Glossary of Terms

Canada Goose
Bob Savannah/USFWS

Glossary of Terms

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 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.

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.

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 (Service Manual 052 FW 1.12B). The Refuge System's focus is on indigenous 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; caused, produced by, or comprising living organisms.

borrow area—An area used to provide substrate for construction projects or other purposes.

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.

CCC—See Civilian Conservation Corps.

CCP—See comprehensive conservation plan.

Cervis—Pertaining to the deer family. Distinguished from Bovidae by the male's having solid, deciduous antlers (e.g., deer, caribou, moose, elk).

CFR—See Code of Federal Regulations.

Civilian Conservation Corps—Peacetime civilian "army" established by President Franklin D. Roosevelt to perform conservation activities from 1933–42. Activities included erosion control; firefighting; tree planting; habitat protection; stream improvement; and building of fire towers, roads, recreation facilities, and drainage systems.

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.

cm—Centimeter; equivalent to 0.39 inch.

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.

colony—Nests or breeding place of a group of birds such as herons or gulls occupying a limited area.

community—Area or locality in which a group of people resides 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 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 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 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.

conspecific—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 U.S.C. 664); of (B) by long-term leases or agreements pursuant to the Bankhead–Jones Farm Tenant Act (50 Stat. 525; 7 U.S.C. 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 ravine or gully.

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

cultural resources—Remains of sites, structures, or objects used by people in the past.

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 I), sample inventory of project site distribution and density over a larger area (class II), or comprehensive field examination to identify all exposed physical manifestation of cultural resources (class III).

cultural resource overview—Comprehensive document prepared for a field office that discusses, among other things, its prehistory and cultural history, the nature and extent of known cultural resources, previous research, management objectives, resource management conflicts or issues, and a general statement on how program objectives should be met and conflicts resolved. An overview should reference or incorporate information from a field office background or literature search described in Section VIII of the Cultural Resource Management Handbook (Service Manual 614 FW 1.7).

curtilage—An enclosed area immediately surrounding a house or development

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 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 trends.

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.

depredation—Taking of wildlife—including destruction of nests or dens, and eggs or young—by a predatory animal; damage inflicted on agricultural crops or ornamental plants by wildlife.

dike—A mound or dam used to impound surface water.

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

DNC—See dense nesting cover.

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

EA—See environmental assessment.

easement—Agreement by which a landowner gives up or sells one of the rights on his/her property.

ecological diversity—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 (Service Manual 052 FW 1.12B).

ecological fit—Applies to how well an organism is suited to fulfill its role in the environment it is in.

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.

ecotone—A transitional zone between two communities containing the characteristic species of each.

EIS—See environmental impact statement.

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 NEPA, 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 a FONSI (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.

environmental impact statement (EIS)—Detailed written statement required by section 102(2)(C) of NEPA, analyzing the environmental impacts of a proposed action, adverse effects of the project that cannot be avoided, alternative courses of action, short-tern uses of the environment versus the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources (40 CFR 1508.11).

executive order (EO)—An order signed by the President of the United States or top executive of a country.

extinction—Complete disappearance of a species from the earth; no longer existing (Koford et al. 1994).

extirpation—Extinction of a population; complete eradication of a species within a specified area.

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 NEPA, supported by an EA, 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.

flowage easement—Agreement by which a landowner gives up or sells the right to impound, flood, and/or inundate his/her property with water The term applies only to developed wetlands, which impound water in excess of the capacity of, or longer in duration than, that which would occur naturally.

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 percent 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 (Koford et al. 1994); the process of reducing the size and connectivity of habitat patches, making movement of individuals or genetic information between parcels difficult or impossible.

friends group—Any formal organization whose mission is to support the goals and purposes of its associated refuge and the Refuge System overall; "friends organizations" and cooperative and interpretive associations.

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

Garrison Diversion Project—A multi-faceted government project aimed at providing water from the Missouri River to various parts of North Dakota.

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 (i.e., points, lines and polygons) with nongeographic attributes such as species and age (Koford et al. 1994).

GIS—See geographic information system.

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 Service Manual 620 FW 1.5).

GPS—See global positioning system.

grassland block—Contiguous area of grassland without fragmentation.

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 (e.g., wildland fire) or human-caused events (e.g., timber harvest and disking).

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

herbivore—Animal feeding on plants.

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.

indicator species—Species of plant or animal that is assumed to be sensitive to habitat changes and represents the needs of a larger group of species.

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.

intermittently flooded—Substrate usually exposed, but surface water is present for variable periods without seasonal periodicity.

introduced species—Species present in an area due to intentional or unintentional escape, release, dissemination, or placement into an ecosystem as a result of human activity.

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

invasive plant—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. 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), an 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 U.S. and to public health.

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

IPM—See integrated pest management.

issue—Any unsettled matter that requires a management decision; e.g., 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 Service Manual 602 FW 1.5).

limited-interest refuge landowner—Owner of property that is covered by a refuge and/or flowage easement that is located within the approved acquisition boundary of a limited-interest national wildlife refuge.

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

lek—An area where certain species of birds (e.g., grouse) assemble for sexual display and courtship.

loam—Soil consisting of sand and clay loosely coherent, with admixture of organic matter or humus.

