

Appendix A. Glossary (including acronyms and abbreviations)

Adaptive Management: Refers to the process in which policy decisions are implemented within a framework of scientifically driven experiments to test predictions and assumptions inherent in management plans. Analysis of results help managers to determine whether current management should continue as is or it should be modified to achieve desired conditions.

Alternative: 1) A reasonable way to fix the identified problem or satisfy the stated need (40 CFR 1500.2); 2) Alternatives are different means of accomplishing refuge purposes and goals and contributing to the System mission (Draft Service Manual 602 FW 1.5).

ATV: All Terrain Vehicle (either 3 or 4-wheeled vehicles)

AUM or Animal Unit Month: A measure of the quantity of livestock forage. Equivalent to the forage sufficient to sustain a 1,000 pound animal (or 1 cow/calf pair) for 1 month during a normal season.

Biological Control: The use of organisms or viruses to control weeds or other pests.

Biological Diversity: The 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.

Categorical Exclusion (CE, CX, CATEX, CATX): A category of actions that do not individually or cumulatively have a significant effect on the human environment and have been found to have no such effect in procedures adopted by a Federal agency pursuant to the National Environmental Policy Act (40 CFR 1508.4).

CCP or Plan: Comprehensive Conservation Plan

CFR: Code of Federal Regulations

Compatible Use: A wildlife-dependent recreational use or any other use of a refuge that, in the sound professional judgment of the Director, will not materially interfere with or detract from the fulfillment of the mission of the System or the purposes of the refuge.

Comprehensive Conservation Plan, Plan, or 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 System, and to meet other relevant mandates.

Cover Type: The present vegetation of an area.

Cultural Resources: The remains of sites, structures, or objects used by people in the past.

Cultural Resource Inventory: A professionally conducted study designed to locate and evaluate evidence of cultural resources present within a defined geographic area. Inventories may involve various levels, including background literature search, comprehensive field examination to identify all exposed physical manifestations of cultural resources, or sample inventory to project site distribution and density over a larger area. Evaluation of identified cultural resources to determine eligibility for the National Register follows the criteria found in .36 CFR 60.4 (Service Manual 614 FW 1.7).

Cultural Resource Overview: A 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 offices background or literature search described in Section VIII of the Cultural Resource Management Handbook (Service Manual 614 FW 1.7).

Designated Wilderness Area: An area designated by the United States Congress to be managed as part of the National Wilderness Preservation System (Draft Service Manual 610 FW 1.5).

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

EA or Environmental Assessment: A concise public document, prepared in compliance with the National Environmental Policy Act, that briefly discusses the purpose and need for an action, alternatives to such action, and provides sufficient evidence and analysis of impacts to determine whether to prepare and Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

Ecosystem: Dynamic and interrelated complex of plant and animal communities and their associated nonliving environment.

Ecosystem Approach: Protecting or restoring the natural function, structure, and species composition of an ecosystem, recognizing that all components are interrelated.

Endangered Species (Federal): A plant or animal species listed under the Endangered Species Act that is in danger or becoming extinct throughout all or a significant portion of its range.

Endangered Species (State): A plant or animal species in danger of becoming extinct or extirpated in an individual 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.

Exotic and Invading Species (Noxious Weeds): Plant species designated by Federal or State law as generally possessing one or more of the following characteristics: aggressive or difficult to manage; parasitic; a carrier or host of serious insects or disease; or nonnative, new, or not common to the United States, according to the Federal Noxious Weed Act (PL 93-639), a noxious weed is one that causes disease or has adverse effects on man or his environment and therefore is detrimental to the agriculture and commerce of the United States and to the public health.

Fauna: All the vertebrate and invertebrate animal species of a determined area.

Federal Trust Resources: A trust is something managed by one entity for another who holds the ownership. The Service holds in trust many natural resources for the people of the United States of America as a result of Federal Acts and treaties. Examples are species listed under the Endangered Species Act, migratory birds protected by the Migratory Bird Treaty Act and other international treaties, and native plant or wildlife species found on the System.

Federal Trust Species: All species where the Federal government has primary jurisdiction including federally endangered or threatened species, migratory birds, anadromous fish, and certain marine mammals.

Fire Regime: A description of the frequency, severity, and extent of fire that typically occurs in an area or vegetative type.

Flora: All the plant species of a determined area.

FONSI or Finding of No Significant Impact: A 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, therefore, will not be prepared (40 CFR 1508.13).

Forb: A broad-leaved, herbaceous plant; for example, a columbine.

Fragmentation: The process of reducing the size and connectivity of habitat patches.

Geographic Information System (GIS): A computer system capable of storing and manipulating spatial data.

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).

Habitat: Suite of existing environmental conditions required by an organism for survival and reproduction. The place where an organism typically lives.

Habitat Restoration: Management emphasis designed to move ecosystems to desired conditions and processes, and/or to healthy forest lands, rangelands, and aquatic systems.

Integrated Pest Management: Methods of managing undesirable species, such as weeds, including: education; prevention, physical or mechanical methods of control; biological control; responsible chemical use; and cultural methods.

Issue: Any unsettled matter that requires a management decision; e.g., a Service initiative, opportunity, resource management problem, 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).

Migration: The seasonal movement from one area to another and back.

Minimum Tool: The minimum action or instrument necessary to successfully, safely and economically accomplish wilderness management objectives.

Mission Statement: A succinct statement of a unit's purpose and reason for being.

Mitigation: Measures designed to counteract environmental impacts or to make impacts less severe.

Monitoring: The process of collecting information to track changes of selected parameters over time.

National Wildlife Refuge (Refuge): A designated area of land or water or an interest in land or water within the System, including national wildlife refuges, wildlife ranges, wildlife management areas, waterfowl production areas, and other areas (except coordination areas) under Service jurisdiction for the protection and conservation of fish and wildlife. A complete listing of all units of the Refuge System may be found in the current "Annual Report of Lands Under Control of the U.S. Fish & Wildlife Service."

National Wildlife Refuge System, Refuge System, or System: Various categories of areas that are administered by the Secretary for the conservation of fish and wildlife, including species that are 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 or waterfowl production areas.

Native Species: Species that normally live and thrive in a particular ecosystem.

Neotropical Migratory Bird or Neotropicals: A bird species that breeds north of the U.S. - Mexican border and winters primarily south of this border.

NEPA: National Environmental Policy Act of 1969

NGPC: Nebraska Game and Parks Commission

No Action Alternative: An alternative under which existing management would be continued.

Non-Priority Public Uses: Any use other than a compatible wildlife-dependent recreational use.

Notice of Availability or NOA: An NOA is a notice that documentation is available to the public on a Federal action, in this case, the Comprehensive Conservation Plan. Published in the Federal Register.

Notice of Intent or NOI: In the case of a Federal action, such as analyzed in this documentation, an NOI is a notice that an environmental impact statement will be prepared and considered (40 CFR 1508.22). Published in the Federal Register.

Noxious Weed: A plant species designated by Federal or State law as generally possessing one or more of the following characteristics: aggressive or difficult to manage; parasitic; a carrier or host of serious insect or disease; or nonnative, new, or not common to the United States, according to the Federal Noxious Weed Act (PL 93-639), a noxious weed is one that causes disease or had adverse effects on man or his environment and, therefore, is detrimental to the agriculture and commerce of the United States and to the public health.

NRCS: National Resource Conservation Service

NWR: National Wildlife Refuge

Objective: A concise statement of what will be achieved, how much will be achieved, when and where it will be achieved, and who is responsible for the work. Objectives are derived from goals and provide the basis for determining management strategies, monitoring refuge accomplishments, and evaluating the success of the strategies. Objectives should be attainable and time-specific and should be stated quantitatively to the extent possible. If objectives cannot be stated quantitatively, they may be stated qualitatively (Draft Service Manual 602 FW 1.5).

Opportunities: Potential solutions to issues.

Planning Area: A planning area may include lands outside existing planning unit boundaries that are being studied for inclusion in the System and/or partnership planning efforts. It may also include watersheds or ecosystems that affect the planning area.

Planning Team: A team or group of persons working together to prepare a document, such as this Comprehensive Conservation Plan. Planning teams are interdisciplinary in membership and function. Teams generally consist of a planning team leader; refuge manager and staff; biologists; staff specialists or other representatives of Service programs, ecosystems or regional offices; and other Federal and State governmental agencies as appropriate.

Planning Unit: A single refuge, an ecologically/administratively related complex of refuges, or distinct unit of a refuge.

Plant Community: An 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 soils, temperature, elevation, solar radiation, slope, aspect, and rainfall; denotes a general kind of climax plant community, i.e., ponderosa pine or bunch grass.

PILT: Payment-in-Lieu-of-Taxes

Prairie Grouse: both sharp-tailed grouse and prairie chickens.

Preferred Alternative: This is the alternative determined (by the decision-maker) to best achieve the Refuge purpose, vision, and goals; contributes to the Refuge System mission, addresses the significant issues; and is consistent with principles of sound fish and wildlife management. The Service's selected alternative at the draft CCP stage.

Prescribed Fire: The skillful application of fire to natural fuels under conditions of weather, fuel moisture, soil moisture, etc., that allows 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 Uses: Compatible wildlife-dependent recreational uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation) are the priority general public uses of the System and shall receive priority consideration in refuge planning and management.

Proposed Action: The Service's proposed action for Comprehensive Conservation Plans is to prepare and implement the CCP.

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: The process by which interested and affected individuals, organizations, agencies, and governmental entities are offered an opportunity to become informed about, to express their opinions and participate in the planning and decision-making process of Service actions and policies. In this process, these views are studied thoroughly and thoughtful consideration of public views is given in shaping decisions for refuge management.

Purposes of the Refuge: The purposes specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, refuge unit, or refuge sub-unit.

ROD or Record of Decision: A concise public record of decision prepared by the Federal agency, pursuant to the National Environmental Policy Act, that contains a statement of the decision, identification of all alternatives considered, identification of the environmentally preferable alternative, a statement as to whether all practical means to avoid or minimize environmental harm from the alternative selected have been adopted (and if not, why they were not adopted), and a summary of monitoring and enforcement where applicable for any mitigation (40 CFR 1505.2).

Refuge: short for Crescent Lake National Wildlife Refuge

Refuge Operating Needs System or RONS: National database containing the unfunded operational needs of each refuge. Projects included are those required to implement approved plans, and meet goals, objectives, and legal mandates.

Refuge Purposes: The purposes specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, a refuge unit, or refuge sub-unit (Draft Service Manual 602 FW 1.5)

Refuge Revenue Share Program or RASP: Provides payments to counties in lieu of taxes using revenues derived from the sale of products from refuges (see Appendix C. Refuge Revenue Sharing Act of 1935, as amended (16 U.S.C. 715s) for more details).

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.

Reserve Acres: Lands that were Public Domain lands when first withdrawn to create the Refuge.

Riparian: Refers to an area or habitat that is transitional from terrestrial to aquatic ecosystems; including streams, lakes, wet areas, and adjacent plant communities and their associated soils which have free water at or near the surface; and 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 any and all plant-life growing on the land adjoining a stream and directly influenced by the stream.

Secretary: short for Secretary of Interior

Service or USFWS: Short for U.S. Fish & Wildlife Service

Special Status Species: Plants or animals which have been identified through either 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; U.S. Fish & Wildlife Service species of management concern and species identified by the Partners in Flight program as being of extreme or moderately high conservation concern.

Species of Management Interest: Those 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.

Strategy: A specific action, tool, or technique or combination of actions, tools, and techniques used to meet refuge objectives.

