what's lost, what's left

A STATUS REPORT ON THE Plants & Animals OF THE LEWIS & CLARK EXPEDITION

SIERRA CLUB
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what's lost, what's left

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"By focusing on a wide variety of threatened, endangered, and sensitive plant and animal species from the Great Plains to the Pacific Northwest, the Sierra Club's Lewis & Clark Bicentennial Campaign seeks to protect and restore critical wildlands that will contribute significantly to reconnecting the natural ecological linkages that have been severed across this spectacular landscape. The Sierra Club's *What's Lost, What's Left* report is a wake-up call telling us how much we have lost since the time of Lewis and Clark, but also, and more important, what we must save."

—*James Bergdahl, PhD*
Conservation Biology Center
Spokane, Washington

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what's lost, what's left

A Status Report on the Plants & Animals of the Lewis & Clark Expedition

In 1803, President Thomas Jefferson sent Captain Meriwether Lewis, Captain William Clark, and the men who made up their Corps of Discovery on an 8,000-mile round-trip journey across the West. Their main purpose was to map and explore the territory recently acquired from France, and to establish trade routes to the Pacific Ocean. But their mission had a secondary goal as well, one that would leave an unparalleled legacy for future generations.

Bison once covered the plains in numbers that reached up to 70 million, but by 1900 only a handful remained. Photo courtesy U.S.D.A.

Jefferson instructed the explorers to observe "the animals of the country generally, and especially those not known in the U.S. the remains and accounts of any which may [be] deemed rare or extinct" and to note "the face of the country, it's growth and vegetable productions." Jefferson also directed them to record the climate, including such details as when flowers bloomed and birds migrated.

The president couldn't have picked a better man for this natural-history duty than Lewis, whose close observations and curiosity led him to count the feathers in the tail of a white-fronted goose and see

The grasslands of the Great Plains were once as wildlife-rich as the Africa's Serengeti. Photo by ©USDA.

if he could outrun a badger. And Lewis relished the task. In the spring of 1805, as the canoes of the Corps of Discovery slid into the Missouri River near present-day Fort Mandan, North Dakota, to head 2,000 difficult miles further west, Lewis wrote in his journal, "I could but esteem this moment of my departure as among the most happy of my life."

Thanks in great part to Lewis's meticulous investigations, the Corps of Discovery found 178 plants new to science, from the silvery buffaloberry to the western red cedar. They described 122 new animals, from the black-billed magpie to the pronghorn. The Corps of Discovery provided additional information about previously known species, including notes on habitat and behavior. Most important, they recorded not just the details of wing length and beak color, but the interrelationships between songbirds and cottonwoods, wolf packs and bison herds, pronghorn and sagebrush.

In addition to guiding Lewis and Clark, Native Americans taught them about the plants and animals they encountered. Tribes near the Pacific Ocean told them when the salmon spawned. The Shoshone in western Montana showed Lewis how to eat the root of the bitterroot flower, while the Nez Perce taught them about camas bulbs. The Corps of Discovery brought this knowledge back East, deepening America's understanding of this continent.

One recurring theme in the explorers' journals is an overwhelming sense of abundance. Just 200 years ago massive bison migrations shook the grasslands, salmon choked the Columbia River and its tributaries, and wolves roamed throughout the West. Most of the time, this was thrilling; occasionally, it proved frustrating. Camped along the Columbia on November 5, 1805, Clark wrote, rather grumpily, "I [s]lept but verry little last night for the noise Kept [up] by the Swans, White & black brants Duck &c. . . . they were emensely numerous and their noise horid."

The journals preserve a clear picture of the wildlands and wildlife of the West two centuries ago. The Sierra Club has launched a seven-year campaign highlighting the wildlands legacy of Lewis and Clark, encouraging people to visit the dramatic terrain the Corps explored and to help save what is left of those lands. The Sierra Club wants to ensure that the journals don't merely describe vanished landscapes and extinct species, but they provide living natural history.

The journals can serve as more than a catalog of the past. They can be a blueprint for the future.

This report looks at some

of the plants and animals native to the lands explored by the Corps of Discovery. It describes their life histories, current status, and ways they are intertwined with the landscape of the West. Divided into three sections—Great North American Prairie, Northern Rockies, and Pacific Northwest—the report examines 11 "Species in the Spotlight," profiles 31 other plants and animals, and contains an index of many species in Lewis and Clark country, including those the explorers were the first to describe scientifically.

Many species, like the woodland caribou, black-footed ferret, whooping crane, and bull trout are noted because of their status under the Endangered Species Act. Others, like the grizzly bear, gray wolf, and black-tailed prairie dog, are also "indicator" species: The well-being of dozens, sometimes hundreds, of other native animals, plants, and fish depend on them. Big bluestem, western red cedar, and sagebrush are important species in critical habitat. Other species are inconspicuous yet unique parts of their ecosystems: the Topeka shiner in Great Plains rivers and streams, the pygmy rabbit in sagebrush steppe, and the fisher in mature and old-growth forests. A report on the species of the Lewis and Clark expedition wouldn't be complete without noting many

The Fifth "H": Honoring Our Treaties

After a torturous 11-day crossing of Lolo Pass, struggling through thick timber and heavy snow with not much more than soup, horseflesh, and candles to eat, Lewis and Clark met up with the Nez Perce at Weippe Prairie above the Clearwater River. The American Indians fed the explorers camas bulbs and ample amounts of salmon.

This meeting with the Nez Perce welcomed the explorers to a complex web of cultures in the Columbia River basin, the lives and traditions of which had been woven around the salmon for thousands of years. But all that has changed. In the Snake River basin alone, nine salmon and steelhead runs are listed as threatened or endangered and one run of coho is extinct. Today, Native American tribes, including the Nez Perce, are among those most committed to bringing the salmon back, in order to heal the ecosystem and restore their way of life.

The campaign for salmon recovery is organized around the "4 H's": habitat, hatcheries, hydropower and harvest. "There's a fifth 'H' that needs attention," says Bill Arthur, the Sierra Club's Northwest field director. "That's *honoring* our treaties with the Native American tribes."

In 1855, the Nez Perce Tribe, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, and the Confederated Tribes and Bands of the Yakama Indian Nation signed treaties with the U.S. government, reserving specific salmon-fishing rights. The treaties guaranteed them the right to take salmon from reservation waters and "at all other usual and accustomed stations in common with the citizens of the United States." In 1974, U.S. District Judge George Boldt determined that the tribes were entitled to 50 percent of the harvestable salmon in their traditional waters under these treaties. Allowing salmon to go extinct would violate the treaties and leave the federal government exposed to expensive lawsuits. As interpreted by the federal courts, the treaties have given the sovereign tribes an equal voice with the federal government and states in salmon management and the tribes are demanding responsible salmon recovery.

The tribes mentioned above formed the Columbia River Intertribal Fish Commission. At the center of their efforts, and the Sierra Club's, is the removal of the earthen portions of the four dams on the lower Snake River: Ice Harbor, Lower Monumental, Little Goose, and Lower Granite, which together produce less than 5 percent of the Northwest's power supply. These dams were some of the last built along this Columbia River tributary—Lower Granite was completed in 1975—and they created a deadly gauntlet in the lower Snake River, which historically provided 50 percent of the salmon in the Columbia basin. Some estimates say these dams alone reduced the returning inland salmon population by 90 percent, and independent scientists believe bypassing these four dams is the single most effective step toward restoring salmon to healthy levels in the Snake River. Removing the dams would allow salmon to spawn in unused but historically important habitat in the River of No Return Wilderness Area and the Selway Bitterroot Mountains in Idaho. Indeed, we should honor our treaties and return salmon in strength to the Clearwater, where the Nez Perce fished for them 200 years ago.

The Boulder Mountains in Idaho are a wildlife haven, providing habitat for pronghorn, bighorn sheep, and beaver in their peaks and valleys. Photo by C.D. Grondahl.

Habitat protection is key to preserving species in Lewis and Clark country, from bison to sockeye salmon. Photo courtesy U.S.D.A.

of the species that sustained the Corps of Discovery and are a part of the natural heritage of the West: bison, pronghorn, salmon, bitterroot, and cottonwood. And of course, there are the species that carry on the legacy of Lewis and Clark today: westslope cutthroat trout (scientific name: *Oncorhynchus clarki lewisi*), Lewis's woodpecker, and Clark's nutcracker.

The stories of these species provide a snapshot of the cur-

rent status of the forests, mountains, and plains that the Corps of Discovery documented so carefully.

At times, it's not a pretty picture. The grizzly bears that stirred the imaginations of Corps members have been reduced to around 1,000 from a population that once topped 100,000. The bison that blanketed the plains in numbers up to 70 million now only roam in tiny herds on scattered

Extensive conservation efforts over the past century have brought elk back from a low of 40,000 near 1900 to 1 million today. Photo by T.A. Blake, courtesy of Fish and Wildlife.

Back from the Brink

Hikers at Point Reyes along the Northern California coast might have their quiet shattered by the high, unearthly squeal of an elk bugling. A visitor to Pennsylvania's woods might catch a glimpse of a rack of antlers over a far ridge. A canoeing couple on the Buffalo River in Arkansas can see a doe with her calf finding its footing along the shore. The return of the elk across the country is one of conservation's greatest success stories.

At the 100th anniversary of the Lewis and Clark expedition in the early 1900s, many species were worse off than they are today. The United States was coming to the end of a long westward push and an unprecedented period of wildlife slaughter, and the conservation ethic had only just started to stir among Euro-Americans. Elk, like other large animals of the West, were disappearing. Settlement converted their calving areas to agriculture and cities. Market hunters shot them just for the sake of their horns and hides, leaving the rest to rot. From a population that roamed from coast to coast, elk were down to a group of 40,000, grouped mostly in the northwest states and in Yellowstone National Park.

Watching many species slip away, some lawmakers tried to arrest the declines. In 1878, Iowa limited the number of greater prairie chickens hunters could shoot. In the 1890s, passenger pigeons gained protection. But it soon became apparent that protection was needed not just for the animals, but for the forests, rivers, and mountains where at-risk species lived.

All this was particularly clear to the young Theodore Roosevelt as he moved to North Dakota to set up a ranch. He had seen the widespread slaughter of bison and wrote, "No sight is more common on the plains than that of a bleached buffalo skull; and their countless numbers attest the abundance of the animal at a time not so very long past."

