

GLOSSARY

Above-average Winter – In above-average winters snow depths would make it more difficult for elk to acquire sufficient food resources to survive on their own. Suitable habitat in years when snows were above average would decline to an estimated 20,000 acres, most of which would be in the Gros Ventre River basin and an estimated 2,600 acres on the refuge. The winter of 1982 was designated as above average (Hobbs et al. 2003). See glossary definition of an average winter.

Adaptive Management – The rigorous application of management, research, and monitoring to gain information and experience necessary to assess and modify management activities. A process that uses feedback from research and the period evaluation of management actions and the conditions they produce to either reinforce the viability of objectives, strategies, and actions prescribed in a plan or to modify strategies and actions in order to more effectively accomplish management objectives.

Allele – Either of a pair of genes located at the same position on both members of a pair of chromosomes and conveying characters that are inherited in accordance with Mendelian law. (*Webster's New World Dictionary of American English*, 3rd College ed., 1988).

Alluvial – Of and/or relating to clay, sand, or other sediment that is gradually deposited by moving water.

Animal unit month (AUM) – The forage base required to sustain a cow and her calf for one month.

Anthropogenic – Pertaining to humans.

Antibody – An immunoprotein that is produced by lymphoid cells, in response to a foreign substance (antigen), with which it specifically reacts.

Antigen – A foreign substance, usually a protein or polysaccharide, that upon introduction into a vertebrate animal, stimulates an immune response.

Average Winter – In average years snow depths would not prevent elk from acquiring sufficient food resources to survive on their own. During an average winter, an estimated 51,000 acres in the Jackson elk herd unit area would likely be suitable as elk winter habitat (Wockner, pers. comm. 2002). Most of this acreage would be in the Gros Ventre River basin, with about 8,500 acres on the refuge, as well as in the Buffalo Valley area. The winter of 1996

was designated as average, based on rankings of snow-water equivalent measurements taken over a 50-year period at the Hunter-Talbot hayfields in Grand Teton National Park (Farnes, Heydon, and Hansen 1999; Hobbs et al. 2003). Snow crusting that decreases access to forage would make model predictions about winter conditions more similar to predictions for severe winters.

Baseline Conditions – Conditions that have resulted from the current management program up through the signing of a record of decision. These conditions assume (1) the elk herd is being maintained at 11,000, (2) the number of elk that winter on the NER fluctuates between 5,000 and 7,500, (3) the bison herd numbers 800-1,000, (4) information on wildlife populations, habitats and socio-economic factors are averaged from the past 5-20 years.

Biobullet – A single dose, biodegradable projectile comprised of an outer methylcellulose casing containing a solid, semi-solid, or liquid product (usually a vaccine or chemical contraceptive), propelled by a compressed-air gun.

Biological Diversity – The variety of living organisms, including the genetic differences among them, and communities and ecosystems in which they occur (USFWS 2001: 601 FW 3).

Biological Integrity – For the National Wildlife Refuge System, biotic composition, structure, and functioning at genetic, organism, and community levels comparable with historic conditions, including the natural biological processes that shape genomes, organisms, and communities (USFWS 2001: 601 FW 3).

Biological Opinion – Document stating the opinion of the Fish and Wildlife Service or the National Park Service on whether or not a Federal action is likely to jeopardize the continued existence of listed species, or result in the destruction or adverse modification of critical habitat.

Brucellosis – Infection with or disease caused by the *Brucella abortus* bacteria. Also known as Bangs disease, undulant fever, and contagious abortion.

Carrying Capacity – The maximum number of organisms that can be supported in a given area or habitat.

Chytrid Disease – *Batrachochytrium dendrobatidis* is a pathogenic fungus that infects amphibians. Chytrid

fungi are typically found in the water or soil and several types are known to parasitize plants and insects. Recent outbreaks (since 1993) of chytridiomycosis among amphibians are the first known outbreaks in vertebrates. The exact mechanism of the disease is unknown but it appears to attack keratin, a fibrous protein that forms a protective layer in animal skin. This disease could be at least partially responsible for worldwide declines in amphibians.

