

Chapter 4. Consultation and Coordination

Preparers and Contributors

The preparation of the environmental impact statement (EIS) and the revised Forest Plan has been a major undertaking. This list of preparers is limited to those people who were members of the Interdisciplinary Team working on these documents. Their preparation could not have been completed without the support and assistance of employees of the Shoshone and our colleagues in the Regional Office. We also recognize the forest leadership team as providing guidance during this process.

Interdisciplinary Team Members:

Name	Position
Joseph Alexander	Forest Supervisor
Bryan Armel	Resource Staff Officer
Carrie Christman	Planning Staff Officer
Susan Douglas	Public Affairs Officer/Writer/Editor
Mark Giacoletto	Forest Fire Management Officer
Joe Harper	Forest Wildlife Biologist
Joe Hicks	Rangeland Management Specialist
Kent Houston	Forest Soil Scientist/Botany/Weeds
Ben Lara	Lands and Recreation Staff
Karin Lovgren	Engineering Staff Officer
Lois Pfeffer	Environmental Coordinator
Kelsey Pike	Editorial Assistant
Loren Poppert	Recreation Staff Officer
Kristie Salzmann	Public Affairs Officer
Randy Spiering	Timber Management Officer
Paul Valcarce	Landscape Architect
Kyle Wright	Archaeologist
Ray Zubik	Forest Fisheries Biologist

Support to the Interdisciplinary Team:

Name	Position
Karri Cary	Hydrologist
Vickey Eubank	GIS Specialist
Kathy Kurtz	Regional Office NEPA Planning Staff
Patricia Goude	Writer-Editor
Debbie Miller	Air Quality Specialist
Cory Mlodik	Wildlife Biologist
Miera Nagy	Director, Strategic Planning
Kawa Ng	Social Scientist
Marynell Oechsner	Wildlife Biologist
Ken Ostrom	GIS Coordinator
John Rupe	Regional Office NEPA Planning Staff
Julie Schaefer	Social Scientist
Chris Sporl	Regional Office Recreation Staff
D.T. Taylor	Economist
Olga Troxel	Land Management Analyst
Chris Wehrli	Regional Office NEPA Planning Staff

Government Cooperators Work Group:

The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

The Government Cooperators Work Group (Work Group) was formed in 2005. The Work Group consisted of local elected officials, representing three boards of county commissioners, seven conservation districts, the Governor's Planning Office, and eight State of Wyoming agencies. Between 2005 and mid-2008, the Forest Service hosted 14 Work Group meetings. All Work Group meetings were open to the public. The counties and conservation districts have engaged contractors to assist them.

In 2011, the Work Group expanded to four boards of county commissioners, eight conservation districts, and two senior policy advisors from the Governor Mead's office. The number of State of Wyoming agencies remained the same.

The Work Group and the interdisciplinary team met in April 2011, for a series of seven workshops on the existing conditions on the Shoshone. Resource specialists shared data and trends. As with the earlier revision process, all Work Group meetings have been, and will continue to be, open to the public.

Distribution of the Environmental Impact Statement

This EIS has been distributed to the following Federal agencies, federally recognized tribes, State and local governments, organizations representing a wide range of views regarding the long-term management of the Shoshone National Forest, and individuals who specifically requested a copy of the document.

Federal, State, and Local Agencies

Name	Agency
Larry Allen	Fremont County Board of Commissioners
Mike Baker	Hot Springs County Board of Commissioners
Brenda Bangert	Park County Board of Commissioners
Larry Bentley	Wyoming Department of Agriculture
Kelly Bott	Wyoming Department of Environmental Quality
Dave Burke	Park County Board of Commissioners
Shelby Carlson	Wyoming Department of Transportation
Marc Coffman	Wyoming State Trails
Mark Conrad	Wyoming Department of Environmental Quality
Jessica Crowder	Wyoming Department of Agriculture
Tavis Eddy	Wyoming Department of Environmental Quality
Becky Enos	Fremont County Board of Commissioners
Mary Flanderka	Wyoming Game and Fish Department
Mack Frost	Cody Conservation District
Keith Grant	Big Horn County Board of Commissioners
Loren Grosskopf	Park County Board of Commissioners
Bill Haagenson	Wyoming State Forestry
Emily Hagedorn	Teton Conservation District
Jay Hein	Wyoming State Forestry
Penny Herdt	Hot Springs County Board of Commissioners
Brad Hill	Wyoming State Trails
Rick Huber	Wyoming Game and Fish Department
Ron Huff	Wyoming Department of Transportation

Federal, State, and Local Agencies

Name	Agency
Peter Jachowski	Cody Conservation District
Kevin Johnson	Wyoming Game and Fish Department
Steve Jones	Meeteetse Conservation District
Gregory Kennett	ERG LLC
John Lumley	Hot Springs County Board of Commissioners
Cathy Meyer	Lower Wind River Natural Resource District
Rich Olson	Hot Springs Conservation District
Reg Phillips	Dubois-Crowheart Conservation District
Jeremiah Rieman	Wyoming State Planning Office
Peggy Ruble	Park County Board of Commissioners
Jill Shockley Siggins	Cody Conservation District
Diane Shober	Wyoming Business Council
Carla Thomas	Hot Springs Conservation District
Joe Tilden	Park County Board of Commissioners
Kristin Tilley	Shoshone Conservation District
David Waterstreet	Wyoming Department of Environmental Quality
Bryon Wilczewski	Lower Wind River Natural Resource District
Randy Williams	Teton Conservation District
Tim Wilson	Popo Agie Conservation District
Judy Wolf	Wyoming State Historical Preservation O
Tim Woolley	Wyoming Game and Fish Department
Clara Mae Yetter	Meeteetse Conservation District
Jeremy Zumberge	Wyoming Department of Environmental Quality

Director, Planning and Review, Advisory Council on Historic Preservation
 Deputy Director APHIS PPD/EAD
 Rural Utilities Service
 National Environmental Coordinator, NRCS
 Acquisitions & Serials Branch, National Agricultural Library
 USDA Office of Civil Rights
 U.S. Army Corps of Engineers
 Chief of Naval Operations (N45)
 US EPA, Region 8, Attn: Suzanne Bohan
 Director OEPC
 U.S. Coast Guard, Commandant CG-47
 Regional Director, Northwest Mountain Region, Federal Aviation Administration
 Federal Highway Administration, Division Administrator
 Director, NEPA Policy & Compliance, DOE

Tribes

Nathan Small, Chairman Shoshone-Bannock Tribes of the Fort Hall Reservation
 Carolyn Boyer-Smith, Cultural Resource Coordinator Shoshone-Bannock Tribes of the Fort Hall Reservation
 Brooklyn Baptiste, Chairman Nez Perce Tribe
 Patrick Baird, THPO/Archaeologist Nez Perce Tribe
 Leroy Spang, President Northern Cheyenne Tribe
 Conrad Fisher, THPO Northern Cheyenne Tribe
 Mike Lajeunesse, Chairman Eastern Shoshone Tribe
 Wilfred Ferris, THPO Eastern Shoshone Tribe
 Willie A. Sharp, Jr., Chairman Blackfeet Nation
 John Murry, THPO Blackfeet Nation
 Cedric Black Eagle, Chairman Crow Tribe

Dale Old Horn, THPO Crow Tribe
Kim Harjo, Chairperson Northern Arapaho Tribe
Darlene Conrad, THPO Northern Arapaho Tribe
Micheal O. Finley, Business C. Chairman Confederated Tribes of the Colville Reservation
Guy Moura, THPO History/Archaeology Confederated Tribes of the Colville Reservation
Leo Stewart-Executive Director, Board of Trustees Confederated Tribes of the Umatilla
Ms. Carey Miller THPO/Archaeologist Confederated Tribes of the Umatilla
Jason Walker, Chairperson Northwestern Band of Shoshone Tribe

Others

Jane Adamson	John Blomstrom	Carl Dammann
Peter Aengst	Mike Blymyer	Mark Davenport
Harold Albright	June Bonasera	Kristin & Tad Davis
George Alderson	Gwen Booth	Allory Deiss
Jim Allen	Leonard Bopp	Christina Denney
Andrew Allgeier	Clifford Bove	Marion Dickinson
Larry Amundson	Jim Bowen	Christopher Dingman
Richard Anderson	R Brame	Nick Dobric
Tom Andrews	Bill & Mary Brazelton	Carl & Carol Dockery
Carol J. Armstrong	Steven Brock	Callie Domek
Mark Asplund	Steven Brutger	Mark Domek
Vic Augustine	Buck Butkovich	Sara Domek
Ann Ayres	Shirley Bye-Jech	Meade Dominick
Carol Bachmann	John Caproni	David Dominick
Keith S. Bailey	Mark Cardell	Sarah Dominick
Leslie Bailey	Bryce Carroll	Steven Donham
Ron Bailey	Andrew Carson	Howard Donley
Monte Baker	Bill Carter	Robert Dorn
Bob Baker	Lawrence E. Cary	Kenneth Driese
C J Baker	Elaine Casteel	Charles Drimal
Virginia D. Baldwin	Kay Chandler	Don Dunham
Curt Bales	Jack D Cheney, Jr.	William & Valorie Dunn
Brian Ballard	Cameron Chimenti	Peter Dvorak
Holly Balogh	Thomas W. Churchill	Colin Dye
Steve Banks	Scott Christy	Geoff Dyer
Aaron Bannon	Cindy & Brad Cicci	Allen Edwards
Joy Bannon	Margo Clark	Hilary Eisen
Dawna Barnett	Richard Clark	Brian Elliott
Bill Bartlett	Donna Clark	John Ellis
John Bear	Douglas Clark	Ron Erickson
Robert & Gloria Beaver	David Clark-Barol	Michelle Escudero
Ann Becker	Alonzo Coby	Tad Facinelli
Keith Becker	Kevin Colburn	Jennifer Fairbrother
Cody Beers	Wayne Conn	Jeremy Fancher
Larry Bentley	Thomas Cooper	Bruce Fauskee
Don & Carolyn Bentzen	Eric Cooper	Dennis Ferguson
Bob Bessler	Ferin Cooper	Jason Flag
Pamela Betters	Matthew Copeland	Vera Ford Gottlieb
Bud Betts	Eugene Copp	Nathan Foster
Robert Betts Jr.	Charles Cord	Ric Foster
Andy Blair	John Corra	Bayard Fox
Tom Blair	Barbara Cozzens	Janet Frey
Bill Blake	Eva Crane	Gloria Frisby Hedderman
Twila Blakeman	Monica Craver	Robert J. Henke
Marvin Blakesley	Dwight Crawford	Clay Fulcher
Auzie Blevins	Gary Cukjati	Guy Fulfer

Jake Fulkerson	Mark Hinschberger	Byron Lee
John Gallagher	Robert Hitchcock	John Lee
Cameron Garnick	Glenda Hlavnicka	Travis Leenerts
Kenny Gasch	Bob Hodecker	Doug Lemm
Allen Gee	Robert Hoskins	Rodger Leseberg
Rich Gerow	Ken Hostetter	Larry Lewis
Alicia Giuffrida	John Housel	Thomas Lewis
Steve Glenn	Liz Howell	Ken Lichtendahl
Clinton Glick	Mike Hudson	Christine Lichtenfels
Jack Gordon	Lisa Hueneke	Brad Lindsey
Ryan Gorsuch	Jim Hulsey	Russ Linneman
Rich Graskemper	Kevin Hurley	Ruby Lippincott
Sonya Grave	Dan Hutchison	Hugh Livingston
Rebecca Gray	Robert Hutchison	Kim Locautli
Tonia Grdina	Field Iiams	Edward Lone Fight
Robert Gregoire	Dick Inberg	Richard Louis Grush
Gregory Griffith	Ada Inbody	Robert Luce
Donna Guelde	Vince Irene	Justin Lundvall
Brian Gustafson	Alice Irwin	Tom & Nancy McCoy
Tim Haberberger	Kathleen & Pete Jachowski	John & Kathy McFadden
David Haire	Michael & Judy Jackson	Greg Macauley
Kurt Hallock	Tiffani Jackson	David MacKenzie
Robert Handelsmann	Charles Jennings	Doug Madsen
Jane Hannelly	Kevin Jensvold	Jim Magagna
S Hansen	Craig Johnson	Joe Malek
Robert Hanson	Debby & John Johnson	Rob Marshall
Chris Hanson	Jerry Johnson	Terry Martin
Oliver Hanson	Lindy Johnson	Teresa Martinez
Ray Hanson	Hugh Jones	Don Mason
Merlin Hare	Bob Joslin	Gib Mathers
Jeff Harrington	Vincent Kalkowski	Benjamin Mayer
Kari Harrington	Scott Kane	Forrest McCarthy
Valerie Harris	Marvin Kauffman	Douglas McCormick
Deb Harris	Tom Keating	Dennis McDaniel
Janice Harris	Robert Keith	Jazmyn McDonald
Zachory Hart	Lowell Keller	Fred McDonald
Stan Harter	Mike Kelly	John McGee
Lara Hartman	Amy Kenworthy	Lisa McGee
Ann Harvey	Steff Kessler	Richard McGinity
Buzzy Hassrick	Martin Kidston	William McMillian
Gary Hatle	Charles Kirkham	Travis McNiven
Ken Haukaas	Jim Klebba	Mike McRann
Krystal Hazen-McCreary	Dennis Knight	Anthony Melita
J.E. Hazlewood	Kirk Koch	Scott Mellor
Rex Headd	Justin Koehler	James Melton
Bill Heath	Keith L. Kohnke	Theresa Mercer
Bonnie Heidel	Sarah Krall	Bert & Brenda Miller
Mark Heinz	Rod Krischke	Neil & Jennifer Miller
Joe Hejna	Dick Kroger	Jeff Milton
Bill Helms	Juan Laden	Megan Mitchell
Yvonne Henze	Ivan Laird	Jeff Moberg
E Heyward	Jerry Langbehn	Bob Model
Joslin Heyward	Sean Leach	Erik Molvar
Laney Hicks	Mike Leahy	Eric Shawn Moody
Edwin & Carol Higbie	John Learned	Charlie Moore
Nathan Hindman	Bennie LeBeau	Pat Moore
Caleb Hiner	Bradley Lee	Bob Moseley

Charlie Moses, Jr.	Cathy Purves	Philip Sheets
Suzan Moulton	Amy Quick	Bill Shipley
Eugene Mueller	Gail Rae	Dan & Tana Shively
Mike Mufich	Dustin Ralston	Diane Shober
Daryle Murphy	Tom Ransburg	Josh Shorb
Warren Murphy	Amy Rathke	Jean Shoulder
Chuck Neal	Jonathan Ratner	Dave Showalter
Dave Neary	Linda Raynolds	Daniel & Dianne Shumway
Lee Nellis	Garth Reber	Gary Siemens
Katie Nelson	Ed Regan	Tony & Sandra E Simek
Peter Nelson	Chad Regester	Benj Sinclair
Robert & Darlene Nielsen	Jim Reiss	Alan Sinner
Neil E. Niemin	Barry Reiswig	Joyce Skoric
Leslie Nistico	Rori Renner	Mark Slacks
Suzy Noecker	Gary Reynolds	Ardell Smith
Pam Noesner	Bonnie Rice	Christine Smith
Werner Noesner	Bob Richard	Bernie Spanogle
Matt Norby	Robin Rick	Lynne Sparks
Joanne Nordenstam	Hap Ridgway	Jeff Stanbury
Laura Norman	J R Riggins	Heidi Stearns
Mark Nunnink	Dave Riebe	Ted Stephen
Jared Oakleaf	Rick Roach	Sandra Sternod
Jim O'Connor	David Roberts	Mike Stewart
Vicki Olson	Ed & Lisa Roberts	Dave Stinson
Diane Orme	Philip Robertson	Laurence Stinson
John Osgood	Bob Robinson	James Strite
Emilene Ostlind	Shannon Rochelle	Rene Suda
Joel Otto	Mary & Tim Rogers	Jared Szakacs
Ernie Over	Ron Rose	Linwood Tallbull
Bill Overfield	Dustin & Jenni Rosencranse	Fred Tammany
Bob Overton	Jody Rowlands	Frank Tanner
Robert Owsley	Charles Rumsey Jr.	Amy Taylor
John Parr	Jack Russell	Neil Thagard
R.D. Pascoe	Ben & Alicia Rux	Deb Thomas
Debra Patla	Al Sammons	Joan Timchak
Nic Patrick	Arne Sandberg	Lawrence Todd
Leslie Patten	Dana Sander	Donald Tolman
Ed Patterson	Dana Sander	Butch & Sue Tonkin
John Paul Travis	Irene Saphra	Terry Trombley
John Pearson	Clint Sauer	Tom Troxel
Steve Pearson	Greg Sauer	Amy Truman
Dave Pendleton	Josh Scheer	Charlie Truman
Ann Perkins	Brit Schiner	J. Truman
Bruce Perry	Pat Schmidt	Luke Truman
Lew Peterson	Mr & Mrs Larry Schoening	Thomas Turiano
Frank Philp	Gene Schrader	Hubert B. Two Leggins
Rob Philp	Harold Schultz	Linda Van der Veer
Ken Pierce	Robert Schwinn	Tim Wade
Patricia Poletti	Richard & Beverly Scott	Wayne Warwick
Jim Pratt	Steph Sedler	David Waterstreet
Ruffin Prevost	Dan Seifert	Edward A. & Phyllis K.
Ray Price	Janean Sellers	Watlington
Jeramie Prine	Mr. & Mrs. Senitte	C Wawak
Jodee Pring	Eric Severns	Bill Weaver
Charles & Vyrla Prior	Ray Shaffer	Eric Weber
Jonathan Proctor	Gregory Shedd	Jack Welch
Kevin Proescholdt	Sean Sheehan	Jennifer Wellman

Darren Wells
John Wells
Frank Wertz
Rondal Wendling
Alan Werner
Ed & Deborah Whitmer
John Wiest
Kim Wilbert

Mike Williams
Joe Winkler
Al Witzel
James Wolf
Alex Wolfer
Scott Woodruff
Spencer Woods
George Wuerthner

Kristin Yannone
Steve Yekel
Joe Yelton
Elmer Zenisek
Fred & Linda Ziegler
Tom Zimmer

Glossary

Term	Definition
Adaptive management	An approach to natural resource management where actions are designed and executed and effects are monitored for the purpose of learning and adjusting future management actions, which improves the efficiency and responsiveness of management.
Age class	Age class is one of the intervals, commonly 10 years, into which the age range of trees is divided for classification or use. Age class distribution refers to the location and/or proportionate representation of different age classes in a forest.
Aggradation	The process of building up a surface by deposition; a long-term or geologic trend in sedimentation.
Air quality related values	Air quality related values are resources that may be affected by a change in air quality and generally relate to visibility, odor, flora, fauna, soil, water, climate, geological features, and cultural resources. Values are specific for each wilderness area.
Allowable use	The degree of use of range or pastureland considered desirable and attainable, considering the present nature and condition of the resource, the management objective, and the level of investment.
Allowable sale quantity	The quantity of timber that may be sold from an area of suitable land covered by a forest plan for a time specified by the plan. This quantity is usually expressed on an annual basis as the average annual allowable sale quantity.
Animal unit month	An animal unit month is the equivalent to the amount of dry forage consumed by a 1,000-pound non-lactating cow in 1 month (approximately 780 pounds, or 26 pounds per day).
Application Rules	The application rules are outlined in the Final Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Area (Interagency Conservation Strategy Team 2007).
Appropriate management response	An appropriate management response is any action suitable to meet fire management unit objectives. Typically, the appropriate management response ranges across a spectrum of tactical options (from monitoring to intensive management actions). The appropriate management response is developed by using fire management unit strategies and objectives identified in a forest's fire management plan.