When the rancher became president, he worked hard on behalf of wildlife, particularly elk. Theodore Roosevelt recognized the importance of setting aside habitat, and not just the alpine peaks where the elk migrate in the summer. In 1909, he established Olympic National Monument in Washington, which would later be expanded by Franklin Roosevelt to form Olympic National Park. The monument protected breeding grounds for elk and numerous other species that lived in the forests of the Olympic peninsula. Congress established the National Elk Refuge in Wyoming in 1912, a 1,000-acre parcel of prime winter range.

These gestures were part of a growing conservation concern. Within the space of the 20 years between 1890 and 1910, the federal government established Yosemite National Park and laid the groundwork for systems of national forests, national wildlife refuges, and national monuments. Citizens joined in, exploring the outdoors, studying natural history, and speaking out about the need for wildlife protection like never before. In 1892, wilderness advocate John Muir started the Sierra Club, in part to protect the beauty he saw in jeopardy.

Slowly but surely, these measures began to pay off. Tule elk, a variety native to California, had been down to a few pairs in 1874, but protection and reintroduction built them back up to 7,500 in the state's central valley and along the coast. Wildlife managers reintroduced elk to Pennsylvania forests in 1913 and the Ozark mountains in 1981. Now there are more than 1 million.

It took longer to find the will to protect non-game species and the predators that keep elk, deer, pronghorn, and mountain goat populations in check, restoring all the elements of a healthy ecosystem. Effective hunting regulations, coupled with better protection of habitat, have allowed some of the important species of the West to return. And now, at the bicentennial of the Lewis and Clark expedition, we have obligations like never before to, as Teddy Roosevelt urged, "preserve our material resources, in the efforts to keep our forests and our game beasts, and game birds—indeed, all the living creatures of prairie and woodland, and seashore—from wanton destruction."

Now it's our turn.

parks and grasslands. Black-footed ferrets, California condors, woodland caribou, and whooping cranes are even worse off, down to only a handful of individuals with scientists hovering over them, trying to establish healthy wild populations. And some, like the passenger pigeon, the ivory-billed woodpecker, and the colorful Carolina parakeet are gone forever.

But there are success stories, too. Elk, beaver, and pronghorn were far worse off in 1900 than they are today. Most of the species the explorers noted 200 years ago are still here. Tallgrass prairies still ripple in the wind; the Northern Rockies offer craggy pinnacles and sweeping valleys to grizzly bears; Pacific Northwest forests still shelter fishers and spotted owls.

The key to saving species is saving habitat. For animals to flourish, they need a secure food source, shelter, and room to roam. But logging continues to strip away forests required by the reclusive lynx, and to increase erosion and muddy streams where salmon spawn. Missouri River dams disrupt the natural water flows that the interior least tern and piping plover depend on during breeding season, and Snake River dams create lethal barriers for salmon and steelhead. Oil and gas drilling and roads are destroying the grizzly bear's last refuges, threatening to wipe the bear out. Every day, we're losing more of these species' habitat.

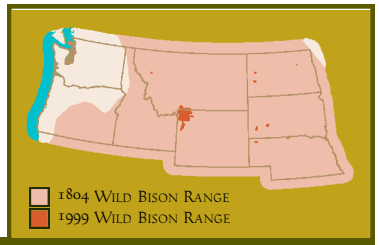
Ultimately, human beings depend on these wildlands too. Wilderness has shaped the American character. Future generations should be able to set out into the West with the same sense of excitement Lewis felt as the canoes hit the current. They should have the opportunity to hear the echo of cranes overhead or observe flocks of terns as Clark did on the Missouri. And as people walk the trails through the mountains and camp along the riverbanks in centuries to come, we hope they too will be overwhelmed by a sense of natural abundance, solitude, and beauty.

The 200th anniversary of the Lewis and Clark expedition presents an unequaled opportunity to protect and pass on the remaining wild places that sustain the plants and animals, clean water and clean air, and recreational opportunities that are America's greatest treasure.

Join the Sierra Club on this journey.

Bison

Bos bison



"[T]he country in every direction around us was one vast plain in which innumerable herds of Buffalow were seen attended by their shepherds, the wolves; the solitary antelope which now had their young were distributed over its face; some herds of elk were also seen."

—MERIWETHER LEWIS

Though he recorded many detailed scientific observations of animals the Corps of Discovery encountered, Captain Meriwether Lewis got closer to one bison than he might have desired. On May 29, 1805, a bull swam across the Missouri River and thundered through camp, skirting several of the men's heads by inches, before Lewis's dog barked and the bison ran off. One of Clark's rifles was trampled, but everyone was glad to have escaped with such minimal damage.

This lone bull undoubtedly made an impression, but the bison, also called buffalo, were most noticeable in the vast herds that seemed the very life of the plains. They infused the grasslands, their many hooves beating the ground, the bulls' roaring echoing off the hills, their backs carpeting the prairie. For plains tribes and explorers alike, the bison were key to every aspect of life. Members of the Corps worried how they would feed themselves as they pressed west and left the bison behind.

Uniquely adapted to life on the prairie, bison graze native grasses and prompt their growth. Photo by Larry Ulrich.

Bison (Bos bison) • Federal Status: not listed • Natural Heritage Status: apparently secure from extinction • Distribution: parks and wildlife reserves only • Habitat: short-, mixed-, and tallgrass prairies • Threats: domestication, perceived threat of disease transmission to domesticated livestock. • L&C States: Nebraska, South Dakota, North Dakota, Wyoming, Montana

Wilderness protection for national grasslands will ensure wild bison have room to roam. Photo by Elise Smith, courtesy U.S. Fish & Wildlife.

Taking a closer look

Bison are more than symbols of the prairie: Biologically, they play an integral role. Native prairie grasses like little bluestem and buffalo grass evolved along with the bison and flourish with the grazing that prompts new growth. The buffalo's sharp hooves turn up the soil. Their wallows provide temporary spring ponds that fill with frogs. Unlike domestic cattle, bison avoid woody cover like buffaloberry, chokecherry, and plum, allowing this important vegetation to serve as winter cover and nesting areas for other wildlife and birds.

Bison naturally roam great distances, eating the grass and sage that make up the bulk of their diet. Females cluster with young, born in late spring, as well as adolescents and a few older males. Other males form herds of their own. The herds mingle in the breeding season of late summer, when males fight for access to the females. In the harsh prairie winter, woolly coats keep bison warm while they use their huge heads to brush away the snow to find food.

Tracking the changes

In the second half of the 19th century, bison began a precipitous decline as the U.S. government slaughtered them to make room for cattle. Conversion of grasslands to cattle ranches, agricultural fields, and cities hemmed the bison in. Passengers on trains shot bison for sport and left them to rot, decimating the vast herds. A population of 70 million wild bison that once reached from Alaska to northern Mexico was cut to 350 by 1883.

Today, bison are returning. Efforts such as the establishment of Yellowstone National Park show how vital habitat protection can be in bringing a species back from the brink. Small wild bison herds have been reestablished, with a 2,000- to 3,000-member herd in Yellowstone. All told, including ranched and captive animals, there are about 200,000 bison now roaming the United States. But the prairie has shrunk to 550,000 undeveloped acres, an area slightly smaller than Rhode Island. Cattle grazing and other disturbances result in the introduction of less-nutritious, non-native weeds. Even in Yellowstone National Park, free-roaming bisons' last large refuge, they are sometimes shot if they wander outside the park's boundaries, in the unfounded fear that they will spread disease to cattle grazing on public lands. Inside Yellowstone, bison are harassed by snowmobiles that roar through the park.

Preserving the legacy

It's not too late to bring back bison herds and restore grasslands. The Sierra Club is actively involved in efforts to:

- *Protect national grasslands, such as the Fort Pierre and Buffalo Gap National Grasslands, as wilderness and establish bison reserves.*
- *Allow bison to leave Yellowstone National Park and occupy adjacent public lands.*
- *Keep off-road vehicles such as dirt bikes and snowmobiles out of sensitive areas, including Yellowstone National Park.*
- *Protect key state lands as bison habitat.*

Black-tailed prairie dog

Cynomys ludovicianus

"[J]ust above the entrance of Teapot creek on the star'd side there is a large assemblage of the burrows of the Barking Squirrel."

—MERIWETHER LEWIS

The abundant black-tailed prairie dogs and their lives underground fascinated Lewis and Clark. Whistling from their sentry posts at the burrow mouths, the animals seemed to call to the explorers. Clark caught one by pouring water into its tunnel. Lewis dug ten feet down into a burrow but still didn't reach the bottom.

The explorers made the first scientific observations of the prairie dogs, which they called "barking squirrels." They noted the animals as they first entered South Dakota and commented on their behavior, from the warning cries that were like those of "little toy dogs" to their habit of living in small family groups within a larger colony.

Networks of prairie-dog burrows called "towns" or "colonies" can spread over several thousand acres and support more than 100 different species. Photo by U.S. Fish & Wildlife.

But Lewis went further than taking notes and sending back skins and dried plants to document his observations. He was so charmed by the prairie dog that he shipped a live one to President Jefferson. The animal survived the four-month journey from North Dakota to Washington, D.C., by barge and ship, and Jefferson got to see firsthand

Black-tailed prairie dog (Cynomys ludovicianus) • Federal Status: candidate for federal listing • Natural Heritage Status: nationally and globally uncommon but not rare. A species of special concern in Montana, Wyoming, & Oklahoma • Distribution: short- and mixed-grass prairies from northern Mexico throughout the Great Plains and southern Saskatchewan, Canada • Habitat: short- and mixed-grass prairies • L&C States: Nebraska, Montana, North Dakota, South Dakota, Wyoming

Commonly considered a pest rather than a vital part of prairie life, prairie dogs are often shot and poisoned. Photo by F&W.

the "barking squirrel" of the plains.

Taking a closer look

Black-tailed prairie dogs are underground architects, living in complex burrows. Rooms branch off the main corridors: Some are guard stations where prairie dogs listen for predators above; others are nurseries where mothers tend the young. Near the burrow entrances, raised mounds give the animals a platform from which to observe approaching threats; the prairie dogs keep grass around the mounds clipped short to maintain sight lines. The network of tunnels composing a colony can encompass several thousand acres.

Prairie-dog towns consist of smaller family groupings called "coteries" made up of one male, several females, and young. Individuals communicate by a complicated series of calls. Mouth-to-mouth contact that looks like kisses help prairie dogs identify members of their individual coteries.

