



THE SAGEBRUSH SEA

"...in the sagebrush lands of the West...the natural landscape is eloquent of the interplay of the forces that have created it. It is spread before us like the pages of an open book in which we can read why the land is what it is and why we should preserve its integrity. But the pages lie unread."

Rachel Carson 1962
Silent Spring

“With remarkable variety in combinations of species, the metaphorical sagebrush ocean embraces currents, tides, eddies and embayments. This is a complex and dynamic sea.”

Stephen Trimble 1989
The Sagebrush Ocean

The Sagebrush Sea covers approximately 150 million acres of the American West, one of the most extensive ecosystems in North America. The heart of the Sagebrush Sea is shaped by the Columbia River, the Great Basin and the Wyoming Basin. It extends from the east side of the Cascade Mountains in Washington and Oregon, across the Snake River Plain in Idaho, east to western and central Wyoming, southwestern Montana, and the western edge of the Dakota grasslands, and south into western Colorado, northern New Mexico and Arizona. The Sagebrush Sea includes northeastern California along the Oregon and Nevada border east of the Sierra Nevadas, northern and central Nevada south to the Mojave Desert and the high plateau country of Utah west of the Wasatch Range.



where streams flow from the mountains into valleys without any outlet to the ocean, contributing to the unique nature of this landscape.

The Sagebrush Sea includes portions of several ecoregions: what is known as the sagebrush steppe of the Columbia and Snake River basins – in the northern reaches of the region – the Great Basin sagebrush ecosystem to the south, and the grasslands of eastern Montana, the Wyoming Basin and western Dakotas. With dramatic changes in elevation and moisture, this is an incredibly varied landscape, home to numerous distinct plant communities, each of which supports a great diversity of flora and fauna.

Black Rock Desert, Nevada — KIRK PETERSON

“Remember that the yield of a hard country is a love deeper than a fat and easy land inspires, that throughout the arid West the Americans have found a secret treasure...a stern and desolate country, a high bare country, a country brimming with a beauty not to be found elsewhere.”

Bernard DeVoto 1943
The Year of Decision: 1846

Where and What is the Sagebrush Sea?

The Sagebrush Sea is a landscape of dramatic contrasts and subtlety. While to some the dry, rocky hillsides and apparently endless bluffs of sage, juniper, piñon, mountain mahogany and bitterbrush appear monotonous and “barren,” they teem with wildflowers, aromatic and flowering shrubs, birds and great variety of other animals. This is expansive country. The horizon extends for 360 degrees and the sky arches high over the cedar, mustard-yellow and sea-green slopes. Pronghorn race across huge grassy basins and bighorn sheep balance on steep cliff sides. There are lakes, rivers, streams, springs and wetlands, hot springs, volcanic rock formations and mountain ranges – some rising to over 9000 feet.

The watersheds and river basins of the Sagebrush Sea include the eastern portion of the Columbia Basin, with its major tributaries, the Yakima, Deschutes, John Day, Owyhee, Boise and Snake Rivers. Toward the eastern edge of the region flow the Colorado, the Green and Wind Rivers, the Missouri and some of its headwater tributaries. Through its southwestern basins flow the Humboldt, Pit, Truckee and Walker Rivers.

The Sagebrush Sea is high country – much of it over 4000 feet in elevation with mountains rising 5000 to 6000 feet or higher above the desert floor. It is basin and range country where long, steep ridges of volcanic uplift and fault-block mountains flank broad basins and valleys. The Saddle Mountains and Rattlesnake Hills north of the Columbia River, the Warner Mountains, Steens Mountain, Hart Mountain, Owyhees, Sheep Creek and Pueblo Mountains in southeastern Oregon and Idaho, the White Mountains and Bodie Hills of northern California, Nevada’s Shoshone, Diamond and Ruby Mountains, Wyoming’s Green Mountains and Bear River Range, the Absarokas and Big Horn Mountains, the Crazy Mountains in Montana, the San Juan Mountains and Uncompahgre Plateau in Colorado – these are some of the ranges that frame the basins of the Sagebrush Sea.

Much of the Sagebrush Sea is described as “high desert,” with intensely hot summers but cold, snowy winters. While overwhelmingly dry, sagebrush country contains important wetlands – including the Malheur and Warner Lakes, Lake Abert, Mono Lake and the Great Salt Lake – as well as the remnants of many alkali and now dry ancient lakebeds. Within the Great Basin itself are many smaller closed basins



Facts about the Sagebrush Sea

Historically, the Sagebrush Sea covered about 270 million acres. Today, because of land use, only 150 million acres remain and throughout much of this region exotic grasses and weeds now dominate native vegetation. Some sagebrush species have lost approximately 50 percent of their historic native habitat.¹

Over 100 bird, 70 mammal and 23 reptile and amphibian species depend on the Sagebrush Sea ecosystem.² In the Intermountain West, more than 50 percent of grassland and shrubland bird species show downward population trends.³

A number of the fastest growing counties in the interior West – the fastest growing region of the country – are in the Sagebrush Sea, in Colorado, Idaho, Nevada, Oregon, and Utah.⁴ Partly because of this growth, recreational visits to BLM lands are expected to increase 5 percent annually.⁵

About 99 percent of basin big sagebrush in the Snake River Plain of Idaho has been converted to agriculture.⁶

Approximately 90 percent of the shrub-steppe grassland that makes up much of the Sagebrush Sea in Oregon and southwestern Washington has been lost.⁷

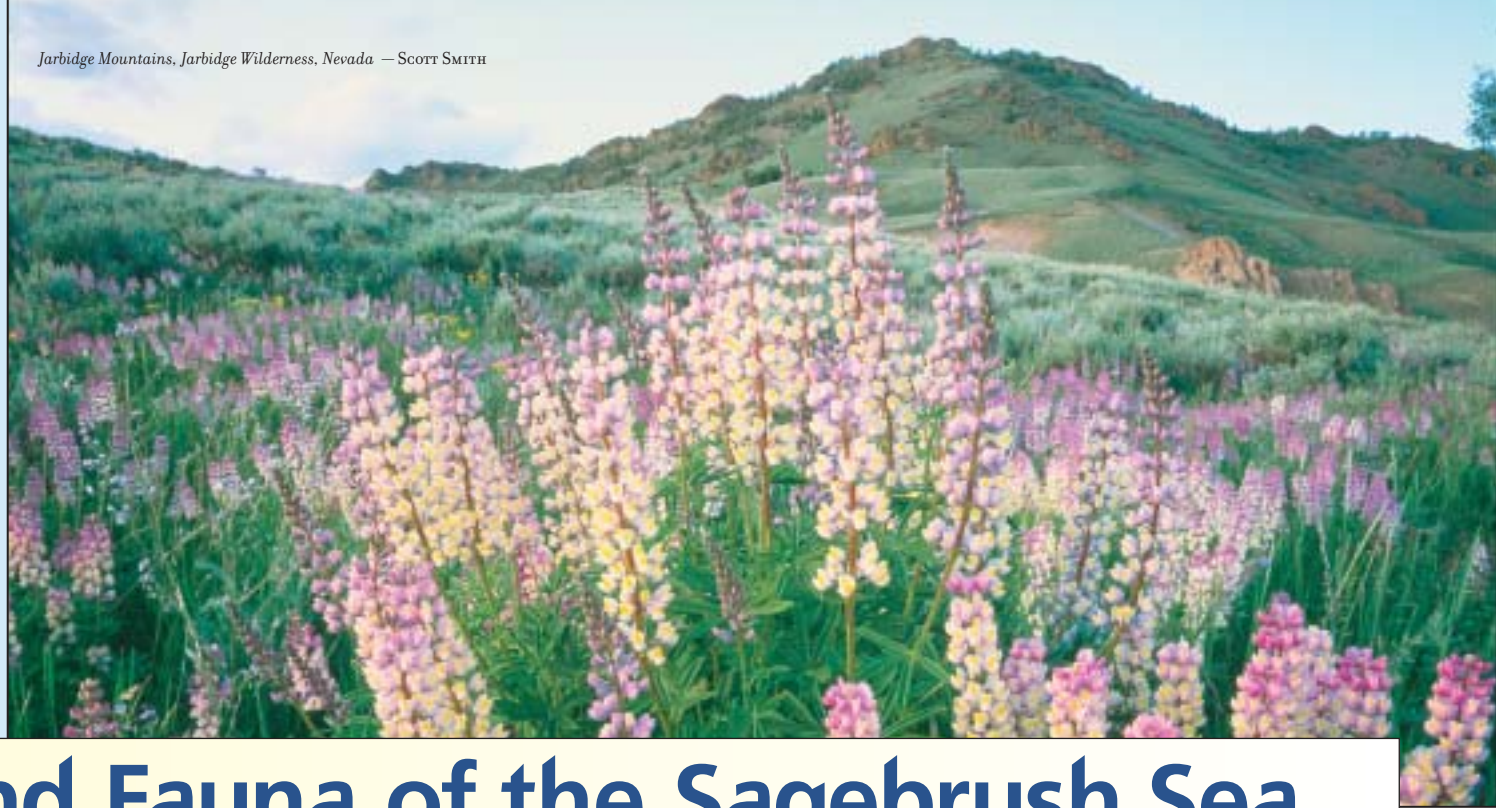
Weeds spread through Western federal lands at an estimated 4000 to 5000 acres per day,⁸ contributing to the endangerment or extinction of 33 percent of at-risk plant species.⁹

