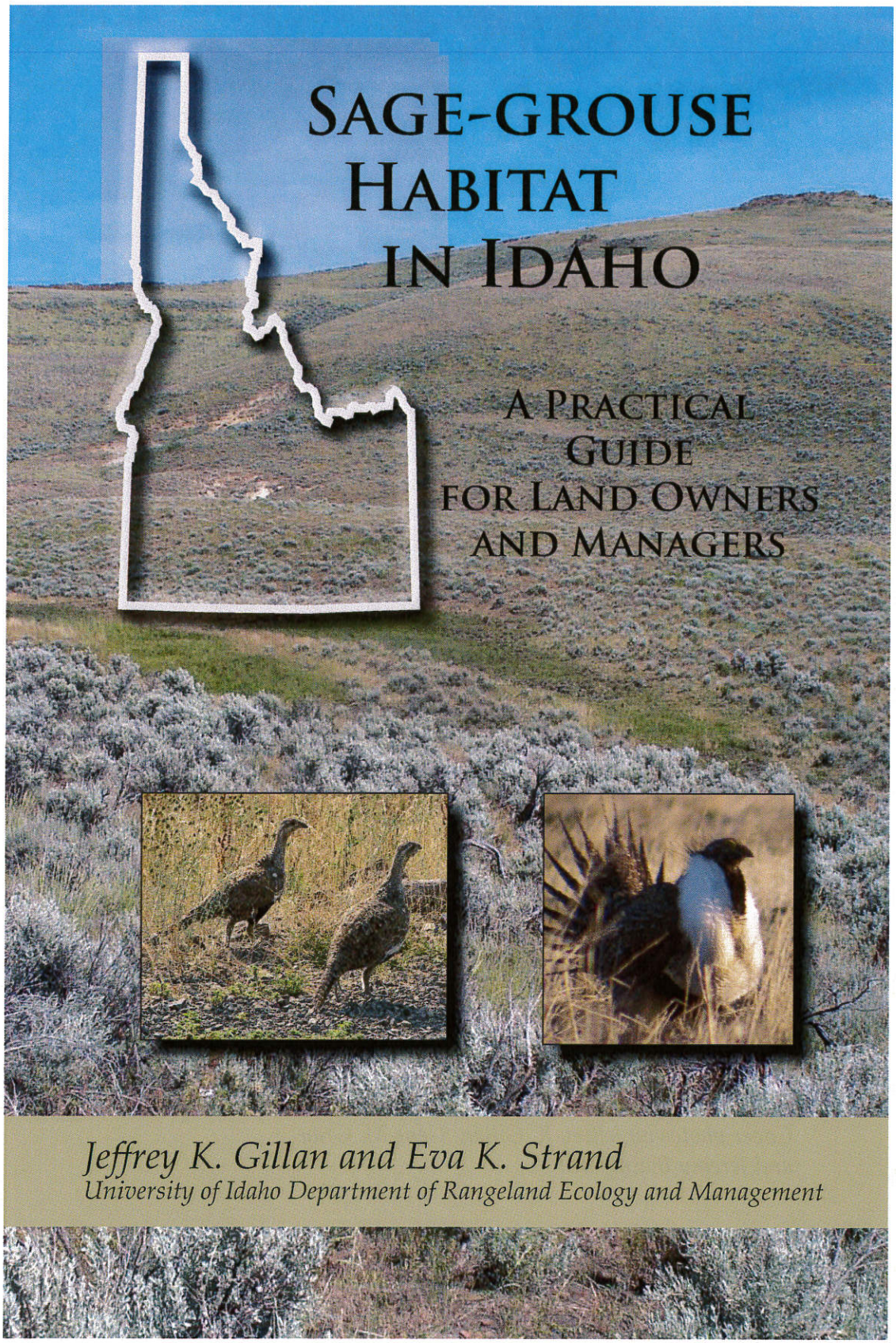


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Cover photos by Jeffrey K. Gillan, Gene M. Gray and Jeremy Baumgardt

Sage-Grouse Habitat in Idaho

A Practical Guide for Land Owners and Managers

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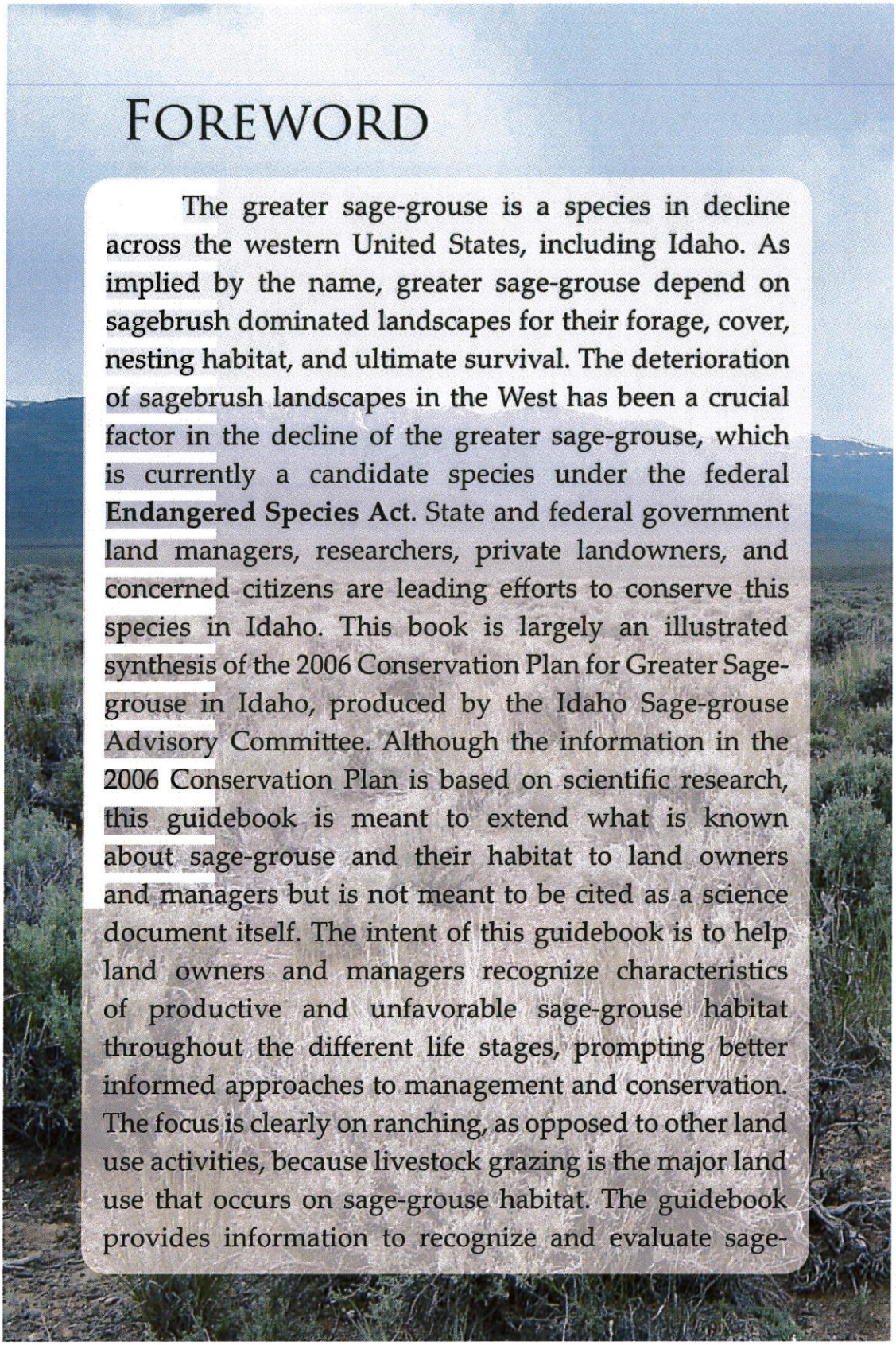
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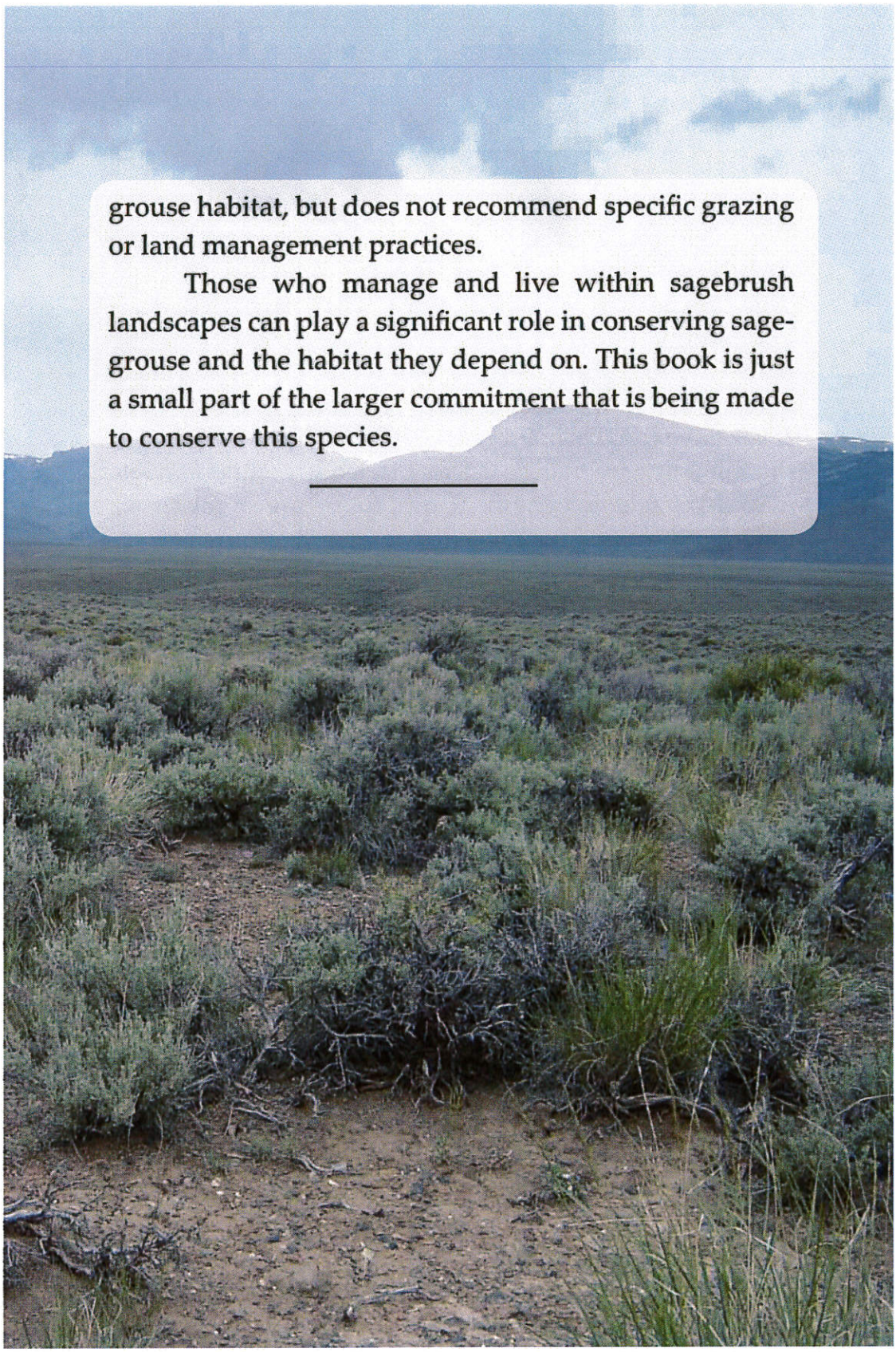
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FOREWORD