Like bison, prairie dogs and their colonies form a biological center of prairie life. Badgers, eagles, and the endangered black-footed ferret rely on the prairie dogs as food. Burrowing owls and swift foxes both frequent abandoned tunnels. The prairie dogs' digging and grass-clipping encourage the growth of nutritious native plants that feed other animals. As many as 29 species depend on the prairie-dog towns for their survival, while another 117 benefit indirectly.

Tracking the changes

Some biologists estimate that prairie dogs once numbered 5 billion, roughly as many animals as were in the famous flocks of passenger pigeons. Now, prairie dogs are candidates for protection under the Endangered Species Act. In the late 1800s, prairie-dog towns covered 100 million acres, but now the animals inhabit only 1 percent of their former range. The approximately 1 million acres of prairie-dog colonies remaining in the short-grass and mixed-grass prairies of the Great Plains are increasingly fragmented by urban sprawl, roads, and agricultural conversion.

Since prairie dogs eat grass and clip stalks around their burrows, some ranchers view them as competition for their livestock. Deemed a pest, the prairie dogs are poisoned and shot. Research now shows that rather than depleting grass, prairie dogs spur grass growth and are compatible with livestock grazing. Unregulated sport shooting further reduces prairie-dog numbers. Both state and federal governments subsidize eradication of prairie dogs, triggering the loss of entire prairie communities.

Preserving the legacy

To help preserve the black-tailed prairie dog, the Sierra Club is working to:

- *Establish prairie-dog reserves on national grasslands. These wildlands, rich with native grasses, would form a solid base for the recovery of the prairie dog and many associated species, including the black-footed ferret and the burrowing owl.*
- *Halt federally subsidized prairie-dog poisoning and convince states to integrate prairie dogs into wildlife-management plans rather than treating them as vermin.*
- *Put limits on the unregulated sport shooting of prairie dogs by creating license quotas, bag limits, and hunting seasons. In areas like the Buffalo Gap National Grasslands, shooting is still rampant.*

Black-footed ferret

Mustela nigripes

"[T]his plane extends with the same bredth from the creek below to the distance of near three miles ablove parrallel with the river, and it is intirely occupyed by the burrows of the barking squiril heretofore described. . . . a great number of wolves of the small kind, [hawks] and some pole-cats were to be seen. I presume that those anamals feed on this squirril."

—MERIWETHER LEWIS

As the group headed to the Upper Missouri River, Lewis took a day to stretch his legs and explore the new landscape. In this country of deep ravines and open plains, he noticed acres of prairie dogs poking out of their burrows. Predators waited for their chance at a prairie-dog meal, most hiding in the grass or circling overhead, others lurking underground.

Spending much of the day out of sight below the soil surface, the black-footed ferret wasn't described until the naturalist John James Audubon wrote about it in 1851 (though Lewis recorded seeing "pole cats," which may have been a reference to the ferrets). No one else commented on the ferrets for another 26 years. But the animal's elusive nature didn't keep it out of trouble. The lithe creature with a black bandit mask was destined to become one of North America's most endangered mammals.

Taking a closer look

The lives of the black-footed ferrets are intertwined with their main prey, the black-tailed prairie dog. Historically, prairie dogs made up 90 to 95 percent of their diet. A ferret can eat a prairie dog every three or four days, no small feat as the animals are roughly the same size. The ferrets

The black-footed ferret, one of North America's most endangered mammals, once numbered only 18 animals. Photo by U.S. Fish & Wildlife.

Black-footed ferret (Mustela nigripes) • Federal Status: listed as endangered in 1967 • Current Range: limited to 7 reintroduced populations in Wyoming, South Dakota, Montana, Arizona, Utah, and Colorado. • Historic Range: short- and mixed-grass prairies of the Great Plains from northern Mexico to southern Saskatchewan, Canada. • Habitat: prairie-dog towns • Natural Heritage Status: critically imperiled (extremely rare) • Threats: lack of large prairie-dog complexes of sufficient size to support ferrets, lack of genetic diversity, canine distemper • L&C States: South Dakota, Wyoming, Montana

spend much of their lives in prairie-dog burrows, using them to hide from hawks and coyotes, and giving birth and raising their young in the tunnels. (From a prairie dog's perspective, the ferret is a very ill-behaved guest.)

Possibly descended from Siberian polecats that crossed the Bering Strait land bridge during the last ice age, ferrets belong to the weasel family. They are nocturnal, solitary hunters, sometimes ranging over 100 acres of territory. Because they are so elusive, little is known about their habits.

Tracking the changes

The fate of the black-footed ferret is intimately linked to that of the black-tailed prairie dog. Originally, the ferret lived throughout grasslands from Canada to northern Mexico, reaching as far west as Utah. As settlers plowed up the Great Plains soil and governments launched prairie-dog eradication campaigns, ferrets vanished too. The burrows where they sought shelter and bred disappeared, and they died from eating poisoned prairie dogs.

In the 1960s, biologists became alarmed by the decline of the black-footed ferret. By 1967, only a handful remained. Twelve years later, scientists deemed the ferret extinct.

Then in September 1981, near Meeteetse, Wyoming, a dog killed a black-footed ferret. Hope blossomed as a group of 129 was found alive in a prairie-dog town. Unfortunately, sylvatic plague, which affects both ferrets and prairie dogs, struck the colony, killing off much of the population. In 1985, an outbreak of another disease, canine distempter, reduced the population further. The remaining 18 ferrets were collected for a captive breeding program.

By 1999, the U.S. Fish and Wildlife Service had reintroduced 1,200 ferrets to sites in Wyoming, South Dakota, Montana, and Arizona.

Prairie dogs provide both food and shelter for the black-footed ferrets that prey on them and breed in the their burrows. Photo by U.S. Fish & Wildlife.

The Fish and Wildlife Service recovery-plan goal is to reintroduce an additional 1,500 ferrets and to establish a minimum of 10 populations with at least 30 breeding adults in each by 2010. To be a good recovery site for the black-footed ferret, an area needs 1,000 acres or more of prairie dogs. By protecting grassland habitat, we can ensure that the 1979 reports of extinction remain a mistake, not a prediction.

Preserving the legacy

The survival of the black-footed ferret depends on our willingness to take the following steps:

- *Ensure that state and federal land-planning processes set aside adequate black-footed ferret recovery areas.*
- *Protect prairie-dog populations. This includes limiting unregulated sport shooting, stopping government-sponsored prairie-dog poisoning, and integrating prairie dogs into state wildlife-management plans.*
- *Establish prairie-dog reserves, including one on Buffalo Gap National Grasslands, a black-footed ferret reintroduction site.*

Interior least tern

Sterna antillarum athalassos

"[T]his bird is very noysey when flying which it dose extreemly swift the motion of the wing is much like that of the Kildee it has two notes one like the squaking of a small pig only on reather a higher kee, and the other kit'-tee'-kit'-tee'—as near letters can express the sound."

—MERIWETHER LEWIS

When the Corps of Discovery canoed the Missouri River, Clark commented on the "Sand bars which choked up the Missouri and confined the [river] to a narrow . . . Chanel." These seasonal islands did more than force the water to plot a more meandering course; they provided nesting grounds for migratory birds like the interior least tern, a fork-tailed bird that darts over the banks like a swallow.

Federally endangered interior least terns nest on sandbars in the Missouri River. Dams disrupt the seasonal flow patterns of the river, causing the sandbars to disappear. Photo by Maslowski Productions/U.S. Fish & Wildlife Service.

Taking a closer look

One of three varieties of least tern, the interior least tern is the only one to nest along inland rivers rather than the coast. Soon after arriving at their summer nesting grounds along the Platte, Niobrara, and Missouri Rivers, male interior least terns launch a courting ritual called "fish flight." With a fish in its mouth, the male will wheel around in the air with one or two females fol-

Interior least tern (Sterna antillarum athalassos) • Federal Status: listed as endangered (except within 50 miles of the coast) in 1985. • Natural Heritage Status: imperiled and surviving only in small remnant populations. • Distribution: interior populations, formerly well distributed in the Mississippi basin, now survive only in scattered remnants; habitat has been decimated by extensive water-management projects and increased use of beaches and sandbars. • Habitat: along river systems on sandbars and beaches. • Threats: habitat deteriorating due to extensive water-management projects and increased use of beaches and sandbars. • L&C States: Montana, South Dakota, North Dakota, Nebraska

lowing. Later on, he will offer small fish to prospective mates.

The terns scrape shallow nests in sandbars, preferably in the middle of a river, far from predators. There the female lays two to three pale eggs. Interior least terns nest close together, sometimes 30 pairs on the same beach, seeking safety in numbers. When a great horned owl or coyote approaches, the birds rise up in a noisy flock and chase it away with harsh cries.

Though helpless at birth, the sand-colored chicks fly within three weeks and by September are ready to migrate to Central and South America for the winter.

Tracking the changes

The sandbars where the terns nest depend on seasonal shifts in river levels. High water in the spring deposits sand and uproots any plants. When water levels drop in the summer, they reveal the collected sand and the terns flock there. Dams along the Missouri, managed for barge traffic, disrupt these natural fluctuations and the sandbars are lost. In 1890, sandbar habitat encompassed 35,273 acres along the Missouri between Nebraska and Iowa; in 1976 sandbars covered only 57 acres. These sandbars are important for a host of other species as well, including piping plovers.

Changes in the river flow have combined with other factors to rob interior least terns of habitat and reduce their numbers. In the 1880s, hat fashions demanded feathers from all kinds of birds, including the tern. The interior least tern was declared endangered in 1985. Current estimates suggest 4,700 to 5,000 adult birds remain.