Much of the Sagebrush Sea is publicly owned, managed by the Bureau of Land Management. The BLM manages more land than any other federal land management agency but with less funding per acre than any other. The current BLM operating budget amounts to \$2.82 per acre per year.¹⁰

Of the approximately 150 million remaining acres of the Sagebrush Sea, about 2 million acres are protected wilderness – less than 2 percent of the region.



Great Basin Collared Lizard — KIRK PETERSON



Birds of the Sagebrush Sea

“Of the twenty-seven different orders [of birds] recognized by ornithologists, seventeen are represented by one or more species which regularly occur as residents, migrants or visitants in the Great Basin.”

Fred A. Ryser, Jr. 1985
Birds of the Great Basin

Flora and Fauna of the Sagebrush Sea

- American avocet
- American bitter
- American coot
- American crow
- American dipper
- American goldfinch
- American kestrel
- American robin
- American white pelican
- American wigeon
- Ash-throated flycatcher
- Bald eagle[†]
- Bank swallow
- Barn swallow
- Belted kingfisher
- Black swift
- Black tern
- Black-billed magpie
- Black-chinned hummingbird
- Black-chinned sparrow
- Black-crowned night-heron
- Black-headed grosbeak
- Black-necked stilt
- Black-shouldered kite
- Black-throated sparrow
- Blue grosbeak
- Blue grouse
- Blue-gray gnatcatcher
- Blue-winged teal
- Bohemian waxwing
- Brewer's blackbird
- Brewer's sparrow
- Broad-tailed hummingbird
- Brown creeper
- Brown pelican
- Brown-headed cowbird
- Bullock's oriole
- Burrowing owl
- Bushtit
- California gull
- California quail
- Calliope hummingbird
- Canada goose
- Canvasback
- Canyon wren
- Caspian tern
- Cassin's finch
- Cattle egret
- Cedar waxwing
- Chipping sparrow
- Cinnamon teal
- Clark's nutcracker
- Cliff swallow
- Common loon
- Common moorhen
- Common nighthawk
- Common poorwill
- Common raven
- Common snipe
- Cooper's hawk
- Dark-eyed junco
- Double-crested cormorant

The Sagebrush Country is a highly varied and complex landscape, filled with a diversity of species that have adapted themselves to the region's variations in elevation, moisture and temperature. While "sagebrush" dominates visually, there are actually many different kinds of sagebrush, growing in communities with other shrubs, trees, grasses and wildflowers to create a rich mosaic of vegetation that support a host of animal and insect species.

The use and abuse of the Sagebrush Sea – the draining and diversion of its streams and wetlands, the conversion of sagebrush and native grasses to cropland and exotic forage plants, the invasion of weed and other non-native species, a century or more of intensive livestock grazing and human-imposed unnatural wildfire regimes along with human settlements and development – have upset the delicate balance of the landscape. The region's riparian areas and wetlands – some of which are home to fish species that live nowhere else – provide habitat for the greatest diversity of species. Yet

these areas are among some of the most threatened in the region. Consequently, both rare and once common species are now imperiled. If current land uses continue without modification, the future of many Sagebrush Sea species will be uncertain and difficult to recover.

In these pages we note a sampling of flora and fauna that live in and depend on the Sagebrush Sea. These species include those found in the sagebrush and grass communities of the region, the area's wetlands, its high alpine reaches and its intermingled woodlands.

Historically, the Sagebrush Sea has been treated as a monotonous landscape. There is, however, an astonishing variety of sagebrush with numerous species and subspecies throughout the American West. What makes sagebrush so distinct is how finely adapted it is to the low and varied moisture conditions and ranging elevations of this region. Its soft grayish-green leaves remain green year round, providing a vital source of food for Sagebrush Sea wildlife.

At the very highest elevations that receive substantial

snowfall, grows *subalpine big sagebrush*. Lower down mountain slopes is *mountain big sagebrush*. At lower and drier elevations grow *Wyoming big sagebrush* and *basin big sagebrush*. Where the soils are thinner and still drier grow the smaller varieties of sagebrush – *black sagebrush*, *dwarf sagebrush* among them. One study of the Owyhee Canyonlands identified 36 sagebrush communities types – various species and subspecies of sagebrush and their grass and wildflower understories.

The mosaic of vegetation in the Sagebrush Sea provides food and shelter for many species of birds, small and large mammals, reptiles, amphibians and insects. Sagebrush itself is an essential food source – especially in winter – for sage grouse, pygmy rabbits, sagebrush vole, pronghorn, mule deer and elk. It also provides protective cover for young grouse, rabbits and fawns as well as for nests of sage grouse, sage sparrow, sage thrasher and Brewer's sparrow. The following are some of the sagebrush obligate species – without sagebrush habitat they could not survive.



Sage Grouse — TERRY STEELE

Sage Grouse. The sage grouse is a striking and charismatic bird that derives its name, food and shelter from the sagebrush on which it depends. Slightly less than 2 feet size, both males and females are a mottled, brownish-gray. Males weigh up to six pounds; females half as much. White chest feathers and specialized head feathers distinguish cocks during the spring breeding season. Cocks have long black tail feathers with white tips, while female tail feathers are mottled black, brown, and white.

“In time there were two as perfectly adjusted to their habitat as the sage. One was a mammal, the fleet and graceful pronghorn antelope. The other was a bird, the sage grouse – the ‘cock of the plains’ of Lewis and Clark.”

Rachel Carson 1962
Silent Spring

The sage grouse mating ritual is fascinating to observe, and often described as among the most stirring and colorful natural history pageants in the West. In early spring, at dawn and often at dusk, males congregate on “leks” – ancestral strutting grounds to which birds return year after year – in areas of scattered sagebrush. Leks vary in size from one to forty acres and may be up to fifty miles from wintering areas.

To attract a hen, cocks strut, fan their tail feathers and swell their breasts to reveal bright yellow air sacs. Their wing movements, inflating and deflating air sacs make an acoustic “swish-swish-coo-oo-pouink!” Cocks may strut throughout the night when the moon is bright.

Throughout the year, sage grouse prefer different seasonal habitats consisting of sagebrush, grasses, forbs, and other desert flora. Chicks feed on insects found in the grasses along with forbs which also provide essential nutrition for nesting hens. Summer range is a combination of sagebrush and forb-rich areas, including wet meadows and riparian areas. Sage grouse eat only sagebrush during

the winter, so good winter range provides grouse access to sagebrush under all snow conditions. Consequently, sage grouse require vast expanses of healthy sagebrush habitat with a thriving mosaic of natural vegetation and functioning hydrologic systems.