The greater sage-grouse is a species in decline across the western United States, including Idaho. As implied by the name, greater sage-grouse depend on sagebrush dominated landscapes for their forage, cover, nesting habitat, and ultimate survival. The deterioration of sagebrush landscapes in the West has been a crucial factor in the decline of the greater sage-grouse, which is currently a candidate species under the federal **Endangered Species Act**. State and federal government land managers, researchers, private landowners, and concerned citizens are leading efforts to conserve this species in Idaho. This book is largely an illustrated synthesis of the 2006 Conservation Plan for Greater Sage-grouse in Idaho, produced by the Idaho Sage-grouse Advisory Committee. Although the information in the 2006 Conservation Plan is based on scientific research, this guidebook is meant to extend what is known about sage-grouse and their habitat to land owners and managers but is not meant to be cited as a science document itself. The intent of this guidebook is to help land owners and managers recognize characteristics of productive and unfavorable sage-grouse habitat throughout the different life stages, prompting better informed approaches to management and conservation. The focus is clearly on ranching, as opposed to other land use activities, because livestock grazing is the major land use that occurs on sage-grouse habitat. The guidebook provides information to recognize and evaluate sage-



grouse habitat, but does not recommend specific grazing or land management practices.

Those who manage and live within sagebrush landscapes can play a significant role in conserving sage-grouse and the habitat they depend on. This book is just a small part of the larger commitment that is being made to conserve this species.

Identification

The greater sage-grouse (*Centrocercus urophasianus*) is the largest grouse species in North America. Overall, sage-grouse are brownish gray with marks of drab gray and white. They also have a black belly patch. The male can be distinguished by its white breast and neck feathers while the female is more plainly colored. Both sexes have long pointed tails. Males are generally larger than females, averaging 2.5 feet in length while females average 2 feet in length. Sage-grouse are a relatively long-lived upland game bird species and a four- or five-year-old bird is not unusual.



Gene M. Gray

Gene M. Gray



Above: *Sage-grouse hen*

Previous Page: *A male sage-grouse displaying on a lek*

Right: *Male sage-grouse*

Gene M. Gray



Jeremy Baumgardt



Paul Makela



Top: *A hen blends into the grass*

Above: *Sage-grouse tracks in the snow (black pen inlcuded for scale)*

Right: *Typical scat*

Jeffrey Gillan



Look-a-Likes

Several other upland game bird species may occur in sage-grouse habitat at different times of the year. Some species may be hard to distinguish in the field, but a trained eye, binoculars, and a good bird guide should help. The three species below are those most likely to be misidentified as sage-grouse. Sage-grouse are the only species with a black belly patch.

IDFG



Dusky (Blue) Grouse
(Dendragapus obscurus)
The dusky grouse is a large grouse, although smaller than sage-grouse. They are blue-gray in color, and less mottled than a sage-grouse. The tail is round instead of pointed.

U.S. Forest Service



Columbian Sharp-tailed Grouse
(Tympanuchus phasianellus columbianus)
Sharp-tailed grouse are smaller in size and have a shorter pointed tail with white outer tail feathers. They have marks of brown and white, and have a slight crest on the head.

Lukasz Lukasik



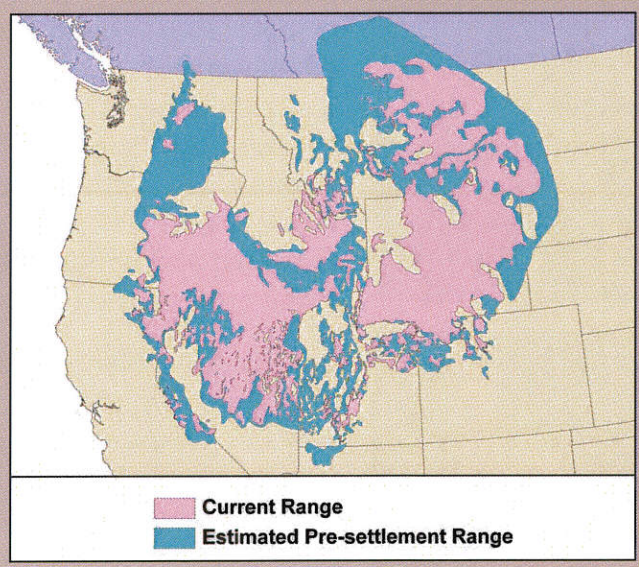
Female Ring-Necked Pheasant
(Phasianus colchicus)
Female pheasants are smaller in size, have a long narrow tail and unfeathered legs.

Reasons for Concern

Decline

Greater sage-grouse likely ranged across **sagebrush steppe** landscapes in 13 western states and three Canadian provinces, an area of about 454,000 square miles. The sagebrush rangelands of southern Idaho, including the Snake River Plain, provided ideal habitat. Biologists estimate that sage-grouse currently occupy a range limited to about 56 percent of pre-European settlement conditions.

Determining exact population numbers is impossible, but biologists can monitor yearly population fluctuations. Monitoring occurs on spring mating grounds, known as **leks**. The number of males on each lek is counted adhering to a standarized protocol and

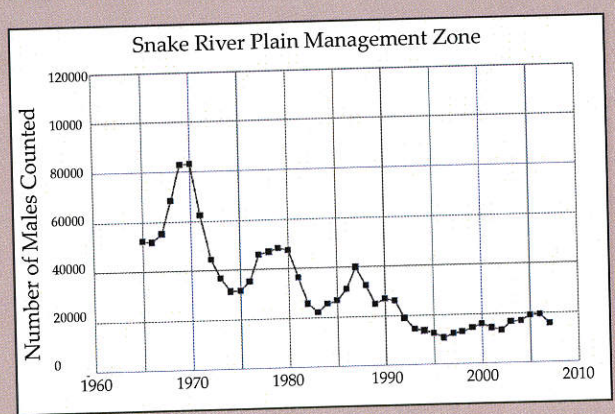


Sage-grouse range (Source: Schroeder et al. 2004)