Preserving the legacy

The following measures would greatly benefit the interior least tern:

- *Use Land and Water Conservation Fund monies to purchase habitat on the Garrison Reach portion and along the federally designated wild and scenic stretches of the Missouri River.*
- *Convince the Army Corps of Engineers to manage the Missouri River for wildlife rather than barge traffic. This includes altering the river flow below the Fort Randall and Gavins Point Dams to mimic natural patterns and create sandbars.*

What's Lost, What's Left

Great North American Prairie Featured Species

Whooping crane

Grus americana

As the Corps of Discovery traveled along the Columbia, Clark spotted graceful white cranes soaring high above that were most likely whooping cranes. Wilderness-loving birds with little tolerance for humans, the whooping crane was on the decline even in the mid-19th century. After reaching a low of 21 in 1948, the cranes are starting to rebound. The bulk of the current population of birds summers in northern Canada and winters in Texas, relying on the wetlands of the Great Plains as rest stops on their long migration. These wetlands need to be protected from drainage and water pollution, and roosting areas along the Platte River need restoration.

federally endangered

Swift fox *Vulpes velox*

The swift fox is another species that takes refuge in the prairie soil. "Their tallons appear longer than any species of fox I ever saw and seem therefore prepared more amply by nature for the purpose of burrowing," Lewis wrote in his description of the small canine. The northern variety *(Vulpes velox hebes)* has been particularly affected by changes in the prairie composition since settlement. In 1995, the U.S. Fish and Wildlife Service determined that an endangered-species listing for the swift fox was warranted, but that other species were a higher priority. The Blackfeet tribe has launched a reintroduction program on a reservation outside Glacier National Park and has released almost 100 foxes since 1998.

federal candidate, state threatened

Pallid sturgeon

Scaphirhynchus albus

The pallid sturgeon, an ancient fish that has existed since the age of the dinosaurs, also relies on natural fluctuations of the Missouri River, one of the few spots where the species still lives. Damming has altered the turbid water the pallid sturgeon requires and channelization has reduced habitat. Decline has been particularly marked between the Gavins Point Dam and the Fort Peck Dam; natural reproduction is almost nonexistent. Listed as endangered in 1990, its future depends on changes in dam management along the main branch of the Missouri River. *federally endangered*

Burrowing owl

Athene cunicularia

The burrowing owl has a bevy of appropriate names. It's commonly called "prairie-dog owl" and "tunnel owl," while its scientific name, *cunicularia,* is Latin for "mine" or "miner." Marked by white eyebrows, a white chin stripe, and long legs that allow it to run down passing beetles, the burrowing owl often nests in abandoned prairie-dog tunnels. Burrowing owls have been declining throughout most of their range because of the loss of prairie lands. Along with black-footed ferrets, the burrowing owl relies on prairie dogs and their habitat to continue in healthy populations.

western burrowing owl (subspecies) is a federal species of concern

Pronghorn

Antilocapra americana

The pronghorn impressed the Corps of Discovery with its beauty, swiftness, and agility. Near Great Falls, Montana, Lewis noted, "[T]hey appear very inquisitive usually to learn what we are as we pass, and frequently accompany us at not great distance for miles, frequently halting and giving a loud whistle through their nostrils, they are a very pretty animal and astonishingly fleet and active." Though often called an antelope, the pronghorn is more closely related to the goat. The fastest four-legged animal in North America, the pronghorn ranges from Nebraska all the way to the Cascades. While populations have recovered since 1908 when they hit a low of 20,000, much pronghorn habitat, like the Red Desert of southern Wyoming, remains without protection as wilderness.

not listed

CLOCKWISE FROM LEFT: PATUXENT NWR MD HOLLINGSWORTH/ USF&WS (CAPTIVE) NORTHERN PRAIRIE WILDLIFE RESEARCH CENTER/USGS USFWS IDAHO DEPT. OF FISH & GAME COURTESY USFWS

What's Lost, What's Left

Great North American Prairie Featured Species

Eastern cottonwood

Populus deltoides

Clark explored the Yellowstone River in a boat made of lashed cottonwood trees. These trees, which grow along many plains rivers, proved invaluable throughout the journey, providing shade and shelter as well as transportation. To commemorate the tree, Clark named the site where he constructed the boats Camp Cottonwood. But the massive groves have been dying out because of dams, which block the seasonal flooding of the riverbanks. Cottonwoods, both this species and black cottonwood, *Populus trichocarpa*, which occurs further west, require the rich silt deposited by high springtime water in order to germinate. Since dams have altered the rivers' flow, no new trees are taking root to replace the old ones. Along the Garrison Reach of the Missouri River, the Sierra Club is planting cottonwoods and working to restore the river to its natural flow patterns.

black cottonwood (subspecies) is state threatened

Badger

Taxidea taxus

In his description of the badger, which he called the "burrowing dog of the Prairie," Lewis deemed it clumsy and slow. "I have in two instances out run this animal and caught it," he wrote. But despite the short legs and stocky body that handicap it in a footrace, the badger can dig with lightning speed after a fleeing ground squirrel. Like many other prairie animals, badgers live in burrows and are losing habitat.

not listed

Piping plover

Charadrius melodus

Piping plovers are a threatened species that rely on prairie wetlands and, like the interior least tern, need natural river flows to replenish the sandbars where they nest. The species have such similar nesting requirements, in fact, that often several plover pairs will settle down in the middle of a crowd of least terns, depending on the swarms of noisy terns to chase off any predators. Plovers forage for small insects on bare sandbars and wetland shores. The restoration of the Missouri River's pattern of high water in the spring and lower levels during the summer is vital for the plover's survival.

federally threatened, state endangered

Greater prairie chicken

Tympanuchus cupido pinnatus

The greater prairie chicken provides its own spectacular display, though on a smaller scale than a stampede of bison or the flight of the whooping crane. During breeding season, the birds gather at a dancing ground called a lek, where males inflate yellow sacs near their throats, raise feathers on their heads like pointed ears, and send booming calls across the prairie. Greater prairie chickens return to these same open grassland sites year after year, and as the leks disappear, so do the prairie chickens.

one subspecies is federally endangered and one is a federal candidate

Big bluestem

Andropogon gerardii

Visitors to tallgrass prairie have described the grass's undulating movement as the heaving of a vast ocean. The grasses that make up the swells—big bluestem, prairie junegrass, side-oats grama—provide rich forage and shelter for a host of birds and mammals. Much of the prairie has been plowed under in the past 200 years. Today less than 1 percent of North America's tallgrass prairie remains. The Sierra Club is committed to preventing destruction of the rest, including the Sheyenne National Grasslands, so that future travelers can witness the inland sea. *not listed*

Topeka shiner

Notropis topeka

The Topeka shiner, a finger-long minnow, looks like a streamlined goldfish. Listed as an endangered species in 1998, the shiner is suffering from water pollution in its native streams. Pesticide-laden runoff from fields and waste from animal factories reduce water quality, and sediment buries the shiner's eggs. The Sierra Club is working to demand better pollution controls from the U.S. Fish and Wildlife Service and the Environmental Protection Agency. *federally endangered*

CLOCKWISE FROM LEFT: © BROTHER ALFRED BROUSSEAU, SAINT MARY'S COLLEGE GARY M. STOLZ/USF&W J.P. MATTSSON/ USF&W KIRK KOEPSEL ©GAROLD W. SNEEGAS OHIO STATE UNIVERSITY AT MARION

Grizzly bear

Ursus arctos horribilus

"The legs of this bear are somewhat longer than those of the black, as are it's tallons and tusks in comparably larger and longer. . . . it's color is yellowish brown, the eyes small black and piercing."

—MERIWETHER LEWIS

Lewis and Clark heard rumors of the grizzly long before they first caught a glimpse of silver-tipped fur. Native Americans told stories of the bear's strength and resilience, and the explorers saw for themselves the massive tracks. By the time the Corps of Discovery had passed through what is now eastern Montana in the summer of 1805, the bears were no longer a mystery. They had encountered them swimming across rivers, running across the plains, and feeding on drowned bison. Grizzlies, it seemed, were everywhere.

Taking a closer look

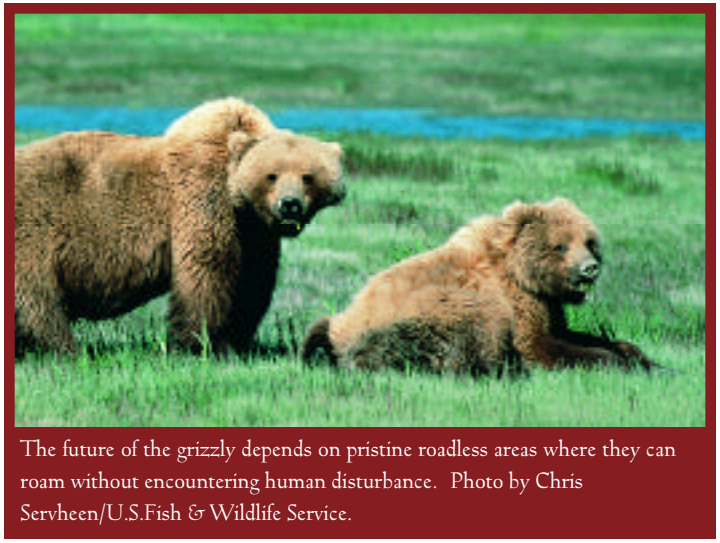
Despite the bloodthirsty reputation that intrigued the explorers and the legends of ferocity that gave them the name *Ursus arctos horribilus*, grizzlies generally make their living from small fare. They may go after a moose or an elk, but the bulk of their diet is more humble: berries, moths, roots, grasses, pine nuts, salmon, and ants. With the exception of mothers with cubs, they largely live solitary lives, roaming over wide swaths of the western landscape. The distance they travel depends on the availability of food. A male grizzly's home range may extend up to 1,000 square miles.

Grizzlies gorge themselves in the fall, storing up precious fat for the winter. Bears typically sleep through the cold months in a cave or a hole left by an uprooted tree.

From historic populations of 100,000, grizzlies now number around 1,000 in the Lower 48. Photo by U.S. Fish & Wildlife.

In January through March, the females generally give birth to one or two cubs. As they emerge from their dens hungry in the spring, cubs learn from their mother how to identify food and where to find it. They spend up to three years with her, gathering information that will be

Grizzly Bear (Ursus arctos horribilis) • Federal Status: listed as threatened in Lower 48 since 1975. • Natural Heritage Status: about 1,000 grizzlies remain in the Lower 48 in five isolated areas of wild country. • Distribution: limited to five populations. • Habitat: once prominent on the prairies, grizzlies depend on intact wilderness ecosystems, with few or no roads and infrequent human presence. Today, they are primarily found in and around Yellowstone and Glacier National Parks and a few other isolated remote pockets of wildlands. • Threats: Threatened rangewide by proposals to remove protections of the Endangered Species Act, which has been helpful in bringing back the bear from the brink. Removing protections would open sensitive habitat to logging, roadbuilding, mining, oil & gas development.