The common species of sage grouse is known as the northern or greater sage grouse. A second species, of much smaller range and smaller physical size is the Gunnison sage grouse, now found only in southwestern Colorado and a small part of Utah.

- Downy woodpecker
- Dusky flycatcher
- Eared grebe
- Eastern kingbird
- European starling
- Evening grosbeak
- Ferruginous hawk
- Fox sparrow
- Gadwall
- Golden eagle
- Grasshopper sparrow
- Gray flycatcher
- Gray vireo
- Great blue heron
- Great egret
- Great horned owl
- Greater sage grouse[†]
- Green-backed heron
- Green-tailed towhee
- Green-winged teal
- Gunnison sage grouse[†]
- Hairy woodpecker
- Hermit thrush
- Horned Lark
- House finch
- House wren
- Killdeer
- Lark sparrow
- Lazuli bunting
- Least bittern
- Lesser goldfinch
- Lesser scaup
- Lewis woodpecker
- Lincoln's sparrow
- Loggerhead shrike
- Long-billed curlew
- Long-eared owl
- Mallard
- Marsh wren
- McGillivray's warbler
- Mountain bluebird
- Mountain chickadee
- Mountain quail
- Mourning dove
- Nashville warbler
- Northern flicker
- Northern harrier
- Northern oriole
- Northern pintail
- Northern pygmy owl
- Northern rough-winged swallow
- Northern shoveler
- Orange-crowned warbler
- Osprey
- Peregrine falcon
- Pied-billed grebe
- Pine grosbeak
- Pine siskin
- Pinyon jay
- Plain titmouse
- Prairie falcon
- Red crossbill
- Red-breasted nuthatch
- Redhead
- Red-tailed hawk
- Red-winged blackbird
- Ring-billed gull
- Rock dove
- Rock wren
- Rose-breasted grosbeak
- Rosy finch
- Rough-legged hawk
- Ruby-crowned kinglet
- Ruddy duck
- Rufous hummingbird
- Rufous-sided towhee
- Sage sparrow
- Sage thrasher
- Sandhill crane
- Savannah sparrow
- Say's phoebe
- Scott's oriole
- Scrub jay
- Sharp-shinned hawk
- Sharp-tailed grouse
- Short-eared owl
- Snowy egret
- Song sparrow
- Sora
- Spotted sandpiper
- Steller's jay
- Summer tanager
- Swainson's hawk
- Swainson's thrush
- Three-toed woodpecker
- Townsend's solitaire
- Tree swallow
- Tricolored blackbird
- Trumpeter swan
- Tundra swan
- Turkey vulture
- Veery
- Vesper sparrow
- Violet-green swallow
- Virginia rail
- Virginia's warbler
- Water pipit
- Western bluebird
- Western flycatcher
- Western grebe
- Western kingbird
- Western meadowlark
- Western screech-owl
- Western snowy plover[†]
- Western tanager
- Western wood-pewee
- Western yellow-billed cuckoo[†]
- White-crowned sparrow
- White-faced ibis
- White-headed woodpecker
- White-throated swift
- Willet
- Willow flycatcher
- Wilson's phalarope
- Wilson's warbler
- Wood duck
- Yellow warbler
- Yellow-bellied sapsucker
- Yellow-billed cuckoo
- Yellow-breasted chat
- Yellow-headed blackbird



Big Sagebrush — SCOTT SMITH

Sagebrush Varieties

Sagebrush or artemisia (its genus) are the most widely distributed native shrubs in the western United States. Sagebrush originally covered nearly 270 million acres, ranging from sea level to nearly 12,000 feet and in places that receive only 8 inches of rain per year. Nearly all varieties of sagebrush are endemic to the western United States, growing nowhere else in the world.¹¹

Mountain, tall or big sagebrush grows at 4,500 – 10,000 ft., from CA to the Rocky Mountains, as far east as NE and from Canada to Mexico. Its crushed leaves have a minty, camphor-like odor.

Wyoming big sagebrush grows at 5,000 – 7,000 ft., in WY, MT, ID, CO and SD.

Basin big sagebrush grows at 1,500 – 10,600 ft., from MT south to NM and throughout all the Western states into ND. The crushed leaf of this subspecies has a pungent sharp odor.

Subalpine big sagebrush grows at 8,800 – 10,000 ft., in CO, north-central WY, southeastern ID and north-central UT.

Black sage grows at 4,500 – 9,500 ft., primarily in the Great Basin. The crushed leaf has a viscid odor unlike any other sagebrush.

Dwarf or low sagebrush grows at 3,000 – 12,200 ft., from southern CO to western MT, UT, ID, northern CA, OR and WA. Its leaves have a pleasantly minty odor.

Three-tip sage grows at 3,000 – 9,000 ft., in BC, WA, NV, northern UT and western MT. Its leaves have a mild and pleasant odor.

Owyhee or fuzzy sagebrush grows at 3,700 – 6,600 ft., in a few spots in ID, NV and OR.

Stiff sagebrush grows at 3,000 – 7,000 ft., in the Columbia River Basin of eastern WA, eastern OR, western ID and western MT.

Bud sagebrush grows at 3,000 – 8,000 ft., in MT, OR, CA, AZ, ID, UT and NM. A small sagebrush that grows only to about one foot high. It blooms in the spring with yellowish green flowers.

Pronghorn. A strictly North American mammal whose fossils date back to the Middle Miocene. Reputedly the fastest animal in the Western Hemisphere, pronghorn are distinguished by their two distinctive slightly curved horns with a single prong – both males and females have horns – and by their large white rump patch and two broad white bands across the throat. About 3 to 4 feet high, pronghorn can run as fast as 50 miles per hour, perhaps more. Pronghorn are found throughout the open plains and grasslands of the Sagebrush Sea in all of the region's states except Washington. Millions of pronghorn once ranged throughout the Sagebrush Sea. By 1915, excessive hunting, habitat destruction and competition with livestock reduced pronghorn numbers to an estimated 10,000 to 15,000. With the implementation of hunting restrictions and conservation measures, the pronghorn population has now grown to about one million.



Pronghorn — IDAHO DEPARTMENT OF FISH AND GAME

Sagebrush Lizard. A small lizard, about 2 to 2.5 inches long, with a gray or brown back usually with blotches or stripes on its sides. The males have blue belly patches, the females are sometimes orange around the neck when breeding. It prefers areas of open ground with scattered low sagebrush and is found among piñon and juniper trees.

Pygmy Rabbit. Considered the smallest North American rabbit, about 8 to 11 inches with 2 inch ears, the pygmy rabbit



Pygmy Rabbit — WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

weighs from a half-pound to a pound. It feeds primarily on sagebrush and lives in dense sagebrush stands where the rabbit burrows. Often considered a Great Basin species, the pygmy rabbit is in fact found throughout the Sagebrush Sea, although populations in some states – especially Washington – are now imperiled.

Sagebrush Vole. About 4 to 4.5 inches with a tail just over an inch, weighing no more than 1.3 ounces, the sagebrush vole is ash-gray with a pale belly and feet. Of all voles, this vole lives in the driest places, amongst sagebrush which it eats along with surrounding green plants.

Sage Sparrow. About 5 to 6 inches long, gray with a single dark spot on its light breast, the sage sparrow lives in big sagebrush and feeds from the ground underneath. Sage sparrows build their nests in the sagebrush plants and tend to return to the same breeding grounds year after year.

Brewer's Sparrow. About 4.5 inches long and pale brown, the Brewer's sparrow is found throughout the Sagebrush Sea. It lives in big sagebrush, builds its nest in shrubs and feeds on the ground, eating insects and seeds.