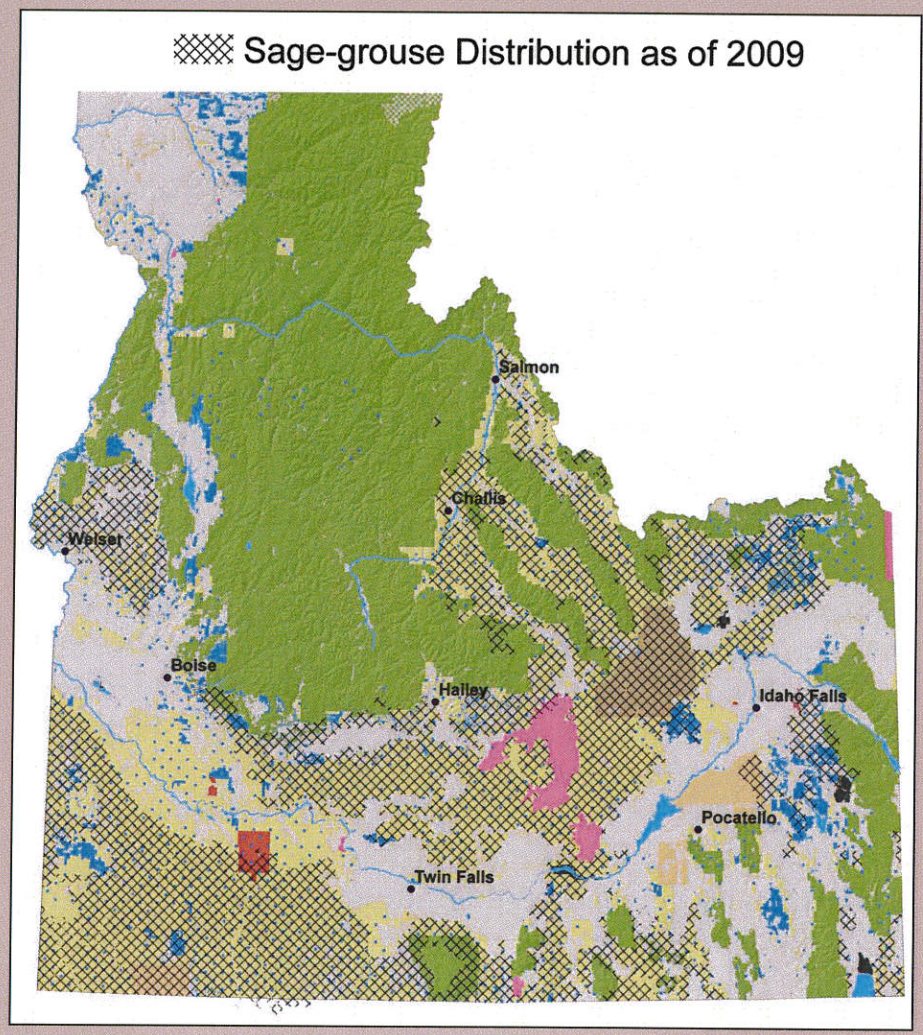
compared with previous years to establish a trend. In 2008, 749 leks across Idaho were surveyed from the air and ground.

Of the 11 states that still support a population, eight have shown population declines since 1965. Populations over the entire range are estimated to have declined at an overall rate of 2 percent per year from 1965 to 2003. Because sage-grouse populations do not adhere to state boundaries, current estimates for Idaho are unavailable. Alternatively, population trends have been estimated for areas that more closely follow ecological and floristic boundaries. Recent analysis, illustrated in the graph below, has shown a general decline in breeding male sage-grouse through 2007 in the Snake River Plain Management Zone, an area encompassing all of southern Idaho and parts of Oregon, Nevada, Utah, and Montana.

Wildlife managers can monitor production (chicks/hen) in an area by analyzing wings from harvested birds. The information is limited, however, because there is often not a large enough sample in most areas to determine accurate numbers. There are also areas within the state that are closed to hunting.



Snake River Plain Management Zone population trend estimate (Source: Garton et al. 2010)



Source: BLM Idaho, IDFG

Sage-grouse Habitat Ownership

Bureau of Land Mngt.	63%
Private	19%
State of Idaho	7%
Forest Service	5%
Department of Energy	4%
Tribal	1%
Military Reservations	<1%
National Parks & Monuments	<1%
U.S. Fish & Wildlife Service	<1%



Sage-Grouse Habitat in Idaho

Impacts to Habitat

The greater sage-grouse is a "sagebrush obligate" species, meaning they require sagebrush for cover, nesting, and food. Loss of these essential sagebrush lands has probably been the main cause for their decline in number. Historically, conversion of sagebrush areas to urban areas, various agriculture crops and seeded pastures significantly reduced habitat. For example, large acreages of sagebrush grasslands that once grew on the plains along the Snake River have, over time, been converted to irrigated cropland

In 2005, a panel of scientists with expertise in sage-grouse, rangelands, fire, and landscape ecology convened to identify and rank threats to sage-grouse as part of the effort to develop a statewide sage-grouse plan for Idaho. They identified 19 separate threats that either have or may impact sage-grouse and its habitat. These threats were assessed at a statewide scale and may not necessarily reflect the same degree of concern at local scales. For example, juniper encroachment has been identified as an important threat in the Owyhee Sage-grouse Planning Area, but is not a major threat in the Shoshone Basin Planning Area. The following section describes a few of the major factors that currently impact the sagebrush steppe and sage-grouse habitat.

Wildfire and Invasive Grasses

Fire frequency and extent has increased sharply in recent decades in portions of southern Idaho, preventing sagebrush stands from recovering as they naturally would if fires burned only occasionally. Some sites that historically burned every 50 to 100 years are now burning as often as every two or three years. Increased

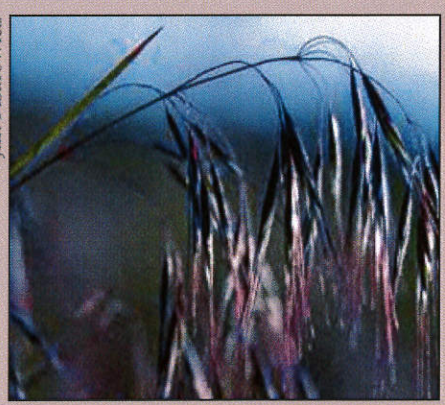
Stephen Bunting



Wildfire in the sagebrush steppe

fire frequency is intertwined with expanding areas of **invasive annual grasslands**. When fires burn in areas that are prone to spreading invasive grasses, restoration of sagebrush becomes more difficult and costly. Exotic grasses, such as cheatgrass, are highly flammable, causing rangeland wildfires to ignite more easily and spread more rapidly. Cheatgrass also cures by early summer, causing the wildfire season in some areas to begin sooner than it would if cheatgrass was not present. Moreover, these grasses frequently establish themselves more robustly after a fire event and can replace native **bunchgrasses** and sagebrush communities, which are essential for productive sage-grouse nesting habitat. The

Jim Pisarowicz



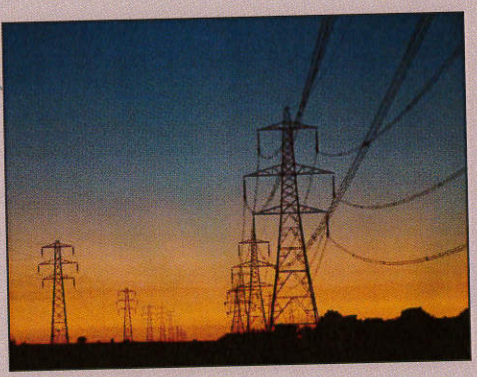
Cheatgrass

devastation of range fires is well illustrated in the Big Desert Planning Area of south-central Idaho, where between 1990 and 2003, and estimated 63 percent of **key sage-grouse habitat** and potential restoration areas burned.

Infrastructure and Rural Residential Development

The expansion of human activities and residences into rural areas can also be detrimental to sage-grouse populations as it can foster the increase of predation or disturbance from stray pets, or attract other animals associated with development such as ravens and skunks. Tall structures, such as power transmission towers can provide perches for raptors and ravens that may prey on sage-grouse and their nests. Sage-grouse may avoid tall structures or other man-made features, rendering even good habitat less available. Increased human access within sage-grouse habitat may result in more fire starts and encourage the spread of invasive weeds. Finally, rural residential or exurban development has become common in sage-grouse habitat. This development can divide large, intact blocks of habitat into areas too small for sage-grouse use.

Tony Boon



Power transmission lines can provide perches for avian predators

Livestock Impacts

Cattle and other livestock are common throughout sage-grouse habitat in Idaho, though total animal unit months (AUMs) on public lands have been decreasing since the 1950's. Sage-grouse and domestic livestock have co-existed on the same range for many decades. Though there is little information directly linking livestock management practices to sage-grouse population levels, ranchers are in a primary position to influence sage-grouse habitat since this is the most prevalent land use in Idaho's sage-grouse country. The interaction among grazing, ranch management and sage-grouse habitat is so complex that identifying grazing related impacts and suggesting corrective actions can only come from careful assessments completed for individual ranches. A management strategy that promotes adequate height and cover of perennial grasses and forbs will have a positive effect on sage-grouse nesting and brood-rearing habitat. Water developments and/or wet meadows, irrigated fields and pastures, are often a part of the managed sagebrush landscape and may benefit sage-grouse during the late brood-rearing period and during drought. On the other hand, livestock grazing can negatively impact sage-grouse habitat if it degrades sagebrush areas, meadows, and riparian habitats. Sources of information for how land managers can improve sage-grouse habitat can be found in the *"Additional Information"* section in the back of this guide.