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

long-term protection—Mechanisms such as fee-title acquisition, conservation easements, or binding agreements with landowners that ensure land use and land management practices will remain compatible with maintenance of the species population at the site.

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

maintenance management system (MMS)—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.

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.

mesic—Characterized by, relating to, or requiring a moderate amount of moisture; having a moderate rainfall.

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

mid-seral stage forest—Forest of middle ages, usually characterized by a closed canopy and diameters of greater than or equal to 8 inches diameter at breast height.

migration—Regular extensive, seasonal movements of birds between their breeding regions and their wintering regions (Koford et al. 1994); 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, that is legally hunted including ducks, geese, woodcock, and rails.

mission—Succinct statement of purpose and/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.

mm—Millimeter; equivalent to 0.04 inch.

MMS—See maintenance management system.

moist soil management—A modern day practice of managing surface water levels in order to promote the production of wetland plants and invertebrates that are preferrred foods for a variety of waterbirds.

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

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

national wildlife refuge (NWR)—Designated area of land, water, or an interest in land or water within the National Wildlife 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—Sets the mission and the administrative policy for all refuges in the National Wildlife 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, wildlife 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.

NAWMP—See North American Waterfowl Management Plan.

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

nest success—Percentage of the total number of nests initiated in an area that successfully hatch at least one egg.

NOA—See notice of availability.

NOI—See notice of intent.

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

nonlethal fire—Rangeland fires in which vegetation structure and composition, 3 years following the fire, are similar to preburn conditions.

North American Waterfowl Management Plan (NAWMP)—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 composed of individuals; corporations; conservation organizations; and local, state, provincial, and federal agencies drawn together by common conservation objectives. Long Lake NWR Complex falls into the "Prairie–Pothole Joint Venture."

notice of availability (NOA)—Notice that documentation is available to the public on a federal action such as a comprehensive conservation plan. Published in the Federal Register.

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

NTMB—See Neotropical migratory bird.

NWR—See national wildlife refuge.

NWRS—See National Wildlife Refuge System.

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.

overwater species—Nesting species such as diving ducks and many colonial-nesting birds that build nests within dense stands of water-dependent

plants, primarily cattail, or that build floating nests of vegetation that rest on the water.

palustrine—Of, or relating to vegetated wetlands traditionally called by such names as marsh, swamp, fen, bog, and prairie; as well as the small, shallow, permanent or intermittent water bodies often called ponds.

Partners for Wildlife Program—Voluntary habitat restoration program undertaken by the U.S. Fish and Wildlife Service in cooperation with other governmental agencies, public and private organizations, and private landowners to improve and protect fish and wildlife habitat on private lands while leaving the land in private ownership.

Partners in Flight (PIF)—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 (Koford et al. 1994).

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 inBkind service, such as labor, for a mutually beneficial enterprise.

passerine—Bird that typically has feet adapted for perching; belonging to the order Passeriformes.

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

percolation—Passing or filtering through.

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

permanently flooded—Surface water is present throughout the year in all years.

PIF—See Partners in Flight.

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, i.e., ponderosa pine or bunchgrass.

prairie pothole—A glacially derived depressional wetland found in the northern Great Plains.

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.

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; American 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 involvement plan—Broad long-term guidance for involving the public in the comprehensive planning process.

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, refuge unit, or refuge subunit (Draft Service Manual 602 FW 1.5).

raptor—Carnivorous bird such as a hawk, a falcon, an eagle, or a vulture that feeds wholly or chiefly on meat taken by hunting or on carrion (dead carcasses).

recruitment rate—Regarding waterfowl, it is the number of young females in the fall population, divided by the number of adult females in the spring population.

refuge lands—Lands in which the Service holds full interest in fee title, or partial interest such as limited-interest refuges.

refuge operations needs system (RONS)—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.

refuge use—Any activity on a refuge, except administrative or law enforcement activity, carried out by or under the direction of an authorized Service employee.

resident species—Species inhabiting a given locality throughout the year; nonmigratory species.

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 prescribed burning.

rhizome— A horizontal, underground stem that can send out both shoots and roots, rhizomes sometimes have thickened areas that store starch.

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; of or 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.

RONS—See refuge operations needs system.

rough fish—Fish that is neither a sport fish nor an important food fish.

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

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

seasonally flooded—Surface water is present for extended periods in the growing season, but is absent by the end of the season in most years.

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

semipermanently flooded—Surface water is present throughout the growing season in most years.

seral stage—Any plant community whose plant composition is changing in a predictable way; characterized by a group of species or plant community that will eventually be replaced by

a different group of species or plant community, for example, an aspen community changing to a coniferous forest community.

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

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 Refuge 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 public through authorizations in Title 50 CFR or other public regulations (Refuge 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 populations 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.

species of management interest—Plant and animal species, while not failing 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 including white-tailed deer, furbearers such as American marten, important prey species including red-backed vole, or significant keystone species such as beaver.

species richness—Absolute number of species in an assemblage or community; the number of species in a given area (Koford et al. 1994).