Term	Definition
Aquatic ecosystem	Waters of the United States that serve as habitat for interrelated and interacting communities and populations of plants and animals. It includes the stream channel, lake or estuary bed, water, biotic communities, and the habitat features that occur.
Bankfull	Bankfull stage is the stage at which a stream first overflows its natural banks.
Bark beetles	Bark beetles are members of the family Scolytidae whose adults and larvae tunnel in the cambium region (bark and sapwood) or living, dying, and recently dead or felled trees and do immense damage to trees all over the world.
Basal area	The area of ground surface occupied by the stem of a plant, as contrasted with the full spread of its foliage, generally measured at 1 inch above soil level.
Beneficial uses	Any of the various uses that may be made of the water, including, but not limited to, domestic water supplies, fisheries and other aquatic life, industrial water supplies, agricultural water supplies, navigation, recreation in and on the water, wildlife habitat, and aesthetics.
Best management practices	Practice or set of practices that enable a planned activity to occur while still protecting the resource managed, normally implemented and applied during the activity rather than after the activity.
Big game	Those species of large mammals normally managed for sport hunting, generally including antelope, bighorn sheep, deer, elk, moose, and mountain goat.
Big game (crucial) winter range	Big game winter range is where a population or portion of a population of animals uses the documented suitable habitat within this range annually, in substantial numbers only during the winter. Crucial winter range describes any portion of the range which has been documented as the determining factor in a population's ability to maintain itself at a certain level (theoretically at or above the Wyoming Game and Fish population objective) over the long term.
Biological opinion	Biological opinions document a U.S. Fish and Wildlife Service opinion as to whether a Federal action is likely to jeopardize the continued of an Endangered Species Act-listed species, or result in the destruction or adverse modification of species' critical habitat.
Boreal disjunct plants	Boreal disjunct plants are remnants of the boreal (northern) ecosystem that remain in high elevation places.

Term	Definition
Candidate species	Plant and animal species being considered for listing as endangered or threatened under the Endangered Species Act.
Capital investment	A capital investment is expenditure of funds on infrastructure.
Carex	Carex is a genus of plants in the family Cyperaceae, commonly known as sedges.
Channel	An open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of water.
Clearcut	A regeneration or harvest method that removes essentially all trees in a stand. A stand in which essentially all trees have been removed in one operation to produce an even-aged stand.
Coarse woody debris	Provides living spaces for a host of organisms and serves as long-term storage sites for moisture, nutrients, and energy. Coarse woody debris consists of any woody material greater than 3 inches in diameter and is derived from tree limbs, boles, roots, and large (greater than 12 inches in diameter) wood fragments and fallen trees in various stages of decay.
Collaboration	Working with someone to produce or create something.
Community wildfire protection plan	A community wildfire protection plan is a plan developed in the collaborative framework established by the Wildland Fire Leadership council and agreed to by state, tribal, and local government, local fire department, other stakeholders, and Federal land management agencies managing land near the planning area. A community wildfire protection plan identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment on Federal and non-Federal land that will protect one or more at-risk communities and essential infrastructure and recommends measures to reduce structural ignitability throughout the at-risk community. A community wildfire protection plan may address issues such as wildfire response, hazard mitigation, community preparedness, or structure protection; or all of the above.

Term	Definition
Condition class	Depiction of the degree of departure from historical fire regimes, possibly resulting in alterations of key ecosystem components. These classes categorize and describe vegetation composition and structure conditions that currently exist inside the fire regime groups. Based on the coarse-scale national data, they serve as generalized wildfire rankings. The risk of loss of key ecosystem components from wildfires increases from condition class 1 (lowest risk) to condition class 3 (highest risk).
Connectivity	The arrangements of habitats that allow organisms and ecological processes to move across the landscape. Patches of similar habitats are either close together or linked by corridors of approved vegetation. The opposite of fragmentation.
Conservation status ranking	Conservation status ranks estimate a species risk of elimination. Status ranks are based on a 1 to 5 scale, 1 denoting a species is critically impaired and 5 denoting a species is secure. Species status is assessed at three geographic scales: global (G), national (N), and state/province (S). The overall status of a species is denoted by its G-rank, while its condition in a particular country is denoted by its N-rank, and its condition in a particular state/province is denoted by its S-rank. State rank is assigned by Wyoming Natural Diversity Database biologists and denotes a species probability of elimination in Wyoming (NatureServe 2012; Wyoming Natural Diversity Database 2012). Subspecies, varieties, or any other designation below the level of a global-ranked species, receive a T-rank that denotes their conservation status. A species may receive a B- or N-rank that refers to the conservation status of the breeding (B) or non-breeding (N) population in a particular nation or state/province.
Conservation strategy	A conservation strategy is a management scheme or plan to conserve or sustain particular ecosystem elements such as rare species or habitats. An example of a conservation strategy would be to survey for potential habitats during project planning in order to protect known populations of a rare species through project-specific measures.
Coppice (Coppice with standards)	Coppice is a vegetation reproduction method with clear felling or clearcutting. Clear felling stimulates sprouting from the residual roots. Standards are selected overstory trees reserved for a longer rotation at the time each crop of coppice material is cut.

Term	Definition
Corridors	Avenues along which wide-ranging animals can travel, plants can propagate, genetic interchange can occur, populations can move in response to environmental changes or natural disasters, and threatened species can be replenished from other areas.
Cultural properties	The definite location of a past human activity, occupation, or use identifiable through field inventory, historic documentation, or oral evidence. Cultural properties include prehistoric and historic archaeological remains, or architectural sites, structures, objects, or places with important public and scientific uses.
Cultural resources	Cultural resources are the physical remains of human activity (artifacts, ruins, burial mounds, petroglyphs, etc.) and conceptual content or context (as a setting for legendary, historic, or prehistoric events, as a sacred area of native people, etc.) of an area or prehistoric or historic occupation.
Deciduous	A deciduous tree or shrub sheds its leaves annually.
Decommission	Demolition, dismantling, removal, obliteration, and/or disposal of a deteriorated or otherwise unneeded asset or component, including necessary cleanup work. This action eliminates the deferred maintenance needs for the fixed asset. Decommissioning roads includes activities that result in the stabilization and restoration of unneeded roads to a more natural state.
Deferred maintenance	Maintenance that was not performed when it should have been or when it was scheduled and which was delayed. When allowed to accumulate without limits or consideration of useful life, deferred maintenance leads to deterioration of performance, increases costs to repair, and decrease in net value.
Degradation	To wear down by erosion, especially through stream action.
Designated wilderness	Designated wilderness refers to any area of land designated by Congress as part of the National Wilderness Preservation System that was established by the Wilderness Act of 1964.
Developed recreation	Developed recreation is outdoor recreation requiring significant capital investment in facilities to handle a concentration of visitors on a relatively small area. Examples are ski areas, resorts, and campgrounds.
Developed site	Developed recreation sites are relatively small, distinctly defined areas where facilities are provided for concentrated public use, such as campgrounds and picnic areas.

Term	Definition
Disjunct	Disjunct populations are separated from other populations.
Dispersed recreation	Dispersed recreation is outdoor recreation in which visitors are diffused over relatively large areas. Where facilities or developments are provided, they are more for access and protection of the environment than for the comfort or convenience of the people.
Disturbance	A disturbance is a discrete event that changes existing plant community composition or structure, and interrupts, changes, or resets the ongoing successional sequence. Disturbances may include human presence, noise, or other activity that causes wildlife to move away from the area or alter behavior.
Early detection and rapid response	The long-term goals of the early detection and rapid response system are to detect, report, and identify suspected new invasive plants with free living populations in the United States.
Ecological conditions	Components of the biological and physical environment that can affect diversity of plant and animal communities and the productive capacity of ecological systems. These components could include the abundance and distribution of aquatic and terrestrial habitats, roads and other structural developments, human uses, and invasive species.
Ecological niche	The physical space in a habitat occupied by an organism; its functional role in the community, e.g., its trophic position; and its position in environmental gradients of temperature, moisture, pH, soil, and other conditions of existence.
Ecosystem	An interacting system of living organisms and their environment.
Endangered species	A plant or animal species listed under the Endangered Species Act that is in danger of extinction throughout all or a significant portion of its range.
Endangered Species Act	Public Law 93-205, approved in 1973 and since amended, the Endangered Species Act provides for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend.
Endemic	Endemic denotes an area in which a particular disease is regularly found, that is, the disease is native. Endemic populations of plants or animals are native to a particular area.

Term	Definition
Even-aged management	A planned sequence of treatments designed to maintain and regenerate a stand with predominantly one age class. The range of tree ages is usually less than 20 percent of the rotation age planned for the stand.
Final regeneration harvest	Timber harvest designed to regenerate a timber stand or release a regenerated stand. This includes clearcut, removal cut of a shelterwood or seed tree system, and selection cut.
Fire management plan	A fire management plan is developed for all areas with burnable vegetation. The fire management plan is a strategic plan that defines a program to manage wildland and prescribed fires based on the forest plan. The fire management plan will provide for firefighter and public safety.
Fire regime	Description of the patterns of fire occurrences, frequency, size, severity, and sometimes vegetation and fire effects as well, in a given area or ecosystem. A fire regime is a generalization based on fire histories at individual sites. Fire regimes can often be described as cycles because some parts of the histories usually are repeated, and the repetitions can be counted and measured, such as fire return interval.
Fire regime condition class	Fire regime condition class is an expression of the departure of the current condition from the historical fire regime. It is derived from the historical fire regime and the current fire severity. It is used as a proxy for the probability of severe fire effects, e.g., the loss of key ecosystem components—soil, vegetation, structure—or alteration of key ecosystem processes—nutrient cycles, hydrologic regimes. The fire regime condition class is an index of ecosystem risks attributable to wildland fire.
Fire suppression	All the work of extinguishing or confining a fire beginning with its discovery.
Fish toxicant	A chemical that kills fish.
Fladry	Fladry is flagging placed on fences.
Forbs	Forbs are herbaceous flowering plants other than grasses.
Forest health	The perceived condition of a forest derived from concerns about such factors such as its age, structure, composition, function, and vigor, presence of unusual levels of insects and diseases, and resilience to disturbance.

Term	Definition
Fragmentation	A condition in which a continuous area is reduced and divided into smaller sections. Habitat can be fragmented by natural events or development activities.
Fuel load	The amount of fuel present expressed quantitatively in terms of weight of fuel per unit area. This may be available (consumable) fuel or total fuel and is usually dry weight.
Fuel treatment	Any manipulation or removal of fuels to lessen potential damage and resistance to control (includes mechanical and prescribed fire treatments).
Geophysical	Geophysical describes a branch of earth science dealing with the physical processes and phenomena occurring especially in the earth and in its vicinity.
Geophysical prospecting	Geophysical operations (seismic, gravity, magnetic, etc.) surveys) necessary to gather data which will facilitate an evaluation of the potential occurrence of a mineral deposit or geological structures that would warrant further exploration.
Graminoids	Graminoids are plants with narrow leaves growing from the base. Forbs are broad-leaved herbs other than grasses.
Greater Yellowstone Area	Federal lands in the Greater Yellowstone Area, or Ecosystem, are managed by the Greater Yellowstone Coordinating Committee. About 15 million acres of public lands are managed by the USDA Forest Service, National Park Service, U.S. Fish and Wildlife Service, and Bureau of Land Management. It includes six national forests (Beaverhead
Ground cover	In soil conservation, grasses or other plants grown to keep soil from being blown or washed away. In horticulture, low growing plants such as vinca and ginger that do not require mowing.
Groundwater	Water in the ground that is in the zone of saturation, from which wells, springs, and groundwater runoff are supplied.

Term	Definition
Group selection	A method of regenerating uneven-aged stands in which trees are cut, in small groups, and new age classes are established. The width of groups is commonly approximately twice the height of the mature trees, with small openings providing suitable microclimates for shade-tolerant tree species to regenerate, and the larger openings providing suitable microclimates for more shade-intolerant tree species to regenerate.
Habitat	A geographical area that can provide for the key activities of life.
Hazard fuel rating	Hazard fuel rating based on areas mapped using Standard Fire Behavior Models: Low = Fuel Model 1; Moderate = Fuel Models 2, 4, 5, and 8; and High = Fuel Models 6 and 10.
Hazardous fuel	Hazardous fuel is a complex defined by kind, arrangement, volume, condition, and location that presents a threat of ignition and resistance to control.
Herbaceous	Of, denoting, or relating to herbs.
Hibernacula	Habitat niches where certain animals, e.g., bats, over-winter, such as caves, mines, tree hollows, or loose bark.
Hydrologic unit boundary	A hydrologic unit boundary is a geographic area representing all or part of a surface drainage basin or distinct hydrologic feature. A 6th level hydrologic unit boundary ranges in size from 10,000 to 40,000 acres and is named and coded with 12 digits.
Ichnofossil	An ichnofossil is a trace fossil, such as that of an animal's track or burrow.
Infra	Infra is a collection of web-based data entry forms, reporting tools, and GIS tools that enable the Forest Service to manage and report accurate information about the inventory of constructed features and land units as well as the permits sold to the public and to partners.
Infrastructure	The basic physical and organizational structures and facilities, e.g., buildings, roads, and power supplies, needed for operation.
Integrity	The capacity to support and maintain a balanced, integrated, and adaptive biological system having the full range of elements and processes expected in a region's natural habitat.
Interpretation	Explaining the meaning or significance of something.

Term	Definition
Invasive species	A species is invasive if it meets two criteria: (1) is nonnative to the ecosystem, and (2) its introduction causes or is likely to cause economic or environmental harm or harm to human health.
Krummholz	Krummholz refers to stunted trees near timberline.
Ladder fuel	Ladder fuels are fuels that provide vertical continuity between strata, allowing fire to carry from surface fuels into the crowns of trees with relative ease.
Large woody debris	<p>Large pieces of relatively stable woody material located within the bankfull channel and appearing to influence bankfull flows.</p> <p>Single – A single piece that has a length equal to or greater than 3 meters or two-thirds of the wetted stream width and 10 centimeters in diameter one-third of the way from the base.</p> <p>Aggregate – Two or more clumped pieces, each of which qualifies as a single piece.</p> <p>Rootwad – Rootmass or boles attached to a log less than 3 meters in length.</p>
Leave tree	A leave tree is a tree marked to be left standing in an area where it would otherwise be felled.
Long-term sustained yield capacity	The highest uniform wood yield from lands being managed for timber production that may be sustained under specified management intensity consistent with multiple-use objectives.
Lynx analysis unit	A lynx analysis unit is an area of at least the size used by an individual lynx, from about 25 to 50 square miles.
Maintenance level	Maintenance level refers to the level of service provided by, and maintenance required for, a specific road. Maintenance level 1 = roads placed in storage for longer than one year, closed to vehicular traffic; maintenance level 2 = roads open for use by high-clearance vehicles, minor traffic, no warning signs; maintenance level 3 = roads open and maintained for a standard passenger car, low speed travel, warning signs provided; maintenance level 4 = moderate travel speeds, single or double lane, aggregate or paved surface; maintenance level 5 = high degree of user comfort, single or double lane, generally paved surface.
Management action or activity	An action or activity humans impose on a landscape for the purpose of managing natural resources

Term	Definition
Management indicator species	Terrestrial and aquatic wildlife species that are used to promote more effective management of diversity and wildlife habitats on National Forest System lands.
Mechanical treatment	Mechanical vegetation treatment is any activity undertaken to modify the existing condition of the vegetation accomplished with mechanical equipment.
Mechanized	Wheeled forms of transportation, including non-motorized carts, wheelbarrows, bicycles, and any other non-motorized, wheeled vehicle.
Minerals	<p>Locatable – Hard rock minerals that are mined and processed for the recovery of metals. They may include certain non-metallic minerals and uncommon varieties of mineral materials such as valuable and distinctive deposits of limestone or silica.</p> <p>Leasable – Coal, oil, gas, phosphate, sodium, potassium, oil shale, sulfur, and geothermal resources.</p> <p>Salable (or mineral materials) – A collective term to describe common varieties of sand, gravel, stone, pumice, cinders, clay, and other similar materials. Common varieties do not include deposits of those materials that may be locatable.</p>
Mitigation	Measures implemented to minimize, reduce, rectify, avoid, eliminate, and/or compensate the potential impacts to resources identified in the effects analysis.
Monoculture	Of a single species, generally even-aged.
Montane	Of or inhabiting mountainous country.
Mosaic	Mosaic refers to the intermingling of plant communities and their successional stages in such a manner as to give the impression of an interwoven design.
Motor vehicle use map	A motor vehicle use map is a map reflecting designated roads, trails, and areas open to motorized public use on an administrative unit or a ranger district of the National Forest System.