Climax Community – A final stage of a plant succession, in which vegetation reaches a state of equilibrium with the environment. The community is self-perpetuating, except that changes may occur very slowly and over a time-scale that is extensive compared with the rapid and dramatic changes during the early stages of succession.

Coliform – Of, pertaining to, or resembling the colon bacillus (*Escherichia coli*), which are found normally in all vertebrate intestinal tracts and are occasionally virulent, causing infantile diarrhea.

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 Refuge System or the purposes of the refuge (USFWS Manual 603 FW 3.6).

Conservation Easement – A legal document that provides specific land-use rights to a secondary party. A perpetual conservation easement usually grants conservation and management rights to a party in perpetuity.

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.

Cumulative Effects – Those effects on the environment that result from the incremental effect of the action when added to the past, present, and reasonable foreseeable future actions regardless of what agency (Federal or nonfederal) or person undertakes such other actions. Cumulative effects can result from

individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

Disease Reservoir – A place in nature where a disease normally lives or is always found in significant numbers.

Ecosystem – An ecological system; the interaction of living organisms and the nonliving environment producing an exchange of materials between the living and nonliving.

Ecosystem Management – Management of an ecosystem that includes all ecological, social, and economic components which make up the whole of the system.

Effective Population Size – A measure of population size based on members that effectively contribute genes to subsequent generations (Berger 1996).

Emergent Wetland – Wetlands with rooted plants that have most of their vegetative (non-root) parts above water.

Endangered Species – Any species of plant or animal defined through the Endangered Species Act (16 USC 1532(6)) as being in danger of extinction throughout all or a significant portion of its range, and published in the *Federal Register*.

Endemic Species – A species only found in a particular area or region.

Environment – The sum total of all biological, chemical, and physical factors to which organisms are exposed; the surroundings of a plant or animal.

Environmental Health – Abiotic composition, structure, and functioning of the environment consistent with natural conditions, including the natural abiotic processes that shape the environment. Specifically for the National Wildlife Refuge System, composition, structure, and functioning of soil, water, air, and other abiotic features comparable with historic conditions (USFWS 2001: 601 FW 3).

Exotic Species – Any introduced plant, animal or protist species that is not native to the area and may be considered a nuisance.

Feedground – An area where a herd of elk are given feed during the winter months.

Forage Production – The amount of forage produced in a given year by a particular species of plant or by vegetation in an area as a whole.

Forage Utilization – The proportion of the current year's forage production that is consumed or destroyed by grazing animals. May refer to a single species of forage or to the vegetation as a whole.

Genetic Variability – The amount of genetic difference among individuals in a population, measured by the number of genes in the population that are polymorphic (having more than one allele), the number of alleles for each polymorphic gene, and the number of genes per individual that are polymorphic.

Genetic Viability – Retention of genetic differences among individuals in a population at a level that allows the populations to persist with limited inbreeding and associated deleterious effects.

Genotype – The genetic constitution, latent or expressed, of an organism, as distinguished from its physical appearance (its phenotype). The sum total of all the genes present in an individual.

Goal – Descriptive, open-ended, and often broad statement of desired future conditions that conveys a purpose but does not define measurable units (USFWS 2000b, 602 FW 1.5).

Habitat – The environment in which a plant or animal lives (includes vegetation, soil, water, and other factors).

Habitat Effectiveness – The extent to which suitable habitat provides is usable by a given species of wildlife or wildlife community with respect to human activity. Habitat effectiveness can be reduced by human activity and disturbance (e.g., resulting from hiking, driving, hunting, and other forms of recreation).

Healthy Habitat – The composition and structure of habitat approximating historical conditions (e.g., conditions that were present prior to substantial human related changes to the landscape), based on the definition of environmental health and biotic integrity (USFWS 2001:601 FW 3.6.B-D).

Healthy Population – Conservation of healthy populations of fish and wildlife means the maintenance of fish and wildlife resources and their habitats in a condition that ensures stable and continuing natural populations and species mix of plants and animals in relation to their ecosystem; minimizes the likelihood of irreversible or long-term adverse effects upon such populations and species; and ensures the maximum practicable diversity of options for the future (50 CFR 100.4).