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

stand density—Number of trees growing in a given area, usually expressed in terms of trees per acre.

stand diversity—Distribution of tree sizes, layers, and ages in a forest. Some stands are all one size (single-story), some are two-story, and some are a mix of trees of different ages and sized (multistory).

stand initiation—When land is occupied by trees following a stand-replacing disturbance. Also referred to as early successional, early seral, and regeneration.

state land—Public land, such as a state park or state wildlife management area, owned by a state.

step-down management plan—Plan that provides the details necessary to implement management strategies identified in the comprehensive conservation plan (Draft 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 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.

tamegrass—Commercially cultured grasses genetically selected for desired characteristics.

tame species—See dense nesting cover.

taxonomy—The theories and techniques of naming, describing, and classifying organisms; the study of the relationships of taxa, including positional changes that do not involve changes in the names of taxa.

temporarily flooded—Surface water is present for brief periods during the growing season.

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.

transpiration—Loss of water vapor from land plants into the atmosphere, causing movement of water through the plant from the soil to the atmosphere via roots, shoot and leaves.

travel corridor—Landscape feature that facilitates the biologically effective transport of animals between larger patches of habitat dedicated to conservation functions. Such corridors may facilitate several kinds of traffic including frequent foraging movement, seasonal migration, or the once in a lifetime dispersal of juvenile animals. These are transition habitats and need not contain all the habitat elements required for long-term survival or reproduction of its migrants.

trophic system—Made up of organisms that occupy various trophic levels (i.e., the position an organism occupies in a food chain).

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 rational 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.

understory reinitiation—When a second generation of trees is established under an older, typically seral, overstory. Also referred to as mid-successional, mid-seral, and young forest.

upland—Dry ground; other than wetlands.

U.S. Fish and Wildlife Service (Service, USFWS, FWS)—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.

waders, *also* **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.

water control structure—An artificial structure that allows for the manipulation of surface water levels.

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

waterfowl production area (WPA)—Prairie wetland with associated upland that is managed to provide nesting areas for waterfowl, which is owned in fee title by the Service. These lands are purchased from willing sellers with funds from Duck Stamp sales. They are open to public hunting, fishing, and trapping according to state and federal regulations.

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 easement—Perpetual agreement entered into by a landowner and the Service. The easement covers only the wetlands specified in the agreement. In return for a single lump-sum payment, the landowner agrees not to drain, burn, level, or fill wetlands covered by the easement.

wetland management district (WMD)—Land that the Refuge System acquires with Federal Duck Stamp funds for restoration and management primarily as prairie wetland habitat critical to waterfowl and other wetland birds.

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 untrammeled by man, where man himself is a visitor who does not remain."(Wilderness Act of 1964 Section 2c [P.L. 88-577)]). This legal definition places wilderness on the "untrammeled" 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 (Hendee 1990).

wildfire—Free-burning fire requiring a suppression response; all fire other than prescribed fire that occurs on wildlands (Service Manual 621 FW 1.7).

wildland fire—Every wildland fire is either a wildfire or a prescribed fire (Service Manual 621 FW 1.3).

wildlife corridor—Landscape feature that facilitates the biologically effective transport of animals between larger patches of habitat dedicated to conservation functions. Such corridors may facilitate several kinds of traffic, including frequent foraging movement, seasonal migration, or the once in a lifetime dispersal of juvenile animals. These are transition habitats and need not contain all the habitat elements required for long-term survival or reproduction of its migrants.

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 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.

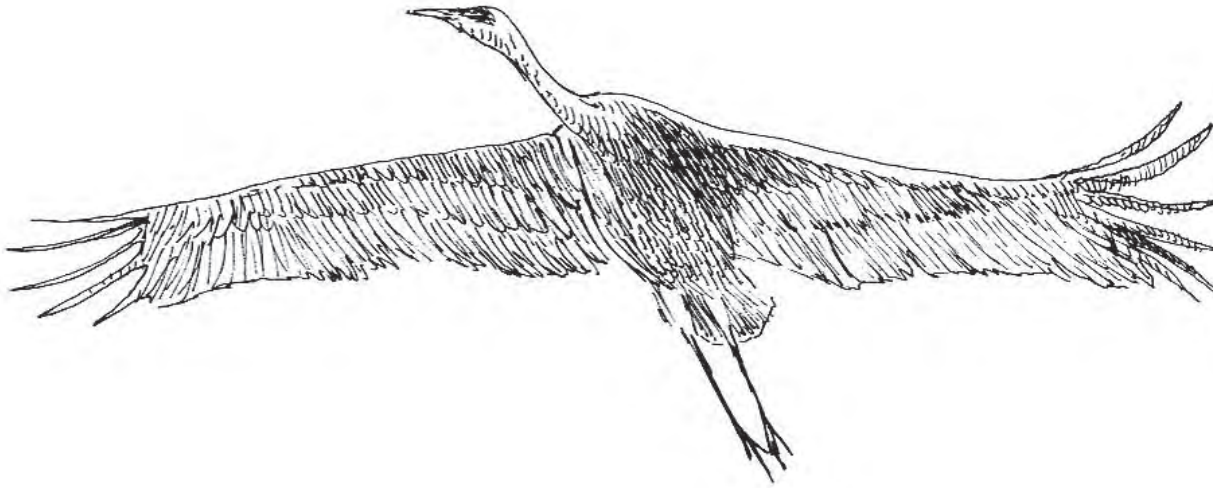
WMD—See wetland management district.

