasses such as smooth brome or Kentucky bluegrass, if the former are sufficiently abundant (>20% frequency) (Todd Grant, biologist, USFWS, North Dakota, personal communication).

(Example) Grassland Objective 2

On high-priority units, use precisely timed disturbance (principally fire and grazing) to restore or maintain vegetation to the following standards:

- Composition on each unit includes (1) >75% pristine native and native-dominated/bluegrass-subdominant vegetation (plant groups 41–43, 46–48, and 53), (2) <30% smooth brome-dominated vegetation (plant groups 61–62), and (3) <20% low shrub-dominated vegetation (plant groups 11–17) (based on percentage frequency of occurrence on belt transects, per Grant et al. 2004).
- Native trees and tall shrubs are absent or nearly so, comprising <0.1% land cover on each unit; nonnative or planted vegetation is rare.
- Leafy spurge is decreased by >50% on each unit, to <1% frequency (frequencies per belt transects; most high-priority units currently have little to no spurge), absinth wormwood is actively controlled, and yellow toadflax

and other newly appearing species of noxious weed that pose a threat to the drift prairie are eliminated within 5 years of initial detection.

STRATEGIES

- Defoliate, typically by livestock grazing or fire, at least 2 of every 3 years. An ideal management sequence over 5 years might be BGGGR (burn, graze, graze, graze, rest), and then reinitiate the sequence. The area covered by trees, tall shrubs, and low shrubs would be incrementally reduced with this burning frequency.
- Primarily use prescribed fire when smooth brome plants are at least in the 4- to 5-leaf stage, but not yet showing an inflorescence, this generally occurs during a narrow mid-May through early June window (may vary by area). A less preferred option is to burn in fall in anticipation of a negative, winter drought effect on smooth brome and Kentucky bluegrass.
- Graze mainly during May through August or September, via a rotation approach with many (7–10) relatively small grazing cells (for example 40–60 acres) per unit and short grazing periods (4–7 days per cell). Adjust stocking rates to facilitate regrowth of individual smooth brome plants at least once within a grazing period, but move livestock to the next cell before native plants are regrowth. Season-long grazing may be acceptable when logistics preclude rotational grazing.
- Apply early season, high-intensity grazing that targets brome grass.
- Annually survey for noxious weeds on native prairie tracts.

RATIONALE

This objective focuses on the restoration of floristic composition. Smooth brome, Kentucky bluegrass, and other introduced plants are prevalent in native prairie across North Dakota. Kentucky bluegrass tends to increase under prolonged rest or with grazing, but decreases with fire especially when burning occurs during stem elongation or in dry years. Smooth brome also increases under rest, but (in contrast to Kentucky bluegrass) appears sensitive to repeated grazing but unaffected or variably affected by prescribed fire. A strategy to improve competitive abilities of native herbaceous plants should match the types, timing, and frequencies of disturbances under which these plants evolved. Target threshold percentage goals for the high-priority units are subjective and based on the district's grassland intactness and staff resource levels. The district staff used recent inventory data to set the threshold percentages for floristic composition and floristic potential. It is anticipated these threshold levels are based on grassland intactness specific to J. Clark Salyer Wetland

Management District and will not change due to staff or resources.

At the district, smooth-brome-dominated plant groups may be less dominant than Kentucky-bluegrass-dominated plant groups. This may not be true in other districts in North Dakota. Smooth brome may be less competitive than native plants or Kentucky bluegrass in the relatively poor sandy soils of McHenry and Pierce counties, where the majority of the waterfowl production areas are located within J. Clark Salyer Wetland Management District. Of the two invasive grass species, smooth brome generally seems more difficult to control once established and more significantly alters the quality and structure of native prairie. Therefore, restoration management should focus on strategies to reduce brome.

(Example) Grassland Objective 3

On low-priority prairie units, apply disturbance (principally fire or grazing) every 5–8 years to remove plant litter, restore plant vigor, reverse woody plant expansion, and provide a mix of structural types that include (1) relatively short-sparse vegetation for species such as northern pintail, killdeer, horned lark, and Brewer's blackbird, (2) moderately short vegetation for species such as blue-winged teal and upland sandpiper, and (3) tall-dense vegetation for species such as mallard, short-eared owl, Le Conte's sparrow, and bobolink.

Although varying widely across units, total area (the sum of all units) should have the following characteristics:

- One-fourth of the area in 0- to 1-year postdisturbance, one-fourth in 2–3 years postdisturbance, and one-half in 4–6+ years postdisturbance—corresponding roughly to a structure of <2 inches VOR, 2–3.9 inches VOR, and >3.9 inches VOR (mean VORs in early spring, per Robel et al. 1970).
- Native trees and tall shrubs compose <0.2% land cover on each tract and all nonnative woody vegetation and planted, native woody vegetation is eliminated from at least half of the units.
- Leafy spurge frequency is maintained at <2% frequency, absinth wormwood is actively controlled and yellow toadflax and other newly appearing species of noxious weed that pose a threat to native prairie are eliminated within 5 years of initial detection.

RATIONALE

This objective focuses on providing vegetation structural diversity, emphasizing structure that is moderately short to tall-dense. Given current and projected staff and funding, low-priority native prairie tracts are unlikely to be restored to a state where native herbaceous vegetation is a

widely noticeable or otherwise common vegetative component. However, with modest effort, the prevalent, introduced cool-season grasses and scattered low shrub can be managed to provide a mix of postdisturbance structural types attractive to a broad array of waterfowl and other grassland bird species.

These units can provide structural diversity in vegetative height and density, while preserving extensive grasslands used by species of birds that require large undisturbed grassland patches. Effects associated with edge-dominated, highly fragmented grassland are also reduced.

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