Step-Down Management Plan: A plan that provides the details necessary to implement strategies identified in the CCP. (Draft Service Manual 602 FW 1.5).

Sound Professional Judgement: A 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.

Strategy: A specific action, tool, or technique or combination of actions, tools, and techniques used to meet unit objectives (Draft Service Manual 602 FW 1.5).

System or Refuge System: National Wildlife Refuge System

Threatened Species (Federal): Species listed under the Endangered Species Act that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.

Threatened Species (State): A plant or animal species likely to become endangered in an individual State within the near future if factors contributing to population decline or habitat degradation or loss continue.

Trust Species: Species for which the U.S. Fish & Wildlife Service has primary responsibility, including, most federally-listed threatened and endangered species, anadromous fishes once they enter inland U.S. waterways, migratory birds, and certain marine mammals.

USFWS or Service: Short for U.S. Fish & Wildlife Service

Vegetation Type or Habitat Type: A land classification system based upon the concept of distinct plant associations.

Vision Statement: A concise statement of the desired future condition of the planning unit, based primarily upon the System mission, specific refuge purposes, and other relevant mandates (Draft Service Manual 602 FW 1.5).

VORS: Visual Observation Readings. A measurement of the density of a plant community; the height of vegetation that blocks the view of predators to a nest.

Wetland: includes lakes, marshes, temporary wetlands, fens, rivers, and creeks but not subirrigated meadows.

Wilderness Area (or Designated Wilderness Area): An area designated by the U.S. Congress to be managed as part of the National Wilderness Preservation System (Draft Service Manual 602 FW 1.5).

Wildfire: A free-burning fire requiring a suppression response; all fire other than prescribed fire that occurs on wildlands (Draft Service Manual 602 FW 1.5).

Wildland: lands characterized by natural vegetation and landscapes where man-made structures and alterations are not evident.

Wildland Fire: Every wildland fire is either a wildfire or a prescribed fire (Draft Service Manual 602 FW 1.5).

Wildlife: Wild animals and vegetation, especially animals living in a natural, undomesticated state.

Wildlife Corridor: A 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 Recreation/Wildlife-Dependent

Recreational Use: A use of a refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation. The National Wildlife Refuge System Improvement Act of 1997 specifies that these are the six priority general public uses of the System.

Appendix B. Literature Cited / References

- Bandy, Mollie. 1980. A Study of Upland Sandpiper Behavior and Habitat Selection in the Sandhills of Nebraska. Univ. Of Nebr., Omaha. Masters thesis. 62 pp.
- Barnes, P.W. 1984 Vegetation patterns in relation to topography and edaphic variation in Nebraska Sandhills Prairie. *Prairie Nat.* 16(4): 145-158.
- Bicak, T.K. 1977. Some Eco-ethological Aspects of a Breeding Population of Long-billed Curlews in Nebraska, *Proc. Nebr. Acad. Sci. Affil. Soc.* 87:7
- Bleed, A. and C. Flowerday, Ed. 1989. An Atlas of the Sandhills, Sec. Edition. Cons. And Survey Div., Insti. Of Agr. And Natural Resources, Univ. Of Nebr.-Lincoln. 265 pp.
- Bue, I.G. 1952. The Relationship of Grazing Practices to Waterfowl Breeding Populations and Production on Stock Ponds in Western South Dakota. *Trns. N. Am. Wildl. Conf.* 17:396-414.
- Burgett, G.R. and R.K. Nickel. 1999. Archeological Overview and Assessment for Lacreek, Fort Niobrara and Valentine National Wildlife Refuges. Midwest Archeological Center, National Park Service. 41pp.
- Christisen, D.M. 1969. National Status and Management of the Greater Prairie Chicken. *Trans. N. Amer. Wildl. and Nat. Resour. Conf.* 34:207-217.
- Clark, J.P. 1977. Effects of Experimental Management Schemes on Production and Nesting Ecology of Ducks at Malheur National Wildlife Refuge. Oregon State University Masters Thesis. 79 pp.
- Duebbert, H.F. 1966 Island Nesting of the Gadwall in North Dakota. *Wilson Bull.* 78:12-25.
- Duebbert, H.F. 1969 High nest density and hatching success of ducks on South Dakota CAP land. *Trans. Of Am. Wildl. Resour. Conf.* 34:218-229
- Duebbert, H.F. 1974 Creating a Sea of Grass. Ducks Unlimited Magazine Mar-Apr 1974.
- Duebbert, H.F. and J.T. Lokemoen. 1976 Duck nesting in fields of undisturbed grass-legume cover. *J. Wildl. Manage.* 40(1) :39-49.
- Farrar, J. 1990. Wildflowers of Nebraska and the Great Plains. NEBRASKALand Magazine, Nebraska G.&P. Commission. 216 pp.
- Fredrickson, L. 2001. Crescent Lake National Wildlife Refuge trip Report, September 19-20.
- Fritz, M., J.S. Stubbendieck, and W. Jobman. 1992. Recovery Plan - Blowout Penstemon. 40 pp.
- Gjersing, F.M. 1975. Wildlife Production in Relation to Rest-Rotation Grazing. *J. Range Manage.* 28(1): 37-42.
- Hopton, J. 1996. Grasshopper Sparrow Habitat Selection in Garden County, Nebraska. Unpublished data. Crescent Lake NWR, Ellsworth, NE.
- Hrabik, R.A. 1989. Fishes in An Atlas of the Sandhills. Resource Atlas No.5. Conservation and Survey Division. University of Nebraska - Lincoln. 265pp.
- Imler, R.H. 1942. Waterfowl Nesting Studies and Experimental Bullsnaek Control, Crescent Lake Refuge, Nebraska and Lacreek Refuge, South Dakota in 1940. Unpublished rept. U.S. Fish & Wildlife Service files. 37 pp.
- Iverson, J. Annual Study Reports. unpublished data. Crescent Lake NWR, Ellsworth, NE.
- Jones, J.K. 1964. Distribution and taxonomy of mammals of Nebraska. Univ. Of Kansas Publ., Museum of Natural History, 16:1-356.
- Jones, R.E. 1963. Identification and Analysis of Lessor and Greater Prairie Chicken Habitat. *J. Wildli. Manage.* 27(4): 257-778.
- Kantrud, H.A. 1982. R. Kologiski 1982. Effects of Soils and Grazing on Breeding Birds of Uncultivated Upland Grasslands of the Northern Great Plains. U.S. Fish and Wildl. Serv. Rep.: 15.ii+33 pp. WR 186.
- Keeler, K.H., A.T. Harrison, and L.S. Vescio. 1980. The flora and sandhills prairie communities of Arapaho Prairie, Arthur County, Nebraska. *Prairie Nat.* 12:65-78.
- Kirsch, L.M. and A.D. Kruse 1973. *Proc. Tall Timbers Fire Ecology Conf.* 12:289-303
- Kirsch, L. M. 1973. Habitat Management Considerations for Prairie Chickens. *Wildl. Soc. Bull.* 2(3): 124-129.
- Kirsch, L.M. 1978. Grazing and Haying Effects on Habitats of Upland Nesting Birds. *Trans. of 43rd No. Am. Wildlife and Natural Resources Conf.* 43:486-497.
- LaGrange, T. 1997. Guide to Nebraska's wetlands and their conservation needs. Nebraska Game and Parks Commission, Lincoln, Nebraska. 34 pp.
- Layton, M.H., C.R. Buzzard, and H.E. Hoy. 1956. A Soil Survey of Cherry County, Nebraska. U.S. Department of Agriculture, Soil Conservation Service. 91 pp.
- Lehman, V.W. 1963. Status of Attwater's Prairie Chicken. *J. Wildl. Manage.* 27(4): 712-725
- McMurtrey, M.S. and Robert Craig. 1969. Job no. K1. USFWS. 16 pp.
- Natural Resource Conservation Service. 1995. Range Site and Condition Survey-Crescent Lake NWR. Unpublished data. Crescent Lake NWR, Ellsworth, NE.

Oosting, J.H. 1948. The study of plant communities. W.H. Freeman and Company. 440 pp.

Panhandle Area Development District. Undated (ca. 1998). Economic Development Report. Gering, NE. 10 pp.

Prairie Grouse Technical Conference. 1998. Unpublished proceedings. Crookston, MN.

Ryder, R.A. 1980. Effects of Grazing on Bird Habitats. U.S. For. Serv. Gen. Tech. Rep: Int-86:51-66.

Schwartz, C.W. 1945. The Ecology of the Prairie Chicken in Missouri. Univ. of Missouri Studies 20(1): 1-99.

Tolstead, W.L. 1942. Vegetation in the Northern Part of Cherry County, Nebraska. Ecol. Monog. 12:255-292.

U.S. Fish & Wildlife Service and Canadian Wildlife Service. 1986. North American Waterfowl Management Plan.

U.S. Fish & Wildlife Service. 1986. Sandhills Wetlands-a Special Investigation. Unpublished document. 20 pp.

U.S. Fish & Wildlife Service. 1982. Refuge Manual, 8RM 9.5 (B)

U.S. Fish & Wildlife Service. An ecosystem approach to fish and wildlife conservation. March 1994

Viehmeier, G. 1941. The Present Status of the Greater Prairie Chicken and Sharp-tailed Grouse in the Sandhills Region of Nebraska. Nebr. Bird Rev. 9(1): 1-7

Wilhite, D.A. and K.G. Hubbard, 1989. Climate. Pages 17-28 in Breed, A. and Flowerday, C., Ed. Sec. Edition. An Atlas of the Sandhills. Cons. and Sur. Div., Insti. Agr. and Nat. Resource. Univ. Nebr.- Lincoln. 265 pp.

Yeatter, R.R. 1963. Population Responses of Prairie Chickens to Land Use Changes in Illinois. J. Wildl. Manage. 27(4) 739-757.

Additional References not Cited in Text

Belrose, F.S. 1980. Ducks, Geese, and Swans of North America. Stackpole books, Harrisburg, PA, 540 pp.

Boydeck, R.K. 1997 Habitat management for sharptail grouse on private lands in Manitoba, Canada. Wildlife Biology, Vol. 3/4.

Bragg, T.B. 1994 (in press). The physical environment of Great Plains Grasslands. From Keeler, K.A., A. Joren (editors), Oxford University Press, New York.

Hoffman, R.W. and G.M. Beauprez. 1997. Reintroduction of greater prairie chickens in north-central Colorado. Wildlife Biology Vol. 3/4

Kuzila, M. 1989. Soil association and series. in An Atlas of the Sandhills. Resource Publication 5. Conservation and Survey Division. University of Nebraska - Lincoln. 265pp.

Miller, S.M. 1990. Land development and use. in An atlas of the Sandhills. Resource Atlas No.5a. Conservation and Survey Division. University of Nebraska - Lincoln 265 pp.

Mitchell, L. and C. Wolfe. 1984. Prairie grouse in Nebraska. NEBRASKALand Magazine, Nebr. Game and Parks Comm. 15 pp.

Natural Resource Conservation Service. 1999. Soil Survey of Garden County Nebraska. 273 pp.

U.S. Fish & Wildlife Service. Valentine National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment. April 1999. 74 pp.

Weaver, J.E. 1961. The living network in prairie soils. The Botanical Gazette 123(1):16-28

Appendix C. Legal and Policy Guidance

Many procedural and substantive requirements of Federal and applicable State and local laws and regulations affect Refuge establishment, management, and development. This appendix identifies the key permits, approvals, and consultations needed to implement the strategies.

In undertaking the proposed action, the Service would comply with the following Federal laws, Executive orders, and legislative acts.