Sage Thrasher. About 7 inches long, grayish brown with yellow eyes, the sage thrasher lives throughout most of the Sagebrush Sea, and builds its nest in or under shrubs, usually sagebrush. It feeds mainly on insects found underneath the brush.

Mammals of the Sagebrush Sea

Merriam's shrew
Spotted bat
Pallid bat
Big freetail bat
Kit fox
Little pocket mouse
Great Basin pocket mouse
Walker Pass pocket mouse
Dark Kangaroo Mouse
Pale Kangaroo Mouse
Great Basin kangaroo rat
Desert woodrat
Bushytail woodrat
Mountain vole
Sagebrush vole
Pygmy rabbit
Common pika
Water shrew
Vagrant shrew
Townsend's pocket gopher
Northern pocket gopher
Western harvest mouse
Western jumping mouse
Little brown myotis (bat)
Big brown bat
Hoary bat
Spotted bat
Fringed myotis
Long-eared myotis
Yuma myotis
Long-legged myotis
Western pipistrel
Small-footed myotis
California myotis

Silver-haired bat
Townsend's big-eared bat
Ord's kangaroo rat
Deer mouse
Northern grasshopper mouse
House mouse
Canyon mouse
Piñon mouse
Wolverine
Least chipmunk
Yellow pine chipmunk
White-tailed antelope squirrel
Long-tailed vole
Texas antelope squirrel
Washington ground squirrel[‡]
Townsend's ground squirrel
Porcupine
Black-tailed jackrabbit
White-tailed jackrabbit
Mountain cottontail
Muskrat
Raccoon
Beaver
Badger
Striped skunk
Spotted skunk
Yellow-bellied marmot
Bobcat
Mountain lion
Coyote
California bighorn sheep[†]
Rocky Mountain bighorn sheep
Pronghorn
Mule deer/black-tailed deer
Rocky Mountain elk
White-tailed deer
Red fox
Ermine
Mink
River otter
Long-tailed weasel
Uinta ground squirrel
Richardson's ground squirrel
Belding's ground squirrel
Golden-mantled squirrel



Reptiles and Amphibians of the Sagebrush Sea

Sagebrush lizard
Black-collared lizard
Longnose leopard lizard
Short-horned lizard
Desert horned lizard
Side-blotched lizard
Great Basin collared lizard



Sagebrush Lizard — ALAN ST. JOHN

Western fence lizard
Western terrestrial garter snake
Valley garter snake
Striped whipsnake
Ground snake
Racer
Rocky Mountain rubber boa
Longnose snake
Western rattlesnake/Great Basin rattlesnake
Great Basin gopher snake
Night snake
Great Basin spadefoot (toad)
Columbia spotted frog[‡]
Northern leopard frog
Western toad
Tiger salamander
Western skink
Tiger salamander
Common garter snake
Pine-gopher snake



Western Rattlesnake — IDAHO DEPARTMENT OF FISH AND GAME

Fish of the Sagebrush Sea

The Sagebrush Sea is home to numerous fish species, some of which live nowhere else. Due to limited water in the region their habitat is vulnerable and has been adversely affected by agriculture and development.



Lahontan Cutthroat Trout — KATHLEEN SIMPSON MYRON

Alvord chub
Bluehead sucker
Bonytail
Borax Lake chub[†]
Brassy minnow
Bridgip sucker
Bull trout[†]
Burbot
Chinook salmon[†]
Chiselmouth
Coho salmon[†]
Colorado pikeminnow[†]
Cui-ui[†]
Cutthroat trout
Emerald shiner
Fathead minnow
Flathead chub
Klamath Lake sculpin
Klamath largescale sucker
Lahontan cutthroat trout[†]
Lahontan reddsie trout
Largescale sucker
Leopard dace

Longnose sucker
Lost River sucker[†]
Malheur sculpin
Margined sculpin
Mottled sculpin
Mountain sucker
Mountain whitefish
Northern pikeminnow
Plains minnow
Rainbow trout
Redside shiner
Shortnose sucker[†]
Speckled dace
Steelhead[†]
Stonecat
Tahoe sucker
Torrent sculpin
Tui chub
Umatilla dace
Utah chub
Warner sucker[†]
Western silvery minnow
White sucker



Redband Trout — RICHARD GROST

[†] Species, subspecies, or subpopulation listed as threatened or endangered under the Endangered Species Act.
[‡] Species, subspecies, or subpopulation is candidate for federal threatened and endangered species list.

Wilderness and Wild & Scenic Rivers

"The Steens Mountain area encompasses some of the most ecologically diverse landscapes in the Basin and Range Ecoregion. Large portions of the area have barely been touched by development, and the area provides important habitat for a wide variety of wildlife ranging from migratory birds and big game to rare and endangered mammals and fish."

Thomas Quigley and Sylvia Arbelbide 1997
U.S. Forest Service Report

Steens Mountain, Oregon — ELLEN BISHOP

Protected Wilderness of the Sagebrush Sea

STATE	WILDERNESS AREA	YEAR	ACRES
COLORADO	Mesa Verde	1976	8100
	Gunnison Gorge	1999	17,700
IDAHO	Black Ridge Canyons	2000	75,550
	Craters of the Moon	1970	43,243
MONTANA	UL Bend	1976	20,819
	Medicine Lake	1979	31,467
NEVADA	Red Rock Lakes	1976	32,350
	Jarbidge Mountains	1964	113,167
	Alta Toquima	1989	38,000
	Arc Dome	1989	115,000
	Boundary Peak	1989	10,000
	Currant Mountain	1989	36,000
	East Humboldts	1989	36,900
	Jarbidge Addition	1989	48,500
	Mt. Rose	1989	28,000
	Quinn Canyon	1989	27,000
	Ruby Mountains	1989	90,000
	Table Mountain	1989	98,000
	Grant Range	1989	50,000
	Mt. Moriah	1989	82,000
	Santa Rosa	1989	31,000
	Black Rock Desert	2000	315,700
	Calico Mountains	2000	65,400
	East Fork High Rock Canyon	2000	52,800
	High Rock Canyon/Yellow Rock Canyon	2000	46,600
	High Rock Lake	2000	59,300
Little High Rock	2000	48,700	
North Black Rock Range	2000	30,800	
North Jackson Mountains	2000	24,000	
Pahute Peak	2000	57,400	
South Jackson Mountains	2000	56,800	
NORTH DAKOTA	Theodore Roosevelt	1978	29,920
OREGON	Steens Mountain	2000	174,744
SOUTH DAKOTA	Badlands	1976	64,144
WASHINGTON	Juniper Dunes	1984	7140
WYOMING	Encampment	1984	10,024
TOTAL			2,076,268