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

WPA—*See* waterfowl production area.

xeric—Of, characterized by, or adapted to an extremely dry habitat.

Appendices



Sandhill Crane
Bob Savannah/USFWS

Appendix A

Compatibility Determinations

Refuge Name
Long Lake National Wildlife Refuge Complex

Establishing and Acquisition Authority
Long Lake National Wildlife Refuge Complex
Executive Order 5808, February 25, 1932
Migratory Bird Conservation Act 45 Stat 1222

Refuge Purpose
"…as a refuge and breeding ground for migratory birds and other wildlife…" Executive Order 5808, dated February 25, 1932.

"…for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." U.S. code of federal regulations (USC) 715d (Migratory Bird Conservation Act.)

Refuge Name
Florence Lake National Wildlife Refuge

Establishing and Acquisition Authority
Florence Lake National Wildlife Refuge
Executive Order 8119, May 10, 1939
Migratory Bird Conservation Act 45 Stat 1222

Refuge Purposes
"…as a refuge and breeding ground for migratory birds and other wildlife…" Executive Order 8119, dated May 10, 1939.

"…for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." USC 715d (Migratory Bird Conservation Act.)

Refuge Name
Slade National Wildlife Refuge

Establishing and Acquisition Authority
Slade National Wildlife Refuge
Donation, 1940
Migratory Bird Conservation Act 45 Stat 1222

Refuge Purposes
"…for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." USC 715d (Migratory Bird Conservation Act.)

Refuge Name
Long Lake Wetland Management District

Establishing and Acquisition Authority
Migratory Bird Hunting Stamp Act 16 U.S.C. 718(c) "…as waterfowl production areas subject to all provisions of the Migratory Bird Conservation Act …except the inviolate sanctuary provisions…"

Migratory Bird Conservation Act 16 U.S.C. 715d "…for any other management purposes, for migratory birds."

Consolidated Farm and Rural Development Act 7 U.S.C. 1924 "…for conservation purposes"

Consolidated Farm and Rural Development Act 7 U.S.C. 2002 "…for conservation purposes"

Refuge Purposes

Long Lake WMD was established "…to assure the long-term viability of the breeding waterfowl population and production through the acquisition and management of WPAs, while considering the needs of other migratory birds, threatened and endangered species and other wildlife." (The purpose statement was developed for all Region 6 districts in June 2004)

National Wildlife Refuge System Mission

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

1. Description of Proposed Use:

Farming, Grazing, and Haying

Continue upland management activities such as farming, grazing, and haying that are conducted under cooperative farming or SUP by private individuals. Currently, these economic uses are used as tools to manage habitat for wildlife.

Approximately 1,100 acres of uplands are farmed each year. Farming is conducted for the sole purpose of grassland restoration. The refuge complex targets restoration of natives on 300–400 acres annually by planting native grass on fields that are currently degraded tamegrass and/or farmed fields. Grazing by cattle is used as a grassland and wetland management tool. Grazing was employed on 827 acres in 2005. Approximately 20–30 percent of the upland acres in the refuge complex could potentially be grazed annually, primarily targeting the early season, April 1–June 15 to reduce invading cool-season exotic species. Occasionally, grazing is also employed as a management treatment outside the seasonal window to address some other management issue. Grazing is also used to open shorelines in certain areas, which, in absence of treatment, are closed stands of dense emergent vegetation. Haying is sporadically used as a grassland management tool. It is used to control invasive plants, prepare areas for upland restoration, treat litter accumulation and/or the ratio of live to dead plants in a stand, and prepare areas for prescribed burns.

The CCP proposes to continue grassland restoration activities throughout the refuge complex. Farming will subsequently be reduced as native grass seeding activities throughout the refuge complex are completed. Cooperative farming activities are employed only on previously farmed uplands. Farming allows the refuge to establish seedbeds relatively free of noxious plants, maximizing the likelihood that grassland restoration will be successful. Crops that may be used during farming include, but are not limited to, corn, soybeans, grain millet, hay millet, winter wheat, barley, and spring wheat.

The CCP proposes to use grazing as a management tool for wetland and upland habitats. Specific acreages have not been identified in the CCP because habitat conditions within wetland and upland areas can change dramatically on a yearly basis due to precipitation and temperatures. An adaptive approach will be used when prescribing grazing treatments for refuge complex habitats.

Availability of Resources

The resources necessary to administer haying, grazing, and farming programs at existing levels are sufficient at current staffing and budgetary levels. Haying, grazing, and farming programs are generally conducted through SUPs or cooperative farming agreements minimizing staff time and refuge assets to complete work. In order to restore native grass and forbs on degraded tamegrass and farmed fields as outlined in this CCP, the refuge complex will require additional funds to purchase seed annually (until the tame grass and farmed fields are converted).