American Indian Religious Freedom Act of 1978: Directs agencies to consult with native traditional religious leaders to determine appropriate policy changes necessary to protect and preserve Native American religious cultural rights and practices.

Americans With Disabilities Act of 1992: Prohibits discrimination in public accommodations and services.

Antiquities Act of 1906: Authorizes the scientific investigation of antiquities on Federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.

Archaeological and Historic Preservation Act of 1974: Directs the preservation of historic and archaeological data in Federal construction projects.

Archaeological Resources Protection Act of 1979, as amended: Protects materials of archaeological interest from unauthorized removal or destruction and requires Federal managers to develop plans and schedules to locate archaeological resources.

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

Bald and Golden Eagle Protection Act of 1940, as amended: Calls for the protection of these raptorial species on and off Federal Lands.

Clean Air Act of 1977, as amended: The primary objective of this Act is to establish Federal standards for various pollutants from both stationary and mobile sources and to provide for the regulation of polluting emissions via state implementation plans. In addition, and of special interest for National Wildlife Refuges, some amendments are designed to prevent significant deterioration in certain areas where air quality exceeds national standards, and to provide for improved air quality in areas which do not meet Federal standards ('non-attainment' areas). Federal facilities are required to comply with air quality standards to the same extent as non-governmental entities (42 U.S.C. 7418). Part C of the 1977 amendments stipulates requirements to prevent significant deterioration of air quality and, in particular, to preserve air quality in national parks, national wilderness areas, national monuments, and national seashores (42 U.S.C. 7470).

Clean Water Act of 1977: Requires consultation with the Corps of Engineers (404 permits) for wetland modifications.

Emergency Wetlands Resources Act of 1986: The purpose of the Act is 'To promote the conservation of migratory waterfowl and to offset or prevent the serious loss of wetlands by the acquisition of wetlands and other essential habitat, and for other purposes.'

Endangered Species Act of 1973, as amended: Requires all Federal agencies to carry out programs for the conservation of endangered and threatened species. An Intra-Service Section 7 consultation was conducted prior to implementation of this CCP (as an appendix). No significant impact is expected from the implementation of this Plan.

Executive Order 11644, Use of Off-Road Vehicles on Public Lands.

Executive Order No. 11593, Protection and Enhancement of the Cultural Environment (1971). If the Service proposes any development activities that would affect the archaeological or historical sites, the Service will consult with Federal and State Historic Preservation Officers to comply with Section 106 of the National Historic Preservation Act of 1966, as amended.

Executive Order No. 11988, Floodplain Management. Each Federal agency shall provide leadership and take action to reduce the risk of flood loss and minimize the impact of floods on human safety, and preserve the natural and beneficial values served by the floodplains. No structures or other barriers that could either be damaged by or significantly influenced the movement of flood waters are planned for construction by the Service in the project area. This Plan supports the preservation and enhancement of the natural and beneficial values of floodplains.

Executive Order No. 11990, Protection of Wetlands. The proposal will help conserve the natural and beneficial values of the wetland habitat. The Service will undertake no activity that would be detrimental to the continuance of the vital wetlands.

Executive Order 13084, Consultation and Coordination with Indian Tribal Governments.

Executive Order No. 12372, Intergovernmental Review of Federal Programs. The State of Nebraska and counties encompassing the Refuge were sent copies of the Draft Comprehensive Conservation Plan and Environmental Assessment for distribution to State and County agencies and departments. Coordination and consultation is ongoing with local and State governments, Tribes, Congressional representatives, and other Federal agencies.

Executive Order No. 12898, Environmental Justice in Minority Populations and Low-income Populations. This environmental justice analysis concluded that the socio-economic, cultural, physical, and biological effects of the preferred alternative (the CCP) does not predict any outcomes that would cause disproportionately high and adverse human health impacts in any population, nor would they result in disproportionately high or adverse impact to low-income or minority populations, nor would create a greater burden on low-income households.

Executive Order 12996 Management and General Public Use of the National Wildlife Refuge System (1996): Defines the mission, purpose, and priority public uses of the National Wildlife Refuge System. It also presents four principles to guide management of the System. Through the development of this Comprehensive Conservation Plan, the Service has completed compatibility determinations for existing wildlife-dependent recreational activities that will be allowed to continue.

Executive Order 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 of 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.

Fish and Wildlife Act of 1956: Established a comprehensive national fish and wildlife policy and broadened the authority for acquisition and development of refuges.

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

Land and Water Conservation Fund Act of 1965: Uses the receipts from the sale of surplus Federal land, outer continental shelf oil and gas sales, and other sources for land acquisition under several authorities.

Migratory Bird Conservation Act of 1929: Establishes procedures for acquisition by purchase, rental, or gift of areas approved by the Migratory Bird Conservation Commission.

Migratory Bird Hunting and Conservation Stamp Act (1934): Authorized the opening of part of a refuge to waterfowl hunting.

Migratory Bird Treaty Act of 1918: Designates the protection of migratory birds as a Federal responsibility. This Act enables the setting of seasons, and other regulations including the closing of areas, Federal or non-Federal, to the hunting of migratory birds.

National Environmental Policy Act of 1969 (40 CFR 1500): Requires all Federal agencies to examine the impacts upon the environment that their actions might have, to incorporate the best available environmental information, and the use of public participation in the planning and implementation of all actions. All Federal agencies must integrate NEPA with other planning requirements, and prepare appropriate NEPA documentation to facilitate sound environmental decision-making. NEPA requires the disclosure of the environmental impacts of any major Federal action that affects in a significant way the quality of the human environment. The process, from its inception, to prepare this Plan complied with all of NEPA requirements.

National Historic Preservation Act of 1966, as amended: Establishes as policy that the Federal Government is to provide leadership in the preservation of the nation's prehistoric and historic resources. The State of Nebraska's State Historic Preservation Officer will be consulted prior to removal of the present bunkhouse to be replaced with a new building. This house was constructed by the CCC in the 1930s to serve as the manager's residence and office.

National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. 668dd-668ee. (Refuge Administration Act): Defines the National Wildlife Refuge System and authorizes the Secretary to permit any use of a refuge provided such use is compatible with the major purposes for which the refuge was established. The Refuge Improvement Act clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation and photography, or environmental education and interpretation); establishes a formal process for determining compatibility; established the responsibilities of the Secretary of Interior for managing and protecting the System; and requires the preparation and implementation of 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. This Plan is in compliance with the National Wildlife Refuge System Act of 1966, as amended.

Native American Graves Protection and Repatriation Act of 1990: Requires Federal agencies and museums to inventory, determine ownership of, and repatriate cultural items under their control or possession. No known Native American cultural items are known to exist or are in possession of the Refuge.

Refuge Recreation Act of 1962, as amended: Allows the use of refuges for recreation when such uses are compatible with the refuge's primary purposes and when sufficient funds are available to manage the uses. This Plan is in compliance with the Refuge Recreation Act.

Refuge Revenue Sharing Act of 1935, as amended (16 U.S.C. 715s): provides for payments to counties in lieu of taxes, using revenues derived from the sale of products from refuges. Public Law 88-523 (1964) revised this Act and required 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. Payments to counties were established as: 1) on acquired land, the greatest amount calculated on the basis of 75 cents per acre, three-fourths of one percent of the appraised value, or 25 percent of the net receipts produced from the land; and 2) on land withdrawn from the public domain, 25 percent of net receipts and basic payments under Public Law 94-565 (31 U.S.C. 1601-1607, 90 Stat. 2662), payment in lieu of taxes on public lands. The current and proposed management of this Refuge under this Plan is in compliance with this Act.

Rehabilitation Act of 1973: Requires programmatic accessibility in addition to physical accessibility for all facilities and programs funded by the Federal government to ensure that anybody can participate in any program.

Secretarial Order 3127 (602 DM 2) Contaminants and Hazardous Waste Determination. No contaminants or hazardous waste are known to exist on the Refuge and none will be created.

Volunteer and Community Partnership Enhancement Act (1998): The purposes of this Act are to encourage the use of volunteers to assist in the management of refuges within the Refuge System; to facilitate partnerships between the Refuge System and non-Federal entities to promote public awareness of the resources of the Refuge System and public participation in the conservation of the resources and; to encourage donations and other contributions.

Wilderness Act of 1964 (Public Law 88-577 [16 U.S. C. 1131-1136]): defines wilderness as follows: “A wilderness, in contrast with those areas where man and his 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. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.”

Appendix D. Operation and Maintenance Needs

The Refuge Operation Needs System (RONS) is a comprehensive, Service-wide database containing the unfunded operational needs of each refuge. The following list of projects for the Crescent Lake NWR, in priority order, are those required to implement approved plans, and meet goals, objectives, and legal mandates. More specific information about each project can be found in the database on file at the Refuge headquarters.

Refuge Operation Needs System (RONS) Projects			
Project	Links to CCP Goal	FTE Cost (2000 dollars)	Other Cost (2000 dollars)
Biologist - Complex*	1-10, 15	\$58,000	\$75,000
Assistant Refuge Manager	1-15	48,000	75,000
Maintenance Position	1-15	43,000	75,000
Public Use Specialist	11, 12, 14	58,000	80,000
Blowout Penstemon Habitat	1-4, 7, 8, 15	16,000	66,000
Noxious Weed Control	1-8, 10		50,000
Wilderness Area Restoration	1-4, 8, 11, 13, 14	17,000	155,000
Office/Visitor Center Expansion	11, 14		85,000
Seasonal Firefighters	1-10, 12-15	177,000	84,000
Grassland Study	1-10	20,000	34,000
Bison Reintroduction **	1-8, 10, 11, 14	39,000	241,000
Law Enforcement Officer	1-15	52,000	75,000
Habitat Mgt - Wet Meadows	4, 5, 8, 10	16,000	51,000
Habitat Mgt - Wetlands	4, 9, 11	43,000	77,000
Carp Control	4, 9, 14, 15	16,000	500,000
Archaeological Inventory	12, 14		255,000
TOTALS		\$603,000	\$1,978,000

* Complex denotes project or MMS need is shared with North Platte NWR

** Only after Objective to reintroduce bison is accepted and conditions met as outlined in the Fish and Wildlife Section under the "reintroduce bison" objective

The Maintenance Management System (MMS) documents, Service-wide, facility and equipment deficiencies, justifies budget requests for maintenance needs, and provides a basis for management decision-making. The Crescent Lake NWR maintenance backlog is \$3,339,000. The following MMS projects for the Refuge are listed in priority order. MMS projects not related to this document are not shown here. More specific information about each maintenance need can be found in the database on file at the Refuge headquarters.

Priority MMS Needs and Costs (2000 dollars)		
Project	Links to CCP Goal	Cost
Replace Residences & Office Roofs (7 total)	13	\$77,000
Replace Phone Lines (System)	13, 14	115,000
Replace Two Information Kiosks	11, 14	40,000
Repair Windmills, Tanks, Wells	1, 4-7, 10, 13	440,000
Repair Water Supply Ditch (14 miles)	4, 9, 11, 14	140,000
Repair Public Use Gravel Roads (5.4 miles)	11, 13-15	27,000
Replace East Storage Building	13	235,000
Repair Water Control Structures (8)	1, 4, 9, 13, 15	80,000

Appendix E. Compatibility Determinations

Station Name: Crescent Lake National Wildlife Refuge

Date Established: 1931

Establishing and Acquisition Authorities: Executive Order No. 5579 of March 16, 1931

Purposes for which Refuge was established:

“... reserved and set apart ... as a refuge and breeding ground for birds and wild animals.”

“... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds” 16 USC § 715D (Migratory Bird Conservation Act).

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

Description of Proposed Use: Wildlife Observation, Wildlife Photography, Interpretation, and Environmental Education

Public use of the Refuge is limited by poor access. Wildlife observation and photography are very small portions of the total use; however, this low visitation results in one of the prime features about the Refuge the public comments on most consistently, the peace and quiet, and the solitude that can be found here.

Interpretation and education are also limited by poor access. There are particular groups that visit the Refuge year-after-year, but their numbers are not great. It is a major undertaking for a class to visit the Refuge.

The CCP proposes to continue the above uses and improve interpretation through the following actions:

- Establish one or two interpretative walking trails.
- Construct pullouts on the current auto tour route to provide a safer locations from which to view the Refuge. Relocating the current auto tour route from the County road to a secondary Refuge road would be desirable but not affordable at this time.

Availability of Resources

Sufficient resources are available to continue present programs. The walking trails would require some additional funding. The auto tour route change would be dependent upon providing a road that is capable of supporting all classes of vehicles in fair weather. Therefore, adding pullouts seems to be the best approach at this time.

Anticipated Impacts of the Use

Some areas of the Refuge will receive slightly higher use. It is not anticipated that this will adversely impact wildlife in any significant way.

Justification

Based on biological impacts described in the CCP and the Environmental Assessment, it is determined that wildlife observation, wildlife photography, interpretation, and environmental education within the Refuge will not materially interfere with or detract from the purposes for which the Refuge was established. Indeed, such activities are directly supportive of the Refuge purpose and provide opportunities to inform Refuge visitors about wildlife conservation and management and the National Wildlife Refuge System.

Determination

Wildlife observation, wildlife photography, interpretation, and environmental education **are compatible**.

Stipulations Necessary to Ensure Compatibility:

- ✓ The closed area where no public use at all is permitted will remain. This area provides almost complete freedom from disturbance for the most secretive of animals.
- ✓ Temporary closures and/or restrictions about exiting vehicles are tools that can be applied should such forms of public use prove detrimental to a particular species.

Description of Proposed Use: Fishing

Fishing is allowed in Island, Smith, and Crane Lakes. Island is open year-round, Smith and Crane Lakes are open only during the winter months. Use of boats is limited to Island Lake and gas powered motors are prohibited. Fishing is the most popular recreational activity on the Refuge, and occurs undiminished through most winters when ice cover permits.

The CCP proposes to continue the present uses but places an upper limit of 100 anglers per day on any body of water.

Availability of Resources

Sufficient resources are available to continue the existing fishing program. Crane Lake already has fish and will only require signs, parking access, and minor law enforcement activity. Limiting public use will probably not be necessary for many years. Use of options like reducing bag limits or catch-and-release regulations are tools that can be employed to limit use that would not require excessive staff effort as would more drastic measures like reservation systems.

Anticipated Impacts of the Use

Some wildlife disturbance is created by fishing activity. Disturbance during the summer is limited to Island Lake and mitigated by boat restrictions. Smith and Crane Lakes fishing causes almost no wildlife impacts since nearly all water-dependent wildlife migrates from the Refuge in the winter.

Justification

Based on the biological impacts described in the CCP and Environmental Assessment it is determined that recreational fishing within the Refuge will not materially interfere with or detract from the purposes for which the Refuge was established. Further, fishing has been identified as a priority public use in the National Wildlife Refuge System Improvement Act of 1997 when this activity is compatible with the Refuge purpose. However, should Smith or Crane Lakes winter-kill, an evaluation will be done by Refuge staff prior to any restocking of fish.

Determination

Recreational fishing as described **is compatible**.

Stipulations Necessary to Ensure Compatibility

- ✓ Crane and Smith Lakes open only in winter months.
- ✓ Motor and boat restrictions.
- ✓ Limit total anglers to 100 per day on any one body of water.

Description of Proposed Use: Hunting

At present, hunting is allowed on the Refuge for deer and upland birds. Hunting is second in popularity only to fishing. The opening of deer season is the highest public use day on the Refuge. The CCP proposes to continue the present uses and add waterfowl hunting at one lake.

The plan also proposes to limit peak hunter numbers to not more than 150 hunters per day.

Availability of Resources

Resources are currently available for the present hunting program. To add one new use will only require a change in the brochures and a limited amount of additional law enforcement since the season will be concurrent with existing seasons.

Anticipated Impacts of the Use

Hunting removes individual animals from the population and causes some wildlife disturbance. This disturbance is limited to fall and winter months when most wildlife have completed critical life processes and are migrating or absent from the Refuge. State and Federal game harvest regulations are in effect to assure perpetual populations of game animals and to also prevent populations from reaching unreasonable numbers resulting in die-offs or nuisance problems.

Justification

Based on biological impacts described in the CCP and Environmental Assessment it is determined that recreational hunting within the Refuge will not materially interfere with or detract from the purposes for which the Refuge was established. Further, hunting has been identified as a priority public use in the National Wildlife Refuge System Improvement Act of 1997 when this activity is compatible with the Refuge purpose.

Determination

Hunting as described **is compatible**.

Stipulations Necessary to Ensure Compatibility

- ✓ The present closed area to remain in effect to provide wildlife viewing opportunity even during open seasons.
- ✓ Limit peak numbers of hunters to a maximum of 150 on any given day. Reaching this limit is probably well into the future, but it will ensure that the basic quality of solitude will not be severely compromised.

Description of Proposed Use: Economic Management Tools (Grazing and Haying)

Current management activities that employ tools with an economic impact will be continued. Because of the annual bidding process as currently in practice, the refuge manager has complete control of these tools to use in a manner most effective for habitat improvement.

There are no changes in the current uses of these tools proposed in the CCP, other than replacing livestock with bison in the proposed wilderness unit.

Anticipated Impacts of the Use

Grazing and haying are used exclusively for the maintenance or improvement of habitat. The refuge manager has the flexibility to use these tools only as necessary, therefore, all impacts of these uses should be beneficial.

Replacement of livestock with bison will have impacts upon the grassland habitat in the proposed Wilderness Area. The CCP and Environmental Assessment discuss these impacts. It is anticipated that these impacts can be minimized through management and that the aesthetic and scientific benefits of such a natural situation will outweigh any slight habitat degradation.

Justification

Upland habitat would deteriorate without the use of a full range of management tools. Grasslands have evolved with fire and grazing which maintain the vigor of the habitat. Those wildlife species dependent upon grassland types not provided on commercially used rangeland find less and less habitat available, and maintenance of habitat quality on the Refuge is imperative.

Determination

Grazing and haying **are compatible**.

Stipulations Necessary to Ensure Compatibility

- ✓ General and specific conditions are required for each permit to ensure consistency with management objectives.

Signatures:

_____ Date _____
Project Leader

Concurrence:

_____ Date _____
Refuge Supervisor

_____ Date _____
Regional Chief
National Wildlife Refuge System

Appendix F. Crescent Lake National Wildlife Refuge Species Lists

Birds

Names are in accordance with the American Ornithological Union check list. Birds known to nest on the refuge are marked with a closed dot (!). Those suspected to nest at least occasionally, but needing further confirmation, are marked with an open dot ("").

Loons

Common Loon *Gavia immer*

Grebes

! Pied-billed Grebe *Podilymbus podiceps*
 Horned Grebe *Podiceps auritus*
 ! Eared Grebe *Podiceps nigricollis*
 ! Western Grebe *Aechmophorus occidentalis*
 Clark's Grebe *Aechmophorus clarkii*

Pelicans

American White Pelican *Pelecanus erythrorhynchos*

Cormorants

! Double-crested Cormorant *Phalacrocorax auritus*

Bitterns, Herons, and Eagles

! American Bittern *Botaurus lentiginosus*
 Least Bittern *Ixobrychus exilis*
 ! Great Blue Heron *Ardea herodias*
 Great Egret *Ardea alba*
 Snowy Egret *Egretta thula*
 Little Blue Heron *Egretta caerulea*
 Cattle Egret *Bubulcus ibis*
 Green Heron *Butorides virescens*
 ! Black-crowned Night-Heron *Nycticorax nycticorax*
 Yellow-crowned Night-Heron *Nycticorax violaceus*

Ibis, Stork

White-faced Ibis *Plegadis chihi*

New World Vultures

! Turkey Vulture *Cathartes aura*

Swans, Geese and Ducks

! Trumpeter Swan *Cygnus buccinator*
 Tundra Swan *Cygnus columbianus*
 Greater White-fronted Goose *Anser albifrons*
 Snow Goose *Chen caerulescens*
 Ross' Goose *Chen rossii*
 Brant *Branta leucopsis*
 ! Canada Goose *Branta canadensis*
 " Wood Duck *Aix sponsa*
 ! Gadwall *Anas strepera*
 ! American Wigeon *Anas americana*
 American Black Duck *Anas rubripes*
 ! Mallard *Anas platyrhynchos*
 ! Blue-winged Teal *Anas discors*
 ! Cinnamon Teal *Anas cyanoptera*
 ! Northern Shoveler *Anas clypeata*

! Northern Pintail *Anas acuta*
 ! Green-winged Teal *Anas crecca*
 ! Canvasback *Aythya valisineria*
 ! Redhead *Aythya americana*
 Ring-necked Duck *Aythya collaris*
 Greater Scaup *Aythya marila*
 ! Lesser Scaup *Aythya affinis*
 Long-tailed Duck *Clangula hyemalis*
 Surf Scoter *Melanitta perspicillata*
 White-winged Scoter *Melanitta fusca*
 Bufflehead *Bucephala albeola*
 Common Goldeneye *Bucephala clangula*
 Barrow's Goldeneye *Bucephala islandica*
 Hooded Merganser *Lophodytes cucullatus*
 Common Merganser *Mergus merganser*
 Red-breasted Merganser *Mergus serrator*
 ! Ruddy Duck *Oxyura jamaicensis*

Osprey, Kites, Hawks, and Eagles

Osprey *Pandion haliaetus*
 ! Bald Eagle *Haliaeetus leucocephalus*
 ! Northern Harrier *Circus cyaneus*
 Sharp-shinned Hawk *Accipiter striatus*
 Cooper's Hawk *Accipiter cooperii*
 Northern Goshawk *Accipiter gentilis*
 Red-shouldered Hawk *Buteo lineatus*
 Broad-winged Hawk *Buteo platypterus*
 ! Swainson's Hawk *Buteo swainsoni*
 ! Red-tailed Hawk *Buteo jamaicensis*
 " Ferruginous Hawk *Buteo regalis*
 Rough-legged Hawk *Buteo lagopus*
 Golden Eagle *Aquila chrysaetos*

Falcons and Caracaras

! American Kestrel *Falco sparverius*
 Merlin *Falco columbarius*
 Gryfalcon *Falco rusticolus*
 Peregrine Falcon *Falco peregrinus*
 Prairie Falcon *Falco mexicanus*

Gallinaceous Birds

Gray Partridge *Perdix perdix*
 ! Ring-necked Pheasant *Phasianus colchicus*
 ! Sharp-tailed Grouse *Tympanuchus phasianellus*
 Greater Prairie-Chicken *Tympanuchus cupido*
 Northern Bobwhite *Colinus virginianus*

Rails

Black Rail *Laterallus jamaicensis*
 ! Virginia Rail *Rallus limicola*
 ! Sora *Porzana carolina*
 ! American Coot *Fulica americana*