Protected Wild and Scenic Rivers of the Sagebrush Sea

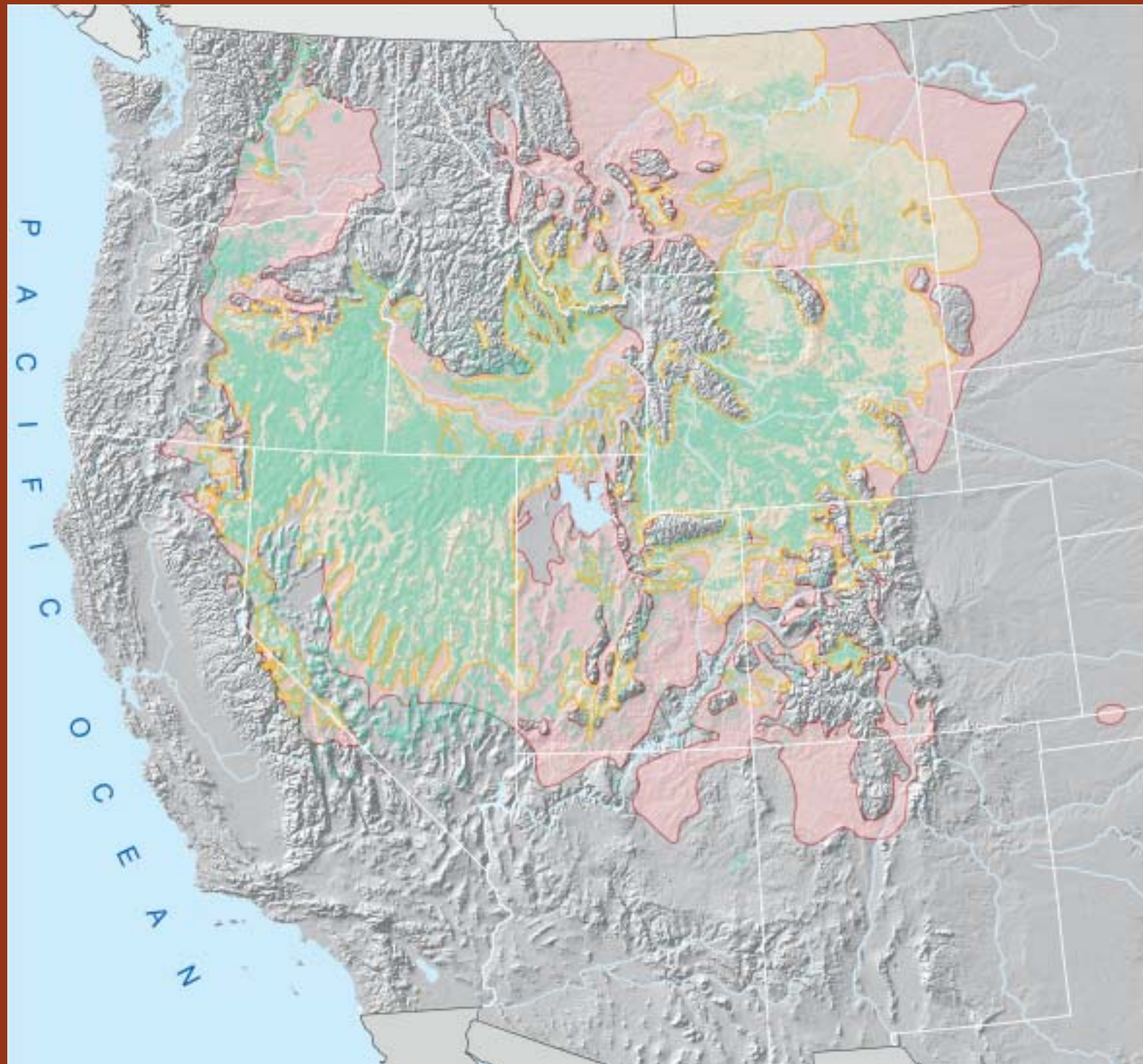
Montana

- Upper Missouri River

Oregon

- Crooked River
- Deschutes River
- Donner and Blitzen River
- John Day River
- Kiger Creek
- North Fork Crooked River
- North Fork Owyhee River
- Owyhee River
- South Fork John Day River
- West Little Owyhee River
- Wildhorse Creek

Upper Missouri Wild and Scenic River, Montana — SCOTT SMITH



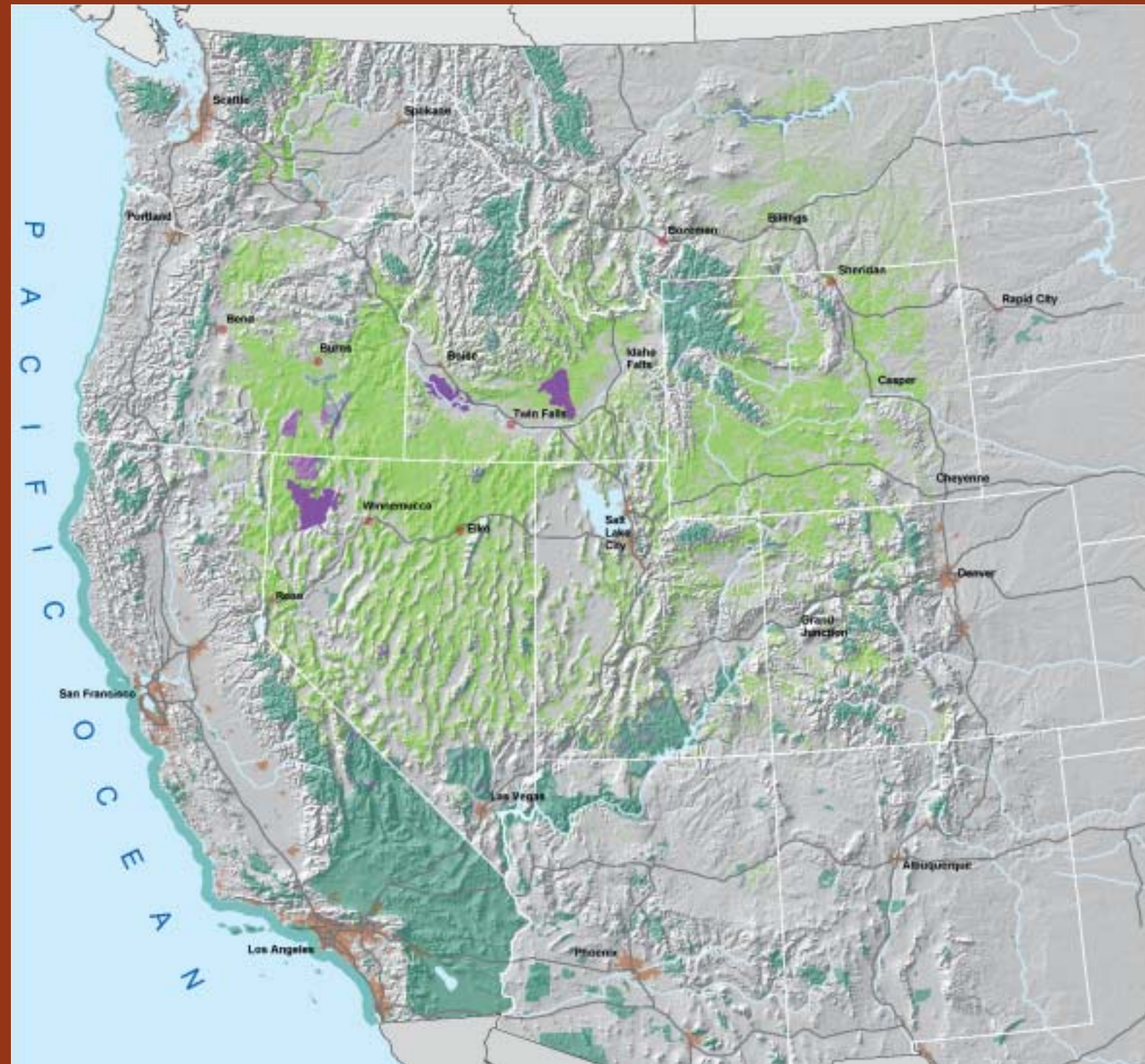
THE SAGEBRUSH SEA

Legend

- The Sagebrush Sea
- Historic Sage Grouse Range
- Current Sage Grouse Range



0 100 200 Miles



THE SAGEBRUSH SEA

Legend

- Congressionally Protected Sagebrush Sea
- Non Congressionally Protected Sagebrush Sea
- Other Congressionally Protected Lands
- Urban Areas
- Rivers
- Interstate Highways



0 100 200 Miles



As the Sagebrush Sea became settled, vast tracts of sagebrush were converted to farm and rangeland and fragmented by human habitation and development. Throughout the Sagebrush Sea Americans have imposed crop fields, herds of livestock, irrigation ditches, roads, powerlines, powerplants, mines, oil and gas extraction, towns and sprawling cities. Land management practices involving the planting of non-native species, burning and fire suppression have altered the natural patterns of vegetation throughout the region. The effects of agriculture, road building, residential, commercial and industrial development, along with the alteration of waterways and wetlands have taken their toll, so that the ecology of this vast landscape is now imperiled.