Anticipated Impacts of the Use

Over a 5-year period, grazing has been conducted on approximately 1,000 acres annually. While annual acreages have not been specified in the CCP, it is expected that future grazing in the refuge complex will increase to address management issues with primary cool-season invasive species (e.g., smooth brome, Kentucky bluegrass). Additionally, habitat requirements of a diverse mix of target bird species requires that habitat be provided in high (> 8 inches), medium (4–8 inches [10–20 centimeters]), and low (< 4 inches

[10 centimeters]) visual obstruction categories. In order to provide these grassland habitats, habitat manipulation, through a variety of means including grazing, haying, and stand reestablishment through reseeding is required. Farming acres will likely remain at or near the current level of 1,100 acres farmed annually for 8–10 years. They will then be reduced as previously farmed and tamegrass uplands are converted to native grass. Approximately 300–400 acres of native grass are targeted to be seeded annually. Haying is used sporadically to address specific grass stand issues throughout the refuge complex and this use is not anticipated to change.

Without management, wetland and upland habitat conditions will deteriorate due to long periods of rest. Cool-season invasive species will likely increase and infest additional areas without the use of spring grazing. While all these activities disturb habitat and wildlife in the short-term, long-term habitat and wildlife benefits outweigh these disturbances. Farming causes decreases in wildlife habitat availability; however, habitat conditions will improve following grassland restoration activities.

The anticipated effect on target bird species, and other species which have similar habitat needs, is a positive effect on their habitats and subsequently their populations.

No cultural resources will be impacted. No impact to endangered species should occur.

Determination
The use of haying, grazing, and farming as habitat management tools is compatible.

Stipulations Necessary to Ensure Compatibility

- Monitor vegetation and wildlife to assess the effects of the management tools.
- Require general and special conditions for each permit to ensure consistency with management objectives.
- Restrict farming permittees to a list of approved chemicals that are less detrimental to wildlife and the environment.
- Restrict haying to commence after August 1 to avoid disturbance to nesting birds (unless the refuge manager deems it necessary to hay earlier to control invasive plants or restore grasslands).

Justification
To maintain and enhance the habitat for migratory birds and other wildlife, some habitat manipulation needs to occur. Upland and wetland habitat conditions will deteriorate without the use of a full range of management tools. Migratory bird habitat and ecological diversity will decrease as habitat suitability declines. Habitat will degrade and meet the requirements of fewer migratory bird species on an annual basis as quality and condition deteriorate. Exotic and invasive plant species will increase and habitat diversity will decrease if management practices did not continue throughout the refuge complex.

Mandatory 15-year reevaluation date: September 2021

2. Description of Proposed Use:

Provide opportunities for environmental education and interpretation.
Environmental education consists of activities conducted by refuge staff, volunteers, and teachers. Interpretation occurs in less formal activities with refuge staff, volunteers or through exhibits, educational trunks, signs, programs, and brochures. Currently, environmental education and interpretation activities are conducted at the Long Lake NWR office and occasionally on Slade NWR and select WPAs in the districts, and at various off-site locations where activities and/or programs are presented.

The recent staff addition of an outdoor recreation planner and proximity to a population of over 100,000 provides potential to expand substantially environmental education and interpretation programs at the refuge complex. The CCP proposes to continue with current uses as well as improve environmental education and interpretation for all visitors. The following are facility and program improvements described in the CCP

- Conduct two theme-related events, one in spring, one in fall to interpret the migration of birds.
- Construct observation tower overlooking the unit II marsh.

- Develop an accessible trail from stone buildings to observation tower.
- Upgrade facilities at Slade NWR and focus on wildlife-oriented activities at Lake Isabel Recreation Area.
- Enhance and upgrade the Small PWA interpretive trail.
- Update and improve refuge signs.
- Update existing brochures to the Service graphic standards.
- Rehabilitate historic stone buildings into an environmental education and interpretation center.
- Develop an on-site shorebird tour/activity as one potential theme and develop others for educators and school groups.
- Continue to conduct teacher workshops with a central theme of wildlife and habitats.
- Increase contact with students, on- and off-site, to develop and enhance an understanding and appreciation of wildlife and their habitats.
- Continue public outreach through various events and compatible wildlife-dependent recreation opportunities.

Availability of Resources
Implementing new facilities outlined in the CCP is closely tied to funding requests in the form of refuge operation needs system (RONS) and maintenance management system (MMS) projects. Existing programs such as current refuge signs and brochures can be updated with available resources.

Anticipated Impacts of Use
Minimal disturbances to wildlife and wildlife habitat will result from these uses at the current and proposed levels. Adverse impacts are minimized through careful timing and placement of activities. Some disturbance to wildlife will occur in areas frequented by visitors. There will be some minor damage to vegetation, littering, and increased maintenance will be necessary. Location and time limitations placed on environmental education and interpretation activities will ensure that this activity will have only minor impacts on wildlife and will not detract from the primary purposes of the various units of the refuge complex.

No cultural resources will be impacted. No impact to endangered species should occur.

Determination
Environmental education and interpretation are compatible public uses.

Stipulations Necessary to Ensure Compatibility
- Allow environmental education and interpretation only in designated areas or under the guidance of refuge staff, a volunteer, or a trained teacher to ensure minimal disturbance to wildlife, minimal damage to vegetation, and minimal conflicts between groups.
- Annually review environmental education and interpretation activities to ensure these activities are compatible.

Justification
Based on biological impacts described in the EA and the draft CCP, staff determined that environmental education and interpretation within the refuge complex will not materially interfere with, or detract from, the purposes for which this refuge complex was established.