Term	Definition
National Forest System lands	National Forest System lands are lands reserved or withdrawn from the public domain of the United States, all national forest lands acquired through purchase, exchange, donation, or other means, the national grasslands and land utilization projects administered under title III of the Bankhead-Jones Farm Tenant Act (50 Stat. 525, 7 USC 1010-1012), and other lands, waters, or interests therein which are administered by the Forest Service or are designated for administration through the Forest Service as a part of the system. 16 USC 1609(a).
National Register of Historic Places	The National Register of Historic Places is the Nation's official list of cultural resources worthy of preservation. Authorized under the National Historic Preservation Act of 1966, the National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect our historic and archaeological resources. Properties listed in the Register include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture. The National Register is administered by the USDI National Park Service.
Off-highway vehicle	An off-highway vehicle is any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain.
Openings	Meadows, clearcuts, and other areas of vegetation that do not provide cover.
Organic matter	In soil, the organic fraction that includes plant and animal residues at various stages of decomposition, cells and tissues of soil organisms, and substances synthesized by the soil population; commonly determined as the amount of organic material contained in a soil sample passed through a 2-millimeter sieve.
Overstory	That portion of the trees, in a forest of more than one story, forming the upper or uppermost canopy layer.
Over-the-snow vehicle	Over-snow vehicles are vehicles that are designed for use over snow and that run on a track or tracks and/or a ski or skis, while in use over snow.
Palsa	Palsa are low, often oval frost heaves occurring in polar and sub-polar climates, which contain permanently frozen ice lenses.
Parturition area	Parturition areas are birthing areas.

Term	Definition
Party	A group of people readily recognized as traveling together.
Perennial stream	A stream that flows continuously.
Plan area	The National Forest System lands covered by a plan.
Prescribed fire	Prescribed fire is a wildland fire originating from a planned ignition to meet specific objectives identified in a written, approved prescribed fire plan for which National Environmental Policy Act requirements (where applicable) have been met prior to ignition.
Primary Conservation Area	The primary conservation area is described in the Final Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Area (Interagency Conservation Strategy Team 2007). The primary conservation area is the same as the original grizzly bear recovery zone; it is the area where stipulations to protect grizzlies are applied. About 1,230,000 acres of the Shoshone are in the primary conservation area.
Proposed species	Any species that is proposed by the U.S. Fish and Wildlife Service or National Marine Fisheries Service to be listed as threatened or endangered under the Endangered Species Act.
Rangeland	Rangeland refers to land on which vegetation is predominantly grasses, forbs, or shrubs suitable for grazing or browsing. Rangeland may include some forest and barren land.
Recreation opportunity spectrum	A framework of land delineations that identifies a variety of recreation experience opportunities categorized into classes on a continuum. The Spectrum's continuum has been divided into six major classes for Forest Service use: urban, rural, roaded natural, semi-primitive motorized, semi-primitive non-motorized, and primitive.
Recreational livestock use	Recreational livestock use refers to the use of an area by domesticated animals, such as horses, llamas, and mules, which are used primarily in conjunction with recreation activities.
Regeneration	Natural – A group or stand of young trees created from germination of seeds from trees on the site or sprouting from trees on the site. Artificial – A group or stand of young trees created by direct seeding or by planting seedlings or cuttings.

Term	Definition
Resilience	The amount of change a system can undergo (its capacity to absorb disturbance) and remain with the same regime—essentially retaining the same function, structure, and feedbacks.
Restore/restoration	Restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. It is an intentional activity that initiates or accelerates the recovery of an ecosystem with respect to its health, integrity, and sustainability.
Riparian	A riparian ecosystem is a transition area between the aquatic ecosystem and the adjacent terrestrial ecosystem, identified by soil characteristics or distinctive vegetation communities that require free or unbound water.
Road	A motor vehicle route over 50 inches wide, unless identified and managed as a trail.
Road construction	Activity that results in the addition of system or temporary road miles.
Road decommissioning	Activities that result in the stabilization and restoration of unneeded roads to a more natural state.
Road maintenance level	See maintenance level.
Road reconstruction	Activity that results in improvement or realignment of a system road.
Salvage	Salvage refers to removal of trees that are dead or in imminent danger of being killed or damaged by injurious agents other than competition between trees, to recover economic value that would otherwise be lost.
Sawtimber	Sawtimber refers to trees fit to yield saw logs (considered suitable in size and quality for producing sawn timber).

Term	Definition
Scenic Integrity Objective	<p>Scenic integrity objectives serve as the desired conditions for the scenic resources and represent the degree of intactness of positive landscape attributes. Scenic integrity objectives are categorized into five levels. The highest ratings are given to those landscapes where valued landscape attributes will appear complete with little or no visible deviations. Lower ratings are given to those landscapes where modifications will be more evident.</p> <p>Very high – Landscape is intact with changes resulting primarily through natural processes and disturbance regimes.</p> <p>High – Management activities are unnoticed and the landscape character appears unaltered.</p> <p>Moderate – Management activities are noticeable but are subordinate to the landscape character. The landscape appears slightly altered.</p> <p>Low – Management activities are evident and sometimes dominate the landscape but are designed to blend with surroundings by repeating line, form, color, and texture of valued landscape character attributes. The landscape appears altered.</p> <p>Very low – Human activities of vegetation and landform alterations may dominate the original, natural landscape character but should appear as natural occurrences when viewed at background distances.</p>
Secure habitat	<p>An area where wildlife retreat to for safety when disturbance in their usual range is intensified, such as by logging activities or during hunting seasons.</p>
Sedge	<p>A sedge is a grasslike plant with triangular stems and inconspicuous flowers, growing typically in wet ground.</p>
Seepage	<p>Water escaping through or emerging from the ground along an extensive line or surface as contrasted with a spring where the water emerges from a localized spot. Also, the slow movement of gravitational water through the soil.</p>
Seral	<p>Seral refers to the gradual supplanting of one community of plants by another, the sequence of communities being termed a sere and each stage seral (successional).</p>

Term	Definition
Shelterwood	<p>A method of regenerating an even-aged stand in which a new age class develops beneath the moderated microclimate provided by the residual trees on a site. When employed, the treatment sequence includes three distinct types of cuttings: (1) an optional preparatory cut to enhance conditions for seed production, (2) a shelterwood seed cut (or establishment cut) to establish a moderated microclimate, prepare the seed bed, and create a new age class, and (3) a shelterwood removal cut (or overstory removal cut) to release established regeneration from competition with the overstory. Cuttings may be done uniformly throughout the stand, in groups or patches (group shelterwood), or in strips (strip shelterwood).</p> <p>With reserves – A regeneration method in which some or all of the shelter trees are retained to attain goals other than regeneration. This method creates an even-aged stand or a two-aged stand if sufficient trees are removed.</p>
Silviculture	<p>The theory and practice of controlling the establishment, composition, constitution, and growth of forests.</p>
Single-tree selection	<p>An uneven-aged method where individual trees of all size classes are removed more or less uniformly throughout the stand, to promote growth of remaining trees and to provide space for regeneration.</p>
Size class	<p>Size class is based on basal area weighted diameter of the plot or stand.</p>
Slope stability	<p>The resistance of any inclined surface, as the wall of an open pit or cut, to failure by sliding or collapsing.</p>
Smoke-sensitive area	<p>An area in which smoke from outside sources is intolerable, for reasons such as heavy population, existing air pollution, or intensive recreation use.</p>
Snag	<p>A snag is a standing, dead tree.</p>
Snowmobile	<p>A motorized vehicle 50 inches or less in width, designed for use over snow, runs on a track and uses one or more skis for steering.</p>
Special use authorization	<p>A permit, term permit, lease, or easement that allows occupancy, use, rights, or privileges of National Forest System land.</p>
Stand replacement fire	<p>A fire severity classification where at least 75 percent average top-kill of vegetation occurs within a typical fire perimeter.</p>

Term	Definition
Stewardship contracts	Stewardship contracting authorities allow agencies to package a diverse array of land stewardship work by combining the disposal of goods, e.g., timber or other forest products, with contracts to perform services, e.g., road decommissioning, watershed restoration, stream restoration, hazardous fuel reduction, etc.
Stocking	The degree to which an area is effectively covered with living trees. Fully stocked stands contain as many trees per acre as can properly use the growing space available.
Structure	The horizontal and vertical physical elements of forests and grasslands and the spatial interrelationships of ecosystems.
Stubble	The basal portion of plants remaining after the top portion has been harvested. Also, the portion of the plants, principally grasses, remaining after grazing is completed.
Succession	The sequential process of long-term plant community change and development that occurs following a disturbance.
Suppression	The work of extinguishing a fire or confining fire spread.
Surface water	Water on the surface of the earth.
Sustainability	Meeting the needs of the present generation without compromising the ability of future generations to meet their needs.
Temporary road	A road necessary for emergency operations or authorized by contract, permit, lease, or other written authorization. Temporary roads are not included in a national forest's transportation atlas.
Thinning	An intermediate treatment made to reduce stand density of trees primarily to improve growth, enhance forest health, or to recover potential mortality.
Threatened species	Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
Three-county area	The three-county area, relative to the Shoshone National Forest, includes Fremont, Park, and Hot Springs counties in Wyoming.
Timber harvest	The removal of trees for wood fiber utilization and other multiple-use purposes.

Term	Definition
Timber production	<p>The purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use.</p> <p>Managing land to provide commercial timber products on a regulated basis with planned, scheduled entries.</p>
Timber sale program quantity	<p>The estimated output of timber from the plan area. The estimate is displayed as an average annual cubic foot output for a decade. It includes projected outputs from lands generally suitable for timber harvest. The projected timber outputs reflect past and projected budget levels and organizational capacity to achieve the desired conditions and objectives in the plan (36 CFR 219.12 and Forest Service Manual 1921.12).</p>
Timber stand improvement	<p>Intermediate cuttings made to improve the composition, constitution, condition, and increment of a timber stand.</p>
Topo-edaphically	<p>Of or relating to topography and soil, especially as it affects living organisms</p>
Trail	<p>A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail.</p>
Unauthorized road or trail	<p>A road or trail that is not included in a forest transportation atlas.</p>
Uneven-aged management	<p>Regeneration and maintenance of stands with a multi-aged structure by removing some trees from all size classes singly or in groups or in strips.</p>
Ungulate	<p>A hoofed animal.</p>
Values to be protected	<p>Include property, structures, physical improvements, natural and cultural resources, community infrastructure, and economic, environmental, and social values.</p>
Vegetation management	<p>Activities designed primarily to promote the health of forest vegetation in order to achieve desired results. When vegetation is actively managed, it is manipulated or changed by humans to produce desired results. Where active management of vegetation is required, techniques are based on the latest scientific research and mimic natural processes as closely as possible. Vegetation management is the practice of manipulating the species mix, age, fuel load, and/or distribution of wildland plant communities within a prescribed or designated management area in order to achieve desired results.</p>
Water right	<p>The legal rights to the use of water.</p>

Term	Definition
Wetland	Seasonally flooded basins or flats; the period of inundation is such that the land can usually be used for agricultural purposes. Also, lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water.
Wildfire	Wildfire is an unplanned, unwanted wildland fire, including unauthorized human-caused fires, escaped prescribed fires, and all other wildland fires where the objective is to put the fire out.
Wildland fire	Wildland fire is a general term describing any non-structure fire that occurs in the wildland.
Wildland-urban interface	Wildland urban interface refers to the line, area, or zone where structures and other human developments meet or intermingle with undeveloped wildland or vegetation fuels.

Literature Cited

- Allen, K.K.; Long, D.F.; and McMillin, J.D. 2006. Effectiveness of MCH in preventing Douglas-fir beetle attacks during a prolonged outbreak. USDA Forest Service, Rocky Mountain Region, Technical Report R2-66.
- Altman, B. and Sallabanks, R. 2000. Olive-sided Flycatcher (*Contopus cooperi*), The Birds of North America Online (Poole, A. Editor). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online. Available: <http://bna.birds.cornell.edu/bna/species/502> doi:10.2173/bna.502
- Amman, G.D. and Cole, W.E. 1983. Mountain pine beetle dynamics in lodgepole pine forests. Part II: population dynamics. General Technical Report INT-145. USDA Forest Service, Intermountain Forest and Range Experiment Station.
- Amman, G.D.; Lessard, G.D.; Rasmussen, L.A.; O'Neil, C.G. 1988. Lodgepole pine vigor, regeneration, and infestation by mountain pine beetle following partial cutting on the Shoshone National Forest, Wyoming. Research Paper INT-396. USDA Forest Service, Intermountain Forest and Range Experiment Station.
- Amman, G.D.; McGregor, M.D.; Cahill, D.B.; and Klein, W.H. 1977. Guidelines for reducing stand loss of lodgepole pine to the mountain pine beetle in unmanaged stands in the Rocky Mountains. General Technical Report INT-36. USDA Forest Service, Intermountain Forest and Range Experiment Station.
- Anderson, C.R.; Ternent, M.A.; Moody, D.S.; Bruscano, M.T.; and Miller, D.F. 1997. Grizzly Bear-Cattle Interactions on Two Cattle Allotments in Northwest Wyoming. Trophy Game Section, Wyoming Game and Fish Department, Laramie, WY. 78 pp.
- Anderson, G.D. 2006. *Festuca hallii* (Vasey) Piper (Hall's fescue): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/festucahallii.pdf>
- Anderson, H.E. 1982. Aids to determining fuel models for estimating fire behavior. USDA Forest Service. General Technical Report INT-122. Intermountain Forest and Range Experiment Station, Ogden, Utah 84401. 22 p.
- Barnes, B.V. 1966. The clonal growth habitat of American aspens. [JSTOR]. Ecological Society of America. 47(3). <http://www.jstor.org/stable/1932983>. (02 June 2008).
- Bartlett, E.T. 1983. Valuing Range Forage on Public Rangelands. Proceedings: Range Economics Symposium and Workshop, Salt Lake City, Utah. USDA Forest Service, General Technical Report, INT-149.
- Bartlett, E.T.; Taylor, R.G.; and McKean, J.R. 1979. Impacts of Federal Grazing on the Economy of Colorado, A report to the U.S. Forest Service, Bureau of Land Management, and the Colorado State Agricultural Experiment Station, Fort Collins, Colorado.
- Beauvais, G.P. and Johnson, L. 2004. Species Assessment for Wolverine (*Gulo gulo*) in Wyoming. Wyoming Natural Diversity Database, Laramie, WY. Prepared for the USDO-ILM, Cheyenne, WY.