Livestock grazing along stream — OREGON NATURAL DESERT ASSOCIATION

Although only 3 percent of American livestock producers¹⁵ — or 22 percent of Western livestock producers¹⁶ — participate in

chicks and other vulnerable animals. In many places throughout the Sagebrush Sea, off-road vehicles have damaged wildlife habitat. Approximately half of BLM lands are open to unrestricted off-road vehicle use with another 44 percent designated for limited access and only 6 percent of BLM land closed to off-road vehicles.¹⁷ Human pressures on the Sagebrush Sea intensify near towns and cities in Colorado, Montana, Utah, Nevada, Idaho and Oregon, where some of the nation's fastest growing communities are located.

Oil and Gas Exploitation

The integrity of the Sagebrush Sea ecosystem in parts of Wyoming, Colorado, Utah, Montana, and the Dakotas are threatened by oil and gas extraction, in particular by the development of coalbed methane gas (CBM). The process used to extract coalbed methane depletes local aquifers, causing drinking water levels to drop and contamination of water sources. Gas wells, compressor stations, service roads and powerlines fragment wildlife habitat — including that of sage grouse — and disrupt migration corridors.

Wyoming is the epicenter of industrial gas development: 51,000 or more coalbed methane wells are planned for the Powder River Basin in the next decade, which will rob the local aquifer of over 1 billion gallons of water per day.¹⁹ As many as 70,000 methane wells may be drilled in the Powder



Coal bed methane gas drilling platform — POWDER RIVER BASIN RESOURCE COUNCIL

River Basin by 2060. Another 10,000-15,000 conventional gas wells are projected for southwestern Wyoming in less than 20 years.²³ Further threatening the Sagebrush Sea, southwest Wyoming holds untapped CBM reserves estimated

at 314 trillion cubic feet — nearly ten times the estimated reserves in the Powder River Basin. Pilot CBM projects in this area are underway.

Mining

Cyanide heap leach mining is a process commonly used to extract gold from ore mined in Great Basin region of the Sagebrush Sea. In this process, a cyanide solution is sprinkled over a huge heaps of mined ore so the cyanide will bind with the gold which is collected on plastic liners underneath the heaps. When the gold has been removed, the heaps,



Cyanide heap leach mine — TOM MYERS

some weighing up to 5 million tons and covering hundreds of acres, are left to be managed as waste. Residual water and rainwater seep continually through the heaps which contain salt and heavy metals, including cyanide, selenium, arsenic, mercury, cobalt and nitrate, resulting in hazardous, toxic runoff.

There are more than 200 cyanide heaps in Nevada that will threaten water quality for decades. At the Wind Mountain Mine near Empire, Nevada, heaps contain 29,000 tons of salt, 12,000 tons of chloride, 2000 tons of nitrate and 12 tons of selenium. At the Candelaria Mine in Mineral County, Nevada, the concentration of 14 metals exceed state standards. For example, mercury exceeds standards by 35 times, selenium by 6 times, arsenic by 49 times and residual cyanide by 350 times.²¹

Fire Suppression

The combination of skewed fire regimes and the spread of non-native vegetation has altered the natural patterns of

vegetation in the Sagebrush Sea. The historic mosaic of sagebrush habitat has changed, native grasses have retreated and juniper trees have spread to areas where they were not previously. Some of these changes are due to climatic evolution, but most are the result of fire suppression, cultivation and development.

Fire suppression in turn has created dangerous conditions for wildfires in the Sagebrush Sea. In 1999 range fires burned 1.7 million acres in the Great Basin as flames raced across the landscape at over 40 miles per hour.²² Fires scorched 70 percent of Idaho's Big Desert in 2000. Scientific projections indicate that unless current land use and management practices are changed, the future health of the Sagebrush Sea's species will decline precipitously.

Weeds

Noxious weeds are estimated to spread at a rate of 4,600 acres per day on BLM lands.²³ Disturbance to desert soils and native vegetation from grazing, fire, agriculture and development contributes significantly to the spread of weeds. Between 1985 and 1995, weeds increased on the public range from 4 million acres to 17 million acres.²⁴ The worst invader may be cheatgrass, a flammable, but fire-loving non-native that has taken over nearly 25 million acres of public land in the Great Basin.²⁵

Juniper Control

The juniper needs less water than other trees, so it thrives in the low moisture conditions of the Sagebrush Sea's higher (but not too high) elevations. Juniper grows slowly and trees can live well over fifteen hundred years. Due to misunderstanding of their role and function in the ecosystem, junipers (and pinyon pine) have been actively destroyed — by burning, logging, chaining and spraying — to make way for forage grasses and other crops. Under natural conditions juniper remains in balance with other vegetation in the Sagebrush Sea, but fire suppression and livestock grazing have created conditions that scientists believe contribute to the spread of juniper. Restoration of natural fire regimes and elimination of both grazing and the conversion of sagebrush steppe for agriculture will help restore a balance of vegetation that will benefit all species in the Sagebrush Sea.²⁶

Land Uses and Threats to the Ecosystem

Grazing

Beginning in the middle 19th century, a surge of settlement across the American West brought a rapid expansion of agricultural activity to the Sagebrush Sea, both farming and livestock grazing. As the non-native settlers imposed their patterns of civilization on the basins and ranges of the Sagebrush Sea, the natural vegetation began to disappear and with it, species like sage grouse, who relied on that landscape for food and shelter. Where the land has been heavily grazed, invasive non-natives like cheatgrass, star thistle, Russian thistle, knapweed and tumble mustard have taken over, in some places severely altering natural patterns of vegetation.

Grazing also reduces the availability of nutritious forbs — wildflowers and other small green plants — vital to wildlife. (A cow eats between 800 and 1000 pounds of forage each month). Livestock grazing ranks as the fourth leading cause of species endangerment in the country,¹² and the second leading cause of endangered plants.¹³ Throughout the Sagebrush Sea, livestock grazing in riparian areas has badly degraded stream banks and riparian vegetation, negatively altering habitat for riverine and aquatic species. According to the BLM, over 68 percent of its public rangelands are in unsatisfactory condition due to grazing.¹⁴

the public lands grazing program, the estimated loss of this program to the U.S. Treasury is as much as \$500 million annually.¹⁷

Agriculture

Throughout the 20th century, the U.S. government promoted programs to reduce and eradicate sagebrush on both public and private lands. Sagebrush has been torn out mechanically, burnt and destroyed with chemical herbicides. Pesticides have been deployed to control native insects. In place of sagebrush, non-native forage grasses like crested wheat grass were planted. To protect homesteads, farm fields and pastures, a long regime of wildfire suppression was instituted which has altered vegetation patterns, often to the detriment of native flora and fauna. In some states, more than 90 percent of the original sagebrush-dominated rangeland has been converted to agricultural crops.