BLM

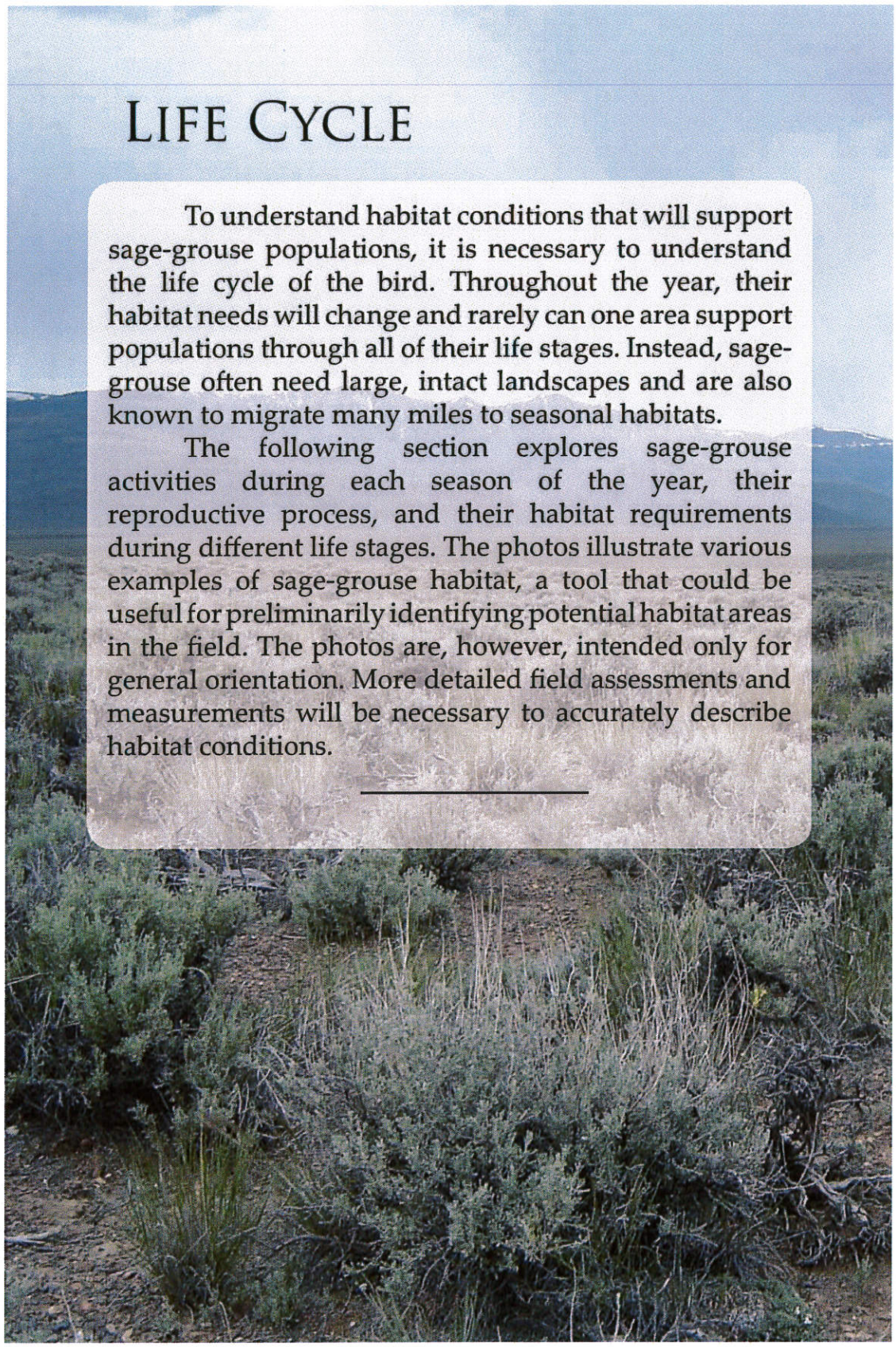


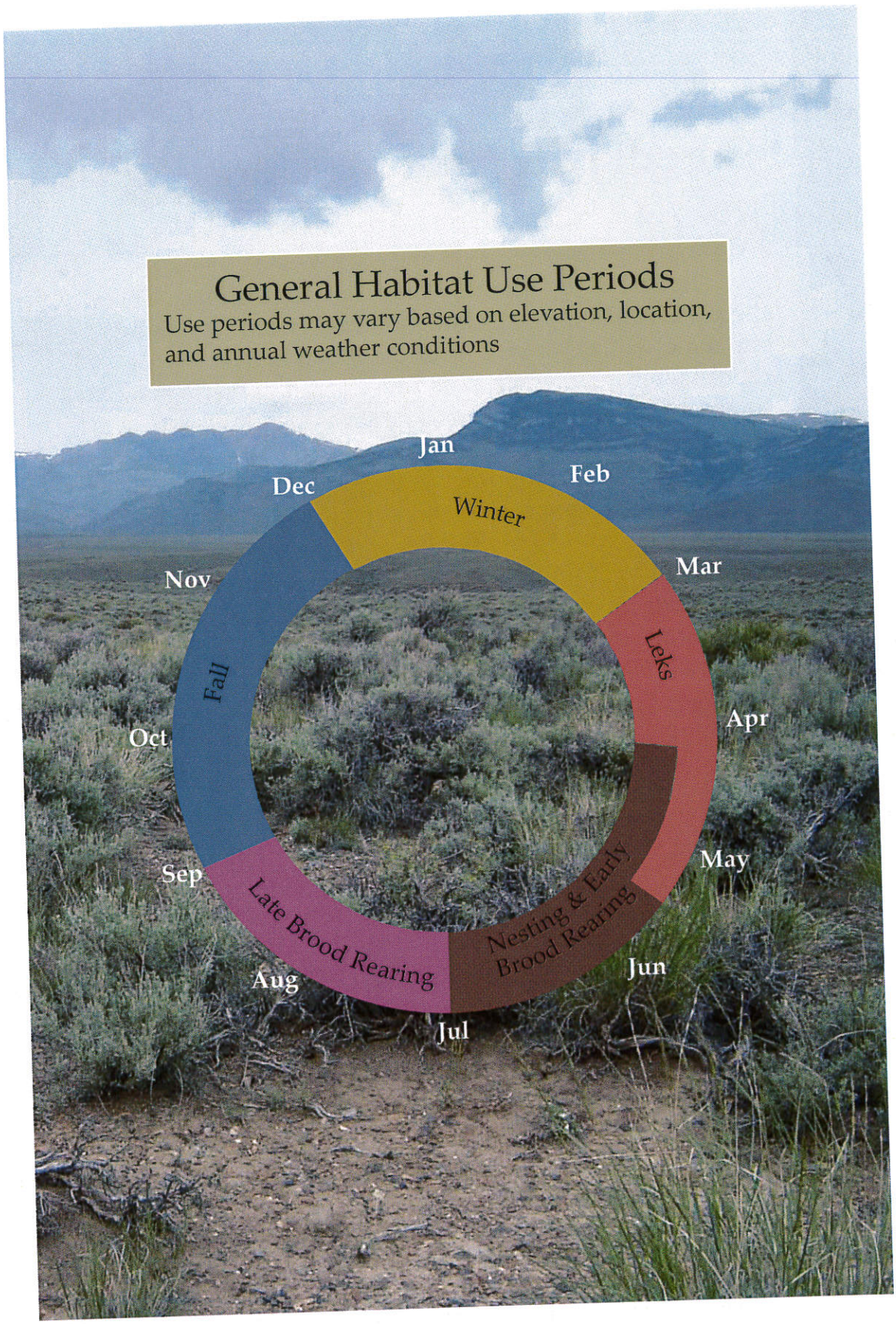
Cattle grazing in the sagebrush steppe

Life Cycle

To understand habitat conditions that will support sage-grouse populations, it is necessary to understand the life cycle of the bird. Throughout the year, their habitat needs will change and rarely can one area support populations through all of their life stages. Instead, sage-grouse often need large, intact landscapes and are also known to migrate many miles to seasonal habitats.

The following section explores sage-grouse activities during each season of the year, their reproductive process, and their habitat requirements during different life stages. The photos illustrate various examples of sage-grouse habitat, a tool that could be useful for preliminarily identifying potential habitat areas in the field. The photos are, however, intended only for general orientation. More detailed field assessments and measurements will be necessary to accurately describe habitat conditions.




General Habitat Use Periods
Use periods may vary based on elevation, location, and annual weather conditions
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Winter
Leks
Nesting & Early Brood Rearing
Late Brood Rearing
Fall

Breeding & Nesting (March-June)

Leks (March-May)

Spring is the mating season for sage-grouse. The species exhibits a **polygynous mating** system, meaning one male will mate with multiple females. The females choose their mate while attending annual gatherings on communal breeding grounds, known as leks. Males try to attract females by performing elaborate strutting displays and by making a "plopping" sound with their inflatable chest air sacs. Sage-grouse typically gather on these leks between March and early May, depending on the location and elevation. There can be as few as two and as many as 100 birds in attendance. Leks can be found at a variety of locations, but generally are in open areas adjacent to sagebrush. They could be in meadows, openings created

Gene M. Gray



Male sage-grouse strut on a lek in spring (Upper Snake Planning Area)

by fires or roads, areas of low sagebrush, or dry lake beds. Leks can often be located in areas that are heavily used by livestock. Most leks are traditional and used year after year.

Nesting & Early Brood-Rearing (May-June)

After mating has concluded, the hen leaves the lek in search of a nesting site. Though studies in southeastern Idaho have shown that hens typically nest within 2-3 miles from the lek, the distance can vary significantly from one region to another. Some hens have been observed moving more than 11 miles to nest. The nest is a bowl-shaped depression on the ground comprised primarily of vegetation such as dead grass. The nest is typically located under a sagebrush shrub, but can be under other common steppe shrubs such as bitterbrush

Gene M. Gray



A hen nests under a sagebrush shrub (West Central Planning Area)

(*Purshia tridentata*), yellow rabbitbrush (*Chrysothamnus viscidiflorus*), or rubber rabbitbrush (*Ericameria nauseosa*) with possibly less success. A relatively small **clutch** size averaging six to seven eggs, coupled with a low re-nesting probability results in one of the lowest reproductive rates of any North American game bird. Eggs can be olive to pale green in color, with small dots of brown. Following the hatch, the hen and chicks will stay in the vicinity of the nest for up to three weeks.