- Bechard, M.J. and Schmutz, J.K. 1995. Ferruginous Hawk (*Buteo regalis*), The Birds of North America Online (Poole, A. Editor). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online. Available:
<http://bna.birds.cornell.edu/bna/species/172doi:10.2173/bna.172>
- Beecham, J.J. Jr.; Collins, C.P.; and Reynolds, T.D. 2007. Rocky Mountain Bighorn Sheep (*Ovis canadensis*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available:
<http://www.fs.fed.us/r2/projects/scp/assessments/rockymountainbighornsheep.pdf> .
- Belica, L.T. and Nibbelink, N.P. 2006. Mountain Sucker (*Catostomus platyrhynchus*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available:
<http://www.fs.fed.us/r2/projects/scp/assessments/mountainsucker.pdf>
- Berg, N. D.; Burghardt, J.; Gray, R.; and Smith, B. 2005. The Greater Yellowstone lynx study: 2004/2005 annual report. Unpublished report on file at Endeavor Wildlife Research Foundation, Jackson, Wyoming.
- Bevenger, G. 2010. Wilderness Air Quality Value Plan, Shoshone National Forest.
- Bighorn Basin Sage Grouse Local Working Group. 2007. Sage-grouse conservation plan for the bighorn basin, Wyoming. August 31, 2007.
- Bjornlie, D. 2011. Grizzly bear use of insect aggregation sites documented from aerial telemetry and observations. Pages 33-35 in C.C. Schwartz, M. Haroldson, and K. West, eds., Yellowstone grizzly bear investigations: Annual report of the Interagency Grizzly Bear Study Team, 2010. U.S. Geological Survey, Bozeman, MT, USA.
- Blanchard, B.M. 1990. Relationships between whitebark pine cone production and fall grizzly bear movements. Pages 362-363 in W.C. Schmidt and K.J. McDonald, eds., Proceedings of a symposium on whitebark pine ecosystems: Ecology and management of a high-mountain resource. USDA Forest Service. General Technical Report INT-270.
- Blanchard, B.M. and Knight, R.R. 1991. Movement of Yellowstone grizzly bears, 1975-87. *Biological Conservation*. 58: 41-67.
- Bowker, M.; Starbuck, C.M.; English, D.B.K.; Bergstrom, J.C.; Rosenberger, R.S.; and McCollum, D.W. (2009). Estimating the net economic value of national forest recreation: An application of the national visitor use monitoring database. Athens, GA: The University of Georgia, Department of Agricultural and Applied Economics. 222 pp.
- Boyce, M.S.; Blanchard, B.M.; Knight, R.R.; and Servheen, C. 2001. Population viability for grizzly bear: A critical review. Interagency Association for Bear Research and Management Monograph Series 34.
- Boyle, S. 2006. North American River Otter (*Lontra canadensis*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available:
<http://www.fs.fed.us/r2/projects/scp/assessments/northamericanriverotter.pdf>
- Brock, B.L.; Inman, R.M.; Inman, K.H.; McCue, A.J.; Packila, M.L.; and Giddings, B. 2007. Broad-scale wolverine habitat in the conterminous Rocky Mountain States. Pages 21-53

- in Greater Yellowstone Wolverine Program, Cumulative Report, May 2007. Wildlife Conservation Society, Ennis, Montana, USA.
- Brown, G. and Reed, P. 2000. Validation of a forest values typology for use in national forest planning. *Forest Science*. 46(2):240-247.
- Buehler, D.A. 2000. Bald Eagle (*Haliaeetus leucocephalus*), The Birds of North America Online (Poole, A. Editor). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online. Available: <http://bna.birds.cornell.edu/bna/species/506doi:10.2173/bna.506>
- Buskirk, S. 2002. Conservation assessment for the American marten in the Black Hills National Forest, South Dakota and Wyoming. University of Wyoming. Laramie, WY. Prepared for Rocky Mountain Research Station.
- Buskirk, S.W. and Ruggiero. L.F. 1994. The scientific basis for conserving forest carnivores: American marten, fisher, lynx, and wolverine in the Western United States. USDA Forest Service. General Technical Report RM-GTR-254.
- Buskirk, S.W.; Ruggiero, L.F.; Aubry, K.B.; Pearson, D.E.; Squires, J.R.; and McKelvey, K.S. 1999. Comparative ecology of lynx in North America. Chapter 14 in Ecology and Conservation of Lynx in the United States the Scientific Basis for Lynx Conservation. General Technical Report RMRS-GTR-30. USDA Forest Service. Rocky Mountain Research Station.
- Cahill, D.B. 1978. Cutting strategies as control measure of the mountain pine beetle in lodgepole pine in Colorado. In: A.A. Berryman, G.D. Amman and R.W. Stark (eds). Proceedings-Symposium on theory and practice of mountain pine beetle management in lodgepole pine forests. University of Idaho, Forest, Wildlife, and Range Experiment Station.
- Cerezke, H.F. 1995. Egg gallery, brood production, and adult characteristics of mountain pine beetle, *Dendroctonus ponderosae* Hopkins (Coleoptera: Scolytidae), in three pine hosts. *Canadian Entomologist* 127: 955-965.
- Chabot, D. 1991. The use of heart rate telemetry in assessing the metabolic cost of disturbances. *Transactions of the North American Wildlife and Natural Resources Conference* 56:256-263.
- Clement, J.M. and Cheng, A. 2008. Study of preferences and values on the Shoshone National Forest. Fort Collins, CO: Colorado State University. 19 p.
- Cody Interagency Dispatch Center. 2012. Cody interagency dispatch zone fire danger rating operating plan May 2012 v1.0. Cody Interagency Dispatch Zone Coordinating Group, Cody, WY: 29 p.
- Cole, D.M. 1989. Preventive strategies for lodgepole pine/mountain pine beetle problems: Opportunities for immature stands. In: Amman, G.D. (ed). Proceedings-Symposium on the management of lodgepole pine to minimize losses to the mountain pine beetle. General Technical Report INT-262. USDA Forest Service, Intermountain Forest and Range Experiment Station.

- Cole, G.F. 1972. Grizzly bear – elk relationships in Yellowstone National Park. *Journal of Wildlife Management*, Vol. 36, No. 2, April 1972, pp. 556-561.
- Cole, W.E.; Cahill, D.B.; and Lessard, G.D. 1983. Harvesting strategies for management of mountain pine beetle infestations in lodgepole pine: preliminary evaluation, East Long Creek demonstration area, Shoshone National Forest, Wyoming. Research Note INT-333. USDA Forest Service, Intermountain Forest and Range Experiment Station.
- Cooperative Extension Service (USDA Forest Service; Natural Resource Conservation Service; Grazing Land Technology Institute; USDI Bureau of Land Management). 1996. Sampling vegetation attribute: interagency technical reference. Denver, CO: http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044175.pdf.
- Copeland, J.P.; McKelvey, K.S.; Aubry, K.B.; Landa, A.; Persson, J.; Inman, R.M.; Krebs, J.; Lofroth, E.; Golden, H.; Squires, J.R.; Magoun, A.; Schwartz, M.K.; Wilmot, J.; Copeland, C.L.; Yates, R.E.; Kojola, I.; and May, R. 2010. The bioclimatic envelope of the wolverine (*Gulo gulo*): Do climatic constraints limit its geographic distribution? *Canadian Journal of Zoology* 88:1-14.
- Cordell, H.K.; Betz, C. J.; Green, G.; and Owens, M. 2008. Off-Highway Vehicle Recreation in the United States, Regions and States: A National Report from the National Survey on Recreation and the Environment (NSRE).
- Cordell, H.K.; Betz, C.J.; Green, G.T.; Mou, S.; Leeworthy, V.R.; Wiley, P.C.; Barry, J.J.; and Hellerstein, D. 2004. Outdoor recreation for 21st century America: a report to the nation: The national survey on recreation and the environment. State College, PA: Venture Publishing.
- Council on Environmental Quality. 1997. Environmental Justice, Guidance Under the National Environmental Policy Act. Washington DC. <http://www.whitehouse.gov/CEQ/>
- Crane, K. K.; Mosley, J. C.; Brewer, T. K.; Torstenson, W. L.F.; and Tess, M. W. 2001. Influence of cattle grazing on elk habitat selection; Proceedings, Western Section, American Society of Animal Science.
- Dean Runyan Associates. 2011. Wyoming Travel Impacts: 1998-2010p Detailed State and County Estimates. Prepared for Wyoming Travel and Tourism. April 2011.
- Debinski, D.M. 1994. Genetic diversity assessment in a metapopulation of the butterfly *Euphydryas gillettii*. *Biological Conservation* 70 (1994) 25-31.
- Duda, M.; De Michele, P.; Bissell, S.; Wang, P.; Herrick, J.; Lanier, A.; et al. 2001. Public attitudes toward grizzly bear management in Wyoming. Harrisonburg, Virginia: Responsive Management National Office.
- Ellingson, L.; Seidl, A.; and Mucklow, C.J. 2006. Tourists' Value of Routt County's Working Landscape, 2005. Economic Development Report, Department of Agricultural and Resource Economics, Fort Collins, CO, EDR 06-05, May.
- English, D.B.K. 2010. National Visitor Use Monitoring Results, May 2010, Data collected FY 2009, USDA Forest Service, Region 2, Shoshone National Forest.

- Environmental Protection Agency. 1999. U.S. Methane Emissions 1990 – 2020: Inventories, Projections, and Opportunities for Reductions. Washington, D.C.
- Environmental Protection Agency. 2012. Wyoming Area Designations for the 2008 Ozone National Ambient Air Quality Standards.
(http://www.epa.gov/ozonedesignations/2008standards/rec/eparesp/08_WY_tsd.pdf)
- Esposito, V.; Phillips, S.; Boumans, R.; Moulaert, A.; and Boggs, J. 2011. Climate change and ecosystem services: The contribution of and impacts on federal public lands in the United States. In: Watson, A.; Murrieta-Saldivar, J.; McBride, B., comps. Science and stewardship to protect and sustain wilderness values: Ninth World Wilderness Congress symposium; November 6–13, 2009. Merida, Yucatan, Mexico. Proceedings RMRS-P-64. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. pp. 155–164.
- Evenden, J.C. 1944. Montana's 30-year mountain pine beetle infestation. Northern region Insect Control Report.
- Fall, P. 1997. Fire history and composition of the subalpine forest of western Colorado during the Holocene. *Journal of Biogeography*. 24(3): 309-325.
- Foreyt, W.; Jenkins, E.J.; and Appleyard, G.D. 2009. Transmission of lungworms (*Muellerius capilaaris*) from domestic goats to bighorn sheep on common pasture. *Journal of Wildlife Diseases* 45(2): 272-278.
- Fralish, J.S. and Franklin, S.B. 2002. Taxonomy and ecology of woody plants in North American forests (excluding Mexico and subtropical Florida). New York, NY: John Wiley & Sons, Inc.: 612 pp.
- French, S.P.; French, M.G.; and Knight, R.R. 1994. Grizzly bear use of army cutworm moths in the Yellowstone ecosystem. *International Conference on Bear Research and Management* 9:389-399.
- Furniss, M. M.; Livingston, R.L.; and McGregor, M.D. 1981. Development of a stand susceptibility classification for Douglas-fir beetle, pp. 115-128. In R. L. Hedden, S. J. Barras, and J. E. Coster [eds.], *Proceedings, Symposium: Hazard-Ratings Systems in Forest Insect Pest Management*. USDA Forest Service Washington Office. General Tech. Rep. WO-27, Washington, DC.
- Furniss, M.M. 1962. Infestation patterns of Douglas-fir beetle in standing and windthrown trees in southern Idaho. *J. Econ. Entomology* 55:486-491.
- Gallant, A. L.; Hansen, A.J.; Councilman, J.S. 2003. Vegetation dynamics under fire exclusion and logging in a Rocky Mountain watershed, 1856-1996. *Ecological Applications*. 13: 385-403.
- Garber, C. S.; Wallen, R.L.; and Duffy, K.E. 1991. Distribution of boreal owl observation records in Wyoming. *Journal of Raptor Research* 25(4):120-122.
- Gee, C.K. 1981. Estimating Economic Impacts of Adjustments in Grazing on Federal Lands and Estimating Federal Rangeland Forage Values. Technical Bulletin 143, Colorado State University, Agricultural Experiment Station. Fort Collins, Colorado.

- Gee, C.K. 1983. The Use of Linear Programming to Estimate Range Forage Values. Proceedings: Range Economics Symposium and Workshop, Salt Lake City, Utah. USDA Forest Service, General Technical Report, INT-149.
- Gibson, K.E. 1989. Partial cutting (sanitation thinning) to reduce mountain pine beetle caused mortality. In: G.D. Amman (ed). Proceedings-Symposium on the management of lodgepole pine to minimize losses to the mountain pine beetle. General Technical Report INT-262. USDA Forest Service, Intermountain Forest and Range Experiment Station.
- Goddard Institute for Space Studies. 2007. Annual Mean Temperature Change for Three Latitude Bands. Datasets and Images. GISS Surface Temperature Analysis, Analysis Graphs and Plots. Available: <http://data.giss.nasa.gov/gistemp/graphs/fig.B.lrg.gif>.
- Greater Yellowstone Coordinating Committee. 2006. Outdoor Recreation in the Greater Yellowstone Area An Interagency Report. Available on line if you want to use the link: <http://fedgycc.org/RecreationintheGreaterYellowstoneArea.pdf.pdf>
- Greater Yellowstone Coordinating Committee, Whitebark Pine Subcommittee. 2011. Whitebark pine strategy for the Greater Yellowstone Area. Available: <http://fedgycc.org/WhitebarkPinePublicationsandArticles.htm>.
- Green, G.I.; Mattson, D.J.; and Peek, J.M. 1997. Spring feeding of ungulate carcasses by grizzly bears in Yellowstone National Park. *Journal of Wildlife Management* 61:1040-1055.
- Greer, A.J. 1994. The Nature of Federal Land Grazing Permits and Seasonal Grazing Dependencies in a Four-County Region in Southern Oregon, Oregon State University, Extension Service, Special Report 932, Corvallis Oregon.
- Gresswell, R.E. 2009. Yellowstone Cutthroat Trout (*Oncorhynchus clarkii bouvieri*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/yellowstonecutthroattrout.pdf>.
- Griffin, P.C. and Mills, L.S. 2007. Precommercial thinning reduces snowshoe hare abundance in the short term. *Journal of Wildlife Management*. 71(2):559-564.
- Griffin, R. 2004. Administrative activity on closed roads in the upper swan, lower swan, and noisy face geographic units. Prepared for Swan View Coalition and Montana Ecosystems Defense Council. Kalispell, MT.
- Grover, J.C. and Keinath, D.A. 2006. Townsend's Big-eared Bat (*Corynorhinus townsendii*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. October 25, 2006. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/townsendbig-earedbat.pdf> [6/4/09].
- Gunther, K.; Aber, B.; Brusino, M.; Cain, S.; Frey, K.; Haroldson, M.; and Schwartz, C. 2011. Grizzly bear-human conflicts in the Greater Yellowstone Ecosystem. Pages 41-44 in Schwartz, C.C.; Haroldson, M.; and West, K. Editors. Yellowstone grizzly bear investigations: Annual report of the Interagency Grizzly Bear Study Team, 2010. U.S. Geological Survey. Bozeman, MT.

- Gunther, K.A. and Renkin, R. 1990. Grizzly bear predation on elk calves and other fauna of Yellowstone National Park. *International Conference Bear Research and Management* 8:329-334.
- Hahn, W.F.; Crawford, T.L.; Nelson, K.E.; and Bowe, R.A. 1989. Estimating Forage Values for Grazing National Forest Lands, Staff Report No. 89-51, Commodity Economics Division, Economic Research Service, USDA, Washington D.C.
- Halfpenny, J.; Murphy, K.; and Reinhart, D. 1999. Lynx: Their Ecology and Biology and How Winter Recreation Effects Them. Pp. 49 to 64 in Olliff, T.; Legg, K.; and Kaeding, B. editors. *Effect of winter recreation on wildlife of the Greater Yellowstone Area: a literature review and assessment*. Report to the Greater Yellowstone Coordinating Committee. Yellowstone National Park, Wyoming. 315 pp.
- Hanni, D.J.; Birek, J.; White, C.; Sparks, R.; and Blakesley, J. 2009. Monitoring Wyoming's birds: 2008 field season report. Tech Rep. M-MWB08-01. Rocky Mountain Bird Observatory, Brighton, CO, 91 pp.
- Hansen, A. 2006. Yellowstone bioregional assessment: understanding the ecology and land use of the Greater Yellowstone. Technical Report #2. Bozeman, MT: Landscape Biodiversity Lab.
- Haroldson, M.A. 2011. Assessing trend and estimating population size from counts of unduplicated females. Pages 10-15 in Schwartz, C.C.; Haroldson M.A.; and West, K. Editors. *Yellowstone grizzly bear investigations: Annual report of the Interagency Grizzly Bear Study Team 2010*. U.S. Geological Survey, Bozeman, MT, USA.
- Haroldson, M.A.; Schwartz, C.C.; Cherry, S.; and Moody, D. 2004. Possible effects of elk hunting on the fall distribution of grizzly bears in the Greater Yellowstone Ecosystem. *Journal of Wildlife Management* 68(1): 129-137.
- Haroldson, M.A.; Ternent, M.A.; Gunther, K.A.; and Schwartz, C.C. 2002. Grizzly bear denning chronology and movements in the Greater Yellowstone Ecosystem. *Ursus* 13:29-37.
- Harris, R. 1999. Abundance and characteristics of snags in western Montana forests. Gen. Tech. Rep. RMRS-GTR-31. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 21p.
- Harris, R.B.; Schwartz, C.C.; Haroldson, M.A.; and White, G.C. 2006. Trajectory of the greater Yellowstone ecosystem grizzly bear population under alternative survival rates. Pages 45–56 in Schwartz, C.C.; Haroldson, M.A.; White, G.C.; Harris, R.B.; Cherry, S.; Keating, K.A.; Moody, D.; and Servheen, C. Editors. *Temporal, spatial and environmental influences on the demographics of grizzly bears in the greater Yellowstone ecosystem*. *Wildlife Monographs* 161.
- Havis, R. 2012. Shoshone National Forest Plan Revision, June 2012, Water yield simulations. USFS, Forest Management Service Center, Fort Collins, CO.
- Hayward, G. D. and Hayward, P. H. 1993. Boreal Owl (*Aegolius funereus*), *The Birds of North America Online* (Poole, A. Editor). Ithaca: Cornell Lab of Ornithology; Retrieved from the *Birds of North America Online*. Available: <http://bna.birds.cornell.edu/bna/species/063>