Cranes

Sandhill Crane *Grus canadensis*

Plovers

Black-bellied Plover *Pluvialis squatarola*
 American Golden Plover *Pluvialis dominica*
 Semipalmated Plover *Charadrius semipalmatus*
 Piping Plover *Charadrius melodus*
 ! Killdeer *Charadrius vociferus*

Stilts and Avocets

!	American Avocet	<i>Recurvirostra americana</i>
!	Black-necked Stilt	<i>Himantopus mexicanus</i>

Sandpipers and Phalaropes

	Greater Yellowlegs	<i>Tringa melanoleuca</i>
	Lesser Yellowlegs	<i>Tringa flavipes</i>
	Solitary Sandpiper	<i>Tringa solitaria</i>
!	Willet	<i>Catoptrophorus semipalmatus</i>
"	Spotted Sandpiper	<i>Actitis macularia</i>
"	Upland Sandpiper	<i>Bartramia longicauda</i>
	Whimbrel	<i>Numenius phaeopus</i>
	Long-billed Curlew	<i>Numenius americanus</i>
	Hudsonian Godwit	<i>Limosa haemastica</i>
	Marbled Godwit	<i>Limosa fedoa</i>
	Red Knot	<i>Calidris canutus</i>
	Sanderling	<i>Calidris alba</i>
	Semipalmated Sandpiper	<i>Calidris pusilla</i>
	Western Sandpiper	<i>Calidris mauri</i>
	Least Sandpiper	<i>Calidris minutilla</i>
	White-rumped Sandpiper	<i>Calidris fuscicollis</i>
	Baird's Sandpiper	<i>Calidris bairdii</i>
	Pectoral Sandpiper	<i>Calidris melanotos</i>
	Dunlin	<i>Calidris alpina</i>
	Stilt Sandpiper	<i>Calidris himantopus</i>
	Short-billed Dowitcher	<i>Limnodromus griseus</i>
	Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>
!	Common Snipe	<i>Gallinago gallinago</i>
!	Wilson's Phalarope	<i>Phalaropus tricolor</i>
	Red-necked Phalarope	<i>Phalaropus lobatus</i>

Skuas, Jaegers, Gulls, and Terns

	Franklin's Gull	<i>Larus pipixcan</i>
	Bonaparte's Gull	<i>Larus philadelphia</i>
	Ring-billed Gull	<i>Larus delawarensis</i>
	California Gull	<i>Larus californicus</i>
	Herring Gull	<i>Larus argentatus</i>
	Glaucous Gull	<i>Larus hyperboreus</i>
	Sabine's Gull	<i>Xema sabini</i>
	Caspian Tern	<i>Sterna caspia</i>
	Common Tern	<i>Sterna hirundo</i>
!	Forster's Tern	<i>Sterna forsteri</i>
	Least Tern	<i>Sterna antillarum</i>
!	Black Tern	<i>Chlidonias niger</i>

Pigeons and Doves

	Rock Dove	<i>Columbia livia</i>
!	Mourning Dove	<i>Zenaida macroura</i>

Cuckoos and Anis

"	Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>
!	Yellow-billed Cuckoo	<i>Coccyzus americanus</i>

Barn Owls

!	Barn Owl	<i>Tyto alba</i>
---	----------	------------------

Typical Owls

!	Eastern Screech Owl	<i>Otus asio</i>
!	Great Horned Owl	<i>Bubo virginianus</i>
	Snowy Owl	<i>Nyctea scandiaca</i>
!	Burrowing Owl	<i>Athene cunicularia</i>
	Long-eared Owl	<i>Asio otus</i>
!	Short-eared Owl	<i>Asio flammeus</i>
	Northern Saw-whet Owl	<i>Aegolius acadicus</i>

Nightjars

!	Common Nighthawk	<i>Chordeiles minor</i>
	Common Poorwill	<i>Phalaenoptilus nuttallii</i>

Swifts

	Chimney Swift	<i>Chaetura pelagica</i>
--	---------------	--------------------------

Hummingbirds

	Hummingbird	<i>Archilochus spc</i>
--	-------------	------------------------

Kingfisher

	Belted Kingfisher	<i>Ceryle alcyon</i>
--	-------------------	----------------------

Woodpeckers

!	Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>
	Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>
!	Downy Woodpecker	<i>Picoides pubescens</i>
	Hairy Woodpecker	<i>Picoides villosus</i>
!	Northern Flicker	<i>Colaptes auratus</i>

Tyrant Flycatchers

	Olive-sided Flycatcher	<i>Contopus borealis</i>
"	Western Wood-Pewee	<i>Contopus sordidulus</i>
	Eastern Wood-pewee	<i>Contopus virens</i>
	Willow Flycatcher	<i>Empidonax traillii</i>
	Least Flycatcher	<i>Empidonax minimus</i>
	Eastern Phoebe	<i>Sayornis phoebe</i>
"	Say's Phoebe	<i>Sayornis saya</i>
	Great Crested Flycatcher	<i>Myiarchus crinitus</i>
	Cassin's Kingbird	<i>Tyrannus vociferans</i>
!	Western Kingbird	<i>Tyrannus verticalis</i>
!	Eastern Kingbird	<i>Tyrannus tyrannus</i>

Shrikes

	Loggerhead Shrike	<i>Lanius ludovicianus</i>
	Northern Shrike	<i>Lanius excubitor</i>

Vireos

!	Bell's Vireo	<i>Vireo bellii</i>
	Solitary Vireo	<i>Vireo solitarius</i>
!	Warbling Vireo	<i>Vireo gilvus</i>
	Philadelphia Verio	<i>Vireo Philadelphicus</i>
	Red-eyed Vireo	<i>Vireo olivaceus</i>

Crows, Jays and Magpies

	Gray Jay	<i>Perisoreus canadensis</i>
!	Blue Jay	<i>Cyanocitta cristata</i>
	Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>
	Black-billed Magpie	<i>Pica pica</i>
	American Crow	<i>Corvus brachyrhynchus</i>

Lark

!	Horned Lark	<i>Eremophila alpestris</i>
---	-------------	-----------------------------

Swallows

	Purple Martin	<i>Progne subis</i>
!	Tree Swallow	<i>Tachycineta bicolor</i>
	Violet-green Swallow	<i>Tachycineta thalassina</i>
"	Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>
	Bank Swallow	<i>Riparia riparia</i>
!	Cliff Swallow	<i>Petrochelidon pyrrhonota</i>
!	Barn Swallow	<i>Hirundo rustica</i>

Titmice and Chickadees! Black-capped Chickadee *Poecile atricapillus***Nuthatches**Red-breasted Nuthatch *Sitta canadensis*White-breasted Nuthatch *Sitta carolinensis***Creepers**Brown Creeper *Certhia americana***Wrens**Rock Wren *Salpinctes obsoletus*! House Wren *Troglodytes aedon*! Marsh Wren *Cistothorus palustris***Kinglets**Golden-crowned Kinglet *Regulus satrapa*Ruby-crowned Kinglet *Regulus calendula***Thrushes**Eastern Bluebird *Sialia sialis*Mountain Bluebird *Sialia currucoides*Townsend's Solitaire *Myadestes townsendi*Veery *Catharus fuscescens*Gray-cheeked Thrush *Catharus minimus*Swainson's Thrush *Catharus ustulatus*Hermit Thrush *Catharus guttatus*Wood Thrush *Hyllocichla mustelina*! American Robin *Turdus migratorius*Varied Thrush *Ixoreus naevius***Mimic Thrushes**Gray Catbird *Dumetella carolinensis*Northern Mockingbird *Mimus polyglottos*Sage Thrasher *Oreoscoptes montanus*! Brown Thrasher *Toxostoma rufum***Starlings**European Starling *Sturnus vulgaris***Wagtails and Pipits**American (Water) Pipit *Anthus rubescens***Waxwings**Bohemian Waxwing *Bombycilla garrulus*Cedar Waxwing *Bombycilla cedrorum***Wood Warblers**Tennessee Warbler *Vermivora peregrina*Orange-crowned Warbler *Vermivora celata*! Yellow Warbler *Dendroica petechia*Magnolia Warbler *Dendroica magnolia*Black-throated Blue Warbler *Dendroica caerulescens*Yellow-rumped Warbler *Dendroica coronata*Townsend's Warbler *Dendroica townsendi*Black-throated Green Warbler *Dendroica Verens*Blackburnian Warbler *Dendroica fusca*Bay-breasted Warbler *Dendroica castanea*Blackpoll Warbler *Dendroica striata*Black-and-white Warbler *Mniotilta varia*American Redstart *Setophaga ruticilla*Worm-eating Warbler *Helmitheros vermivorus*Ovenbird *Seiurus aurocapillus*Northern Waterthrush *Seiurus aurocapillus*

MacGillivray's Warbler

! Common Yellowthroat

Wilson's Warbler

Yellow-breasted Chat

*Oporornis tolmiei**Geothlypis trichas**Wilsonia pusilla**Icteria virens***Tanagers**

Scarlet Tanager

Western Tanager

*Piranga olivacea**Piranga ludoviciana***Sparrows and Towhees**

Green-tailed Towhee

Western Towhee

Cassin's Sparrow

American Tree Sparrow

Chipping Sparrow

Clay-colored Sparrow

Brewer's Sparrow

Field Sparrow

! Vesper Sparrow

! Lark Sparrow

! Lark Bunting

" Savannah Sparrow

Baird's Sparrow

! Grasshopper Sparrow

Fox Sparrow

Song Sparrow

Lincoln's Sparrow

Swamp Sparrow

White-throated Sparrow

Harris' Sparrow

White-crowned Sparrow

Dark-eyed Junco

McCown's Longspur

Lapland Longspur

Chestnut-collared Longspur

Snow Bunting

*Pipilo chlorurus**Pipilo erythrophthalmus**Aimophila cassinii**Spizella arborea**Spizella passerina**Spizella pallida**Spizella breweri**Spizella pusilla**Poocetes gramineus**Chondestes grammacus**Calamospiza melanocorys**Passerculus sandwichensis**Ammodramus bardii**Ammodramus savannarum**Passerella iliaca**Melospiza melodia**Melospiza lincolni**Melospiza georgiana**Zonotrichia albicollis**Zonotrichia querula**Zonotrichia leucophrys**Junco hyemalis**Calcarius mccownii**Calcarius lapponicus**Calcarius ornatus**Plectrophenax nivalis***Cardinals, Grosbeaks, and Allies**

Northern Cardinal

Rose-breasted Grosbeak

Black-headed Grosbeak

! Blue Grosbeak

Lazuli Bunting

Indigo Bunting

! Dickcissel

*Cardinalis cardinalis**Pheucticus ludovicianus**Pheucticus melanocephalus**Guiraca caerulea**Passerina amoena**Passerina cyanea**Spiza americana***Blackbirds and Orioles**

! Bobolink

! Red-winged Blackbird

! Eastern Meadowlark

! Western Meadowlark

! Yellow-headed Blackbird

*Dolichonyx oryzivorus**Agelaius phoeniceus**Sturnella magna**Sturnella neglecta**Xanthocephalus xanthocephalus**Euphagus carolinus**Euphagus cyanocephalus*! Common Grackle *Quiscalus quiscula*! Brown-headed Cowbird *Molothrus ater*! Orchard Oriole *Icterus spurius*! Baltimore Oriole *Icterus galbula*! Bullock's oriole *Icterus galbula*

Finches

Purple Finch	<i>Carpodacus purpureus</i>
House Finch	<i>Carpodacus mexicanus</i>
Cassin's Finch	<i>Carpodacus cassinii</i>
Red Crossbill	<i>Loxia curvirostra</i>
Common Redpoll	<i>Carduelis flammea</i>
Pine Siskin	<i>Carduelis pinus</i>
! American Goldfinch	<i>Carduelis tristis</i>
Evening Grosbeak	<i>Coccothraustes vespertinus</i>