Gene M. Gray



Sage-grouse nest and eggs (West Central Planning Area)

Nesting & Early Brood-Rearing Habitat Characteristics

Nesting success is critically important to population viability. Greater sage-grouse require a large continuous area of sagebrush habitat as well as a substantial **understory** of grasses and **forbs** (flowering broad-leaved plants) for their nesting and early brood-rearing habitat. Both of these components are important because the chicks need protection from predators and access to food without exposing themselves. To help monitor habitat value, biologists have developed a general set of habitat criteria (Table 1), which can be useful to help identify

Habitat Feature	Habitat Use	Productive Habitat Wetter Sites	Productive Habitat Drier Sites
Sagebrush canopy cover	Nesting Cover	15% - 25%	15% - 25%
Sagebrush height	Nesting Cover	15-30 inches	12-30 inches
Sagebrush growth form	Nesting Cover	Spreading form, few if any dead branches	Spreading form, few if any dead branches
Perennial grass and forb height	Nesting Cover	≥ 7 inches	≥ 7 inches
Perennial grass and forb canopy cover	Nesting cover & Food	≥ 25%	≥ 15%
Forb abundance & variety	Food	High	High

Table 1: Productive nesting and early brood-rearing habitat characteristics (Source: Connelly et al. 2000 & Sather-Blaire et al. 2000)

potential nesting habitat out in the field.

Sagebrush Canopy Cover

Many scientific studies have demonstrated that the most productive nesting and early brood-rearing habitat includes 15 to 25 percent sagebrush **canopy cover.** Canopy cover is the overhead projection or footprint of live sagebrush crowns across the surface of the ground within an area of interest. Photos on the following pages illustrate different canopy cover amounts as they might appear in the field.

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Marginal sagebrush cover 11%

Jeffrey Gillan

Jeffrey Gillan

Jeffrey Gillan

Sage-Grouse Habitat in Idaho

Jeffrey Gillan

Shrub Structure

Biologists assume that sagebrush plants with a spreading growth form provide more secure nesting conditions than more columnar growth forms, as they provide additional screening cover from predators.

Jeffrey Gillan



Jeffrey Gillan



Above: *Preferred spreading branch form (Challis Planning Area)*

Left: *A columnar structure provides less cover and leaves nests more visible to predators (Greater Curlew Planning Area)*

Shrub Height

For productive nesting cover, the average height of sagebrush generally falls between 15 and 30 inches for wetter sites and between 12 and 30 inches for drier sites.

Jeffrey Gillan



Productive shrub height (North Magic Valley Planning Area)

Jeffrey Gillan

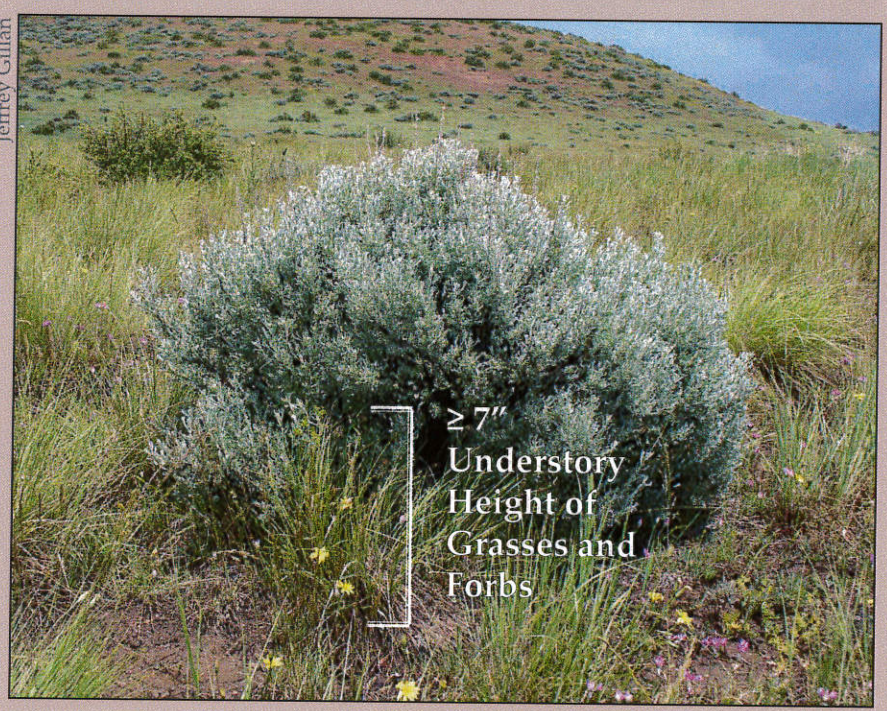


This stiff sagebrush (Artemisia rigida) site is unproductive for nesting based on height requirements (West Central Planning Area)

Understory

Along with specific sagebrush cover and height characteristics, nesting hens and their brood also prefer a substantial understory of perennial grasses and forbs. Forbs and insects are important food sources during the spring months. A healthy understory provides this food source and protective cover from predators. As a practical matter, it is ideal to maintain the grass understory through the end of the grazing season. This residual vegetation will provide the cover needed for productive nesting habitat in the following breeding season before sufficient new grass and forbs become available. Habitat that provides an average of at least 7 inches of height of grass and forbs is desirable, though it may not be possible to achieve this height in all years or on all sites.

Jeffrey Gillan



Productive understory (North Magic Valley Planning Area)

Jeffrey Gillan



Above: *Productive grass and forb understory (Challis Planning Area)*

Jeffrey Gillan



Right: *Productive grass and forb understory (Owyhee Planning Area)*

Jeffrey Gillan



Unproductive nesting habitat: Insufficient grass and forb understory (Owyhee Planning Area)

Jeffrey Gillan



Unproductive nesting habitat: Insufficient understory plants (West Central Planning Area)

Late Brood-Rearing (July-Sept.)

As the summer months get hotter the grasses and forbs on rangelands start to dry out. During this time the hen and brood will move out of their nesting habitat to follow the availability of forbs and insects. They will either move to areas higher in elevation where conditions are more moist or to areas where water collects. They can frequently be seen in agricultural fields, wet meadows, and **riparian** areas adjacent to sagebrush cover. Table 2 details the habitat characteristics during this period. Some sage-grouse have been observed traveling as far as 50 miles to reach their summer ranges.

Habitat Feature	Habitat Use	Productive Habitat
Sagebrush canopy cover	Cover	10% - 25%
Sagebrush height	Cover	15-30 inches
Proximity of sagebrush cover	Cover	Sagebrush cover is adjacent (< 100 yards) to brood-rearing area
Perennial grass and forb canopy cover	Cover & Food	≥ 15%
Riparian and wet meadow plant community	Food	Wetland plant species dominate wet meadow or riparian area
Riparian and wet meadow stability	Cover and Food	Some bare ground may be evident but vegatative cover dominates the site
Forb availability in uplands and wetland areas	Food	Succulent forbs are readily available in terms of distribution and plant structure

Table 2: Late brood-rearing habitat characteristcis
(Source: Connelly et al. 2000 & Sather-Blaire et al. 2000)



Jeffrey Gillan



Typical late summer habitat for hens and broods when riparian areas become crucial foraging areas (East Idaho Uplands Planning Area)

Jeffrey Gillan



Sage-grouse often use cultivated fields adjacent to sagebrush in the late summer months (North Magic Valley Planning Area)

Fall & Winter (September-March)

Fall

Fall habitat for sage-grouse can vary greatly. Sage-grouse will continue using wet meadows, riparian areas and irrigated fields until their food source of forbs dries up or is killed by frost. During this period their diet will change back to predominantly sagebrush and the birds will move to areas where it is available.

Winter

Sage-grouse spend the winter in sagebrush dominated landscapes where they rely almost exclusively on sagebrush for both forage and shelter. Winter habitat characteristics are listed in Table 3. The habitat they choose is dependent on snow depth, elevation, and aspect. Sage-grouse tend to prefer south and southwest facing aspects and very gentle slopes. They can often be seen on windswept ridges, draws, or any location that has significant sagebrush available above the snow. Productive habitat consists of sagebrush between 10 and

Habitat Feature	Habitat Use	Productive Habitat
Sagebrush canopy cover	Cover and Food	10-30%
Sagebrush Height	Cover and Food	10 to 14 inches above snow level

Table 3: Winter habitat characteristics
(Source: Connelly et al. 2000)



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Sage-grouse winter range (West Central Planning Area)