- Headwaters Economics. 2012. Economic Profile System- Human Dimension Tool. Profiles created for Fremont Hot Springs and Park County Wyoming for Federal payment information.
- Heidel, B. and Laursen, S. 2003. Botanical and Ecological Inventory of Peatland sites on the Shoshone National Forest. Wyoming Natural Diversity Database, University of Wyoming. Laramie, Wyoming.
- Hester S.G. and Grenier M.B. 2005. A conservation plan for bats in Wyoming. Wyoming Game and Fish Department, Nongame Program, Lander, WY.
- Hiedel, B. and Rodemaker, E. 2008. Inventory of Peatland Systems in the Beartooth Mountains. Wyoming Natural Diversity Database, University of Wyoming. Laramie, Wyoming.
- Hilderbrand G.V.; Schwartz, C.C.; Robbins, C.; Jacoby, M.E.; Hanley, T.A.; Arthur, S.M.; and Servheen, C. 1999. Importance of meat, particularly salmon, to body size, population productivity, and conservation of North American brown bears. *Canadian Journal of Zoology* 77:132-138.
- Hillis, M. 1991. Defining elk security: the Hillis paradigm. In: Montana State University. Proceedings, elk security, April 10-12, 1991. Bozeman, MT. 38-43 p.
- Holmes, J.A. and Johnson, M.J. 2005. Brewer's Sparrow (*Spizella breweri*): a technical conservation assessment. January 13, 2005. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/brewerssparrow.pdf> [6/4/09].
- Holmes, J.A. and Johnson, M.J. 2005a. Sage Sparrow (*Amphispiza belli*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/sagesparrow.pdf> .
- Holmes, M. and Berg, N. 2009. Greater Yellowstone ecosystem lynx study. Endeavor Research Foundation. Jackson, WY: <http://www.yellowstone.co/pdfs/lynxstudy2009.pdf>.
- Holsten, E.H.; Thier, R.W.; Munson, A.S.; and Gibson, K.E. 1999. The spruce beetle. USDA Forest Service, Forest Insect and Disease Leaflet 127 (revised 11/1999), 12 pp.
- Houston, D.B. 1973. Wildfires in northern Yellowstone National Park. [JSTOR]. *Ecological Society of America*. 54(5). Available: <http://www.jstor.org/stable/1935577>. (04 June 2008).
- Humphrey, A. 2009. Effectiveness of fenced exclosures in aspen regeneration: An examination of several fence types – Final Report. Wallowa Resources, Enterprise, OR.
- Inman, R. M.; Packila, M. L.; Inman, K. H.; Aber, B.; Spence, R.; and McCauley, D. 2009. Greater Yellowstone Wolverine Program, Progress Report – December 2009. Wildlife Conservation Society, North America Program, General Report, Bozeman, Montana, U.S.A.
- Interagency Conservation Strategy Team. 2007. Final conservation strategy for the grizzly bear in the Greater Yellowstone Area. Missoula, MT. 160 pp.

- Interagency Grizzly Bear Committee. 1998. Interagency grizzly bear committee taskforce report: Grizzly bear/motorized access management. Missoula, Montana. 8 pp.
- Interagency Grizzly Bear Study Team. 1998. Yellowstone Grizzly Bear Investigations, 1997. Report of the Interagency Grizzly Bear Study Team.
- Interagency Grizzly Bear Study Team. 2009. Yellowstone Grizzly Bear Investigations, 2008. Report of the Interagency Grizzly Bear Study Team.
- Interagency Grizzly Bear Study Team. 2010. Whitebark pine cone production. USGS, Northern Rocky Mountain Science Center. Authors: Haroldson, M. and Podruzny, S. Available: http://nrmsc.usgs.gov/files/norock/products/IGBST/2010Wbp_FINAL.pdf.
- Interagency Grizzly Bear Study Team. 2010. Yellowstone Grizzly Bear Investigations, 2009. Report of the Interagency Grizzly Bear Study Team.
- Interagency Grizzly Bear Study Team. 2011. Whitebark pine cone production. Authors: Haroldson, M. and Podruzny, S. USGS, Northern Rocky Mountain Science Center. Available: <http://nrmsc.usgs.gov/files/norock/products/IGBST/2011WBPREport.pdf>.
- Interagency Grizzly Bear Study Team. 2011. Yellowstone Grizzly Bear Investigations, 2010. Report of the Interagency Grizzly Bear Study Team.
- Intergovernmental Panel on Climate Change (IPCC). 2001. Third Assessment Report: Climate Change 2001. Available: <http://www.ipcc.ch/ipccreports/tar/vol4/english/index.htm>.
- Intergovernmental Panel on Climate Change. 2007. Solomon, S.; Qin, D.; Manning, M.; Chen, Z.; Marquis, M.; Averyt, K.B.; Tignor, M. and Miller, H.L. editors. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Available: http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_wg1_report_the_physical_science_basis.htm.
- Jimenez, M.D.; Smith, D.W.; Becker, S.A.; Stahler, D.R.; Stahler, E.; Metz, M.; McIntyre, R.; Irving, J.; Raymond, R.; Anton, C.; Kindermann, R.; Bowersock, N.; and Krischke, R.F. 2012. Wyoming Wolf Recovery 2011 Annual Report. Pages WY-1 to WY-25 in U.S. Fish and Wildlife Service Rocky Mountain Wolf Program 2011 Annual Report. USFWS, Ecological Services, 585 Shepard Way, Helena, Montana, 59601.
- Joyce, L.A.; Blate, G.M.; Littell, J.S.; McNulty, S.G.; Millar, C.I.; Moser, S.C.; Neilson, R.P.; O'Halloran, K.; Peterson, D.L. 2008. Pp. 3-1 to 3-127. In preliminary review of adaptation options for climate-sensitive ecosystems and resources. A report by the U.S. climate change science program and the subcommittee on global change research [Julius, S.H. and West, J.M. (editors); Baron, J.S.; Griffith, B.; Joyce, L.A.; Kareiva, P.; Keller, B.D.; Palmer, M.A.; Peterson, C.H.; and Scot, J.M. (Authors)]. U.S. Environmental Protection Agency, Washington, D.C.
- Judd, S.L.; Knight, R.R.; and Blanchard, B.M. 1986. Denning of grizzly bears in the Yellowstone National Park area. International Conference on Bear Research and Management 6:111-117.

- Keane, R.; Holsinger, L.; Parsons, R.; and Gray, K. 2008. Climate change effects on historical range and variability of two large landscapes in western Montana, USA. *Forest Ecology and Management*. 254:375-389.
- Keinath, D. and McGee, M. 2005. Boreal Toad (*Bufo boreas boreas*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/borealtoad.pdf>
- Keinath, D.; Estes-Zumpf, W.; and Tronstad, L. 2009. Shoshone National Forest amphibian and invertebrate surveys: Survey results 2009. Wyoming Natural Diversity Database. Laramie, WY.
- Keinath, D.A. 2004. Fringed Myotis (*Myotis thysanodes*): a technical conservation assessment. October 29, 2004. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/fringedmyotis.pdf> [6/4/09].
- Keinath, D.A.; Andersen, M.D.; and Beauvais, G.P. 2010. Range and modeled distribution of Wyoming's species of greatest conservation need. Report prepared by the Wyoming Natural Diversity Database, Laramie Wyoming for the Wyoming Game and Fish Department, Cheyenne, Wyoming and the USGS, Fort Collins, Colorado. August 20, 2010.
- Kendall, K.C. 1983. Use of pine nuts by grizzly and black bears in the Yellowstone area. *International Conference on Bear Research and Management* 5:166-173.
- Kennedy, P.L. 2003. Northern Goshawk (*Accipiter gentiles atricapillus*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/northerngoshawk.pdf>
- Kerr, R. 1988. La Niña's big chill replaces El Niño. *Science* 241: 1037-1038.
- Klaus, M. 2003. The status, habitat, and response to grazing of water voles populations in the Big Horn Mountains of Wyoming, USA. *Arctic, Antarctic, and Alpine Research* 35:100-109.
- Klaus, M. and Beauvais, G.P. 2004. Water Vole (*Microtus richardsoni*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/watervole.pdf> .
- Kleindorfer, P.R.; Kunreuther, H.C.; and Shoemaker, P.J.H. 1993. *Decisions Sciences: an interactive perspective*. New York, NY: Cambridge University Press. 470 pp.
- Knight, D.H. 1994. *Mountains and plains, the ecology of Wyoming landscapes*. Yale University Press.
- Knight, R.R. and Judd, S. 1983. Grizzly bears that kill livestock. *International Conference on Bear Research and Management* 5:186-190.
- Kotliar, N.B. 2007. Olive-sided Flycatcher (*Contopus cooperi*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/olivesidedflycatcher.pdf> .

- Kreutzweiser, D.; Sibley, P.; Richardson, J; and Gordon, A. 2012. Introduction and a theoretical basis for using disturbance by forest management activities to sustain aquatic ecosystems. *The Society for Freshwater Science*. 31(1): 224-231. Available: <http://www.bioone.org/doi/full/10.1899/11-114.1>.
- Kufeld, R.C. 1973. Foods eaten by the Rocky Mountain elk. *Journal of Range Management* 26: 106-113
- Landres, P. M.; Vagias, W. M.; and Stutzman, S. 2012. Using wilderness character to improve wilderness stewardship. *Park Science*. 28(3).
- Liebhold, A.M.; Gottschalk, K.W.; Muzika, R.; Montgomery, M.E.; Young, R.; O'Day, K.; and Kelley, B. 1995. Suitability of North American tree species to the gypsy moth: a summary of field and laboratory tests. USDA Forest Service, Northeastern Forest Experiment Station, General Technical Report N E-211.
- Littell, J.S.; Oneil, E.E.; McKenzie, D.; Hicke, J.A.; Lutz, J.A.; Norheim, R.A.; and Elsner, M.M. 2010. Forest ecosystems, disturbance, and climatic change in Washington State, USA. *Climatic Change*, 102(1/2), 129-158.
- Loeffler, C. (editor). 2001. Conservation plan and agreement for the management and recovery of the Southern Rocky Mountain Population of the Boreal Toad (*Bufo boreas boreas*). Boreal Toad Recovery Team and Technical Advisory Group, 97 pp. Available online: <http://wildlife.state.co.us/SiteCollectionDocuments/DOW/WildlifeSpecies/SpeciesOfConcern/BorealToad/BorealToadRecovery.pdf>
- Lorah Ph. D., L.; Southwick, R.; and Allen, T. 2012. Conserving lands and prosperity: Seeking a proper balance between conservation and development in the Rocky Mountain West. *Sportsmen for Responsible Energy Development*. 27 pp.
- Lorenz, T. J.; Sullivan, K. A.; Bakian, A.V.; and Aubrey, C.A. 2011. Cache site selection in Clark's nutcracker. *The Auk* 128:237-247.
- Lotan, J.E.; Brown, J.K; Neuenswander, L.F. 1985. Role of fire in lodgepole pine forests. In: Baumgartner, D.M.; Krebill, R.G.; Arnott, J.T.; Weetman, G.F., editors. *Proceedings, lodgepole pine: the species and its management*. Pullman, WA: Washington State University. 133-152.
- Luce, R.J. and Keinath, D. 2007. Spotted Bat (*Euderma maculatum*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/spottedbat.pdf>
- Lyon, L. J., and Christensen, A. G. 1992. A partial glossary of elk management terms. U.S. Department of Agriculture, Forest Service, General Technical Report INT-GTR-288, Portland, Oregon.
- Macwhirter, R.B. and Bildstein, K.L. 1996. Northern Harrier (*Circus cyaneus*), *The Birds of North America Online* (Poole, A. Editor). Ithaca: Cornell Lab of Ornithology; Retrieved from the *Birds of North America Online*. Available: <http://bna.birds.cornell.edu/bna/species/210doi:10.2173/bna.210>

- Magnan, N.; Seidl, A.; Mucklow, C.J.; and Alpe, D. 2005. The Value of Ranchland to Routt County Residents, 1998-2005. Economic Development Report, Department of Agricultural and Resource Economics, Fort Collins, CO, EDR 05-02, October.
- Martin, J.W. and Carlson, B.A. 1998. Sage Sparrow (*Amphispiza belli*), The Birds of North America Online (Poole, A. Editor). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online. Available: <http://bna.birds.cornell.edu/bna/species/326doi:10.2173/bna.326>
- Massey, C.L. and Wygant, N.D. 1954. Biology and control of the Engelmann spruce beetle in Colorado. Circular No. 944, USDA 35 pp.
- Mast, M.A. and Ingersoll, G.P. 2011. Trends in Lake Chemistry in Response to Atmospheric Deposition and Climate in Selected Class I Wilderness Areas in Colorado, Idaho, Utah, and Wyoming, 1993–2009: Scientific Investigations Report 2011–5123.
- Mattson, D. J. and Knight, R.R. 1992. Spring bear use of ungulates in the Firehole River drainage of Yellowstone National Park. Pages 5-93 and 5-120 in Varley, J.D. and Brewster, W.G. eds., Wolves for Yellowstone? A report to the United States Congress, Volume IV Research and Analysis. National Park Service. Yellowstone National Park, Wyoming. 750 pp.
- Mattson, D.J. 1997. Use of ungulates by Yellowstone grizzly bears (*Ursus arctos*). Biological Conservation 81:161-177.
- Mattson, D.J. and Knight, R.R. 1991. Application of Cumulative Effects Analysis to the Yellowstone Grizzly Bear Population. U.S.D.I. Natl. Park Serv. Interagency Grizzly Bear Study Team Report 1991.
- Mattson, D.J. and Reinhart, D.P. 1995. Influences of cutthroat trout (*Oncorhynchus clarki*) on behavior and reproduction of Yellowstone grizzly bears (*Ursos arctos*), 1975-1989. Canadian Journal of Zoology 73:2072-2079.
- Mattson, D.J. and Reinhart, D.P. 1997. Excavation of red squirrel middens by grizzly bears in the whitebark pine zone. Journal of Applied Ecology 34:936-940.
- Mattson, D.J.; Blanchard, B.M.; and Knight, R.R. 1991. Food habits of Yellowstone grizzly bears, 1977-87. Canadian Journal of Zoology 69:1619-1629.
- Mattson, D.J.; Blanchard, B.M.; and Knight, R.R. 1992b. Yellowstone grizzly bear mortality, human habituation, and whitebark pine seed crops. Journal of Wildlife Management 56:432-442.
- Mattson, D.J.; Gillin, C.M.; Benson, S.A.; and Knight, R.R. 1991b. Bear feeding activity at alpine insect aggregation sites in the Yellowstone ecosystem. Can. J. Zool. 69: 2430-2435.
- Mattson, D.J.; Knight, R.R.; and Blanchard, B.M. 1987. The effects of developments and primary roads on grizzly bear habitat use in Yellowstone National Park, Wyoming. International Conference on bear Research and Management 7:259-273.

- Mattson, D.J.; Reinhart, D.P.; and Blanchard, B.M. 1992a. Variation in production and bear use of whitebark pine seeds in the Yellowstone area. In Proceedings of plants and their environment: first biennial scientific conference on the Greater Yellowstone Ecosystem.
- May, B.; Albeke, S.E.; and Horton, T. 2007. Range-wide status assessment for Yellowstone cutthroat trout (*Oncorhynchus clarkii bouveri*): 2006. Yellowstone Cutthroat Trout Conservation Team Report. Montana Fish, Wildlife and Parks, Helena, MT. 410 pp.
- McGregor, M.D. and Cole, D.M. eds. 1985. Integrating management strategies for the mountain pine beetle with multiple-resource management of lodgepole pine forests. USDA For. Serv., Intermtn. For. & Range Exp. Sta., Ogden, UT, GTR INT-1 74, 68 pp.
- McGregor, M.D.; Amman, G.D.; Schmitz, R.F.; and Oakes, R.D. 1987. Partial cutting lodgepole pine stands to reduce losses to the mountain pine beetle. Can. J. For. Res. 17: 1234-1239.
- McKenzie, D.; Peterson, D.L.; and Littell, J.J. 2009. Chapter 15: Global warming and stress complexes in forests of western North America. In: Bytnerowicz, A.; Arbaugh, M.J.; Riebau, A.R.; and Andersen, C. (Eds.), Wildland fires and air pollution (pp. 319-337).
- Mehl, M.S. 1992. Old-growth descriptions for the major forest cover types in the Rocky Mountain Region. Pp. 106-120 In: Kaufmann, M.R.; Moir, W.H; and Bassett, R.L. (tech. Cords). Old-growth forests in the Southwest and Rocky Mountain regions: Proceedings of a workshop. USDA Forest Service. General Technical Report RM-213. Fort Collins, CO.
- Menlove, J. 2008. Forest resources of the Shoshone National Forest. Fort Collins, CO: USDA Forest Service, Rocky Mountain Research Station: 16 pp.
- Messier, M.; Shatford, J.; and Hibbs, D. 2012. Fire exclusion effects on riparian forest dynamics in southwestern Oregon. Forest Ecology and Management. 264: 60-71.
- Meyer, C.; Knight, D; Dillon, G. 2006. Historic variability for the upland vegetation of the Shoshone National Forest, Wyoming. Laramie, WY: Department of Botany, University of Wyoming.
- Mielke, J.L. 1943. White pine blister rust in western North America. Yale Univ. School For., New Haven, Conn. Bulletin 52.
- Mielke, J.L. 1957. The comandra blister rust in lodgepole pine. USDA Forest Service, Intermountain Forest and Range Research Station, Research Note INT-46.
- Mikkelson K.M., Dickenson, E.R. V., Maxwell, R.M., McCray, J.E., and Sharp, J.O. 2012. Water-quality impacts from climate-induced forest die-off. Nature Clim. Change <http://dx.doi.org/10.1038/nclimate1724> (2012); published online 28 October 2012; corrected online 31 January 2013.
- Millar, C.I.; Stevenson, N.L.; and Stephens, S.L. 2007. Climate Change and Forests of the Future: Managing in the Face of Uncertainty. Ecological Applications 17(8): 2145-2151.
- Minnesota IMPLAN Group (MIG). 2010. 2009 IMPLAN model for Fremont, Hot Springs, and Park County, Wyoming.