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

Mandatory 15-year reevaluation date: September 2021

3. Description of Proposed Use: Wildlife Observation and Wildlife Photography

Provide opportunities that support wildlife-dependent recreation.
Wildlife observation and wildlife photography are facilitated by an auto tour route, one hiking trail and two wildlife observation pullouts.

The CCP proposes to continue previously stated uses and add the following to improve wildlife observation and wildlife photography:

- Designate and develop auto tour route.
- Identify exceptional wildlife viewing opportunities and improve viewing access through placement of portable blinds.
- Designate and develop an interpretive hiking trail and an observation deck.

Availability of Resources
Implementing new facilities outlined in the CCP is closely tied to funding requests in the form of RONS and MMS projects. Existing programs such as current refuge signs and brochures can be updated with available resources.

Determination
Wildlife observation and wildlife photography are compatible uses.

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
Based on the anticipated biological impacts, it is determined that wildlife observation and wildlife photography on the refuge complex will not interfere with the habitat goals and objectives or purposes for which it was established.

Wildlife observation and wildlife photography are priority public uses listed in the Improvement Act. By facilitating these uses, visitors will gain knowledge and an appreciation of fish and wildlife which will lead to increased public stewardship of wildlife and their habitats. Increased public stewardship will support and complement the Service's actions in achieving the purposes of the refuge complex and the mission of the refuge system.

Mandatory 15-year reevaluation date: September 2021

4. Description of Use: Recreational Fishing

Continue to provide for recreational fishing at designated fishing areas in accordance with state regulations and expand programs to refuge and WPA areas where fish currently exist.
The primary game fish found in the refuge complex are northern pike, walleye, and perch. Designated fishing areas on Long Lake NWR include Long Lake Creek and shore fishing access sites of unit 1. Boating is allowed only on Long Lake Creek and the period of use is May 1 through September 30. Boats are restricted to 25 horsepower. YMCAWPA and Adams WPA have the same fishery resources as Long Lake NWR because these waterfowl production areas are directly connected to the watershed.

Slade NWR and several waterfowl production areas, located in conjunction with large permanent wetlands, may have fishery resources which are not currently used. The CCP calls for an inventory of these areas and establishment of compatible fishery programs where they are found.
Fishing visitation is dependent on success, which is greatly influenced by weather cycles. 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 which subject wetlands of marginal depths to frequent winterkill of fish resources).

Availability of Resources
The current fishing program is administered using available resources. The CCP calls for the establishment of new fishing programs where game fish populations currently exist and where fishing activity can be provided in a manner, which is compatible with other objectives. Sufficient resources are available to maintain the existing recreational fishing program. When fishing programs are expanded to new areas, the refuge complex will need an increased law enforcement presence through additional law enforcement staffing and/or cooperative agreements for law enforcement coverage through the NDGF.

Anticipated Impacts of Use
Fishing and other human activities cause disturbance to wildlife. Restricting fishing to designated fishing areas minimizes the 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 other refuge complex objectives and programs.

Determination
Recreational fishing is compatible.

Stipulations Necessary to Ensure Compatibility
- Require that fishing follow state and federal regulations.
- Confine fishing to designated fishing areas.
- Phase out the use of lead sinkers and lures over a 5-year period, as these present ingestion dangers for migratory birds.
- Monitor existing use to ensure that facilities are adequate and disturbance to wildlife continues to be minimal.
- Employ a "no wake zone" that includes all waters within 500 feet of the shoreline or emergent marsh areas, and/or restrict horsepower on boats used in confined areas and areas of limited depth, such as Long Lake Creek.

Justification
Based on the biological impacts addressed above and in the EA, it is determined that recreational fishing will not materially interfere with the habitat goals and objectives or purposes for refuge establishment.

Fishing is a priority public use as listed in the Improvement Act.

Mandatory 15-year Reevaluation Date: September 2021

5. Description of Use: Recreational Hunting

Continue to provide recreational hunting and expand programs in refuge and waterfowl production areas where programs can be provided in a compatible manner.
Allow continued recreational hunting of deer, ring-necked pheasant, sharp-tailed grouse, Hungarian partridge, on Long Lake NWR.

The CCP calls for staff to evaluate and expand the Long Lake hunting program to include fox and coyote and waterfowl on designated portions of the refuge where compatible and with restrictions necessary to ensure that the activity does not materially interfere with the purposes of the refuge and/or the attainment of other refuge objectives.

Allow continued hunting of deer on Slade NWR.

The CCP calls for staff to evaluate and expand the Slade hunting program to include ring-necked pheasant, sharp-tailed grouse, Hungarian partridge, fox and coyote, where compatible and with restrictions necessary to ensure that the activity does not materially interfere with the purposes of the refuge and/or the attainment of other refuge objectives.

The CCP calls for staff to evaluate and provide deer, ring-necked pheasant, sharp-tailed grouse, Hungarian partridge, fox and coyote hunting at Florence Lake NWR where compatible and with restrictions necessary

to ensure that the activity does not materially interfere with the purposes of the refuge and/or the attainment of other refuge objectives.