Old World Sparrows

! House Sparrow	<i>Passer domesticus</i>
-----------------	--------------------------

Mammals**Shrews**

Masked Shrew	<i>Sorex cinereus</i>
--------------	-----------------------

Moles

Eastern Mole	<i>Scalopus aquaticus</i>
--------------	---------------------------

Bats

Big Brown Bat	<i>Eptesicus fuscus</i>
---------------	-------------------------

Hares and Rabbits

Eastern Cottontail	<i>Sylvilagus floridanus</i>
Black-tailed Jackrabbit	<i>Lepus californicus</i>
White-tailed Jackrabbit	<i>Lepus townsendii</i>

Ground Squirrels

Thirteen-lined Ground Squirrel	<i>Spermophilus tridecemlineatus</i>
--------------------------------	--------------------------------------

Pocket Gophers

Plains Pocket Gopher	<i>Geomys bursarius</i>
----------------------	-------------------------

Mice and Rats

Plains Pocket Mouse	<i>Perognathus flavescens</i>
Silky Pocket Mouse	<i>Perognathus flavus</i>
Ord's Kangaroo Rat	<i>Dipodomys ordii</i>
Western Harvest Mouse	<i>Reithrodontomys megalotis</i>
Plains Harvest Mouse	<i>Reithrodontomys montanus</i>
White-footed Mouse	<i>Peromyscus leucopus</i>
Deer Mouse	<i>Peromyscus maniculatus</i>
Northern Grasshopper Mouse	<i>Onychomys leucogaster</i>
Bushytail Woodrat	<i>Neotoma cinerea</i>
Meadow Jumping Mouse	<i>Zapus hudsonius</i>

Voles

Prairie Vole	<i>Microtus ochrogaster</i>
Meadow Vole	<i>Microtus pennsylvanicus</i>

Muskrat

Common Muskrat	<i>Ondatra zibethicus</i>
----------------	---------------------------

Porcupine

Common Porcupine	<i>Erethizon dorsatum</i>
------------------	---------------------------

Coyote and Fox

Coyote	<i>Canis latrans</i>
Swift Fox	<i>Vulpes velox</i>
Red Fox	<i>Vulpes fulva</i>

Raccoon

Common Raccoon	<i>Procyon lotor</i>
----------------	----------------------

Weasel and Mink

Long-tailed Weasel	<i>Mustela frenata</i>
Least Weasel	<i>Mustela nivalis</i>
Mink	<i>Mustela vison</i>

Badger

American Badger	<i>Taxidea taxus</i>
-----------------	----------------------

Skunks

Striped Skunk	<i>Mephitis mephitis</i>
Spotted Skunk	<i>Spilogale putorius</i>

Deer and Antelope

Mule Deer	<i>Odocoileus hemionus</i>
White-tailed Deer	<i>Odocoileus virginianus</i>
Pronghorn	<i>Antilocapra americana</i>

Extirpated

Black-footed Ferret	<i>Mustela nigripes</i>
Blacktail Prairie Dog	<i>Cynomys ludovicianus</i>
Elk	<i>Cervus canadensis</i>
Bison	<i>Bison bison</i>
Plains Grizzly Bear	<i>Ursus horribilis</i>
Plains Wolf	<i>Canis lupus</i>

Amphibians and Reptiles**Salamander**

Tiger Salamander	<i>Ambystoma tigrinum</i>
------------------	---------------------------

Frogs and Toads

Woodhouse's Toad	<i>Bufo woodhousii</i>
Plains Spadefoot	<i>Spea bombifrons</i>
Western Chorus Frog	<i>Pseudacris triseriata</i>
Bullfrog	<i>Rana catesbeiana</i>
Northern Leopard Frog	<i>Rana pipiens</i>

Turtles

Common Snapping Turtle	<i>Chelydra serpentina</i>
Painted Turtle	<i>Chrysemys picta</i>
Yellow Mud Turtle	<i>Kinosternon flavescens</i>
Ornate Box Turtle	<i>Terrapene ornata</i>

Lizards and Skinks

Prairie Racerunner	<i>Cnemidophorus sexlineatus</i>
Lesser Earless Lizard	<i>Holbrookia maculata</i>
Many-lined Skink	<i>Eumeces multivirgatus</i>
Northern Prairie Lizard	<i>Sceloporus undulatus</i>

Snakes

Eastern Yellow-bellied Racer	<i>Coluber constrictor</i>
Plains Hognose Snake	<i>Heterodon platyrinos</i>
Bullsnake	<i>Pituophis catenifer</i>
Plains Garter Snake	<i>Thamnophis radix</i>
Red-sided Garter Snake	<i>Thamnophis sirtalis</i>

LIST OF HERBARIUM SPECIMENS
annotated and corrected by Steven B. Rolfsmeier, 2 October 1992
Note: This is not a complete list of flora at Crescent Lake NWR.

DIVISION CHLOROPHYTA CHARACEAE

Chara sp. muskgrass

DIVISION PTERIDOPHYTA

EQUISETACEAE (Horsetail Family)
Equisetum laevigatum A. Br. smooth scouringrush

DIVISION MAGNOLIOPHYTA

ACERACEAE (Maple Family)
Acer negundo L. box elder

ALISMATACEAE (Water-plantain Family)
Alisma gramineum J. G. Gmel. water plantain
Sagittaria cuneata Sheld. arrowhead
Sagittaria latifolia Willd. arrowhead

AMARANTHACEAE (Amaranth Family)
Amaranthus arenicola. I.M. Johnst. sandhills pigweed
Froelichia floridana (nutt.) Moq. snake cotton

APIACEAE [UMBELLIFERAE] (Parsley Family)
Cicuta maculata L.. water hemlock
Conium maculatum L. poison hemlock
Sium suave Walt. water parsnip

APOCYNACEAE (Dogbane Family)
Apocynum cannabinum L. Indian hemp, hemp dogbane

ASCLEPIADACEAE (Milkweed Family)
Asclepias arenaria Torr. sand milkweed
Asclepias incarnata L. swamp milkweed
Asclepias speciosa. Torr. showy milkweed

ASTERACEAE [COMPOSITAE] (Aster Family)
Ambrosia acanthicarpa Hook. annual bursage
Ambrosia psilostachya DC. western ragweed
Anthemis cotula L. dog fennel
Artemisia campestris L. western sagewort
Artemisia frigida Willd. fringed sagebrush
Artemisia ludoviciana Nutt.. white sage
Aster Sp. nodding beggar-ticks
Bidens cernua L. beggar-ticks
Bidens frondosa L. tall beggar-ticks
Bidens vulgata Greene golden aster
Chrysopsis villosa (Pursh) Nutt. Canada thistle
Cirsium arvense (L.) Scop. horseweed, mare's tail
Conyza canadensis (L.) Cronq. western fleabane
Erigeron bellidiastrum Nutt. viscid euthamia
Euthamia gymnospermoides Greene Maximilian sunflower
Helianthus maximilianii Schrad. prairie sunflower
Helianthus petiolaris Nutt. marsh elder
Iva xanthifolia Nutt. blue lettuce
Lactuca oblongifolia Nutt. prickly lettuce
Lactuca serriola L. dotted gayfeather
Liatris punctata Hook. smooth gayfeather
Liatris squarrosa (L.) Michx. skeletonweed
Lygodesmia juncea (Pursh) Hook. hoary aster
Machaeranthera linearis Greene
Palafoxia sphacelata (Nutt.) Cory

Ratibida columnifera (Nutt.) Woot. & Standl. prairie coneflower
Rudbeckia hirta L. black-eyed susan
Senecio.tridenticulatus Rydb. prairie ragwort
Shinersoseris rostrata (Gray) Tomb annual skeletonweed
Solidago canadensis L. Canada goldenrod
Solidago missouriensis Nutt. prairie goldenrod
Thelesperma filifolium (Hook.) Gray greenthread
Townsendia exscapa (Richards.) Porter easter daisy

BORAGINACEAE (Borage Family)
Cryptantha fendleri (Gray) Greene cryptantha
Lithospermum carolinense (Walt.) MacM. hoary puccoon
Lithospermum incisum Lehm. fringed puccoon

BRASSICACEAE (Mustard Family)
Capsella bursa-pastoris (L.) Medic. shepherd's purse
Lepidium densiflorum Schrad. peppergrass
Lesquerella ludoviciana (Nutt.) S. Wats. bladderpod
Rorippa palustris (L.)Bess. bog yellow cress
Sisymbrium altissimum L.. tumbling mustard
Thelypodium integrifolium (Nutt.) Endl. thelypody

CAMPANULACEAE (Bellflower Family)
Lobelia siphilitica L. blue lobelia

CAPPARACEAE (Caper Family)
Cleome serrulata Pursh Rocky Mountain bee plant

CAPRIFOLIACEAE (Honeysuckle Family)
Symphoricarpos occidentalis Hook. western snowberry, buckbrush

CARYOPHYLLACEAE (Carnation Family)
Saponaria officinalis L. bouncing bet
Silene noctiflora L. night-flowering catchfly

CHENOPODIACEAE (Goosefoot Family)
Chenopodium album L. lamb's quarters
Chenopodium rubrum L. alkali blite
Corispermum nitidum Kit. bugseed
Salsola collina Pall. Russian thistle

COMMELINACEAE (Spiderwort Family)
Commelina erecta L. erect dayflower
Tradescantia occidentalis (Britt.) Smyth spiderwort

CONVOLVULACEAE (Morning glory Family)
Evolvulus nuttallianus R. & S. evolvulus
Ipomoea leptophylla Torr. bush morning glory

CUSCUTACEAE (Dodder Family)
Cuscuta indecora Choisy large alfalfa dodder

CYPERACEAE (Sedge Family)
Carex atherodes Spreng.
Carex emoryi Dew.
Carex heliophila Mack. sun sedge
Carex hystericina Muhl. ex Willd. bottlebrush sedge
Carex interior Bailey