- Monitoring reports for the Shoshone National Forest, 1995-2009. Available:
<http://www.fs.usda.gov/detail/shoshone/landmanagement/planning/?cid=stelprdb5201443>
- Montana Natural Heritage Program and Montana Fish, Wildlife and Parks. 2012. Montana Field Guide. Clark's Nutcracker – *Nucifraga columbiana*. Retrieved on May 9, 2012, from http://FieldGuide.mt.gov/detail_ABPAV08010.aspx.
- Murphy, K.; Wilmot, J.; Copeland, J.; Tyers, D.; Squires, J.; Inman, R. M.; Packila, M.L.; and McWhirter, D. 2011. Wolverine conservation in Yellowstone National Park: Final report. YCR-2011-02. National Park Service, Yellowstone National Park, Yellowstone Center for Resources, Yellowstone National Park, Wyoming.
- National Academy of Sciences. 2006. Understanding and Responding to Climate Change: Highlights of National Academies Reports. (<http://dels.nas.edu/basc/Climate-HIGH.pdf>)
- National Interagency Fuels Technology Team. 2010. Interagency fire regime condition class (FRCC) guidebook: version 3.0. National Interagency Fuels, Fire & Vegetation Interagency Transfer. Available at <http://www.fire.org/nift/>. 126 p.
- NatureServe. 2011. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available: <http://www.natureserve.org/explorer>. [accessed: 29 March 2012].
- Negron, J.F. 1998. Probability of infestation and extent of mortality associated with the Douglas-fir beetle in the Colorado Front Range. *For. Ecol. Manage.*, 107: 71-85.
- Negron, J.F.; Schaupp, Jr. W.C.; Gibson, K.E.; Anhold, J.; Hansen, D.; Thier, R.; and Mocettini, P. 1999. Estimating extent of mortality associated with the Douglas-fir beetle in the central and northern Rockies. *West. J. Appl. For.*, 14: 121-127.
- Nicholoff, S.H., compiler. 2003. Wyoming Bird Conservation Plan, Version 2.0. Wyoming Partners In Flight. Wyoming Game and Fish Department, Lander, WY.
- NIFMID. 2011. National Interagency Fire Management Integrated Database (NIFMID). Available: <https://fam.nwcg.gov/fam-web/kcfast/>.
- Olliff, T.; Legg, K.; and Kaeding, B. editors. 1999. Effects of winter recreation on wildlife of the Greater Yellowstone Area: a literature review and assessment. Report to the Greater Yellowstone Coordinating Committee. Yellowstone. National Park, Wyoming. 315 pp.
- Paige, C. and Ritter, S. 1999. Birds in a sagebrush sea: managing sagebrush habitats for bird communities. Partners In Flight, Western Working Group, Boise, ID.
- Parmenter, A.W.; Hansen, A.; Kennedy, R.E.; Cohen, W.; Langner, U.; Lawrence, R.; Maxwell, B.; Gallant, A.; Aspinall, R. 2003. Land use and land cover change in the Greater Yellowstone Ecosystem: 1975-1995. *Ecological Applications*. 13: 687-703.
- Patla, D.A. and Keinath, D. 2005. Columbia Spotted Frog (*Rana luteiventris* formerly *R. pretiosa*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/columbiaspottedfrog.pdf>

- Patterson, B.D.; Ceballos, G.; Sechrest, W.; Tognelli, M.F.; Brooks, T.; Luna, L.; Ortega, P.; Salazar, I.; and Young, B.E. 2003. Digital Distribution Maps of the Mammals of the Western Hemisphere, version 1.0. NatureServe, Arlington, Virginia, USA.
<http://www.natureserve.org/explorer>
- Perkins, D.L. and Roberts, D.W.. 2003. Predictive models of whitebark pine mortality from mountain pine beetle. *Forest Ecology and Management* 174 (2003) 495–510.
- Perkins, J. M. and Cross, S. P. 1988. Differential use of some coniferous forest habitats by hoary and silver-haired bats in Oregon. *Murrelet* 69:21-24.
- Perryman, B. 2001. Historic Fire Regimes and Shrub Demography. *Journal of Range Management*, 53:660-665
- Perryman, J.S.; Olson, C.E. 1975. Impact of Potential Changes in BLM Grazing Policies on West-Central Wyoming Cattle Ranches, University of Wyoming, Agricultural Experiment Station, Research Journal 87, Laramie, Wyoming.
- Podruzny, S. 2011. Occupancy of bear management units (BMU) by females with young. Page 16 in C.C. Schwartz, C.C.; Haroldson, M.; and West, K. eds., *Yellowstone grizzly bear investigations: Annual report of the Interagency Grizzly Bear Study Team, 2010*. U.S. Geological Survey, Bozeman, MT, USA.
- Podruzny, S.R.; Cherry, S.; Schwartz, C.C.; and Landenburger, L.A. 2002. Grizzly bear denning and potential conflict areas in the Greater Yellowstone Ecosystem. *Urus* 13:19-28.
- Potyondy, J.P. 2007. The evolution of channel maintenance science in the Forest Service. M. Furniss, C. Clifton, and K. Ronnenberg, eds., 2007. *Advancing the fundamental sciences: proceedings of the Forest Service national earth sciences conference, San Diego, CA, 18-22 October 2004*, PNW-GTR-689, Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.
- Raesly, E.J. 2001. Progress and status of river otter reintroduction projects in the United States. *Wildlife Society Bulletin* 2001, 29(3):856-862.
- Rasmussen, L.A.; Amman, G.D.; Vandygriff, J.C.; Oakes, R.D.; Munsen, A.S. and Gibson, K.E. 1996. Bark beetle and wood borer infestation in the Greater Yellowstone Area during four postfire years. USDA For. Serv. Research Paper INT-RP-487. 10 pp.
- Ratner, J. 2001. Army cutworm moth sites in the Wind River Range: A preliminary survey 2001. Prepared by Bradford Environmental Research Institute under contract to the Shoshone National Forest.
- Ratner, J. 2003. Army cutworm moth sites in the Wind River Range: An expanded survey 2003. Prepared by Bradford Environmental Research Institute under contract to the Shoshone National Forest.
- Rehm-Lorber, J. A.; Blakesley, J.A.; Pavlacky, Jr. D.C.; and Hanni, D.J. 2010. *Monitoring the Birds of Wyoming: 2009 Field Season Report (Revised)*. Tech. Rep. M-MWB-09-01. Rocky Mountain Bird Observatory, Brighton, CO. 64 pp.

- Reinhart, D. P.; Haroldson, M.A.; Mattson, D.J.; and Gunther, K.A. 2001. Effects of exotic species on Yellowstone grizzly bears. *Western North American Naturalist* 61(3):227-288.
- Renkin, R.A. and Gunther, K.A.. 1996. Predicting grizzly bear mortality in developed areas of Yellowstone Park. Bear Management Office, Yellowstone Center for the Resources, Yellowstone National Park, Wyoming. 17 pp.
- Retzlaff, M. 2010. RPA Nonmarket Values: Pricing Recreation in the National Forest System. Draft report under contract to EMC WO staff.
- Rhoades, C.C., McCutchan, J.H., Cooper, L.A., Clow, D., Detmer, T.M., Briggs, J.S., Stednick, J.D., Veblen, T.T., Ertz, R.M., Likens, G.E., and Lewis, W.M. 2013. Biogeochemistry of beetle-killed forests: Explaining a weak nitrate response. *Proceedings of the National Academy of Sciences*.
- Rice, J.; Tredennick, A.; Joyce, L.A. 2012. Climate change on the Shoshone National Forest, Wyoming: a synthesis of past climate, climate projections, and ecosystem implications. Gen. Tech. Rep. RMRS-GTR-264. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Rimbey, N.; Torell, A.L. 2011. Grazing Costs: What's the Current Situation? Prepared by University of Idaho Extension Agricultural Economist. Agricultural Economic Extension Series No 2011-02. March 22, 2011. Department of Agricultural Economics and Rural Sociology. Moscow, Idaho. 8 pp.
- Robertson, G. J. and Goudie, R. I. 1999. Harlequin Duck (*Histrionicus histrionicus*), *The Birds of North America Online* (Poole, A. Editor). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online. Available: <http://bna.birds.cornell.edu/bna/species/466doi:10.2173/bna.466>
- Rocky Mountain Elk Foundation. 2009. Historic and Current Elk Range Map. Website accessed 8/12/2011. <http://www.rmef.org/AllAboutElk/ElkRange>
- Romme, W.H.; Bohland, L.; Persichetty, C.; Caruso, T. 1995. Germination ecology of some common forest herbs in Yellowstone National Park, Wyoming, U.S.A. *Arctic and Alpine Research*. 27(4). 407-412.
- Romme, W.H.; Turner, M.; Gardner, R.; Hargrove, W.; Tuskan, G. 1997. A rare episode of sexual reproduction in aspen (*Populus tremuloides Michx.*) following the 1988 Yellowstone fires. *Natural Areas Journal*. 17: 17-25.
- Romme, William H. and Knight, D.H. 1981. Fire frequency and subalpine forest succession along a topographic gradient in Wyoming. [JSTOR]. *Ecological Society of America*. 62(2). <http://www.jstor.org/stable/1936706>. (04 June 2008).
- Rotenberry, J.T.; Patten, M.A. and Preston, K. L. 1999. Brewer's Sparrow (*Spizella breweri*), *The Birds of North America Online* (Poole, A. Editor). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online. Available: <http://bna.birds.cornell.edu/bna/species/390doi:10.2173/bna.390>
- Rowe, H.L. and Bartlett, E.T. 2001. Development and Federal Grazing Policy Impacts on Two Colorado Counties: A Comparative Study. *Current Issues in Rangeland Resource*

- Economics, Proceedings of a symposium sponsored by the Western Coordinating Committee 55, New Mexico State University, Research Report 737, Las Cruces, New Mexico.
- Rudolph, K. M.; Hunter, D. L.; Foreyt, W. J.; Cassirer, E. F.; Rimler, R. B.; and Ward, A.C.S. 2003. Sharing of *Pasteurella* spp. between free-ranging bighorn sheep and feral goats. *Journal of Wildlife Diseases* 39:897-903.
- Ruediger, B.; Claar, J.; Gniadek, S.; Holt, B.; Lewis, L.; Mighton, S.; Naney, B.; Patton, G.; Rinaldi, T.; Trick, J.; Vandehey, A.; Wahl, F.; Warren, N.; Wenger, D.; and Williamson, AL. 2000. Canada lynx conservation assessment and strategy. USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management, and USDI National Park Service. Forest Service Publication #R1-00-53, Missoula, MT. 142 pp.
- Ruggiero, L.F.; Aubry, K.B.; Buskirk, S.W. et al., tech. eds. 1999. Ecology and conservation of lynx in the United States. Univ. Press of Colorado. Boulder, CO: 480 pp.
- Ruggiero, L.F.; Aubry, K.B.; Buskirk, S.W.; Koehler, G.M.; Krebs, C.J.; McKelvey, K.S.; and Squires, J.R. 2000b. The scientific basis for lynx conservation: qualified insights. In Ruggiero, L.F.; Aubry, K.B.; Buskirk, S.W.; et al., tech. eds. The scientific basis for lynx conservation in the contiguous United States. Gen. Tech. Rpt. RMRS-GTR-30. Ogden, UT: U.S. Dept. Agriculture, Forest Service, Rocky Mountain Research Station.
- Savage, M. 1991. Structural dynamics of southwestern pine forest under chronic human influence. *Annals of the Association of American Geographers*. 81(2): 271-289.
- Schmid, J.M. and Hinds. T.E. 1974. Development of spruce-fir stands following spruce beetle outbreaks. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Research Paper RM-131.
- Schmid, J.M. and R.H. Frye R.H. 1976. Stand ratings for spruce beetles. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Research Note RM-309.
- Schwartz, C.C.; Haroldson, M.A.; and White, G.C. 2005. Reproductive performance for grizzly bears in the Greater Yellowstone Ecosystem, 1983-2002. In Schwartz, C.C.; Haroldson, M. A.; White, G.C.; Harris, R.B.; Cherry, S.; Keating, K.A.; Moody, D.; and Servheen, C. authors. Temporal, spatial, and environmental influences on the demographics of grizzly bears in the Greater Yellowstone Ecosystem. *Wildlife Monographs*.
- Schwartz, C.C.; Haroldson, M.A.; Gunther, K.A.; and Moody, D.S. 2002. Distribution of grizzly bears in the Greater Yellowstone Ecosystem, 1990-2000. *Ursus* 13:203-212.
- Schwartz, M.K.; Copeland, J.P.; Anderson, N.J.; Squires, J.R.; Inman, R.M.; Mckelvey, K.S.; Pligrim, K.L.; Waits, L.P.; and Cushman, S.A. 2009. Wolverine gene flow across a narrow climatic niche. *Ecology* 79:2170-2179.
- Scott, D.W. 2002. "Untrammled," "wilderness character," and the challenges of wilderness preservation. *Wild Earth* 11(3/4):72-79.
- Singer, F.J.; Zeigenfuss, L.C.; and Spicer, L. 2001. Role of patch size, disease, and movement in rapid extinction of bighorn sheep. *Conservation Biology* 15:1347-1354.

- Slater, G.L. 2004. Grasshopper Sparrow (*Ammodramus savannarum*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/grasshoppersparrow.pdf> .
- Slater, G.L. 2006. Trumpeter Swan (*Cygnus buccinator*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/trumpeterswan.pdf> .
- Slater, G.L. and Rock, C. 2005. Northern Harrier (*Circus cyaneus*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/northernharrier.pdf>
- Smith, B.E. and Keinath, D.A. 2007. Northern Leopard Frog (*Rana pipiens*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/northernleopardfrog.pdf>.
- Smith, H. and Keinath, D.A. 2004. Species assessment for northern goshawk (*Accipiter gentilis*) in Wyoming. Prepared for the US Dept. of Interior, Bureau of Land Mgmt, Cheyenne, WY. Wyoming Natural Diversity Database, Laramie, WY.
- Smith, H.; Beauvais, G.P.; and Keinath, D.A. 2005. Survey of historic northern goshawk (*Accipiter gentilis*) locations on the Shoshone National Forest – 2004. Prepared for the Shoshone N.F., Cody, WY. Wyoming Natural Diversity Database, Laramie, WY.
- Smith, N.; Deal, R.; Kline, J.; Blahna, D.; Patterson, T.; Spies, T.A.; and Bennett, K. 2011. Ecosystem services as a framework for forest stewardship: Deschutes National Forest overview. Gen. Tech. Rpt. PNW-GTR-852. Portland, OR: U.S. Dept. Agriculture, Forest Service, Pacific Northwest Research Station. 46 pp.
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436. Posted electronically at <http://soils.usda.gov/technical/classification/taxonomy/>.
- Squires, J.R. and Reynolds, R.T. 1997. Northern Goshawk (*Accipiter gentilis*), The Birds of North America Online (Poole, A. Editor). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online. Available: <http://bna.birds.cornell.edu/bna/species/298doi:10.2173/bna.298>
- Squires, J.R. and Ruggiero, L.F. 1996. Nest-site preference of Northern Goshawk in south-central Wyoming. *Journal of Wildlife Management*. 60: 170-177.
- Stasiak, R. 2006. Lake Chub (*Couesius plumbeus*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/lakechub.pdf>
- State of Wyoming. 2009. Wyoming statewide comprehensive outdoor recreation guide. Cheyenne, WY. 10p.
- Stein, S.M.; Alig, R.J.; White, E.M.; Comas, S.J. et al. 2007. National forests on the edge: Development pressures on America's national forests and grasslands (Gen. Tech. Rep.