Continue to provide the hunting programs on waterfowl production areas as prescribed by legislation. The CCP calls for staff to evaluate and provide expanded access for boats in areas where their use augments fishing and hunting programs and can be provided in a compatible manner.

Availability of Resources
Sufficient resources are available to maintain the existing recreational hunting program. When the hunting programs are expanded, the refuge complex will need to pursue additional law enforcement coverage through additional law enforcement staffing and/or cooperative agreements for law enforcement coverage through the NDGF.

Anticipated Impacts of Use
Some wildlife disturbance will occur during recreational hunting activities at the various units of the refuge complex. Less than 5 percent of Long Lake NWR will be evaluated for hunting of migratory birds. This will ensure that adequate area remains undisturbed for the benefit of migratory birds. Approximately 15 percent of Long Lake NWR is closed to all hunting.

All hunting on Long Lake NWR and Slade NWR is seasonally scheduled so that it will not interfere with migratory birds' use of these refuges. This ensures adequate resting areas for migratory species during the fall migration.

Winter hunting for fox and coyote on refuge units (Long Lake NWR, Slade NWR, and Florence Lake NWR) administered by the refuge complex is proposed by the CCP. Fox are primary nest predators and coyote have resulted in depredation complaints from neighboring landowners and resulted in the employment of USDA agents for control during each of the past 5 years. Hunting for these species after the waters have frozen will allow for population reductions at a time in the season when there will be little or no disturbance to most migratory birds. While any population reduction during the winter will be temporary, the opportunity provided by coyote and fox hunting will increase recreational opportunity and holds potential to reduce annual surplus of these species which have presented localized predation and depredation issues associated with these refuges. Hunting of fox and coyote is a recreational opportunity, which was approved by legislation on the 78 WPAs and one WDA managed by the refuge complex.

Other public use activities will be minimally impacted by the recreational hunting program changes proposed by the CCP.

Restricting vehicle use to designated purposes, times, and established roads, trails, and parking lots protects habitats from damage and minimizes disturbance to wildlife. Closed areas around residences and the headquarters area provide safety zones and reduce conflicts between hunters and visitors. Restrictions on the timing of seasons and areas open to hunting ensure that the proposed hunting activities do not materially interfere with the purposes of the refuge and/or the attainment of Refuge System objectives.

Determination
Recreational hunting is compatible.

Stipulations Necessary to Ensure Compatibility

- Require the use of nontoxic shot, in accordance with current regulations for migratory bird and upland game hunting.
- Limit use of motorized vehicles to designated parking areas, access trails, and public roads.
- Prohibit all-terrain vehicles (ATVs).
- Prohibit camping, overnight use, and fires.
- Require that hunting be conducted in accordance with federal and state regulations.
- Develop hunting programs with appropriate timing and area restrictions to avoid conflicts with other

objectives (i.e. late season; upland gamebirds; winter; fox and coyote: upland areas distant from water roosting/loafing areas; waterfowl: etc.).

- Promote sound hunting practices for hunter safety and quality experiences.

Justification
Hunting on national wildlife refuges was identified as a priority public use in the Improvement Act. 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 the refuge complex will not materially interfere with or detract from the purposes for which this refuge complex was established or the goals and objectives of the Refuge System.

Mandatory 15-year Reevaluation Date: September 2021

6. Description of Use: Recreational Trapping and Predator Management

Provide for recreational trapping on lands in the refuge complex along with spring predator trapping to improve upland nesting bird success in the refuge complex
Recreational trapping on refuges administered by the refuge complex is authorized through issuance of SUPs to trappers who are interested in removing surplus and problem animals as agents of management. The district's waterfowl production areas are legally open to trapping according to state regulations as per their establishing legislation and the federal code of regulations. In addition, the refuge complex plans to pursue partnerships to affect predator control on select areas (waterfowl production areas and surrounding private lands where permission is obtained) where nesting success rates of waterfowl are suppressed due to high predation rates as described in the CCP.

Availability of Resources:
Currently there is sufficient funding and staffing to manage the recreational trapping and spring predator trapping in the refuge complex at existing levels. When the trapping programs are expanded as is called for in this CCP, the refuge complex will need to pursue additional law enforcement coverage through additional law enforcement staffing and/or cooperative agreements for law enforcement coverage through the NDGF. In addition, to administer a spring predator trapping program, additional biological science staff for monitoring of predator populations and upland bird production will be required. These needs are listed in the station's RONS list in appendix N. Staff will pursue partnerships to provide labor and funding assistance from various public and private organizations to manage predator populations in order to achieve acceptable nest success rates for waterfowl and other ground nesting migratory birds in select areas.

Anticipated Impacts of the Use:
Trapping removes individual animals from wildlife populations, which temporarily reduces predator populations up to and during the nesting season. Spring predator trapping increases the nesting success of upland nesting birds. There will be direct mortality of target animals, some vegetation trampling by personnel, and some minor increase in general wildlife disturbance in trapping areas due to human and vehicular traffic. There is the possibility of injury to nontarget wildlife that are caught in traps such as an occasional rabbit, domestic dogs and feral cats. Refuge complex staff anticipates that the combination of recreational trapping and predator management, which targets specific areas of high densities of waterfowl and low recruitment, caused primarily by high nest predation rates, will result in higher, more acceptable recruitment rates for waterfowl and other upland nesting birds. Recreational trapping and predator management activities are anticipated to yield less damage to refuge complex infrastructure (i.e., roads, dikes, WCS) and fewer domestic livestock depredation complaints from neighbors of the three refuges.