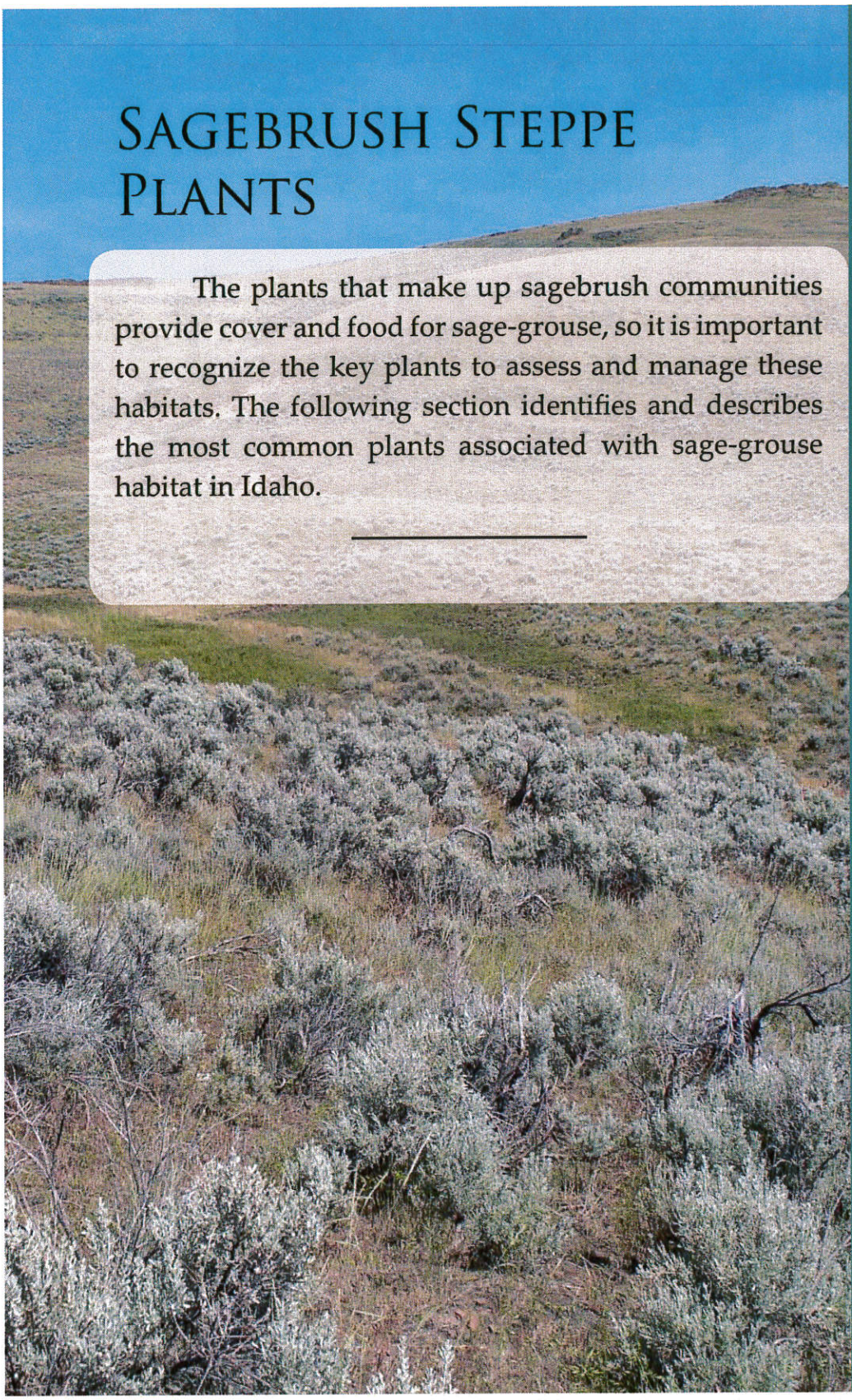
14 inches above the snow level and between 10 and 30 percent canopy cover.

Migration

Migration in sage-grouse appears to vary by individual populations. Birds from some populations have been observed exhibiting no significant migration between seasonal habitat during the course of the year. Other populations have been observed exhibiting a two stage migration, with birds moving from their winter/ breeding habitat to their summer range. Still other populations exhibit a three stage migration, moving from winter to breeding, then to summer ranges. Some populations have been recorded traveling distances as far as 100 miles. In Idaho, most sage-grouse populations tend to be migratory. The exact reason for migration is not known, but tradition and habitat availability in a given geographic area likely play a role.

Sagebrush Steppe Plants

The plants that make up sagebrush communities provide cover and food for sage-grouse, so it is important to recognize the key plants to assess and manage these habitats. The following section identifies and describes the most common plants associated with sage-grouse habitat in Idaho.

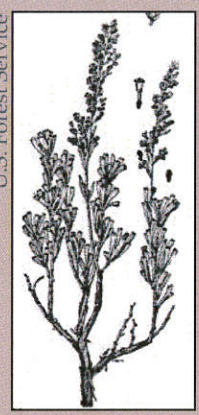


Sagebrush

Tall Sagebrush

Big sagebrush (*Artemisia tridentata*) is the most widespread sagebrush species and is used extensively for nesting habitat. Listed below are the three most common subspecies found in Idaho. The subspecies can appear similar to the casual observer but can be readily identified with minimal training.

U.S. Forest Service



Big sagebrush

Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) is a medium sized shrub that grows up to 3 feet tall. It branches at the base and has an uneven crown. It generally grows on dryer sites that receive between 7 and 12 inches of precipitation annually and is usually found between 2,500 and 6,500 feet in elevation. Sage-grouse use it for nesting, wintering, and brood-rearing habitat.

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Wyoming big sagebrush

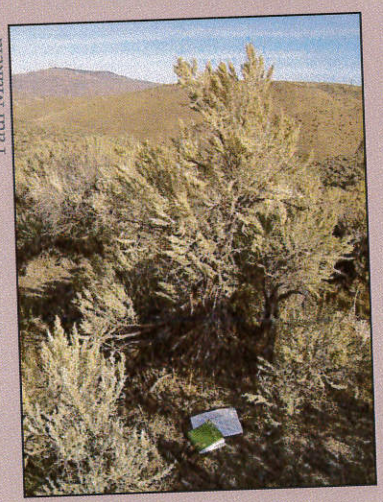
Mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) generally grows above 5,000 feet in elevation and prefers moist deep soils that receive between 14 and 22 inches of precipitation annually. It branches at the base and can grow up to 3 feet tall. The crown is typically even and flat topped. It can be a major source of food during winter for grouse but is also used for nesting, and brood-rearing habitat.



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Mountain big sagebrush

Basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*) is most common on relatively moist productive sites such as valley bottoms and drainage areas. It can reach 3 to 10 feet in height. Many areas that were once occupied by this subspecies have been converted to croplands because of the fertility of these sites. Its tall and tree-like structure provides poor nesting cover. It may be less palatable than other sagebrush species.



Paul Makela

Basin big sagebrush

Silver sagebrush (*Artemisia cana*) Two subspecies occur in Idaho; mountain (*A. cana* ssp. *viscidula*) and bolander (*A. cana* ssp. *bolanderi*). Mountain silver sagebrush is found on seasonal wet, productive sites at elevations between 6,000 and 8,000 feet. It only grows up to 1 foot in height so it has limited value for nesting habitat, but is very palatable. Bolander silver sagebrush can grow up to 3 feet tall and prefers poorly drained, alkaline soils.



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NL Britton

Silver sagebrush

Tall threetip sagebrush (*Artemisia tripartita* ssp. *tripartita*) occurs commonly in the Upper Snake River Plain between 3,400 and 7,100 feet in elevation where the annual precipitation ranges from 11 to 15 inches. It prefers deep, well drained soils, and is often mixed with mountain big sagebrush. It generally grows 16 to 32 inches tall and can provide food, cover, and nesting habitat. It is one of



Jeffrey Gillan

Tall threetip sagebrush



U.S. Forest Service

the only sagebrush species that will resprout after a fire.

Dwarf sagebrush

Little (or low) sagebrush (*Artemisia arbuscula*) grows up to 16 inches in height on rocky or thin soil, or very dry sites. It is a very palatable species and can provide habitat throughout the year. Sage-grouse will use it for nesting though they typically will seek taller sagebrush species if available.

Paul Makela



Juley Hankins-Smith



U.S. Forest Service



Little sagebrush

Black sagebrush (*Artemisia nova*) is a short shrub that grows between 4 and 12 inches in height. It can be found on thin and rocky soil from 4,900 to 7,000 feet elevation where precipitation averages 7 to 18 inches. Sage-grouse can use it for winter and brood-rearing habitat.

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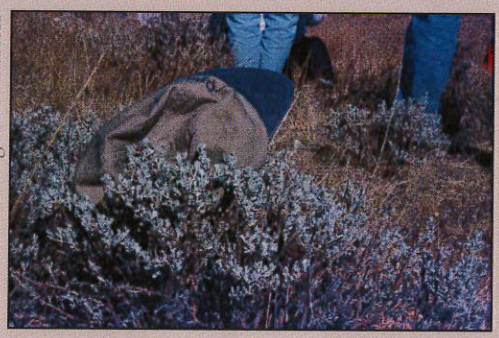


Black sagebrush

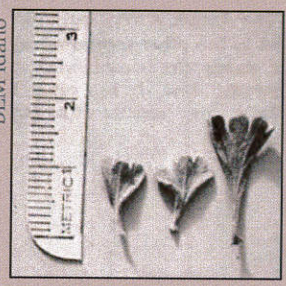


Early (alkali) sagebrush (*Artemisia longiloba*) looks very similar in color and structure to little sagebrush. It is a low growing shrub that typically occupies rocky, shallow, and poor-draining soils. Early sagebrush flowers very early in the season compared with other sagebrush species. It is a highly palatable species and is the dominant sagebrush on some of the largest leks in Idaho.

Roger Rosentreter



BLM Idaho



Early sagebrush

Stiff sagebrush (*Artemisia rigida*) grows from 12 to 16 inches tall on very shallow soils. It has brittle or stiff branches and is deciduous. Stiff sagebrush sites can provide sage-grouse with late brood-rearing habitat because the sites are often wet enough to support a large diversity of forbs.