- PNWGTR- 728, 26 pp.). Portland, OR: USDA, Forest Service, Pacific Northwest Research Station.
- Stevenson, N.L. and Millar, C.I. 2012 Climate Change: Wilderness's greatest challenge, *Park Science*. 28(3).
- Taylor, D.T.; Foulke, T.; and Coupal, R.H. 2012. An economic profile of the Shoshone National Forest. Laramie, WY: University of Wyoming department of agricultural and applied economics. On file at the Supervisor's Office, Shoshone National Forest. 93 pp.
- Taylor, R.G.; Bartlett, E.T.; and Lair, K.D. 1992. Seasonal Dependency on Federal Forage in Colorado. *Journal of Range Management*, 34(5):373-376.
- The Outdoor Foundation. 2011. Outdoor Recreation Participation Report. <http://www.outdoorfoundation.org/research.participation.2011.html>.
- Thompson, M.; and Henderson, R. 1998. Elk habituation as a credibility challenge for wildlife professionals. *Wildlife Society Bulletin* 26 (3):477-483.
- Tinker, D. and Knight, D. 2000. Coarse woody debris following fire and logging in Wyoming lodgepole pine forests. *Ecosystems*. 3: 472-483.
- Tinker, D.B.; Resor, C.A.C.; Beauvais, G.P.; Kipfmüller, K.F.; Fernandes, C.L.; and Baker, W.L. 1998. Watershed analysis of forest fragmentation by clearcuts and roads in a Wyoming forest. *Landscape Ecology*. 13: 149-165.
- Tinker, D.B.; Romme, W.H.; and Despain, D.G. 2003. Historic range of variability in landscape structure in subalpine forests of the Greater Yellowstone Area, USA. *Landscape Ecology*. 18: 427-439.
- Tomback, D.F.; Arno, S.F.; and Keane, R.E. 2001. The compelling case for management intervention. In: Tomback, D.F.; Arno, S.F.; and Keane, R.E (editors). *Whitebark pine communities: ecology and restoration*. Washington: Island Press. 3-25.
- Tombeck, D.F. 1998. Clark's nutcracker (*Nucifraga columbiana*). Species Account Number 331. *The Birds of North America Online* (Poole, A. Editor) Ithaca, NY: Cornell Laboratory of Ornithology. Available: <http://bna.birds.cornell.edu/bna>.
- Torell, L.A.; Garrett, J.R.; and Ching, C.T.K. 1981. The Economic Effects of Three Changes in Public Lands Grazing Policies. *Journal of Range Management*, 34(5):373-376.
- Travsky, A. and Beauvais, G.P. 2005. Species assessment for the ferruginous hawk (*Buteo regalis*) in Wyoming. Prepared for the USDI Bureau of Land Management, Cheyenne, WY.
- U.S. Climate Change Science Program. 2011. Methane as a Greenhouse Gas CCSP Research Highlight 1 (January 2006). August 22, 2011. Available online at <http://www.climatechange.gov/infosheets/highlight1/default.htm>
- U.S. Department of Commerce, Bureau of Economic Analysis. 2011. Regional Economic Information System, (<http://www.bea.gov/regional/reis/>).

- U.S. Department of Commerce. 1990. 1990 census of population, social and economic characteristics of Colorado. Bureau of the Census. Washington DC. www.census.gov.
- U.S. Department of Commerce. 2000. 2000 census of population, social and economic characteristics of Colorado. Bureau of the Census. Washington DC. www.census.gov.
- U.S. Department of Commerce. 2010. 2010 census of population, social and economic characteristics of Colorado. Bureau of the Census. Washington DC. www.census.gov.
- USDA Forest Service. 1977. The visual management system. Agricultural Handbook. National forest landscape management, Volume 2. Washington, DC: U.S. Government Printing Office: 462.
- USDA Forest Service. 1980. Grassland and shrubland habitat types of the Shoshone National Forest. Cody, WY: U.S. Department of Agriculture, Forest Service, Shoshone National Forest. 143 p.
- USDA Forest Service. 1983. New directions in management on the Bighorn, Shoshone, and Bridger-Teton National Forests. Ogden, UT: U.S. Department of Agriculture, Forest Service: 90p.
- USDA Forest Service. 1983a. Forest habitat types of eastern Idaho-western Wyoming. Gen. Tech. Rep. INT-144. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station: 122 pp.
- USDA Forest Service. 1985. Integrating management strategies for the mountain pine beetle with multiple resource management of lodgepole pine forests. Eds. McGregor, Mark and Cole, Dennis. General Technical Report INT-174. USDA Forest Service, Intermountain Forest and Range Experiment Station.
- USDA Forest Service. 1985. Sexual reproduction, seeds, and seedlings. Author: Walter McDonough. Gen. Tech. Rep. RM-119. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Management Station: 25-28.
- USDA Forest Service. 1991. Regeneration of aspen by suckering on burned sites in western Wyoming. Authors: Bartos, D.; Mueggler, W.; and Campbell Jr., R. Res. Pap. INT-448. Ogden, UT: USDA Forest Service, Intermountain Research Station: 10 pp.
- USDA Forest Service. 1994. Allowable sale quantity amendment to the 1986 Forest Plan. On file at the Supervisor's Office, Shoshone National Forest. Cody, WY.
- USDA Forest Service. 1995. Challenges, Facing Resource Management and Research. No. 2. People and Natural Resource RD&A Program, Seattle Forestry Sciences Lab. Pacific Northwest Research Station. Seattle, WA.
- USDA Forest Service. 1995. Landscape Aesthetics: A Handbook for Scenery Management. Agriculture Handbook 701.
- USDA Forest Service. 1995. Record of decision for oil and gas leasing. Shoshone National Forest. Cody, WY.

- USDA Forest Service. 1996. Rocky Mountain Region. Rangeland analysis and management training guide. Denver, CO: <http://www.rosemonteis.us/files/references/usfs-1996.pdf>.
- USDA Forest Service. 1999. Environmental assessment for management of noxious weeds and undesirable plants on the Shoshone National Forest. On file at the Supervisor's Office, Shoshone National Forest. Cody, WY.
- USDA Forest Service. 2000. Line Creek Plateau Research Natural Area decision notice, finding of no significant impact, and designation order. Shoshone National Forest and Custer National Forest. On file at the Supervisor's Office, Shoshone National Forest. Cody, WY.
- USDA Forest Service. 2001. Riparian and wetland plant community types of the Shoshone National Forest. Authors: Walford, G.; Jones, G.; Fertig, W.; Mellman-Brown, S.; and Houston, K. Gen. Tech. Rep. RMRS-GTR-85. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station: 122 pp.
- USDA Forest Service. 2001a. Symposium proceedings, sustaining aspen in western landscapes: 13–15 June 2000, Grand Junction, CO. Compilers: Sheppherd, W.; Binkley, D.; Bartos, D.; Stohlgren, T.; and Eskew, L. Proceedings RMRS-P-18. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 460 pp.
- USDA Forest Service. 2003. Documentation of the Biological Assessment process For the Proposed and Listed Species related to Commercial Livestock Grazing on the Shoshone National Forest. Shoshone National Forest. Cody, WY. 62 pp.
- USDA Forest Service. 2003. Understanding Community-Forest Relations. PNW-GTR-566. Technical Editor Linda E. Kruger. Pacific Northwest Research Station. Seattle, Washington.
- USDA Forest Service. 2004. Occupancy and Use Order No. 04-00-104 Special Order—Food Storage and Sanitation. Rocky Mountain Region and Intermountain Region, Forest Service.
- USDA Forest Service. 2004. Rocky Mountain Region. Tech. coordinator: David Winters. Contributors: David Cooper, Jeffrey Hamerlinck, Nancy Lee, James Maxwell, Douglas Peterson, LeRoyPoff, Frank Rahel, Dennis Staley, and Ellen Wohl. Ed. Molly Welker. Aquatic, riparian, and wetland ecosystem assessment: Bighorn National Forest, Wyoming. Report 1 of 3. Introduction and ecological driver analysis. Denver, CO.
- USDA Forest Service. 2005b. Brewer's Sparrow (*Spizella breweri*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/brewerssparrow.pdf> .
- USDA Forest Service. 2007. Northern Rockies Lynx Management Direction - Record of Decision. USDA Forest Service, National Forests in Montana, parts of Idaho, Wyoming, and Utah. Available at: <http://www.fs.fed.us/r1/planning/lynx/documents.htm>. 71 pp.
- USDA Forest Service. 2008. Shoshone National Forest invasive plant action plan. Shoshone National Forest. Cody, WY. 15 pp.

USDA Forest Service. 2008. Watershed condition assessment: Shoshone National Forest. USDA Forest Service, Rocky Mountain Region.

USDA Forest Service. 2009. Continental Divide National Scenic Trail comprehensive plan. www.fs.fed.us/cdt/.

USDA Forest Service. 2009. Ecosystem Diversity Report: Shoshone National Forest. Version 4.0. USDA Forest Service. Rocky Mountain Region.

USDA Forest Service. 2009. Wyoming's Forest Products Industry and Timber Harvest, 2005. Resource Bulletin. RMRS-RB-9. Rocky Mountain Research Station. Fort Collins, CO: 28 pp.

USDA Forest Service. 2009a. Comprehensive evaluation report: Shoshone National Forest, Version 3.0. USDA Forest Service. Rocky Mountain Region.

USDA Forest Service 2010a National Roadmap for Responding to Climate Change.

USDA Forest Service 2010b. Shoshone National Riparian Condition Maintained in the Shoshone National Forest Geographic Information Systems Library. 808 Meadow Lane. Cody, WY 82414.

USDA Forest Service 2010c. Wilderness Air Quality Value Plan. Shoshone National Forest. May 2010. 36 pp.

USDA Forest Service 2010d. Forest plan monitoring report for fiscal year 2009: Shoshone National Forest. USDA Forest Service, Rocky Mtn. Region, Cody, WY.

USDA Forest Service. 2010e. Biological Assessment Livestock Grazing Permit Issuance (2010) and Addendum to Documentation of the Biological Assessment Process for Proposed and Listed Species Related to Commercial Livestock Grazing on the Shoshone National Forest. Shoshone National Forest, Cody, WY. 16 pp.

USDA Forest Service. 2011. Forest plan monitoring report for fiscal year 2009: Shoshone National Forest. USDA Forest Service, Rocky Mtn. Region, Cody, WY.

USDA Forest Service. 2011. Visitor Use Report: Shoshone: Region 2, National Visitor Use Monitoring, March 2011.

USDA Forest Service. 2011. Watershed Condition Framework. FS-977.

USDA Forest Service. 2011a. 2011 Amendment to the 2003 biological assessment for commercial livestock grazing on the Shoshone National Forest. Cody, WY.

USDA Forest Service. 2012. Land Area of the National Forest System, 2011 Report. Table 6, National Forest System Acres by State, Congressional District and County.

USDA Forest Service. 2012. Quick-Silver: An Economic Analysis Tool, version 7.

USDA Forest Service. 2012. Shoshone National Forest. Shoshone National Forest: Final analysis of the management situation. Cody, WY. Available at:
<http://www.fs.usda.gov/detail/shoshone/landmanagement/planning/?cid=stelprdb5201443>

- USDA Forest Service. 2012b. Shoshone National Forest: Proposed Draft Plan. USDA Forest Service, Rocky Mountain Region.
- USDA Forest Service. 2013. Shoshone National Forest Aquatic Nuisance Species Action Plan. Shoshone National Forest
- USDA Forest Service and USDI Bureau of Land Management. 2004. The healthy forests initiative and health forest restoration act interim field guide, FS-799. Washington, DC: U.S. Department of Agriculture, Forest Service and U.S. Department of Interior, Bureau of Land Management. 58 pp.
- USDA Forest Service; USDI Bureau of Land Management; and Wyoming Game and Fish Department. 2012. Wyoming: Domestic Sheep and Bighorn Sheep Distribution Map. February 2012.
- USDA Forest Service; USDI Park Service; and USDI Bureau of Land Management. 1990. Nez Perce National Historic Trail comprehensive management plan. Missoula, MT. http://www.fs.usda.gov/detail/npnht/landmanagement/planning/?cid=fsbdev3_055670.
- USDA Forest Service; USDI U.S. Geological Survey; and The Nature Conservancy. 2011. Landscape fire and resource management planning tools (LANDFIRE). <http://www.landfire.gov/>
- USDI Bureau of Land Management. 1993. Process for Assessing Proper Functioning Condition. TR 1737-9 1993.
- USDI Bureau of Land Management. 1998. Proper Functioning Condition Work Group. Riparian area management: Process for assessing proper functioning condition. Denver, CO. <http://www.blm.gov/nstc/library/pdf/Final%20TR%201737-9.pdf>.
- USDI Bureau of Land Management. 2009. Reasonable foreseeable development scenario for oil and gas Lander field office, Wyoming (Draft), February 9, 2009.
- USDI Bureau of Land Management. 2010. Reasonable foreseeable development scenario for oil and gas, Bighorn Basin planning area Wyoming, November 8, 2010.
- USDI Fish and Wildlife Service. 1993. Grizzly Bear Recovery Plan. Missoula MT. 181 pp.
- USDI Fish and Wildlife Service. 2003. Endangered and Threatened Wildlife and Plants; Notice of Remanded Determination of Status for the Continuous United States Distinct Population of the Canada Lynx; Clarification of Findings; Final Rule. July 3, 2003. Federal Register 68(128): 40076-40101.
- USDI Fish and Wildlife Service. 2007. Endangered and Threatened Wildlife and Plants; Final Rule Designating the Greater Yellowstone Area Population of Grizzly Bears as a Distinct Population Segment; Removing the Yellowstone Distinct Population Segment of Grizzly Bears From the Federal List of Endangered and Threatened Wildlife; 90-Day Finding on a Petition to List as Endangered the Yellowstone Distinct Population Segment of Grizzly bears. March 29, 2007. Federal Register 72(60): 14866-14938.
- USDI Fish and Wildlife Service. 2007. National bald eagle management guidelines. USDI Fish and Wildlife Service.

- USDI Fish and Wildlife Service. 2009. Endangered and threatened wildlife and plants; Final rule to identify the northern Rocky Mountain population of gray wolf as a distinct population segment and to revise the list of endangered and threatened wildlife. <http://www.fws.gov/mountain-prairie/species/mammals/wolf/74FR15123.pdf>.
- USDI Fish and Wildlife Service. 2009a. Endangered and Threatened Wildlife and Plants; Final Rule to Identify the Northern Rocky Mountain Population of Gray Wolf as a Distinct Population Segment and to Revise the List of Endangered and Threatened Wildlife. April 2, 2009. Federal Register 74, 15123-15188.
- USDI Fish and Wildlife Service. 2009b. Endangered and threatened wildlife and plants; revised designation of critical habitat for the contiguous United States distinct population segment of the Canada lynx; final rule. 50 CFR 17. Federal Register Vol. 74, No. 36. February 25, 2009.
- USDI Fish and Wildlife Service. 2010a. Endangered and Threatened Wildlife and Plants; Reinstatement of Protections for the Grizzly bear in the Greater Yellowstone Ecosystem in Compliance with Court Order, Final Rule. March 26, 2010. Federal Register 75(58): 14496-14498.
- USDI Fish and Wildlife Service. 2010. Trumpeter swan survey of the Rocky Mountain population, U.S. breeding segment- Fall 2010. US Dept. of Interior, USFWS. Mountain-Prairie Region, Lakewood, CO.
- USDI Fish and Wildlife Service. 2012. Authors: Jimenez, M.D.; Smith, D.W.; Becker, S.A.; Stahler, D.R.; Stahler, E.; Metz, M.; McIntyre, R.; Irving, J.; Raymond, R.; Anton, C.; Kindermann, R.; Bowersock, N.; and Krischke, R.F. Wyoming wolf recovery 2011 annual report. Pages WY-1 to WY-25 in U.S. Fish and Wildlife Service Rocky Mountain Wolf Program 2011 Annual Report. USFWS, Ecological Services, 585 Shepard Way, Helena, Montana, 59601.
- USDI Fish and Wildlife Service; USDA Forest Service; USDI Bureau of Land Management; and USDI National Park Service. 2000. Ruediger, B; Claar, J.; Gniadek, S.; Holt, B.; Lewis, L.; Mighton, S.; Naney, B.; Patton, G.; Rinaldi, T.; Trick, J.; Vandehey, A.; Wahl, F.; Warren, N.; Wenger, D.; and Williamson, A. Canada lynx conservation assessment and strategy. Missoula, MT.
- Van de Water, K. and North, M. 2011. Stand structure, fuel loads, and fire behavior in riparian and upland forests, Sierra Nevada Mountains, USA: a comparison of current and reconstructed conditions. *Forest Ecology and Management*. 262: 215-228.
- Van Tassell, L.W. and Richardson, J.W. 1998. Impact of Federal Grazing Reductions on Wyoming Ranches. Stubble Height and Utilization Measurements: Uses and Misuses, Oregon State University, Agricultural Experiment Station Bulletin 682, Corvallis, Oregon.
- Vaughan, D.M. and Shepherd, M. D. 2005. Species Profile: *Euphydryas gillettii*. In Shepherd, M. D.; Vaughan, D. M.; and Black, S. H. (Eds). Red List of Pollinator Insects of North America. CD-ROM Version 1 (May 2005). Portland, OR: The Xerces Society for Invertebrate Conservation.

- Vickery, P.D. 1996. Grasshopper Sparrow (*Ammodramus savannarum*), The Birds of North America Online (Poole, A. Editor). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online. Available: <http://bna.birds.cornell.edu/bna/species/239doi:10.2173/bna.239>
- Wallmo, O.C.; Gill, R.B.; Carpenter, L.H.; and Riechert, D.W. 1973. Accuracy of field estimates of deer food habits. *The Journal of Wildlife Management*. 37(4): 556-562.
- Watson, P.; Wilson, J.; Thilmany, D.; and Winter, S. 2007. Determining Economic Contributions and Impacts: What is the difference and why do we care? *The Journal of Regional Analysis and Policy*. 37(2):1-15.
- Weatherby, J.C. and R.W. Thier. 1993. A preliminary validation of a Douglas-fir beetle hazard rating system: Mountain Home Ranger District, Boise National Forest, 1992. USDA Forest Service, Biological Evaluation R4-93-05.
- Weldon, G.A.; Hall, R.A.; Cohen, D.L.; and Roberson, R. 2008. Fuel treatment effectiveness report: Gunbarrel wildland fire use. U.S. Department of Agriculture, Forest Service, Shoshone NF, 12 p.
- White, C.M.; Clum, N.J.; Cade, T.J.; and Hunt, W.G. 2002. Peregrine Falcon (*Falco peregrinus*), The Birds of North America Online (Poole, A. Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online. Available: <http://bna.birds.cornell.edu/bna/species/660doi:10.2173/bna.660>
- Whitlock, C. 1993. Postglacial vegetation and climate of Grand Teton and southern Yellowstone National Parks. *Ecological Monographs*. 63(2): 173-198.
- Wiggins, D. 2004. Short-eared Owl (*Asio flammeus*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. September 22, 2004. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/shortearedowl.pdf> [accessed: 26 March 2012].
- Wiggins, D. 2005. Harlequin Duck (*Histrionicus histrionicus*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/harlequinduck.pdf> .
- Wiggins, D. 2005. Loggerhead Shrike (*Lanius ludovicianus*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. February 10, 2005. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/loggerheadshrike.pdf> [accessed 26 March 2012].
- Wiggins, D. A.; Holt, D.W.; and Leasure, S.M. 2006. Short-eared Owl (*Asio flammeus*), The Birds of North America Online (Poole, A. Editor). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online. Available: <http://bna.birds.cornell.edu/bna/species/062>
- Wildlife Conservation Society. 2010. Modeled potential wolverine habitat throughout the wolverine historic range in the U.S. Rocky Mountains- Map. WCS- North America Program, Bozeman, MT.