The future of the grizzly depends on pristine roadless areas where they can roam without encountering human disturbance. Photo by Chris Servheen/U.S.Fish & Wildlife Service.

valuable when they have to fend for themselves. The long rearing period, combined with small litters and high cub mortality, gives the grizzly bear the lowest reproduction rate of any animal in the Lower 48, making them particularly vulnerable to extinction.

Tracking the changes

Much has changed for the grizzly since more than 100,000 roamed from east of the Mississippi to the California coast in the time of Lewis and Clark. Today, about 1,000 grizzly bears remain in the Lower 48, spread amongst five isolated groups in Montana, Wyoming, Idaho and Washington—1 percent of former grizzly numbers in 1 to 2 percent of their former range. These small numbers, coupled with diminishing habitat, resulted in the bear's 1975 listing as "threatened" on the endangered species list.

The grizzly bear's ferocious reputation contributed to its rapid decline. As settlers moved into the river valleys and meadows where the bears once thrived, they shot and poisoned grizzlies and other predators to make way for livestock and farms. They also got rid of them in less direct ways, by carving up and developing prime habitat separating populations from one another.

Now even the bear's last wild refuges are at risk. Logging, rural sprawl, energy development, and uncontrolled dirt-bike and snowmobile use destroy key habitat and increases the killing of bears. In Yellowstone, food sources within bears' existing habitat are threatened; whitebark pines, cutthroat trout, salmon, army cutworm moths, bison, and elk all face possible decline due to climate change, non-native species, habitat loss, and other human factors. Roads are a particular problem, slicing remaining forests into smaller and smaller pieces and bringing more and more humans into bear habitat.

The federal government is considering removing the grizzly from the endangered species list. This would put the burden of managing grizzlies on Idaho, Montana, and Wyoming, states that have historically had close ties with the timber, agriculture, and mining industries and little tolerance for large predators. Among other changes, these states are likely to reestablish a legal hunt. While the grizzly still roams Yellowstone and other areas in the Northern Rockies, the bear would be extinct in the Lower 48 without ESA protection.

Preserving the legacy

The Sierra Club, a national leader in grizzly bear conservation, recommends the following steps to help the bear:

- *Implement the Roadless Area Conservation Rule.*
- *Designate prime grizzly bear habitat as wilderness.*
- *Keep the grizzly in the lower 48 states listed as a threatened species.*
- *Ensure that states have adequate management plans for protecting grizzly bears and their habitat.*
- *Limit dirt bikes and snowmobiles (especially in springtime) in grizzly habitat.*
- *Reduce and reclaim roads on public lands to levels with which bears can live.*
- *Improve the public's respect for bears and increase understanding about how to live with them. Measures include properly storing food and garbage and the use of pepper spray rather than more lethal methods of defense. The 19 human-caused grizzly bear deaths in the greater Yellowstone ecosystem in recent months underscore the need for improved education.*
- *Compensate for habitat loss and food-source decline by ensuring ecological connectivity between Yellowstone and Canada.*

Whitebark pine

Pinus albicaulis

"I saw today a species of woodpecker which fed on seeds of pine. its beak and tail were white, its wings were black, and everyother part a dark brown. it is about the size of a robin."

—MERIWETHER LEWIS

Many travelers have witnessed the Clark's nutcracker perched near a Rocky Mountain campground, waiting for spilled trail mix. The more notable aspect of Lewis's observation, however, is not the bird but the interaction between bird and whitebark pine. This intertwined natural history has broad implications for the future of the West.

Taking a closer look

Whitebark pines grow in the high mountains from British Columbia to California and Wyoming. This lovely tree, with its rounded shape and white-grooved needles in bunches of five, takes root on windblown alpine slopes. The broad crown catches snow and helps build up the high-altitude snowpack. Rather than opening to release their seeds, the cones drop to the ground and the seeds fall out as the cones fall apart.

The whitebark pine plays a central role in the alpine ecosystem of the Rocky Mountains. The rich pine nuts provide food for the nutcrackers that cache many of the seeds for later. The ones the birds don't find germinate, creating new trees. Red squirrels also revel in the bounty, tucking cones and seeds into pantries, called middens, waiting for the cold. Grizzlies, attracted by the calls of Clark's nutcrackers, raid the

Though they've weathered many harsh alpine winters, whitebark pines are being defeated by the non-native fungus blister rust. Photo by ©Brother Alfred Brousseau, Saint Mary's College.

Whitebark pine (Pinus albicaulis) • Federal Status: not listed. • Natural Heritage Status: apparently secure, but vulnerable in Rocky Mountain states. • Distribution: Western populations extend from western British Columbia, south into Washington and Oregon into California. Eastern populations occur south from Alberta and follow the northern Rocky Mountains into western Montana and central Idaho, with extensive stands in northwestern Wyoming. Distribution is strongly influenced by Clark's nutcrackers, which disperse seeds. • Habitat: many western high-elevation forests. In the Rockies, eastern Cascades, and Blue Mountains, it is a minor component in mixed stands of Engelmann spruce and subalpine fir.• Threats: blister rust is marching across its range. • L&C States: Washington, Oregon, Idaho, Montana, Wyoming

Clark's nutcrackers, red squirrels and grizzly bears all rely on the rich nuts of the whitebark pine. Photo by ©Brother Alfred Brousseau, Saint Mary's College.

squirrel middens in time to fatten up for the winter.

Tracking the changes

Unlike other species that are stressed by a complex web of factors, the whitebark pine's shrinking numbers have a clear culprit: blister rust. This non-native fungus first appeared in 1906 and has infected 80 percent of whitebark pine stands in northern Montana. Because the rust is an exotic disease, it has no natural enemies in North America to slow its progress. Its spread to prime grizzly bear areas such as Yellowstone seems inevitable.

Blister rust attacks whitebark pines through the needles, working its way to the trunks where it causes cankers or blisters to erupt. As branches die, trees lose their ability to produce cones and become more susceptible to insect and rodent attacks. The disease, combined with years of fire suppression that have disturbed the natural composition of Rocky Mountain forests, threatens the future of whitebark pine.

Overall, whitebark pine has declined 45 to 50 percent since 1900, and experts estimate these stands will take 500 to 700 years to grow back, if they recover at all.

Preserving the legacy

In order to stop the disappearance of whitebark pines, the Sierra Club recommends the following measures:

- *Protect remaining stands. Road expansions, off-road vehicle use, development, and logging continue to eat away at the remaining areas of whitebark pines, imperiling not just the trees, but the grizzly bear as well.*
- *Pursue the development of rust-resistant whitebark pines.*

Westslope cutthroat trout

Oncorhynchus clarki lewisi

"Goodrich had caught half a dozen very fine trout and a number of both species of the white fish. These trout are from sixteen to twenty-three inches in length, precisely resemble our mountain or speckled trout in the form and the position of their fins, but the specks on these are of a deep black instead of the red or gould colour of those common to the U' States."

—MERIWETHER LEWIS

On June 13, 1805, Lewis witnessed a scene that he described as "the grandest sight I ever beheld." He spent paragraph after paragraph in his journal painting the splendor of the Great Falls of the Missouri (at a place that would later become Great Falls, Montana) and then, frustrated at his inability to capture the beauty in words, wondered if he shouldn't cross it all out and start over.

Westslope cutthroat trout thrive in cold clear Rocky Mountain streams that are growing in short supply. Photo courtesy NPS-YNP.

The waters of the Great Falls also provided a glimpse of a species new to science: the westslope cutthroat trout. Private Silas Goodrich caught some for dinner, and before Lewis took a bite, he noted the appearance, partaking in a great tradition that Charles Darwin would also employ: dinner-table natural history.

Two centuries of dams and water diversion have tamed the roaring wall of water that so impressed Lewis. The spot he admired is now the site of the Ryan Dam. Westslope cutthroat trout, which honors both explorers in its scientific name, *Oncorhynchus clarki lewisi,* is found in only a fraction of its historic range.

Taking a closer look

Westslope cutthroat, small trout with a rosy underside and dark speckled tail and a red slash under its mouth, live mainly in Montana, Idaho, and Canada, with small numbers in Washington, Wyoming, and Oregon. They persist wherever there are cold clear streams for them to spawn in and deep sheltered pools where they can wait out the winter. In the spring, as snowmelt swells rivers and streams, cutthroat return to tributaries to mate and lay eggs. Some migrate more than 100 miles to a suitable spawning site; others stay in the area where they live year-round.

Tracking the changes

In Idaho, where the cutthroat is the state fish, westslope cut-

Westslope cutthroat trout (Oncorhynchus clarki lewisi) • Federal Status: not listed, but may warrant listing as threatened. • Natural Heritage Status: apparently declining across its range. • Distribution: estimated to occupy between 19 & 27 percent of its historic range in Montana and about 36 percent in Idaho. But westslope cutthroat trout can hybridize, thus, genetically pure westslope cutthroat are estimated to exist in only 2 to 4 percent of their historic stream distribution • Habitat: small rivers, gravelly streams, and isolated mountain lakes. • Threats: hatchery stock has eroded native stocks. Habitat damage, overfishing, and introduced species are also a threat • L&C States: primarily Idaho, Montana; scattered populations in Washington, Oregon, Wyoming

throat were once the most common trout species in the central and northern parts of the state. In recent decades, populations have declined. Westslope cutthroat are easily disturbed by logging and road-building, which muddy pristine streams and remove shade trees that cool the water. A recent study by the Western Native Trout Campaign showed a strong correlation between roadless areas and the survival of native trout populations.

Non-native fish, both stocked and accidentally introduced, pose additional problems. Some, like northern pike and lake trout, eat cutthroat trout. Others, like brook trout, outcompete the cutthroat for food when the two share a stream. Still others, like non-native rainbow trout, hybridize with cutthroat, diluting native gene pools. While some estimates place the fish in 19 to 27 percent of their original range in Montana and 36 percent of their original range in Idaho, unhybridized cutthroat strains occupy only 2 to 4 percent of their traditional habitat.

In 2000, the U.S. Fish and Wildlife Service declined to protect westslope cutthroat under the Endangered Species Act. The Alvord cutthroat and yellowfin cutthroat, two other subspecies, have already gone extinct.