Roads, Fences, Powerlines and Off-Road Vehicles

Roads, fences and powerlines have fragmented wildlife habitat throughout the Sagebrush Sea. Fences and powerlines create obstacles and hazards for animals like pronghorn, and provide artificial perches for raptors that prey on sage grouse

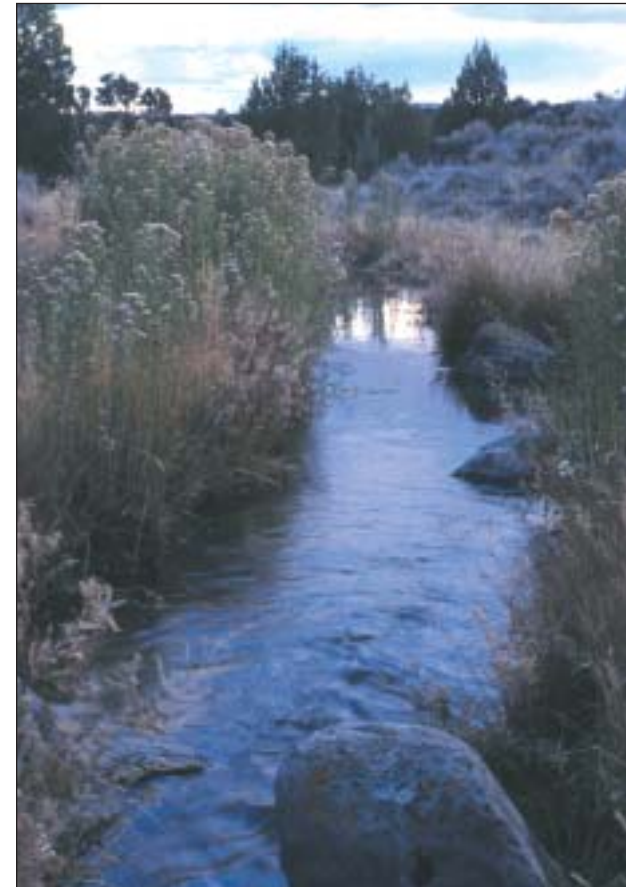
Wilderness Campaigns

The Federal Land Policy and Management Act of 1976 (FLPMA) directed the BLM to identify wilderness-quality lands among their holdings. These areas, called Wilderness Study Areas (WSAs), are managed under FLPMA and the Interim Management Policy for Lands under Wilderness Review until Congress chooses to designate them as Wilderness or release them from consideration. To date, Congress has designated very little BLM Wilderness in the Sagebrush Sea.

Conservation Efforts

California – California conservationists are drafting a citizens' inventory and wilderness proposal (to be completed in 2001) of unprotected areas that will likely include Tule Mountain, Skedaddle, Tunnison Mountain and Twin Peaks Wilderness Study Areas, and Shaffer Mountain, Shinn Mountain and Observation Peak not currently under any protective designation. All are within the Sagebrush Sea and open to threats from off-road vehicles, mining, grazing and possible juniper removal.

Colorado – A citizens' wilderness proposal has been developed and introduced as legislation by the Colorado Wilderness Network, a coalition led by five conservation groups and endorsed by 300 businesses and organizations. The bill proposes wilderness protection for seven BLM areas containing 195,450 acres of sagebrush habitat. The proposal includes areas in northwest Colorado around Dinosaur National Monument, Cold Springs Mountain and Vermilion Basin. Many of these areas are threatened by grazing, oil and gas development.



Smoke Creek, Five Springs WSA, California — JIM ROSE



Missouri River/Bullwhacker Crest, Montana — MONTANA WILDERNESS ASSOCIATION

Idaho – Idaho conservationists are completing a citizens' inventory of BLM sagebrush wilderness-quality lands and beginning to draft legislation to designate BLM wilderness areas. The inventory has identified 4 million acres of Sagebrush Sea wildlands which include: the Big Lost, Owyhee-Bruneau Canyonlands, the Lavalands, Camas Trail-Bennet Hills, and the Island Ranges. To date the BLM has identified only 1.8 million acres in its wilderness survey. Of concern to conservationists is that lands identified by the BLM for wilderness designation include mostly steep-walled canyons and rocks, while important sagebrush habitats are left out. Currently, there is no designated BLM wilderness in Idaho.

Montana – Montana conservationists are in the initial stages of a citizens' BLM wilderness survey. Montana Sagebrush Sea wildlands include areas adjacent to the Missouri River, the river itself and the upland breaks which forms the corridor and core of a BLM sagebrush wilderness "complex". This region includes the Charles M. Russell National Wildlife Refuge, Burnt Lodge (BLM land adjacent to the refuge), Bullwhacker, Antelope Creek, Ervin Ridge, Chimney Bend, Woodhawk and Bull Creek. Also called the "Wild Missouri" region, a portion of which has been designated as the upper Missouri Breaks National Monument.

Nevada – A coalition of conservationists in Nevada are conducting an inventory of the state's Sagebrush Sea wilderness. Preliminary surveys have discovered many areas, including Pilot Peak and North Pequop, not designated as Wilderness Study Areas by the BLM. In 2000, the Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area designated 755,400 acres of wilderness in northern Nevada. Unprotected areas remain threatened by mining, grazing, off-road vehicles and other uses.

Oregon – A coalition of Oregon conservation groups is working to protect the ecological integrity and health of Oregon's sagebrush wilderness and high desert country. A focal point has been the campaign to protect the Steens Mountain and Alvord Desert area in southeastern Oregon. The Steens Mountain Cooperative Management and Protection Act passed in October 2000, withdrew 1.2 million acres from mining and geothermal development, put 425,000 acres off-limits to off-road vehicles and designated 174,744 acres as wilderness. Within the wilderness area, 99,859 acres were reserved as the first legislatively designated grazing-free wilderness. Other efforts include designating a Badlands Desert wilderness area; protecting key wildlife habitat between and around Hart Mountain National



Painted Hills, John Day Fossil Beds National Monument, Oregon — SCOTT SMITH

Many local grassroots and regional groups are working to conserve and protect the Sagebrush Sea.

American Lands Alliance
www.americanlands.org 202/547-9400

Center for Biological Diversity
www.biologicaldiversity.org 520/623-5252

Land and Water Fund of the Rockies
www.lawfund.org 208/342-7024

National Public Lands Grazing Campaign
www.publiclandsranching.org 541/201-0053

Western Environmental Law Center
www.westernlaw.org 541/485-2471

Western Watersheds Project
www.westernwatersheds.org 208/788-2290

Wildlands Center for Preventing Roads
www.wildlandscpr.org 406/543-9551

CALIFORNIA

California Wilderness Coalition
www.calwild.org 530/758-0380

COLORADO

Center for Native Ecosystems
www.nativeecosystems.org 303/247-0998

Colorado Environmental Coalition
www.ourcolorado.org 970/243-0002

Great Old Broads for Wilderness
www.greatoldbroads.org 970/385-9577

Sinapu
www.sinapu.org 303/447-8655

IDAHO

Committee for Idaho's High Desert
www.cihd.org 208/429-1679

Idaho Conservation League
www.wildidaho.org 208/345-6933



Granite Peak, citizen proposed Wilderness, Utah — SCOTT SMITH

Antelope Refuge, Beaty's Butte and Sheldon National Wildlife Refuge in Nevada; protecting the Owyhee Canyonlands; and Wild and Scenic River designation for a number of the region's streams.

Utah—The Utah Wilderness Coalition, which includes both local and national conservation groups, is leading the campaign to protect Utah's BLM wilderness lands. The coalition has drafted legislation which proposes 9.1 million

acres of BLM land to be designated as wilderness and identifies wilderness quality lands in 11 different regions in Utah including the Bookcliffs, Greater Dinosaur, Great Basin, the Henry Mountains, and the San Rafael Swell. All of these areas contain sagebrush wilderness.

Washington—There are only about 400,000 acres of BLM land in Washington's Sagebrush Sea, with one small wilderness area, the Juniper Dunes. What little other

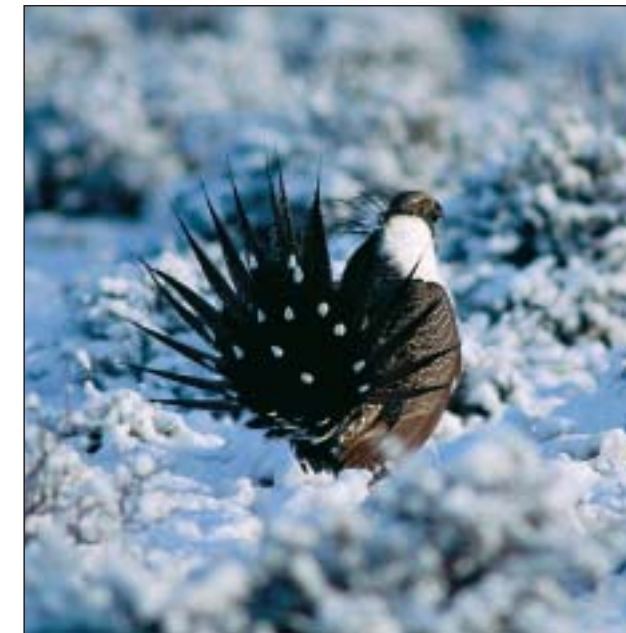
wildlands remain are mostly encompassed by the Hanford Reach National Monument, adjacent national wildlife refuge, and nearby Yakima Army Training Center.