Dave Powell, U.S. Forest Service
Bugwood.org

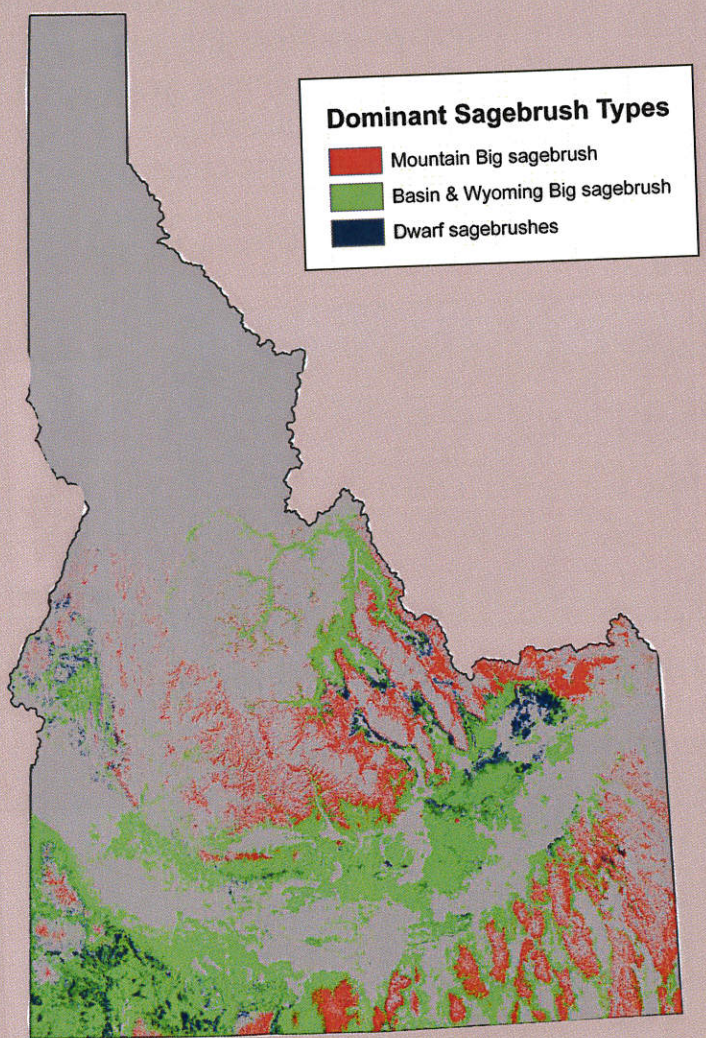


BLM Idaho



Stiff sagebrush

This map shows sagebrush distribution throughout Idaho. It does not show distribution of every species, only the dominant species in each geographic area. For example, if an area is labled "mountain big sagebrush", it may also contain other species.



Idaho Gap Analysis
Idaho Cooperative Fish and Wildlife Research Unit

Grasses

Sage-grouse depend on grass to provide cover from predators primarily during the nesting and brood-rearing periods. Some grasses based on their structure, provide increased visual obstruction and therefore provide more effective habitat for sage-grouse hens and nests. Although many different grass species occur in sage-grouse habitat, the following is a list of a few common grasses that can provide cover for sage-grouse.

Bluebunch wheatgrass (*Pseudoroegneria spicata*)
Native

Jennifer Peterson



Bev Jaquish

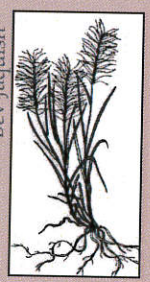


Bottlebrush squirreltail (*Elymus elymoides*)
Native

Eva Strand



Bev Jaquish



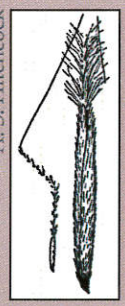
Idaho fescue (*Festuca idahoensis*)
Native


© Gary A. Monroe


Bev. Jaquish

Thurber's needlegrass (*Achnatherum thurberianum*)
Native


Sheri Hagwood


A. S. Hitchcock

The following grasses are non-native species that may provide cover for sage-grouse nesting, however, these grasses can also be very agressive and possibly out-compete desirable native bunchgrasses.

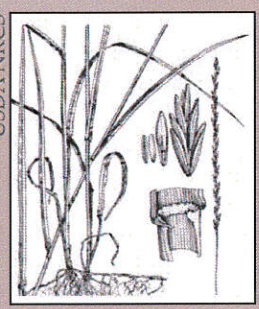
Crested wheatgrass (*Agropyron cristatum*)
Introduced


Loren St. John USDA-NRCS Plant Database


Jen Peterson

Intermediate wheatgrass (*Thinopyrum intermedium*)
Introduced


Jennifer Peterson


USDA NRCS

Forbs

Below is a list of the forbs most commonly used by sage-grouse, which is used by the Bureau of Land Management for habitat assessments. Forb variety is important during the early and late brood-rearing periods. Not only do hens and chicks eat green, succulent forbs, but chicks especially feed on the insects associated with a healthy understory.

Alfalfa (*Medicago* spp.)
Birdsfoot trefoil (*Lotus* spp.)
Broomrape (*Orobanche* spp.)
Clover (*Trifolium* spp.)
Daisies (*Erigeron* and *Aster* spp.)
Dandelion (*Taraxacum officinale*)
Dandelion, Mt. (*Agoseris* spp.)
Desert parsley
(*Lomatium* and *Cymopterus*)
Everlasting (*Antennaria* spp.)
Groundsmoke (*Gayophytum* spp.)
Hawksbeard (*Crepis* spp.)
Knotweed (*Polygonum* spp.)
Milkvetch (*Astragalus* spp.)
Peppergrass (*Lepidium* spp.)
Phlox (*Phlox* spp.)
Prairie star flower (*Lithophragma* spp.)
Prickly lettuce (*Lactuca serriola*)
Sweet clover (*Melilotus* spp.)
Sweet vetch (*Hedysarum* spp.)
Vetch (*Vicia* spp.)
Western salsify (*Tragopogon dubius*)
Western yarrow (*Achillea millifolium*)

Melanie Johnson



Phlox

Jen Peterson



Hawksbeard

Jen Peterson



Western Yarrow



Steppe Succession

Disturbance events are common in sagebrush steppe habitats and include but are not limited to fire, drought, flood, insects, disease and grazing pressure. **Succession** refers to the change of vegetation communities over time as they develop after a disturbance event. The potential for a site to return to productive sage-grouse habitat depends on the site's capacity for re-growth of shrub and understory vegetation to meet seasonal habitat characteristics. Recovery time for sagebrush communities after disturbance can vary greatly and is dependent on the scale and type of disturbance event, remaining or neighboring vegetation and seed bank, the pre-existing condition of the site (e.g., plant species composition), soil factors, weather conditions, topography, and post-disturbance management.

Fire is a disturbance event that has always played a role in the sagebrush steppe ecosystem. The understory grasses and forbs can recover in a few years. However, because sagebrush plants are usually killed by fire and most species do not re-sprout, sagebrush takes much longer to re-establish. The graphic on page *49* shows typical sagebrush steppe succession after a fire or other disturbance event. During the first few years, forbs and grasses may greatly increase and commonly dominate a site. Fire-tolerant shrubs such as rabbitbrush, and re-sprouting sagebrush such as threetip, may also be present. Over time, grass and forb cover will decrease as the fertilizing effects of the burn subside and sagebrush re-establishes and increases its canopy cover. Sagebrush,

with a healthy understory of grasses and forbs may eventually dominate the site and remain until the next disturbance event. Healthy sagebrush landscapes are composed of a mosaic of these early, mid and late successional stages.

Studies have shown that following fire, recovery to pre-burn sagebrush cover can take from 25 to 75 years. Wyoming big sagebrush has the slowest rate of recovery while mountain big sagebrush usually recovers more quickly. However, as discussed on Pages *10* and *11*, fire frequency and extent has increased in sagebrush steppe, and recovery is influenced by invasive annual grasses. In some areas, successional processes have been altered, and some sites may not recover to productive sage-grouse habitat. Throughout Idaho, private landowners and federal and state land managers are working hard to actively restore healthy sagebrush steppe habitats.

Site Potential

Even without disturbance, the distribution and abundance of sagebrush is variable across the landscape. Vegetation characteristics are generally determined by physical elements such as elevation, precipitation, soil types, and aspect. Therefore, the variation in these physical elements across the landscape will naturally result in a variation in the types of habitats present. Some sites may never be capable of being productive sage-grouse nesting habitat. For example, a dry south-facing slope with shallow, rocky soils may not be able to grow suitable big sagebrush cover for nesting. However, such a site may be capable of supporting other species of sagebrush or forbs that could provide foraging opportunities during other times of the year.