Preserving the legacy

In order to preserve the remaining westslope cutthroat trout, the Sierra Club is working to:

- *Implement the Roadless Area Conservation Rule as originally written to protect pristine habitat for this sensitive species.*
- *End commercial logging, oil and gas leasing, and dirt-bike use in cutthroat habitat and permanently protect important wildlands, watersheds, and fish habitat.*
- *Restore the wildlife-rich area of Lolo Pass in Montana's Bitterroot Mountains.*
- *Add protections for cutthroat by ensuring it is granted Endangered Species Act protections.*

Gray wolf

Canis lupus

"We scarely see a gang of buffaloe without observing a psrsel of those faithfull shepherds on their skirts in readiness to take care of the maimed wounded. The large wolf never barks, but howls as those of the atlantic states do."

—MERIWETHER LEWIS

Early on in their travels with the Corps of Discovery, as they headed to the Platte River, passing big bluestem meadows and cottonwoods along the riverbanks, brothers Rueben and Joseph Field captured a wolf cub. They tied it up, planning to make it a pet. It turned out to be easier to catch a wolf than to keep one. It quickly gnawed its way free and scampered back into the wild.

Lewis and Clark called the gray wolf the "large wolf" to distinguish it from the smaller coyotes, which they dubbed the "prairie wolf." Wolves were familiar from the East, but Lewis and Clark discovered a subspecies, the plains gray wolf, or *Canis lupus nubilus*. As usual, Lewis offered detailed observations, noting how a pack would isolate an antelope from the herd so they could chase it down. Clark wrote, "The large Wolves are very numerous," and they saw them throughout the western part of their trip, feeding on bison and stalking wild turkeys. They heard them howling through the night.

After more than a century of poison, traps, and shooting in the West, wolves are only now starting to make a comeback in Montana, Idaho, and Wyoming. Photo by John and Mary Hollingsworth, U.S. Fish & Wildlife Service.

Taking a closer look

Few sounds convey "wilderness" as clearly as a wolf's howl. A technique adapted for communication over distances, a howl can travel up to six miles. Serving as a rallying cry before the hunt or a marker of territory boundaries, the howl is indispensable for these social, yet far-roaming animals.

Gray wolf (Canis lupus) • Federal Status: listed as endangered in the Lower 48, threatened in Minnesota. • Natural Heritage Status: in the West, limited to reintroduced populations in Yellowstone and central Idaho. One population in northwest Montana naturally reintroduced itself from southern Canada. • Distribution: extirpated from most of the contiguous United States largely from bounty hunting and human encroachment on and development of habitat. Reintroduced populations in Yellowstone and central Idaho have been increasing rapidly. • Habitat: able to occupy a variety of habitat ranging from desert to forest to tundra. Wolves seem to prefer wilderness habitats with low road densities and abundant ungulate prey. • Threats: direct human-caused mortality and habitat loss. • L&C States: Wyoming, Montana, Idaho (recent sightings in North Dakota, Washington)

If wolves are taken off the endangered species list, they will lose federal protection. The Sierra Club is working to ensure that states have adequate protection plans. Photo by Tracy Brooks/U.S. Fish and Wildlife Service.

A pack howling together, finding different ranges and patterns, can sound much larger than it is, warning off a competing group.

Dominating the pack are one male and one female. Generally this pair is the only one to breed, and the rest of the pack, if it's a small one, is made up of their offspring. Pack size depends on prey: Only 7 wolves might be needed if dinner is deer, while 20 might be necessary to hunt moose.

When a pack takes down an elk or deer, it frequently feeds the whole forest. Ravens trail wolves to their prey, often feasting alongside them. Vultures circle overhead, waiting for an opening. Grizzly bears also take a turn. As Lewis and Clark witnessed with bison herds, wolves serve as an important check on prey populations, keeping them from growing too large. At the time wolves were reintroduced to Yellowstone in 1995, the elk had grown so numerous and hungry they halted the growth of aspen forests by eating the young shoots. Biologists hope the wolves will help reverse these trends.

Tracking the changes

The wolf has been the victim of a nasty public-relations campaign. For many years, the animals were the target of bounty hunters, who could redeem a carcass or wolf pelt for $50. The wolves were poisoned, trapped, and shot. In the second half of the 19th century, 2 million were killed in the Lower 48. The West wiped out its wolves, and they made their way onto the endangered species list.

In 1995 and 1996, the U.S. Fish and Wildlife Service took the first step in righting these wrongs by introducing 31 wolves to Yellowstone National Park and 20 to central Idaho. Currently there are approximately 220 in the greater Yellowstone area, while in Idaho, the number of wolves has grown to 260. Additional wolves keep coming from Canada into northern Montana, reintroducing themselves.

The newly released wolves encounter a different world from that of their Lewis and Clark–era ancestors. The areas around Yellowstone National Park, the Rocky Mountain Front, and the mountains of central Idaho where wolves are staging their comeback are being eyed by the oil and gas industries and timber interests. Dirt bikes and snowmobiles roar through their habitat. Anti-wolf sentiments are still entrenched in some areas, but these opinions are now moderated by a public that largely wants to hear the wolf howl again in the West. Because of wolf introduction, Wyoming is becoming the most balanced ecosystem in the lower 48 states.

Preserving the legacy

The Sierra Club is working to:

- *Protect wolf habitat in Wyoming, Idaho, and Montana.*
- *Educate the public about wolves and their biology to dispel negative stereotypes.*
- *Partner with state governments to draw up plans ensuring that the wolves have adequate protection. When wolf populations reach the target size, the species will be delisted in the Rocky Mountains, losing federal oversight.*

Oregon bitterroot

Lewisia rediviva

On July 1, 1805, at Traveller's Rest near present-day Missoula, Montana, Lewis gathered the flowers that would give their name to so many landscape features in western Montana, from the Bitterroot Mountains to the Bitterroot River. Also called the "rockrose" because of its lush pink petals and ability to grow in stoney, seemingly inhospitable spots, the bitterroot was a dietary staple for area tribes who ate the thick taproots. The flowers bloom during the summer, closing at night and unfolding at dawn.

not listed

Clark's nutcracker

Nucifraga columbiana

The Corps of Discovery first saw this bird "on the hights of the rockey mountains" while camped with the Shoshone Indians near Idaho's Lemhi River. The Clark's nutcracker may have an even better mapping ability than Captain Clark, its namesake. A hoarder of whitebark pine nuts, the nutcracker can locate as many as 2,000 different caches up to eight months after it buried them. Still, it misses some, which germinate and grow. Unfortunately, blister rust is killing off whitebark pines, depriving Clark's nutcrackers of a primary food source.

not listed

Bull trout

Salvelinus confluentus

Actually a char rather than a trout, the bull trout seeks out cold streams with ample shelter and clean gravel in Washington, Oregon, Montana, Idaho, Nevada, and parts of Canada. Since its habitat requirements are more stringent than those of many other fish, the bull trout is more sensitive to habitat alteration. It was listed as a threatened species in 1998. The greatest risks to bull trout come from logging, roadbuilding, overharvest, and destructive mines like the proposed Rock Creek Mine in northwestern Montana. This copper and silver mine would set a terrible precedent by tunneling underneath the Cabinet Mountains Wilderness Area, degrading habitat for grizzly bears and lynx as well as bull trout. Hydropower dams throughout the greater Columbia River basin also have negative impacts on bull trout.

federally threatened

Elk

Cervus elaphus

Though elk herds wandered the grasslands and forests throughout the expedition, they played the most prominent role during the winter at Fort Clatsop. Tired of salmon, the Corps of Discovery ate elk and used the skins for clothing and livestock harnesses. Elk were nearly wiped out in North America, along with many other large mammals, during the 1800s. In response, President Theodore Roosevelt set aside habitat including the National Elk Refuge. A success story, the return of the elk from 40,000 to 1 million today shows what can be done if habitat preservation is a priority. The variety of elk that fed Lewis and Clark in the winter of 1805–1806 at Fort Clatsop are the Roosevelt elk subspecies, named for Theodore Roosevelt.

not listed

Elegant mariposa lily

Calochortus elegans

This delicate white flower is also called "cat's ear" because of its wedge-shaped petals that have a tangle of white strands at the base. It grows in the open woods from western Montana to eastern Washington and Idaho. Lewis discovered it along Idaho's Clearwater River and wrote that the Nez Perce ate the lily bulbs.

not listed

What's Lost, What's Left

Northern Rockies Featured Species

Bighorn sheep

Ovis canadensis

Private Joseph Fields saw several bighorn sheep near the Yellowstone River and picked up a curved horn to bring back to camp. A favorite of trophy hunters, bighorn sheep declined dramatically in the 19th century, from 200,000 to several thousand. Increasing populations of domestic sheep passed on psoroptic scabies, among other diseases, while exotic grasses and fire suppression changed their habitat. Reintroductions have helped some extirpated populations regain a foothold.

state species of concern; one subspecies is federally endangered, and one is extinct

Cougar *Puma concolor*

Cougars, which can reach seven feet long including their tail, are powerful enough to take down an elk, though they feed mainly on deer. As their habitat becomes increasingly fragmented by roads and development, young cougars find it hard to disperse. One of the greatest threats to cougars is negative public perception. In Oregon, the Sierra Club is the lead plaintiff in a lawsuit against the U.S. Fish and Wildlife Service to stop a planned experiment that involves killing healthy cougars to observe the impact on elk populations. But there's good news as well: Cougars may be making a comeback in the East, where they were thought to have gone extinct, and populations are growing in western states partly as a result of bans on hunting with hounds.

state threatened, three subspecies are federally endangered

Mountain goat

Oreamnos americanus

The Corps of Discovery first heard about the white animal with sharp straight horns from the Native Americans, and Clark saw one at a distance near the Lemhi Mountains on the Idaho-Montana border. Just as the pronghorn is not really an antelope, the mountain goat is not really a goat. More closely related to the chamois of the Alps, mountain goats live in the crags, ruling an icy, seemingly inhospitable realm. While this keeps conflicts with humans to a minimum, mountain goats may be affected by global warming as increasing temperatures alter the high peaks of areas like Glacier National Park.

not listed

Greater sage grouse

Centrocercus urophasianus

The greater sage grouse is the largest North American grouse; Lewis and Clark called it "cock of the plains." Aptly named, the sage grouse is dependent on sagebrush: It winters in sagebrush, mates in sagebrush, nests in sagebrush, and eats sagebrush. As sage-steppe landscapes are increasingly degraded, wilderness protection for areas like the Owyhee Canyonlands in Idaho is needed to ensure the sage grouse has the habitat it requires to survive.