- Williams, E.H. 1995. Fire-burned habitat and reintroductions of the butterfly *Euphydryas gillettii* (*Nymphalidae*). *Journal of the Lepidopterist's Society*. 49(3), 1995, 183-191.
- Woods & Poole Economics. 2010. State Profile: Montana and Wyoming. May 2010.
- Wyoming Department of Administration and Information, Economic Analysis Division. 2010. Equality State Almanac 2009.
- Wyoming Department of Administration and Information, Economic Analysis Division. 2011. Demographic Profiles Available: http://eadiv.state.wy.us/Demog_data/pop2010/pop10.html
- Wyoming Department of Education. 1998-2010. Statistical Report Series. Available: <http://www.k12.wy.us/TCD/data.asp>.
- Wyoming Department of Environmental Quality Air Quality Division. March 26, 2009. State of Wyoming Technical Support Document I For Recommended 8-Hour Ozone Designation for the Upper Green River Basin, Wyoming.
- Wyoming Game and Fish Department. 2003. Threatened, endangered, and nongame bird and mammal investigations. Lander, WY.
- Wyoming Game and Fish Department. 2003. Wyoming Greater Sage-grouse Conservation Plan. Cheyenne, WY.
- Wyoming Game and Fish Department. 2004b. Final Report and Recommendations. Appendix M. Available: <http://gf.state.wy.us/wildlife/sheep/index.asp>
- Wyoming Game and Fish Department. 2008. Threatened, endangered, and nongame bird and mammal investigations. Lander, WY.
- Wyoming Game and Fish Department. 2009. Threatened, endangered, and nongame bird and mammal investigations – Annual completion report. September 2009. Cheyenne, WY.
- Wyoming Game and Fish Department. 2009a. Annual big game herd unit report: Cody region. Cheyenne, WY.
- Wyoming Game and Fish Department. 2009b. Annual big game herd unit report: Lander region. Cheyenne, WY.
- Wyoming Game and Fish Department. 2010. Annual report of small and upland game harvest – 2009. Cheyenne, WY.
- Wyoming Game and Fish Department. 2010. Annual big game herd unit report: Cody region. Cheyenne, WY.
- Wyoming Game and Fish Department. 2010a. Wyoming wildlife action plan. Cheyenne, WY.
- Wyoming Game and Fish Department. 2010b. Threatened, endangered, and nongame bird and mammal investigations – Annual completion report May 2010. Cheyenne, WY.
- Wyoming Game and Fish Department. 2010c. Annual big game herd unit report: Lander region. Cheyenne, WY.

- Wyoming Game and Fish Department. 2010d. Recommendations for development of oil and gas resources within important wildlife habitat. Cheyenne, WY 82006.
- Wyoming Game and Fish Department. 2011. Stream and lake fish species inventory data. Maintained by WGFD, Cheyenne, WY 82006.
- Wyoming Range Service Team. 2008. Wyoming rangeland monitoring guide: a cooperative and voluntary approach to monitoring rangelands, version 2. ftp://ftp-fc.sc.egov.usda.gov/WY/Range/wy_rangeland_monitoring_guide.pdf.
- Wyoming State Governor. 2011. Executive Order 2011-5: Greater sage-grouse core area protection. Office of the Governor, Cheyenne, WY.
- Wyoming State-wide Bighorn/Domestic Sheep Interaction Working Group. 2004. Final Report and Recommendations. 18 pp. <http://gf.state.wy.us/wildlife/sheep/index.asp>
- Yosef, Reuven. 1996. Loggerhead Shrike (*Lanius ludovicianus*), The Birds of North America Online (Poole, A. Editor). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online. Available: <http://bna.birds.cornell.edu/bna/species/231>
- Zahniser, H. 1956. The need for wilderness areas. The Living Wilderness 59 (Winter to Spring):37–43.

Index

- Air quality, 92, 112
 Allowable sale quantity, xxiii, 432, 627
 Alpine, xiii, 13, 121, 139, 144, 336, 412
 American marten, 183, 186, 187, 288, 649
 American peregrine falcon, 273
 Aquatic invasive species, 315, 396, 399
 Aspen, xiii, 13, 19, 123, 130, 140, 200, 277, 278
 Aspen decline, 378
 Bald eagle, 252
 Big game winter range, 289, 628
 bighorn sheep core habitat, 604
 Black-backed woodpecker, 195
 Boreal owl, 199
 Boreal western toad, 262, 263
 Brewer's sparrow, 219, 279
 Campgrounds, 495
 Canada Lynx Habitat on the Shoshone, 148
Choristoneura occidentalis. *See* Western spruce budworm
 Columbia spotted frog, 262
 Comandra blister rust, 378
Comandra umbellata. *See* Comandra blister rust
 Continental Divide National Scenic Trail, 28, 50, 484, 485, 486, 501, 512
 Counties, 1, 147, 353, 598
Cronartium ribicola. *See* White pine blister rust
 Cross-country skiing, 7, 46, 151, 302, 322, 487
 Crucial winter range, 464, 628
 Decision Framework, vii, 4
Dendroctonus pseudotsugae. *See* Douglas-fir beetle
 Desired Condition, 25, 82, 108, 134, 277, 280, 283, 287, 297, 300, 303, 305, 315, 358, 389, 396, 412, 430, 448, 459, 472, 538, 545, 552, 563, 600
 Disease, 141, 143, 290, 298, 299, 364, 372, 566
 Diseases
 aspen decline, 378
 comandra blister rust, 378
 dwarf mistletoe, 378
 white pine blister rust, 378
 Douglas-fir, xiii, 13, 120, 124, 128, 139, 140, 141, 144, 183, 187, 193, 203, 532
 Douglas-fir beetle, 377
 Dunoir, 8, 9, 10, 26, 27, 32, 37, 40, 456, 488, 498, 499, 500, 516, 538
 Dwarf mistletoe, 378
 Elk
 Rocky Mountain elk, xv, 138, 285, 286, 288
 Facilities, x, 9, 24, 29, 35, 38, 74, 75, 166, 174, 308, 340, 359, 360, 367, 396, 398, 419, 442, 443, 444, 446, 447, 450, 470, 472, 481, 482, 490, 493, 494, 495, 496, 503, 508, 513, 515, 553, 576, 612, 631, 632, 635
 Fens, 133, 143, 144, 334, 336, 340
 Ferruginous hawk, 224
 Fire, xv, 25, 87, 113, 119, 126, 130, 131, 134, 137, 140, 143, 147, 184, 193, 195, 197, 199, 200, 203, 204, 207, 208, 220, 230, 249, 255, 263, 270, 280, 306, 319, 339, 347, 350, 353, 354, 355, 358, 361, 364, 365, 369, 378, 391, 397, 423, 507, 533, 553, 558, 566, 629, 633, 635, 651, 661
 Fish, vi, xiv, xvi, 17, 18, 71, 81, 143, 188, 189, 190, 313, 314, 326, 530, 603, 620, 628, 633, 634, 639, 654
 Floodplain, 81, 83, 86, 312, 315, 532, 617
 Forest products, xv, xvi, 14, 28, 98, 119, 147, 430, 436, 437, 438, 439, 440, 480, 492, 556, 566, 643
 Fremont, 1, 5, 96, 147, 345, 353, 356, 388, 389, 394, 429, 489, 582, 585, 586, 587, 588, 595, 596, 597, 613, 620, 643
 Fringed myotis, 269
 Geophysical, 455, 634
 Glacier Addition, 26, 489, 517
 Goals, 25, 612
 Grasshopper sparrow, 226
 Grasslands, 13, 70, 122
 Gray wolf, 189
 Greater sage-grouse, 229, 234
 Greater Yellowstone Area, vi, xiv, 2, 18, 50, 53, 79, 145, 147, 152, 153, 156, 160, 161, 163, 166, 171, 174, 175, 286, 335, 342,

- 345, 357, 388, 394, 481, 508, 531, 544,
627, 634, 639
- Greybull Ranger District, 407, 446
- Grizzly Bear Conservation Strategy, xiv
- Gypsy moth, 377
- Harlequin duck, 255, 256, 257, 258, 259
- Harvest, 48, 204, 296, 298, 316, 432, 440,
475
- High Lakes Wilderness Study Area, 8, 9,
10, 26, 27, 32, 456, 500, 517, 538
- Hoary bat, 185, 192, 193
- Hot Springs, 1, 5, 96, 353, 388, 389, 394,
582, 585, 586, 587, 588, 595, 596, 597,
613, 620, 643
- Insects and disease, 141, 143, 364, 372, 566
- Integrated pest management, 373, 384
- Invasive plants, xvi, 220, 231, 280, 386, 555
- Inventoried roadless areas, 33, 35, 38, 41,
43, 45, 48, 53, 536, 538
- Kirwin Historical Site, 511, 512, 551, 553,
554, 555
- Lake chub, 314, 327
- Lander, 1, 78, 149, 162, 163, 286, 300, 323,
396, 555
- Lands, xvi, xx, xxii, 19, 20, 37, 40, 84, 251,
257, 413, 430, 452, 453, 454, 455, 457,
458, 461, 467, 532, 579, 582, 619
- Leasable, 457, 460, 637
- Limber pine, 13, 125, 140, 141
- Little Popo Agie Moraine, xvii, 12, 27, 34,
37, 40, 47, 334, 345, 511, 545, 551, 552,
553, 554
- Livestock, xviii, 49, 75, 88, 137, 141, 144,
158, 163, 172, 174, 175, 189, 190, 191,
220, 222, 225, 226, 231, 233, 235, 242,
251, 256, 278, 280, 303, 320, 336, 391,
400, 408, 414, 419, 423, 548, 553, 554,
607
grazing, 138, 163, 210, 211, 400, 661
- Locatable, 456, 460, 637
- Lodgepole pine, 13, 124
- Loggerhead shrike, 234, 235, 237
- Lymantria dispar*. See Gypsy moth
- Management areas
1.1, 26, 97, 408, 489, 498
1.1A, 26, 498
1.2, 302
1.3, 26, 97, 302, 538
1.6A, 27, 498, 500
1.6B, xvi, 27, 498
2.2A, 27, 431, 451, 489, 498, 500
2.3, 27, 431, 451, 498, 500
3.1A, 27, 451, 498, 500
3.1B, 27, 431, 500
3.1C, 27, 498, 500
3.3A, 27, 97, 431
3.3B, 28, 431
3.3C, 28, 431
3.6A, 28
3.6B, 28
4.2, 28, 431, 521, 566
4.3, 28, 90, 431
4.5A, 28, 431, 432
5.1, 28, 33, 43, 45, 91, 97, 290, 379, 380,
397, 431, 473, 474, 521
5.2, 28, 431, 521, 539
5.4, xv, xvi, 28, 33, 38, 42, 43, 144, 290,
298, 379, 431, 521
8.1, 29, 431, 460
8.2, 29, 431, 460
- Management indicator species, vi, 18, 19,
145, 277, 314, 317, 318, 320, 321, 637
- Minerals, 171, 271, 452, 453, 454, 637
- Monitoring, 7, 22, 72, 79, 102, 103, 107,
119, 161, 164, 165, 166, 178, 184, 188,
193, 197, 201, 204, 208, 216, 222, 225,
228, 232, 237, 239, 243, 246, 250, 253,
256, 261, 265, 271, 275, 424, 450, 493,
525, 526, 615
- Mountain pine beetle, 374
- Mountain suckers, 314, 327
- Mule deer, 296, 297
- Municipal watersheds, 77
- National Forest System roads, 466
- Nez Perce National Historic Trail, 28, 484,
487, 503
- North American wolverine, 179
- Northern goshawk, 202, 206
- Northern harrier, 238
- Northern leopard frog, 262
- Northern Rockies Lynx Management
Direction, vi, xiv, 143, 146, 179, 508
- Oil and gas leasing, 19, 452, 454, 457, 458,
460
- Olive-sided flycatcher, 207
- Peregrine falcon, 273, 274
- Proposed Action, vii, 1, 4
- Purpose and Need, vii, 3
- Ranger Districts, 1, 45, 162, 357, 407
- Red-breasted nuthatch, 19, 282, 284
- Reforestation, 433

- Research Natural Area, vi, 10, 27, 32, 50, 330, 334, 335, 342, 345, 451, 509, 542
 Revision Topics, viii, 3, 6, 31, 34, 36, 39, 41, 44, 46, 506
 Rights-of-way, 448
 Riparian communities, 133
 River otter, 245
 Roadless Rule, 24, 30, 33, 35, 38, 41, 43, 45, 48, 51, 536, 537, 538, 539, 541
 Rocky Mountain bighorn sheep, 209
 Rocky Mountain elk, 285, 299
 Root diseases
 Annosus, 379
 Armillaria, 379
 Sage sparrow, 219
 Sagebrush, 13, 19, 122, 123, 139, 366
 Scenery, 21, 487, 530, 556, 558, 559, 564, 565, 604
 Scenic byway, 28, 496, 566, 567
 seismic, 19, 457, 634
 Short-eared owl, 241, 242
 Skiing, 7, 46, 151, 302, 322, 480, 482, 487, 488, 513
 Soils, 80, 82, 88, 122, 617
 Special forest products, 436
 Special interest areas, xvii, 12, 21, 50, 551
 Special uses, 7, 29, 71, 166, 294, 341, 342, 391, 441, 445, 447, 451, 495, 510, 511, 518, 532, 549, 576, 579, 642
 Spotted bat, 269
 Spruce, 13, 124, 183, 376
 Sublette, 1, 96, 97, 99, 147, 286, 582
 Swamp Lake Botanical, xvii, 12, 27, 32, 133, 259, 260, 330, 334, 339, 345, 551, 553, 554
 Teton, 1, 2, 20, 50, 96, 147, 245, 249, 448, 458, 490, 582, 620, 634
 Threatened and Endangered Species, 617
 Townsend's big-eared bat, 269
 Transportation, 324, 468, 484, 577, 620
 Trumpeter swan, 182, 259, 260
 Utility corridor, 393, 448, 450
 Vegetation, xiii, 3, 6, 13, 28, 32, 34, 35, 37, 40, 42, 45, 47, 48, 70, 82, 84, 115, 119, 127, 142, 144, 423, 472, 532, 545, 553, 568, 604, 644
 Visual resource, 448, 556, 559, 569, 570
 Wapiti, 1, 10, 29, 37, 45, 147, 162
 Washakie Ranger District
 Lander, 1, 9, 10, 25, 26, 27, 32, 45, 96, 103, 121, 122, 123, 127, 147, 149, 158, 162, 210, 216, 220, 230, 279, 302, 312, 324, 357, 399
 Water vole, 248, 249
 Watershed, 21, 52, 71, 72, 73, 78, 309, 310, 311
 Western spruce budworm, 377
 Wetlands, 80, 81, 552, 617
 Whiskey Mountain Herd, 211
 White pine blister rust, 378
 Whitebark pine, xiii, 13, 125, 140, 154, 305, 332, 335, 665
 Wilderness, vi, xvii, 8, 9, 10, 11, 21, 25, 26, 27, 32, 50, 53, 102, 302, 312, 341, 359, 367, 451, 456, 483, 489, 515, 516, 519, 520, 521, 522, 523, 526, 536, 572, 606, 631, 651, 658
 Wilderness Act of 1964, 94, 141, 143, 309, 310, 383, 516, 518, 557, 631
 Wilderness Study Area, vi, 8, 9, 10, 26, 32, 456
 Wildlife, vi, xxiii, 3, 6, 15, 18, 32, 35, 37, 40, 42, 45, 47, 140, 204, 254, 307, 463, 531, 552, 603, 617, 628, 634, 639, 648, 649, 651, 663
 Willow, 13, 123, 139, 405
 Wind River, 2, 5, 10, 12, 45, 125, 147, 169, 190, 285
 Wiggins Fork, 169, 190, 285
 Wind River Indian Reservation, 210, 211, 214, 567, 568, 586
 Wyoming Statewide Comprehensive
 Outdoor Recreation Plan, 483, 489
 Yellowstone checkerspot, 302
 Yellowstone cutthroat trout, 17, 21, 52, 70, 75, 143, 310, 312, 313, 314, 322, 324, 325, 326, 659
 Yellowstone National Park, 1, 2, 70, 123, 126, 127, 129, 149, 162, 189, 212, 248, 374, 375, 495, 568