Sagebrush Steppe Succession


Jeffrey Gillan

Late development (North Magic Valley Planning Area)


Jeffrey Gillan

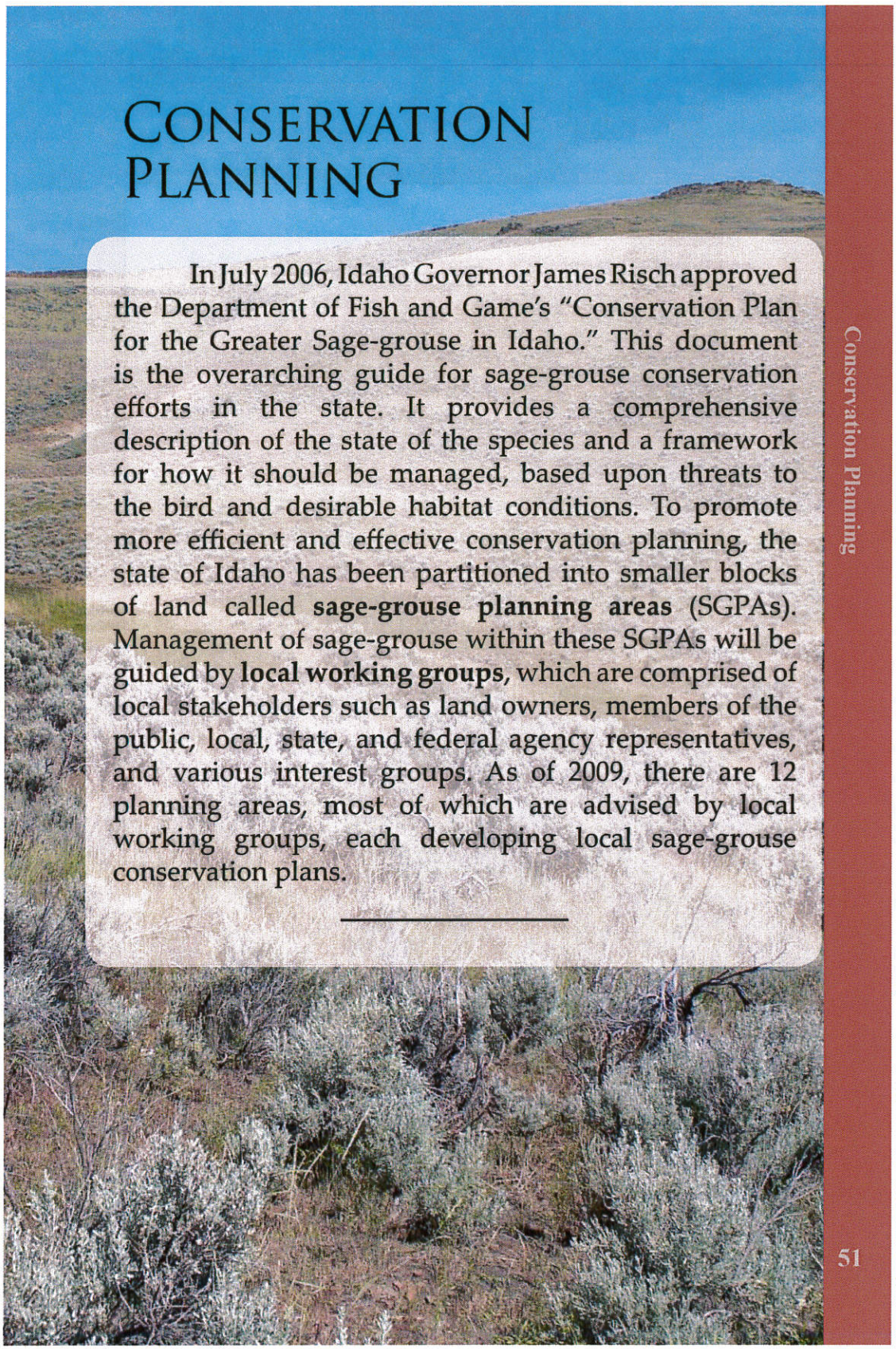
Mid-development (Greater Curlew Planning Area)


Eva Strand

Early development with mostly grasses and forbs (Jarbidge Planning Area)

Sagebrush Growth

Time Since Fire Disturbance



Conservation Planning

In July 2006, Idaho Governor James Risch approved the Department of Fish and Game's "Conservation Plan for the Greater Sage-grouse in Idaho." This document is the overarching guide for sage-grouse conservation efforts in the state. It provides a comprehensive description of the state of the species and a framework for how it should be managed, based upon threats to the bird and desirable habitat conditions. To promote more efficient and effective conservation planning, the state of Idaho has been partitioned into smaller blocks of land called **sage-grouse planning areas** (SGPAs). Management of sage-grouse within these SGPAs will be guided by **local working groups**, which are comprised of local stakeholders such as land owners, members of the public, local, state, and federal agency representatives, and various interest groups. As of 2009, there are 12 planning areas, most of which are advised by local working groups, each developing local sage-grouse conservation plans.

Idaho Sage-Grouse Planning Areas



Sage-Grouse Habitat in Idaho

Final Thoughts

A particularly challenging aspect of understanding and conserving sage-grouse is the fact that they are a landscape-scale species and their habitat needs are more complex than other upland game birds. Unlike pheasants, which tend to have narrow habitat needs and probably spend their entire lives within a small area, sage-grouse roam over large areas. One study in southeastern Idaho documented a population with a range of 1,000 square miles. Sage-grouse have fairly specific habitat needs during different times of the year and seem to have little ability to adapt to large scale changes. It is clear that any action that permanently changes the basic nature of large portions of the landscape will be detrimental. While traditional ranching in Idaho may be compatible with maintaining the types of sagebrush landscapes upon which sage-grouse depend, houses or subdivisions built on or near leks, infrastructure development, or large-scale conversion to cultivated areas permanently removes vital components of the landscape.

This book has introduced the biology, life cycle and habitat requirements of sage-grouse; information that can help you be a better steward. Helping to conserve sage-grouse can be simplified down to a few basic principles you can follow on your land:

1. Protect existing habitat.
2. Encourage sagebrush steppe regeneration.
3. Prevent and eliminate exotic species.
4. Think before you build or develop in the sagebrush steppe.

Additional Information

For the latest information on sage-grouse issues, management techniques, and conservation assistance, please contact your local working group and consult the resources below.

Bureau of Land Management, Idaho
1387 S. Vinnell Way, Boise, ID 83709
Public Desk: (208) 373-4000
www.blm.gov/id
Contains information and updates on public land issues in Idaho

Idaho Department of Fish and Game
600 S. Walnut, P.O. Box 25, Boise, ID 83707
(208) 334-3700
http://fishandgame.idaho.gov/cms/wildlife/plans/sage_grouse/
Access to the 2006 Conservation Plan for the Greater Sage-grouse in Idaho, local working group reports and plans, and other scientific reports

Idaho Governor's Office of Species Conservation
300 N. 6th Street, Suite 101, Boise ID, 83702
(208) 334-2189
www.species.idaho.gov
Contains local working group contact information

Natural Resources Conservation Service
9173 W. Barnes Drive, Suite C, Boise, ID 83709
(208) 378-5700
www.id.nrcs.usda.gov

Natural Resources Conservation Service Plants Database
http://plants.usda.gov/
Images and descriptions of plants in the U.S., including sagebrush steppe species

U.S. Fish and Wildlife Service
1387 S. Vinnell Way, Suite 368, Boise, ID 83709
(208) 378-5243
www.fws.gov/idaho
Contains tools for landowners such as information on conservation agreements and the Endangered Species Act

U.S. Geological Survey SAGEMAP
sagemap.wr.usgs.gov/SageGrouse.aspx
Contains contact information for local working groups, literature on livestock grazing impacts on sage-grouse habitat, best management practices, scientific reports, and policy documents

Wyoming Game and Fish Department
http://gf.state.wy.us/wildlife/wildlife_management/sageGrouse/index.asp
Has many resources on grazing practices, sage-grouse research, and policy direction in Wyoming and the rest of the sagebrush region

Glossary of Terms

Bunchgrasses (page 12)
Perennial grasses that grow in clumps or tufts as opposed to mats

Canopy cover (page 21)
Overhead projection or footprint of the plant's crown onto the ground surface, usually expressed as a percentage

Clutch (page 20)
The number of eggs produced by a hen at a single time

Endangered Species Act (page 2)
Federal law aimed to prevent the extinction of critically imperiled animal and plant species and protect the ecosystems on which they depend

Forb (page 20)
A flowering broad-leaved plant that can be an annual or a perennial

Invasive annual grasslands (page 12)
Areas dominated or strongly influenced by invasive annuals such as cheatgrass, medusahead wildrye or similar species

Key sage-grouse habitat (page 13)
Areas of generally intact sagebrush that provide sage-grouse habitat during some portion of the year

Leks (page 8)
Traditional communal mating ground where hens choose mates, occurs between March and early May on open areas adjacent to sagebrush

Local working group (page 51)
A group comprised of landowners, land managers, scientists, and other citizens that provides advice on conservation efforts in a planning area

Polygynous mating (page 18)
A mating type in which a male mates with multiple females

Riparian (page 33)
Lands adjacent to creeks, streams, rivers and standing water where vegetation is strongly influenced by the presence of water

Sage-grouse planning areas (page 51)
Geographic areas originally defined by the Idaho Department of Fish and Game that have similar landscapes, sage-grouse habitats, and population use, used to improve management efficiency

Sagebrush steppe (page 48)
A low rainfall landscape capable of supporting perennial grasses and shrubs, synomous with sagebrush dominated rangelands

Succession (page 48)
A directional change in the species composition or structure of a plant community over time

Understory (page 20)
Vegetation community in the shrub steppe composed of grasses and forbs, essential for suitable nesting habitat

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Sage-grouse Habitat in Idaho: A Practical Guide for Land Owners and Managers

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May 2010

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