<u>Carex lacustris</u> Willd.	ripgut	LENTIBULARIACEAE	(Bladderwort Family)
<u>Carex lanuginosa</u> Michx.	woolly sedge	<u>Utricularia vulgaris</u> L.	common bladderwort
<u>Carex nebrascensis</u> Dew.	Nebraska sedge	LILIACEAE	(Lily Family)
<u>Carex praegracilis</u> W. Boott.	clustered field sedge	<u>Allium textile</u> A. Nels. & Macbr.	wild onion
<u>Carex scoparia</u> Schkuhr ex Willd.	broom sedge	LOASACEAE	(Stickleaf Family)
<u>Carex stipata</u> Muhl	sawbeak sedge	<u>Mentzelia nuda</u> (Pursh) T. & G.	stickleaf, sand lily
<u>Cyperus engelmannii</u> Steud.		MALVACEAE	(Mallow Family)
<u>Cyperus rivularis</u> Kunth.	brook flatsedge	<u>Sphaeralcea coccinea</u> (Pursh) Rydb.	scarlet globe mallow
<u>Cyperus schweinitzii</u> Torr.	Schweinitz flatsedge	NAJADACEAE	(Naiad Family)
<u>Cyperus strigosus</u> L.	straw-colored nutsedge	<u>Najas quadalupensis</u> (Spreng.) Magnus	common naiad
<u>Scirpus acutus</u> Muhl.	hardstem bulrush	NYCTAGINACEAE	(Four o'clock Family)
<u>Scirpus maritimus</u> L.	prairie bulrush	<u>Abronia fragrans</u> Nutt. ex Hook.	sweet sand verbena
<u>Scirpus pallidus</u> (Britt.) Fern.	darkgreen bulrush	<u>Mirabilis glabra</u> (S. Wats.) Standl.	smooth four o'clock
<u>Scirpus pungens</u> Vahl	three-square bulrush	ONAGRACEAE	(Evening Primrose Family)
<u>Scirpus validus</u> Vahl	softstem bulrush	<u>Calylophus serrulatus</u> (Nutt.) Raven	plains yellow primrose
EUFORBIACEAE	(Spurge Family)	<u>Gaura coccinea</u> Pursh	scarlet gaura
<u>Euforbia geveri</u> Engelm.	Geyer's spurge	<u>Oenothera latifolia</u> (Rydb.) Munz	pale evening primrose
<u>Euforbia glyptosperma</u> Engelm.	ridge-seeded spurge	<u>Oenothera nuttallii</u> Sweet	white-stemmed evening primrose
<u>Euforbia esula</u> (Schur) Soo	leafy spurge	<u>Oenothera villosa</u> Thunb.	common evening primrose
FABALIEAE [Leguminosae]	(Bean Family)	PAPAVERACEAE	(Poppy Family)
<u>Amorpha canescens</u> Pursh	leadplant	<u>Argemone polyanthemus</u> (Fedde) G. Ownbey	prickly poppy
<u>Astragalus ceramicus</u> Sheld.	painted milk-vetch	PLANTAGINACEAE	(Plantain Family)
<u>Dalea purpurea</u> Vent.	purple prairie clover	<u>Plantago eriopoda</u> Torr.	alkali plantain
<u>Dalea villosa</u> (Nutt.) Spreng.	silky prairie clover	<u>Plantago major</u> L.	common plantain
<u>Glycyrrhiza lepidota</u> Pursh	wild licorice	<u>Plantago patagonica</u> Jacq.	woolly plantain
<u>Lathyrus polyamorphus</u> Nutt.	hoary vetchling	POACEAE [GRAMINEAE]	(Grass Family)
<u>Lotus purshianus</u> Clem. & Clem.	prairie trefoil	<u>Agrohordeum macounii</u> (Vasey) Lepage	Macoun wildrye
<u>Medicago lupulina</u> L.	black medick	<u>Agropyron caninum</u> (L.) Beauv.	slender wheatgrass
<u>Medicago sativa</u> L.	alfalfa	<u>Agropyron cristatum</u> (L.) Gaertn.	crested wheatgrass
<u>Melilotus alba</u> Medic.	white sweet clover	<u>Agropyron smithii</u> Rydb.	western wheatgrass
<u>Melilotus officinalis</u> (L.) Pall.	yellow sweet clover	<u>Agrostis scabra</u> Willd.	ticklegrass
<u>Psoralea lanceolata</u> Pursh	lemon scurf-pea	<u>Agrostis stolonifera</u> L.	redtop
<u>Psoralea tenuiflora</u> Pursh	wild alfalfa	<u>Andropogon hallii</u> Hack.	sand bluestem
<u>Trifolium fragiferum</u> L.	strawberry clover	<u>Andropogon scoparius</u> Michx.	little bluestem
<u>Trifolium pratense</u> L.	red clover	<u>Aristida purpurea</u> Nutt.	red three-awn
<u>Trifolium repens</u> L.	white clover	<u>Bouteloua gracilis</u> (H.B.K.) Lag. ex Griffiths	blue grama
HALORAGACEAE	(Water milfoil Family)	<u>Bouteloua hirsuta</u> Lag.	hairy grama
<u>Myriophyllum exalbescens</u> Fern.	water milfoil	<u>Bromus japonicus</u> Thunb. ex. Murr	Japanese brome
IRIDACEAE	(Iris Family)	<u>Bromus tectorum</u> L.	downy brome
<u>Sisyrinchium montanum</u> Greene	blue-eyed grass	<u>Calamagrostis canadensis</u> (Michx.) Beauv.	bluejoint
JUNCACEAE	(Rush Family)	<u>Calamagrostis stricta</u> (Timm.) Koel.	northern reedgrass
<u>Juncus balticus</u> Willd.	Baltic rush	<u>Calamovilfa longifolia</u> (Hook.) Scribn.	prairie sandreed
<u>Juncus dudleyi</u> Wieg.	Dudley rush	<u>Cenchrus longispinus</u> (Hack.) Fern.	field sandbu
<u>Juncus longistylis</u> Torr.		<u>Dichanthelium acuminatum</u> (Sw.) Gould & Clark	
<u>Juncus torreyi</u> Cov.	Torrey rush	<u>Dichanthelium oligosanthos</u> (Schult.) Gould Scribner	panicum
JUNCAGINACEAE	(Arrowgrass Family)	<u>Echinochloa muricata</u> (Beauv.) Fern.	barnyard grass
<u>Triglochin maritima</u> L.	arrowgrass	<u>Elymus canadensis</u> L.	Canada wild rye
LAMIACEAE [LABIATAE]	(Mint Family)	<u>Eragrostis cilianensis</u> (All.) E. Mosher	stinkgrass
<u>Lycopus asper</u> Greene	rough bugleweed	<u>Eragrostis trichodes</u> (Nutt.) Wood	sand lovegrass
<u>Mentha arvensis</u> L.	field mint	<u>Glyceria striata</u> (Lam.) Hitchc.	fowl mannagrass
<u>Monarda pectinata</u> Nutt.	spotted beebalm	<u>Hordeum jubatum</u> L.	foxtail barley
<u>Nepeta cataria</u> L.	catnip	<u>Koeleria pyramidata</u> (Lam.) Beauv.	junegrass
<u>Scutellaria galericulata</u> L.-	marsh skullcap	<u>Leersia oryzoides</u> (L.) Sw.	rice cutgrass
<u>Teucrium canadense</u> L.	American germander	<u>Muhlenbergia filiformis</u> (Thurb.) Rydb.	pull-up muhly

Muhlenbergia mexicana (L.) Trin. wirestem muhly
Muhlenbergia pungens ThUrb. blowout muhly
Muhlenbergia racemosa (Michx.) B.S.P. marsh muhly
Munroa squarrosa (Nutt.) Torr. false buffalo grass
Oryzopsis hymenoides (R. & S.) Ricker Indian ricegrass
Panicum capillare L. witchgrass
Panicum virgatum L. switchgrass
Paspalum setaceum Michx. sand paspalum
Phleum pratense L. timothy
Phragmites australis (Cav.) Trin. ex Steud. common reed
Poa pratensis L. Kentucky bluegrass
Sorghastrum nutans (L.) Nash Indian grass
Spartina pectinata Link prairie cordgrass
Sphenopholis obtusata (Michx.) Scribn prairie wedgegrass
Sporobolus cryptandrus (Torr.) Gray sand dropseed
Stipa comata Trin. & Rupr. needle-and-thread
Triplasis purpurea (Walt.) Chapm. sandgrass
Vulpia octoflora (Walt.) Rydb. six-weeks fescue

POLEMONIACEAE (Phlox Family)
Ipomopsis longiflora (Torr.) V. Grant white-flowered gilia
Phlox andicola Nutt. ex Gray plains phlox

POLYGONACEAE (Buckwheat Family)
Eriogonum annuum Nutt. grasshopper tobacco
Polygonum amphibium L. water smartweed
Polygonum convolvulus L. climbing buckwheat
Polygonum lapathifolium L. nodding willow weed
Polygonum ramosissimum Michx. knotweed
Rumex crispus L. curly dock
Rumex venosus Pursh wild begonia

POTAMOGETCINACEAE (Pondweed Family)
Potamogeton illinoensis Morong Illinois pondweed
Potamogeton natans L. broad-leaved pondweed
Potamogeton pectinatus L. sago pondweed
Potamogeton richardsonii (Benn.) Rydb. claspingleaf pondweed

PRIMULACEAE (Primrose Family)
Lysimachia thyrsiflora L. tufted loosestrife

RANUNCULACEAE (Buttercup Family)
Delphinium virescens Nutt. prairie larkspur
Ranunculus cymbalaria Pursh shore buttercup

ROSACEAE (Rose Family)
Potentilla norvegica L. Norwegian cinquefoil
Potentilla pensylvanica L. cinquefoil
Rosa arkansana Porter Arkansas rose
Rosa woodsii Lindl. western wild rose

RUBIACEAE (Madder Family)
Galium trifidum L. small bedstraw

RUPPIACEAE (Ditchgrass Family)
Ruppia occidentalis S. Wats. ditchgrass

SCROPHULARIACEAE (Figwort Family)
Agalinis tenuifolia (Vahl) Raf. slender gerardia
Penstemon albidus Nutt. white penstemon
Penstemon angustifolius Nutt. ex Pursh narrowleaf penstemon

SOLANACEAE (Potato Family)
Physalis heterophylla Nees clammy ground cherry
Physalis hispida (Waterfall) Cronq. plains ground cherry
Solanum interius Rydb. plains black nightshade

SPARGANIACEAE (Bur-reed Family)
Sparganium eurycarpum Engelm. giant bur-reed

TYPHACEAE (Cat-tail Family)
Typha angustifolia L. narrow-leaved cat-tail
Typha latifolia L. broad-leaved cat-tail

URTICACEAE (Nettle Family)
Parietaria pensylvanica Muhl. Pennsylvania pellitory
Urtica dioica L. stinging nettle

VERBENACEAE (Vervain Family)
Verbena bracteata Lag. & Rodr. prostrate vervain
Verbena hastata L. blue vervain
Verbena stricta Vent. hoary vervain

ZANNICHELLIACEAE (Horned pondweed Family)
Zannichellia palustris L. horned pondweed

ZYOOPHYLLACEAE (Caltrop Family)
Tribulus terrestris L. puncture vine

Appendix G. Minimum Tools for Wilderness Management

The Wilderness Act of 1964 (Public Law 88-577/16 U.S.C. 1131-1136) defines wilderness as:

“A wilderness, in contrast with those areas where man and his 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. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres of land or is of sufficient sizes to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.”

The 24,502-acre proposed Crescent Lake Wilderness Area will be protected and managed so as to preserve its wilderness characteristics until such time as Congress acts on the proposal. The use of certain management tools is essential to maintain these characteristics. However, the use of those tools must be “minimized.” Following is a brief description of those tools and their use. In the terms of management, all access into the Wilderness Area will be limited and the Refuge staff will avoid multi-trips. Specific management will be fully presented in the Wilderness Management Plan to be completed by December 2002.

Fire Management

The proposed wilderness is, and is surrounded by, a sea of volatile fuels; there is no road access to the perimeters adjacent to private lands. Thus, wildfires will be controlled by whatever means necessary to protect life and surrounding private property. Water supplies (including windmills) may be retained on the wilderness since there are no other reliable water sources. Motorized vehicles and other firefighting equipment may be stored on or near the wilderness to enable quick response.

Prescribed fires will be used only when essential to sustain wilderness characteristics. No more than 5 percent of the wilderness will be burned in any one year and the tools used will include all those needed to assure fires are contained within the planned burn areas and do not spread to surrounding private lands. This may include use of motorized vehicles such as pickup trucks, all-terrain vehicles (ATVs), tractors and mowers.