Herbaceous Forage – Non-woody plants; includes grasses, wildflowers, and sedges and rushes (grass-like plants).

Herd Integrity – The genetic integrity of the herd or population; i.e., the state in which heterozygosity, fitness, and viability are maintained.

Heterozygosity – The proportion of individuals with more than one version of the same gene on a chromosome locus. Also, the tendency to possess two versions of the same gene on a locus, as opposed to the same version (homozygosity).

Heterozygote – A plant or animal having two different alleles at a single locus on a chromosome, and hence not breeding true to type for a particular genetic characteristic.

Historic Conditions – For the National Wildlife Refuge System, the composition, structure, and functioning of ecosystems resulting from natural processes that were present prior to substantial human-related changes to the landscape (USFWS 2001: 601 FW 3).

Hydrology – The science dealing with the properties, distribution, and circulation of water on and below the earth's surface and in the atmosphere. The distribution and cycling of water in an area.

Immunocontraception – The induction of contraception by injecting an animal with a compound that produces an immune response that precludes pregnancy.

Immunocontraceptive – A contraceptive agent that causes an animal to produce antibodies against some protein or peptide involved in reproduction. The antibodies hinder or prevent some aspect of the reproductive process.

Jackson Hole Area – The approximate geographic area south of Yellowstone National Park that includes Jackson Hole; the east side of the Teton Range; the stream and river drainages that flow into Jackson Hole, including the Pacific Creek, Buffalo Fork, Spread Creek, Hoback River, Flat Creek, and Mosquito Creek drainages; and the lower Hoback River drainage west of Granite Creek.

Listed Species – Any species of fish, wildlife or plant, which has been determined to be endangered or threatened under section 4 of the Endangered Species Act.

Loam – Loose-textured soil consisting of a mixture of sand, clay, and organic matter.

Loess – A pale, yellowish silt or clay forming finely powered, usually wind-borne deposits.

Management Plan – A document that provides direction and guidance for accomplishing management goals and establishing purposes, and for contributing to the fulfillment of agency missions. The heart of a management is comprised of goals, objectives, and strategies.

Mesic – Applied to an environment that is neither extremely wet (hydric) or extremely dry (xeric).

Monitoring – A process of collecting information to evaluate if an objective and/or anticipated or assumed results of a management plan are being realized (effectiveness monitoring) or if implementation is proceeding as planned (implementation monitoring).

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

Native – With respect to a particular ecosystem, a species that occurred historically in that ecosystem (USFWS 2001: 601 FW 3).

Natural Diversity – For the U.S. Fish and Wildlife Service, the number and relative abundance of indigenous species that would occur without human interference (USFWS 1992: 701 FW 1).

Non-endemic Infectious Disease – A disease that is not native to a particular area and that is caused by a microbial agent capable of invasion, growth, and replication within a host animal.

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 and park 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 (USFWS 2000b, 602 FW 1.5).

Pathogen – A disease-producing microorganism.

Pathogenic – Capable of producing disease.

Preferred Alternative – The preferred alternative can be the proposed action as found in the draft NEPA document, the no-action alternative, another alternative, or a combination of actions or alternatives discussed in the draft NEPA document.

Prevalence (of a disease) – The number of cases of a disease that are present in a population at one point in time, usually expressed as a percentage of the total population of animals.

Record of Decision (ROD) – A concise public record of decision prepared by a federal agency, pursuant to NEPA, that contains a statement of the decision, identification of all alternatives, 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), and a summary of monitoring and enforcement where applicable for any mitigation (40 CFR 1505.2).

Recruitment – Number of animals surviving and being added to a breeding population at a certain point in time.

Refuge – A designated area of land or water, or an interest in land or water, within the National Wildlife Refuge System.

Residual Forage – Grasses, forbs, and other herbs that remain standing from one growing season to the next, and sometimes beyond. Generally, the above ground portion of herbaceous vegetation dies after the growing season, and if left undisturbed can remain upright for a period of time. Strong wind, heavy cover, and grazing can reduce the amount of residual vegetation remaining from one season to the next.