Wyoming—A coalition of Wyoming conservation groups inventoried the state's BLM wildlands, and published their findings in "Wilderness at Risk – The Citizens' Wilderness Proposal for Wyoming BLM Lands." It proposes to protect 1.1 million acres of Wyoming BLM land as wilderness, including Sagebrush Sea in the Bighorn Basin, the Red Desert, Flaming Gorge Basin, Elk Mountain and Mill Creek in the Green River Basin, and parts of the Wind River, Platte River, and Powder River basins. Home to 50,000 pronghorn, rare desert elk, wild horses, sage grouse and raptors, these areas are threatened by coal bed methane development, off-road vehicle use, grazing and associated range developments. In a related campaign, over 100 conservation groups and local businesses drafted the Citizens' Red Desert Protection Alternative in response to the BLM's proposed management plan for the Jack Morrow Hills.

Sage Grouse Protection

An indicator species for the Sagebrush Sea, sage grouse have inhabited the western United States and southern Canada since the Pleistocene epoch. Described by Lewis and Clark in 1806, nineteenth century settlers and travelers reported huge flocks of sage grouse that darkened the sky. Sage grouse and the Sagebrush Sea are inseparable.

The historic range of sage grouse closely conformed to the distribution of short and tall sagebrush in what became sixteen Western states and three Canadian provinces. But since 1900 sage grouse populations have shrunk and they no longer occur in Arizona, British Columbia, Kansas, Nebraska, New Mexico, and Oklahoma. Sage grouse populations have declined as much as 45-80 percent over the past 20 years due to habitat destruction, degradation and fragmentation. The



Sage Grouse — ALAN ST. JOHN

"The sage and the grouse seem made for each other. The original range of the bird coincided with the range of the sage, and as the sagelands have been reduced, so the populations of grouse have dwindled."

Rachel Carson 1962
Silent Spring

total sage grouse population, estimated at 140,000 individuals, represents only about eight percent of historic numbers.

American Lands and partners are working to restore sage grouse populations by raising public awareness of the Sagebrush Sea and recruiting voices inside and outside the conservation community to speak on its behalf. Our goal is to recover sage grouse populations to provide a huntable surplus. With the example of sage grouse, we hope to educate the public and decision-makers about sagebrush ecosystems and work toward improved management and protection for the grouse and other sagebrush obligate species.

MONTANA

Montana Wilderness Association
www.wildmontana.org 406/443-7350

NEVADA

Friends of Nevada Wilderness
www.nevadawilderness.org 775/324-7667

Great Basin Mine Watch
www.greatbasinminewatch.org 775/348-1986

Nevada Wilderness Project
www.wildnevada.org 775/746-7850

NEW MEXICO

Forest Guardians
www.fguardians.org 505/988-9126

OREGON

Audubon Society of Portland
www.audubonportland.org 503/292-6855

Hells Canyon Preservation Council
www.hellscanyon.org 541/963-3950

Oregon Natural Desert Association
www.onda.org 503/525-0193

Oregon Chapter Sierra Club
www.oregon.sierraclub.org 503/238-0442

Oregon Trout
www.ortrout.org 503/222-9091

Predator Defense Institute
www.predatordefense.org 541/937-4261

UTAH

Southern Utah Wilderness Alliance
www.suwa.org 801/486-3161

WASHINGTON

Northwest Ecosystem Alliance
www.ecosystem.org 206/671-9950

WYOMING

Biodiversity Associates
www.biodiversityassociates.org 307/742-7978

Conservationists' effort to list the northern sage grouse under the Endangered Species Act is beginning to precipitate policy changes and increase funding for protection and restoration of sage grouse habitat. American Lands and partners have filed a petition to list the Gunnison sage grouse under the Endangered Species Act, and the U.S. Fish and Wildlife Service now describes the Gunnison as a candidate for ESA listing. Informational brochures and public presentations will help convey our message, rooting it deep in local communities to counter opposition to sage grouse conservation from those with vested interests in current land use and management practices that damage and degrade sage grouse habitat.

Campaign Against Industrial Recreation

Off road vehicles (ORVs) represent one of the fastest growing threats to the natural integrity of our public lands.

Conservation groups throughout the country are working to ensure that:

- ORVs are limited to existing routes, clearly marked as open to ORVs, where environmental damage can be minimized.
- ORVs are allowed only where land managers can demonstrate the ability to monitor their impact and enforce rules to prevent impairment of the landscape.
- ORVs be prohibited in legislatively or administratively proposed wilderness areas, roadless areas, and areas of critical environmental concern.

particularly those within the delicately balanced ecosystem of America's Sagebrush Sea. ORV use diminishes and destroys the qualities for which most Americans value these lands — clean air and water, protection of wildlife and their habitat and the beauty and tranquility of untrammelled wild places. The increased popularity of ORVs has coincided with technological advances that have enabled these machines to penetrate deeper into pristine backcountry areas. ORVs are particularly devastating to the fragile soils in the Sagebrush Sea and to high desert vegetation. ORVs erode soil in riparian areas which reduces water quality by increasing sedimentation in streams. Noisy ORVs disturb wildlife, cause air pollution and negatively effect human health. ORVs also disturb non-motorized recreation, including hunting, hiking, fishing and wildlife watching, so that a single ORV user creates an impact far greater, more lasting and damaging than other recreational users of the Sagebrush Sea.

Public Lands Livestock Grazing Permit Buyout

Since 1998, a growing number of conservation organizations have advocated for federal legislation to authorize and fund a program to allow livestock operators to relinquish their federal grazing permits to the government in exchange for compensation. The legislation would require permanent retirement of the permits, reallocate forage to wildlife and promote watershed restoration by allowing associated allotments to recover from the impacts of domestic livestock grazing. Operators participating in the program would continue to own their base properties, and could use their payments to restructure their ranch (including purchase more private grazing land) or retire. Such a program would benefit taxpayers who would no longer be subsidizing livestock grazing on retired allotments.

Permanent permit retirement is prohibited under current law which effectively requires Bureau of Land Management and Forest Service managers to transfer



Coiled barbed wire from livestock-free Hart Mountain National Antelope Refuge, Oregon — WILDERNESS VOLUNTEERS

grazing permits to new grazers upon the resignation or retirement of the previous permittee. (In rare cases, permits are cancelled where allotments have been severely overgrazed, it is court ordered, or Congress so directs, such as within a national park). However, there are numerous examples where conservation organizations, livestock operators and federal managers have worked creatively within the bounds of current law to buyout permits. In some cases Congress has passed legislation that authorizes permit retirement on specially designated land. These examples demonstrate permit retirement to be a socially compassionate, policy efficient, politically pragmatic, and ecologically responsible way to end detrimental livestock grazing on public land.

Through the National Public Lands Grazing Campaign conservation groups are lobbying Congress to pass legislation to authorize and fund voluntary permit retirement. In the interim, to demonstrate its effectiveness, permittees, federal agencies, and conservationists are working — when private funding is available — to buyout a limited number of permits in wilderness areas, national parks and monuments.

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Oregon Natural Desert Association

SPECIAL THANKS

Rick Brown
Andy Kerr
Gilly Lyons
Anne Martin

FUNDING

This brochure was made possible with the generous support of:

Foundation for Deep Ecology
Larch Company
Paradam Foundation
Sperling Foundation
Wyss Foundation



Hart Mountain National Antelope Refuge - Warner Wetlands, Oregon — GEORGE WUERTHNER