western sage grouse (subspecies) is a federal candidate

Trumpeter swan *Cygnus buccinator*

On the way West, Lewis saw and heard swans overhead. These could have been trumpeter swans which nest in North Dakota. Trumpeter swans, with a seven-foot wingspan that makes them the world's largest waterfowl, were too prominent and showy to make it through the late-19th-century fashion craze that demanded exotic feathers for hats. But with the help of the Red Rocks Lake National Wildlife Refuge near Yellowstone National Park, the population rebounded from fewer than 50 in the Lower 48 in the 1930s to near 4,000 today. *state species of concern*

CLOCKWISE FROM LEFT: HOLLINGSWORTH/USF&W LAVONDA WALTON/USF&W (CAPTIVE) DAVID ERICKSON/USF&W IDAHO DEPT. OF FISH & WILDLIFE

Pacific salmon & steelhead:

Coho (or silver)
Oncorhynchus kisutch

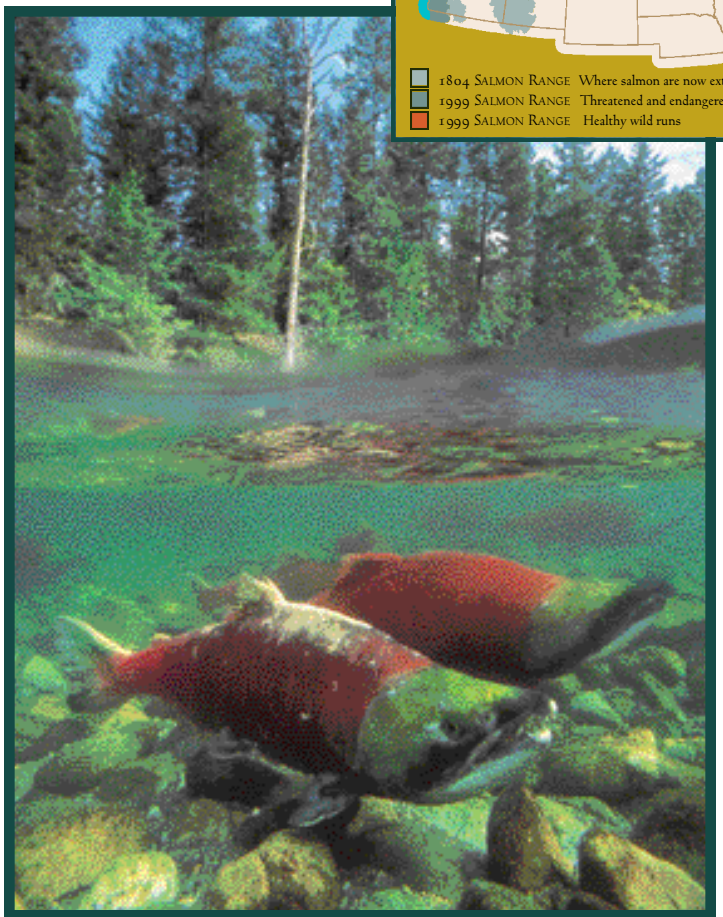
Chinook (or king)
Oncorhynchus tshawytscha

Steelhead
Oncorhynchus mykiss

Chum (or dog)
Oncorhynchus keta

Sockeye
Oncorhynchus nerka

Pink
Oncorhynchus gorbuscha



As salmon head upstream to spawn, they find their way increasingly blocked by dams. Photo by John T. Pennington.

"[T]here was great joy with the natives last night in consequence of the arrival of the Salmon; one of those fish was caught; this was the harbinger of good news to them. They informed us that these fish would arrive in great quantities in the course of about 5 days. this fish was dressed and being divided into small peices was given to each child in the village. this custom is founded in a supersticiuos opinion that it will hasten the arrival of the Salmon."

—Meriwether Lewis

Near the Dalles and all along the Columbia River, the Corps of Discovery witnessed a salmon economy in full swing. Salmon were at the end of their seasonal upstream surge and the Native Americans in the area had all the fish they could want and enough to trade. Clark noted wooden houses where half the rooms were devoted to dried salmon and estimated that stacks on nearby rocks contained 10,000 pounds of fish.

Even more frequently than they commented on the amount of salmon, though, the explorers mentioned the rough, surging currents that made canoeing a challenge. This was the key to the salmon's abundance; they thrived in the pure water and rapid rivers that characterized the Columbia River basin.

Taking a closer look

The five salmon species in the Pacific Northwest—chum, chinook, sockeye, pink, and coho—are all members of the genus *Oncorhynchus*. Greek for "hooked snout," *Oncorhynchus*

Salmon & Steelhead (all species) • Federal status: all species listed in our report have federal endangered or threatened listings for distinct subpopulations, except for pink salmon, which is a federal candidate species • Natural heritage status: globally secure, but declining rapidly within the Lower-48, especially the Pacific Northwest and California. • Distribution: streams and rivers from southern California to the Bering Sea have been home to salmon for millions of years. • Habitat: aquatic • Threats: human development, especially damming and hydropower; overfishing; urban and industrial development; roads and highways; agriculture; and logging. • L&C states: Washington, Oregon, Idaho.

describes the bent nose and twisted jaw male salmon develop by the time they spawn. Steelhead joined the *Oncorhynchus* genus when they were determined to be closely related to Pacific salmon.

The basic elements of the life histories of Pacific salmon are similar. Born in streambeds in gravel nests called redds, they gradually make their way to the ocean, transferring from freshwater to salt. They spend most of their lives at sea, often heading far offshore from the California, Idaho, Oregon, and Washington river mouths where they started, up to the Gulf of Alaska and the Bering Sea. Eventually they return, smelling their way back, fighting the current and leaping waterfalls to reach the streams where they were born. Exhausted by the trip, they die after mating and laying eggs, creating another generation to feed people and wildlife, economies and ecosystems.

Of course, each of these species has unique attributes as well. Some spend hardly any time in the ocean; others stay for many years. In appearance, they range from the spotted chinook or king salmon that can reach up to 120 pounds to the streamlined sockeye that turns brilliant red as it heads upstream to spawn.

Populations of fish from each spawning area are unique, too. In a feat of navigation equal to that of the explorers, sockeye that historically spawned in Redfish Lake in central Idaho traveled 900 miles upstream to spawn. Unfortunately, where they once plied wild rivers like Lewis and Clark, now they must cross dam after dam. In the four years between 1993 and 1997, only ten sockeye returned to Redfish, their namesake lake.

Tracking the changes

Over the past 200 years, the unfettered river waters that impressed and frightened Lewis and Clark have become polluted and divided by dams. The Columbia system once saw 16 million salmon returning each year. Now, only 1 percent of the wild salmon that existed at the time of the Lewis and Clark expedition come back to these once-mighty waters. Irrigation draws water out of the Columbia and its tributaries, and 29 federal dams block rivers in the Columbia basin. Industrial logging muddies streams with sediment, and runoff from agriculture, mines, and cities pollutes the water. The trip of the salmon upstream as adults and downstream as smolts has become an increasingly challenging obstacle course, with fewer making it through each year.

In 1896, even after salmon populations were starting to decline, the total catch of chinook, coho, sockeye, chum, and steelhead was 3.3 million. In 1990, it was 257,000. Some runs of coho, chinook, and sockeye are already extinct, and of all the species 21 runs are threatened and 5 are endangered. Additional threats come from clearcut logging, farm-raised salmon, and hatchery-raised salmon that decrease genetic diversity and bring disease to wild populations.

The Lower Snake River, the area Clark described as full of rapids and teeming with fish, is a particularly vital area for salmon recovery. It contains populations of endangered spring/summer chinook, fall chinook, and steelhead, in addition to four dams, which create a lethal corridor that threatens the survival of salmon in the Snake River basin.

Preserving the legacy

The key actions we can take to return the salmon to healthy populations are:

- *Bypass the four dams on the lower Snake River to restore a free-flowing river and a healthy migration and spawning corridor. These dams only produce 5 percent or less of the Northwest's power supply.*
- *Halt National Marine Fisheries Service plans to dredge the estuary at the lower Columbia to allow additional ships and barges through. This dredging will stir up toxic metals in the riverbed and further degrade salmon habitat.*
- *Fully fund the Columbia Basin Salmon Plan. This National Marine Fisheries Service plan calls for restoring and preserving salmon habitat all along the Columbia River basin, managing water flows through dams to benefit salmon migration, and reforming hatcheries. Currently the Bush administration is funding the plan at only half the recommended levels.*
- *Protect remaining wildlands and roadless areas in our national forests, which contain some of the last, best fish and wildlife habitat in Washington, Oregon, and Idaho.*
- *Remove old logging roads in western Washington and Oregon to restore healthy ecosystems and forests.*
- *Control sprawl and "nonpoint-source" pollution in Puget Sound and the Willamette Valley.*
- *Provide permanent protection for the critical watersheds in the Tillamook State Forest in Oregon.*

Western red cedar

Thuja plicata

"The Mountains which we passed to day much worst than yesterday the last excessively bad & thickly Strowed with falling timber & Pine Spruce fur Hackmatak & Tamerack."

—WILLIAM CLARK

Struggling through the thick forests near Lolo Pass, Lewis and Clark didn't always appreciate the majestic trees that dripped snow and blocked their path. But Lewis still noted the arbor vitae, or western red cedar, and imagined turning them into long and elegant boats. Private Joseph Whitehouse also saw them along the Lochsa River and wrote of "Some tall Strait [cypress] or white ceedar." As the explorers descended down the Columbia toward the ocean, the cedars grew larger and more prominent.

When Lewis and Clark reached the Pacific Coast, they found that Western red cedar played a vital role in tribal life, providing materials for clothing, boats, and baskets. Photo by ©Brother Alfred Brousseau, Saint Mary's College.

By the time they reached Fort Clatsop at the Pacific, the captains came to see the fragrant tree as the centerpiece of a complex culture. The Chinook Indians incorporated it into almost every aspect of their lives, from wooden bowls to bedding and clothing made of bark. Other tribes carved totem poles and canoes from the massive trunks.