Riparian Area – A geographic area containing an aquatic ecosystem and the adjacent upland areas that directly affects it. This includes floodplain, and associated woodland, rangeland, or other related upland areas. Pertaining to the banks of streams, lakes, wetlands, or tidewater.

Riparian Zone – Terrestrial areas where the vegetation complex and micro-climate conditions are products of the combined presence and influence of perennial and/or intermittent water, associated high water tables, and soils that exhibit some wetness characteristics. Normally used to refer to the zone within which plants grow rooted in the water table of rivers, streams, lakes, ponds, reservoirs, springs, marshes, seeps, bogs, and wet meadows.

Scope – The range of actions, alternatives, and impacts to be considered in an environmental impact statement (40 CFR 1508.2.5).

Scoping – An early and open process for determining the extent and variety of issues to be addressed and for identifying the significant issues related to a proposed action (40 CFR 1501.7).

Sensitive Species – Those plant or animal species for which population viability is a concern as evidenced by a significant current or potential downward trend in population numbers, distribution, density, or habitat capability.

Seral – A phase in the sequential development of a climax community.

Seroprevalence – The proportion of individuals in a population that show positive results on serological examination.

Severe Winter – For modeling purposes, a severe winter is defined as one in which the snow-water equivalent over a large part of the analysis area would be 6 inches or, the threshold at which elk would be unable to acquire sufficient food resources to survive on their own (Hobbs et al. 2003). In a severe winter suitable habitat would decline to an estimated 12,000 acres, with less than 700 acres on the refuge. For reference purposes, the winter of 1997 was designated as severe, based on rankings of snow-water equivalent measurements at the Hunter-Talbot hayfields in Grand Teton National Park (Farnes, Heydon, and Hansen 1999; Hobbs et al. 2003). Because some portions of the snow data set only went back to 1980, 1997 was used as “the most severe on record” (Hobbs et al. 2003). Snow crusting that decreases access to forage would likely intensify winter severity.

Shoulder Season – Period of time between two busy tourist seasons. In Jackson Hole, fall and spring are shoulder seasons between the busy summer season, when many tourists come to the area to view wildlife and scenery, hike, and raft rivers and the busy winter season when tourists come to downhill ski.

Snow-water Equivalents – Refers to the water content of snow, per unit volume of snow.

Stakeholder – Individuals, organizations, and groups; officials of Federal, State, and local government agencies; Native American 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 planning issues and those who do or do not realize that the agencies’ decisions may affect them.

Strain – An intraspecific group of organisms, possessing only one or a few distinctive traits, usually genetically homozygous for those traits, and maintained as an artificial breeding group by humans.

Strain 19 – The strain of *Brucella abortus* bacteria currently used to vaccinate cattle against brucellosis.

Strategy – A specific action, tool, or technique or combination of actions, tools, and techniques used to meet unit objectives (USFWS 2000b, 602 FW 1.5).

Subirrigated – Irrigated from beneath.

Succession – A gradual change from one community to another, characterized by a progressive change in species structure, an increase in biomass and organic matter, and a gradual balance between community production and community respiration.

Test and Cull – A procedure that involves capture, handling, and testing a group of cattle or bison for brucellosis, tuberculosis, or other communicable diseases, identifying the positive testers, and removing them from the herd.

Transitional Range – Range used by ungulates as they move from their summer range to their winter range and vice versus in the spring.

Threatened Species – A plant or animal species likely to become endangered species throughout all or a significant portion of their range within the foreseeable future. A plant or animal identified and defined in accordance with the 1973 Endangered Species Act and published in the Federal Register.

Undulant Fever – A disease in humans caused by *Brucella*.

Vaccine – A suspension of killed or attenuated microorganisms that, when introduced into the body, stimulates an immune response against that microorganism.

Vector – An organism that carries pathogens from one host to another.

Viable Population – A population of sufficient size and genetic variability that it maintains its vigor and its potential for evolutionary adaptation.

Vision Statement – A concise statement of the desired future condition of the planning unit, based primarily on the agency’s mission, specific establishing purposes, and other relevant mandates (USFWS Manual 602 FW 1.5).

Zona Pellucida – The outer membrane of a mammalian egg.

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