Determination:
Recreational trapping and predator management is compatible.

Stipulations Necessary to Ensure Compatibility:
- Trapping will be conducted in a manner that will remove only targeted species or species removed for public health and safety concerns.

- Recreational trapping will occur within regular state seasons and will not conflict with other public uses.
- Trapping for predators outside of regular season will be coordinated with the NDGF.
- Detailed trapping records will be maintained for refuge and staff trappers.
- No trapping will take place in areas of high public use areas unless done for health and safety reasons.
- No exposed bait will be placed near traps that might attract eagles or other raptors.
- Traps must be monitored at a minimum of every 24 hours.
- Nest Success will be monitored in areas targeted for predator removal to determine the program's effectiveness and the need for the following year's trapping (trapping will be conducted only when nest success falls below 30 percent).

Justification:
Recreational trapping removes excess individuals from targeted wildlife populations, provides recreational opportunity, and offers economic and wise use of surplus and renewable wildlife resources. Predator management will benefit upland nesting birds, including many species of waterfowl when predator populations are reduced during the nesting season. Combined recreational trapping and predator management activities reduce populations of specific species that depredate livestock, damage infrastructure, and/or suppress nest success of waterfowl and ground-nesting birds.These management activities augment the refuge complex's ability to efficiently and effectively accomplish primary resource objectives. Long-term negative effects to these predator populations will not occur as trapping activities cannot feasibly remove enough animals to permanently impact these populations.

Mandatory 15-year Re-evaluation Date: September 2021

7. Description of Use: Research

Continue to provide opportunities for research.
The refuge complex receives periodic requests to conduct scientific research. Some requests are specific to Service lands administered by the refuge complex, and others are part of a larger landscape-level project that requires authorization from multiple refuge field stations. In addition, the refuge complex often partners with other agencies and/or private partners to conduct field research and/or studies that advance the attainment of primary refuge goals and objectives.
Recently, as more and more health threats arise (e.g., West Nile virus, CWD, avian influenza) research may be essential to prevent, or at least manage, disease outbreaks. Access to researchers and/or 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, refuge complex staff may become involved in the research and/or monitoring. In other cases, government personnel from another agency may take the lead in developing and following standard operating procedures, reducing the role of refuge staff. Coordination, however, will remain paramount to assure that any operation minimizes the impact to trust resources and their habitats to the extent possible.

In general, those proposals that involve multiple refuge field stations are coordinated by the DWG and approval is issued as a letter of authorization. Proposals which are specific to lands administered by the refuge complex are reviewed and either authorized with a letter (if studies are simple, shorter than 1 year, and only require access) or an SUP (if studies are more complex, will take longer than 1 year, and have potential to disturb, stress, or remove vegetation or individuals of a wildlife population). Those operations essential to maintaining human health and safety will be coordinated through an approved disease contingency plan. These threats are an exception to the normal process of authorizing and approving research on lands in the refuge complex.

Absent those situations which involve emerging threats to human health and safety and which will be addressed in a separate disease contingency plan, priority will be given to research proposals that support the refuge complex's purposes, goals, and objectives. This will include, for example, studies that contribute to the enhancement, protection, use, preservation and management of native refuge complex wildlife

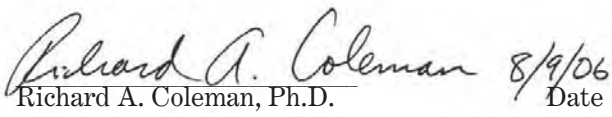
activities can have on the Service's ability to achieve refuge complex purposes, sufficient restrictions will be placed on the researcher to ensure that disturbance is kept to a minimum. This program as described is determined to be compatible.

Mandatory 15-year Re-evaluation Date: September 2021

Submitted

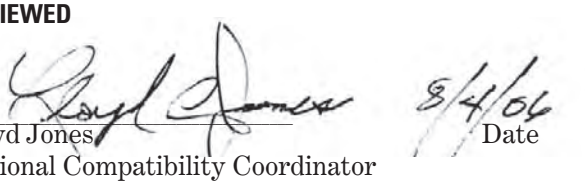
Paul Van Ningen — Date
Project Leader
Long Lake National Wildlife Refuge Complex, ND

Approved

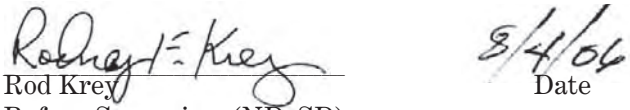


Richard A. Coleman, Ph.D. — Date
Assistant Regional Director
National Wildlife Refuge System
U.S. Fish and Wildlife Service, Region 6, CO

Reviewed



Lloyd Jones — Date
Regional Compatibility Coordinator
U.S. Fish and Wildlife Service, Region 6, ND



Rod Krey — Date
Refuge Supervisor (ND, SD)
U.S. Fish and Wildlife Service, Region 6, CO