Grazing

Grazing may also be essential to sustain wilderness characteristics and, whether by cattle or bison, requires some supporting facilities and activities including: installation and maintenance of fencing; moving animals in, out, and within the wilderness; providing and maintaining water supplies; removing sick animals. All activities will be conducted without motorized vehicles when possible. When vehicles are necessary, ATVs will be used, whenever possible, to minimize physical impacts. No new water facilities are needed but removal of unnecessary wells and maintenance of others will require occasional use of heavier motorized vehicles. Electric fencing will be used occasionally to minimize the need for permanent facilities.

Control of Nonnative Plants

Biological controls have been implemented and will continue to be the tools of choice. However, monitoring indicates that Canada thistle continues to spread and that chemical control is also needed to maintain wilderness character. When chemical control within the wilderness is conducted, access will be by walking with backpacks (spot spraying in perimeter areas), and ATVs. Aerial spraying will be considered if needed to control large-scale invasions.

Public Use

All authorized public uses may occur within the wilderness to the extent they can be conducted without the use of motorized vehicles. However, solitude and primitive recreation is the overriding theme. Hiking, photography, and wildlife viewing will be allowed but no trails will be provided. Signs and interpretive facilities will be on the perimeters, outside the wilderness. There are no fishing lakes. Hunting will be permitted but the use of wheeled carts for removing game will not be allowed. The Nebraska Game and Parks Commission will be contacted in order to try to establish a special provision for the boning out of deer in the wilderness, which currently is prohibited by State law.

Appendix H. Species of Special Interest

Region 6 Species of Management Concern that Occur on the Refuge

American Bittern	<i>Botaurus lentiginosus</i>
White-Faced Ibis	<i>Plegadis chihi</i>
Trumpeter Swan	<i>Cygnus buccinator</i>
Northern Harrier	<i>Circus cyaneus</i>
Ferruginous Hawk	<i>Buteo regalis</i>
Upland Sandpiper	<i>Bartramia longicauda</i>
Black Rail	<i>Laterallus jamaicensis</i>
Long-billed Curlew	<i>Numenius americanus</i>
Black Tern	<i>Chlidonias niger</i>
Barn Owl	<i>Tyto alba</i>
Burrowing Owl	<i>Athene cucularia</i>
Short-eared Owl	<i>Asio flammeus</i>
Redheaded Woodpecker	<i>Melanerpes erythrocephalus</i>
Loggerhead Shrike	<i>Lanius ludovicianus</i>
Dickcissel	<i>Spiza americana</i>
Lark Sparrow	<i>Chondestes grammacus</i>
Lark Bunting	<i>Calamospiza melanocorys</i>
Grasshopper Sparrow	<i>Ammodramus savannarum</i>
Eastern Meadowlark	<i>Sturnella magna</i>
Greater Prairie Chicken	<i>Tympanuchus cupido</i>
Yellow Mud Turtle	<i>Kinosternon flavescens</i>

State and Federally Listed

Endangered

Blowout Penstemon	<i>Penstemon haydenii</i>
American Burying Beetle	<i>Nicrophorus americanus</i>
Swift Fox	<i>Vulpes velox</i>

Threatened

Bald Eagle	<i>Haliaeetus leucocephalus</i>
------------	---------------------------------

Partners-in-Flight Watch List

Bobolink	<i>Dolichonyx oryzivorus</i>
Franklin's Gull	<i>Larus pipixcan</i>
Grey Catbird	<i>Dumetella carolinensis</i>
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>

Appendix I. Step-Down Management Plans

Step-down management plans describe management strategies, procedures, methods and tasks for specific resources or functions. Step-down plans for Crescent Lake Refuge are listed below and are on file at the Refuge headquarters.

<u>Approved Step-down Plans</u>	<u>Year Approved</u>
Fire Management	1998
Fish Management	1980
Furbearer Management	1961
Hazard Communication	1996
Hunting	1969
Predator Management	1987
Water Management (Annual Plan)	2000
Wildlife Inventory	1995
Smith Lake Fishing (amended to include Crane Lake)	1996 2000
Integrated Pest Management	1995
Spill Prevention, Containment & Countermeasures	1999
Exposure Control- Blood Borne Pathogens	1997
Safety	1994
Signs	1999
Prescribed Burns (Annual Plans)	2000
Upland Management Plan	1996

Appendix J. Section 7

Intra-Service Section 7 Consultation has been initiated with the Grand Island Field Office and will be completed prior to final approval of this Plan.

Appendix K. List of Preparers/Review Team

This document is a compilation of efforts by Bill Behrends, (Refuge Manager, retired), Steve Knode (Project Leader), and Marlin French (Refuge Biologist). Dale Henry (ResPro Consulting) produced the written document in the approved format. Others involved in the process included: John Esperance (Planning) served as the Team Leader; Wayne King (Regional Biologist) provided guidance in developing the habitat and wildlife goals and objectives; Sean Fields (Planning) produced the maps; and Barb Shupe (Planning) completed edits and document layout.

Additionally, the following individuals formed the Review Team:

- Ken McDermond, FWS, Regional Chief of the National Wildlife Refuge System, Region 6
- Dave Heffernan, FWS, Deputy Regional Chief of the National Wildlife Refuge System, Region 6
- Larry Shanks, FWS, Refuge Supervisor (retired), Region 6/CO-KS-NE-UT
- Ron Cole, FWS, Refuge Supervisor, Region 6/CO-KS-NE
- Mike Spratt, Chief, Division of Refuge Planning
- Harvey Wittmier, Chief, Division of Realty
- Cheryl Williss, FWS, Regional Chief of Water Resources, Region 6
- Sheri Fetherman, FWS, Chief, Education/Visitor Services, Region 6
- Melvie Uhland, FWS, Education/Visitor Services, Region 6
- Rhoda Lewis, FWS, Regional Archaeologist, Region 6
- Dr. Jim Stubbendieck, Director, Center for Great Plains Studies, Univ. of Nebraska at Lincoln (UNL)
- Steve Riley, NGPC, Headquarters
- Dave Tunink, NGPC, Headquarters
- Bruce Morrison, NGPC, Headquarters
- Ritch Nelson, NGPC, Panhandle District Mgr, Wildlife Division
- Jack Peterson, NGPC, Panhandle District, Fisheries Supervisor
- Mark Lindvall, Neb. Chapter of The Wildlife Society
- Len McDaniel, FWS, Refuge Biologist (retired), Valentine NWR

The staff of the Crescent Lake National Wildlife Refuge wishes to thank all those involved in the preparation, review, and publishing of this Draft Comprehensive Conservation Plan.

Appendix L. Mailing List

Federal Officials

U.S. Senator Chuck Hagel, Washington, D.C.
Mary Crawford, Ag Director, Scottsbluff, NE
U.S. Senator Ben Nelson, Washington, D.C.
State Dir. W. Donald Nelson, Lincoln, NE
Staff Assistant, Chadron, NE
U.S. Representative Tom Osborne, Washington, D.C.
Esther Benson, District Office Director, Scottsbluff, NE

Federal Agencies

USDA/Natural Resources Conservation Service, Oshkosh, NE
US EPA, Denver, CO
USFWS, Albuquerque, NM; Alamos/Monte Vista NWR, CO; Anchorage, AK; Arapaho NWR, CO; Arlington, VA; Arrowwood NWR, ND; Atlanta, GA; Denver, CO; Fort Snelling, MN; Hadley, MA; Juneau, AK; Air Quality Branch, Lakewood, CO; Ecological Services Field Office, Grand Island, NE; Fish Springs NWR, UT; Fort Niobrara/Valentine NWR, NE; Lost Trail NWR, MT; Medicine Lake NWR, MT; North Platte NWR, NE; Portland, OR; Rainwater Basin NWR, NE; Sacramento, CA; Sherwood, OR; Sand Lake NWR, SD; Seedskaadee NWR, WY; Shepherdstown, WV; Waubay NWR, SD
USGS, Biological Resources Division, Fort Collins, CO

State Officials

Governor Mike Johanns, Lincoln, NE
Nancy Dunn, Dir. Field Operations, Western Office
State Senator Phil Erdman, Lincoln, NE

State Agencies

Nebraska Game and Parks Commission
Ritch Nelson, Alliance, NE
Dan Evasco, Oshkosh, NE
Rex Amack, State Office, Lincoln, NE
Ash Hollow State Historical Park, Lewellen, NE
Nebraska State Historical Society, Lincoln, NE
Illinois Department of Natural Resources, Springfield, IL

Local Agencies

Garden County Commissioners
City of Oshkosh

Organizations, Business and Civic Groups

National Audubon Society, Washington, D.C.
Audubon Nebraska, Dave Sands, Lincoln, NE
Wildcat Audubon Society, Alice Kenitz, Gering, NE
Nebraska Chapter, TWS, Mark Lindvall, Valentine, NE
The Nature Conservancy
Vincent Shay, Omaha, NE
Doug Whisenhunt, North Platte, NE
The Nation Bison Assoc., Denver, CO
NE State Buffalo Association, Dave Hutchinson, Rose, NE
Rackett Fire District #1, Ashby, NE
Blue Creek Fire District #1, Lewellen, NE
North Platte Sportsman's Assoc, Keith Wiederspan, Oshkosh NE
Natl. Wildlife Ref. Assoc., Brent Giezentanner, Co Springs, CO

TWS, Central Mountain & Plains Section, Fort Collins, CO
Wildlife Management Institute, Rob Manes, KS; Bob Bryne, D.C.

KRA Corporation, F&W Reference Section, Bethesda, MD
Defenders of Wildlife, Washington, D.C.
The Wilderness Society, Washington, D.C.
Animal Protection Institute, Sacramento, CA
The Nature Conservancy, Boulder, CO
National Trappers Association, New Martinsville, WV

Universities & Colleges

University of Nebraska
Thomas Bragg, Omaha, NE
James Stubbendieck, Lincoln, NE
Ogalala Lakota College
Don Althoff, Kyle, SD
Northwestern University, Professor Paul Friesema, Evanston, IL

Media

Star-Herald, Scottsbluff, NE
Gering Courier, Gering, NE
KNEB Radio, Scottsbluff, NE
KMOR/KOAQ/KOLT Radio, Scottsbluff, NE
Omaha World Herald, Omaha, NE
KDUH TV, Scottsbluff, NE
KSTF TV, Gering, NE
Garden County News, Jim McKeeman, Oshkosh, NE
Alliance Times-Herald, Alliance, NE

Libraries

Alliance Library, Alliance, NE
Oshkosh Library, Oshkosh, NE

Individuals Expressing Interest in This Plan

Darrell Anderson	Lynn Myers
Arnold Black, Jr.	Dick Paisley
Loren Blake	Jack Parker
Cliff Buske	Duane Petersen
Eddy Collins	Pat Peterson
Gerald DeWitt	Hershell Rice
Ev Dietlein	Rush Creek Land & Livestock
Tim Dietlein	Craig Schafer
Ron Dorman	Ron Shearer
Jim Ducey	Jim Snyder
Eldred Ranch, Inc.	Pat Thelander
Brad Emerson	Todd Thies
Chancy Groves	Ted Turner, c/o Russell Miller
Dale Henry	Ted Turner, c/o John Hanson
Martin Hisel	Jeff D. Wall
Dr. John Iverson	Gale Young
Merle Jeffrey	Jack Zickefoose
Dr. Stephen Kerr	
Jim McGinley	

Crescent Lake National Wildlife Refuge
115 Railway Street, Suite C109
Scottsbluff, NE 69363-1346
308/635 7851
crescentlake@fws.gov

U. S. Fish & Wildlife Service
<http://www.fws.gov>
<http://www.r6.fws.gov/larp>

For Refuge Information
1 800/344 WILD

March 2002