Taking a closer look

As the explorers noticed, the cedars flourish along the Pacific Northwest coast where there is plenty of moisture and

Western red cedar (Thuja plicata) • Federal Status: not listed. • Natural Heritage Status: secure • Distribution: along the Pacific Coast from the southern Alaska panhandle through British Columbia, western Washington and Oregon, into Northern California. A disjunct population occurs along the west slopes of the Rockies from British Columbia to northeastern Washington, northern Idaho, and western Montana. • Habitat: wet or maritime climates with cool, cloudy summers and wet, mild winters. • Threats: very slow-growing, often commercially over-logged. • L&C States: Washington, Oregon, Idaho, Montana

Able to grow to 175 feet high and 1,000 years old, ancient Western red cedars are often the target of the timber industry. Photo by ©Brother Alfred Brousseau, Saint Mary's College.

rich soil. They grow in mixed stands with Douglas fir and western hemlock, providing habitat for many forest species. Near the coast, Roosevelt elk eat young shoots and saplings; further inland Rocky Mountain elk eat the leaves in the winter. Black bears den in large hollow trunks.

One of the tallest evergreens, western red cedars can typically reach 175 feet in height and 8 feet in diameter. They are shadowed only by giant sequoias, redwoods, and the occasional Douglas fir. Undisturbed, western red cedars can grow to be nearly 3,000 years old. Ancient stands of red cedar are particularly important for animals dependent on old growth, like the northern spotted owl and Vaux's swifts. In the modern Pacific Northwest, however, most of the ancient red cedar groves are gone.

Tracking the changes

Though logging cut huge swaths through old growth, pockets of ancient western red cedar still exist throughout the Northwest, towering over a lush understory of ferns, devil's club, salal, and huckleberry. These few remaining giant groves are at risk of being cut or burned. Logging companies that continue to harvest giant red cedars are comparable to the last of the renegade buffalo hunters of the Great Plains.

The Forest Service is planning several timber sales in Idaho's Clearwater National Forest, including an area with 1,000 acres of old growth. Other sales, along the North Lochsa slope, are within sight of the route Lewis and Clark traveled and include the last roadless piece of the explorers' trail in Idaho. Another home to ancient cedars, the Dark Divide roadless area in Washington's Gifford Pinchot National Forest, needs permanent protection as wilderness.

Preserving the legacy

To ensure the future of the last remaining groves of ancient western red cedar, the Sierra Club is working to:

- *Halt logging in areas of old growth in Washington and Oregon, and in Idaho's Clearwater and Panhandle National Forests.*
- *Establish the Dark Divide roadless area as wilderness and the nearby Lewis River as wild and scenic. Other wildlands, such as the Wild Skykomish area north of Seattle, also need wilderness protection.*

Northern spotted owl

Strix occidentalis caurina

"[I]n several instances we have found them as much as 36 feet in the girth or 12 feet in diameter perfectly solid and entire. they frequently rise to the hight of 230 feet, and one hundred and twenty or 30 of that hight without a limb."

—MERIWETHER LEWIS ON SITKA SPRUCE

In the shadows of the enormous hemlock, Sitka spruce and Douglas fir along the Pacific coast, Lewis spent the winter of 1806 describing plants and animals in his journal, touching on everything from squirrel-tail grass to the candlefish. Swooping above, but still under the trees' high canopy, a small, quiet bird went unrecorded. Two centuries later, the northern spotted owl would enter the spotlight, linked to the preservation of old-growth forests like the one surrounding Fort Clatsop.

Taking a closer look

Northern spotted owls spend much of their lives in the space between a tree's top branches and the level where its roots meet the soil.

Owl pairs nest in trunk cavities, dead tree tops, or broad snags. Their dark brown and chestnut-colored feathers marked by lighter bands help them blend in with shadows broken by sun filtering through the branches. Tall trees that blot out much of the sky provide the owl some protection from predators like great-horned owls and northern goshawks. The spotted owls hunt for dusky-footed woodrats and their primary prey, red-tree voles and squirrels, often foraging over an area of

At the heart of controversy over old-growth forests, the northern spotted owl nests in ancient trees and seeks food on the forest floor. Photo by John & Karen Hollingsworth/ U.S. Fish & Wildlife Service.

NORTHERN SPOTTED OWL *(Strix occidentalis caurina)* • FEDERAL STATUS: listed as threatened in 1990. • NATURAL HERITAGE STATUS: vulnerable to extirpation or extinction. • DISTRIBUTION: fairly large range (British Columbia to Northern California) but spotty occurrences within range. Population trend is downward. • HABITAT: ancient, mixed-conifer forests of the Pacific Northwest. • THREATS: lost and degraded habitat because of logging and/or forest fragmentation. It's estimated that habitat has been reduced by about 60 percent since 1800; habitat loss has been due primarily to logging, but natural disturbances have also played a role. May be threatened by the recent expansion of the range of the barred owl into the Pacific Northwest; possibly could compete with or displace spotted owl; hybridization has been detected but is very rare. • L&C STATES: Washington, Oregon

The northern spotted owl was only listed as threatened in 1990, but already efforts are underway to strip that protection. Photo by Hollingsworth.

thousands of acres per breeding pair. The squirrels in turn feed on mushrooms and other fungi found on the forest floor, which is piled with decaying trees and conifer needles.

This habitat of large trees of mixed species and a rich understory is mostly found in old-growth forests where trees are at least 200 years old.

Tracking the changes

The decline of the northern spotted owl has become a symbol of the loss of the ancient forests. Listed as a threatened species in 1990, the owl's fate is tied to that of its old-growth habitat—Douglas fir, Sitka spruce, western hemlock, and redwoods—an environment that, as Lewis noted, shelters a wealth of other species as well.

As much as 90 percent of the Pacific Northwest's old-growth forests have been logged or otherwise destroyed.

In 1993, the U.S. Forest Service put into place the Northwest Forest Plan, the culmination of a series of lawsuits challenging the aggressive logging that was stripping the Pacific Northwest of its old-growth forests. The plan reduced the rate of logging on 13 national forests in the western parts of Washington, Oregon, and California by about 85 percent; set up late succession reserves allowing regrowth (this benefited spotted owls, marbled murrelets, and other old-growth-dependent species); and established a forest-management program that requires a wildlife survey before each new timber sale.

This creative solution has slowed the rate of old-growth loss, but not eliminated it, and timber companies are looking to undermine these protections both by delisting the spotted owl and by dropping the survey and management requirements of the Northwest Forest Plan. Protecting the Pacific Northwest's old growth from these attacks will help build northern spotted owl populations back from the estimated 3,000 to 5,000 pairs that remain.

Preserving the legacy

In order to protect the northern spotted owl and its old-growth habitat, we need to:

- *Resist efforts to delist the northern spotted owl. The timber industry recently filed a lawsuit asking the U.S. Fish and Wildlife Service to review whether the owl should be stripped of its threatened status.*
- *Retain current levels of protection in the Northwest Forest Plan. The timber industry and the Forest Service under the Bush administration are trying to roll back survey and management standards mandated by the Northwest Forest Plan.*
- *Permanently protect all remaining stands of mature and old-growth forests on federal land. This includes protecting roadless areas in Washington like the Dark Divide, the wild Skykomish Country, and the South Quinalt Ridge.*
- *Establish habitat reserves in areas like the Tillamook State Forest in Oregon. The forest burned in the 1930s and is just reaching the point where spotted owls and other important old-growth species can find high-quality habitat.*

What's Lost, What's Left

Pacific Northwest Featured Species

Fisher

Martes pennanti

At Fort Clatsop, George Drouillard, the expedition's interpreter, saw a fisher "but it escaped from him among the fallen timber." These medium-size carnivores are very agile, able both to climb trees and to pursue their prey down holes in the ground. It's not unusual that Drouillard saw the fisher in the forest—they like habitat with a high, closed canopy; it's unusual that he saw the fisher at all. They are notoriously shy of people.

Pacific fisher (subspecies) is a federal species of concern

Oregon spotted frog

Rana pretiosa

In early spring, when ice is still on the ground, male Oregon spotted frogs poke their heads above the water and click to attract female attention. But each year is a little more quiet. Threatened by agricultural runoff that pollutes the water, development that consumes wetlands, and non-native bullfrogs that prey on them, the Oregon spotted frog now exists in a handful of places in Oregon and Washington, and is a candidate for Endangered Species Act protection.

federal candidate

Pygmy rabbit

Brachylagus idahoensis

The endangered pygmy rabbit, small enough to fit in a cereal bowl, is the smallest native rabbit in North America. The pygmy rabbit frequents the dry lands of the sagebrush-steppe where it digs burrows underneath the sagebrush and lives off the fragrant leaves. A distinct subspecies is found only in one area of Washington, Sagebrush Flat. Barely hanging on in the wild, these pygmy rabbits have been collected for a captive breeding program in the hopes of building up numbers and reintroducing them. For a successful reintroduction, habitat needs to be identified, connected, and protected, and grazing and off-road vehicle use should be curtailed.

federally endangered

Lewis's woodpecker

Melanerpes lewis

"I saw a black woodpecker (or crow) today about the size of the lark woodpecker," wrote Lewis in the summer of 1805, marking one of his most famous discoveries. Lewis's woodpecker doesn't so much look like a crow (it has a bright red face and a pink chest) as fly like one, with slow flaps. It lives in large dead or burned trees where it can easily excavate or find a hole for a nest. But years of fire suppression have turned the open forests of ponderosa pine favored by Lewis's woodpecker into dense thickets of Douglas fir, and timber companies have removed many of the large trees it prefers.

Partners in Flight priority species in Wyoming

Woodland caribou

Rangifer tarandus caribou

Woodland caribou once inhabited forests from Maine to Washington and as far south as central Idaho, seeking out old-growth stands of low-elevation interior cedar-hemlock, subalpine fir, and Engelmann spruce, where lush arboreal lichens can be found. The most endangered large mammal in the Lower 48, the woodland caribou has been reduced to a population of less than 40 in the southern Selkirk Mountains of northern Idaho, northeast Washington, and southeast British Columbia. Additions to the Salmo-Priest Wilderness Area in northeastern Washington, as well as protection of valuable habitat in the Upper Priest River and Upper Priest Lake areas, along the Selkirk Crest in Idaho, and the Yaak Valley in Montana, would give the woodland caribou a fighting chance to recover.

federally endangered, state endangered

CLOCKWISE FROM UPPER LEFT: IDAHO FISH & GAME (STUFFED) KEITH LAZELLE HELEN CRUICKSHANK/CORNELL LAB OF ORNITHOLOGY WASHINGTON DEPT OF FISH & WILDLIFE OREGON DEPT OF FISH & WILDLIFE

What's Lost, What's Left

Pacific Northwest Featured Species

Pacific yew

Taxus brevifolia

Appearing along the coast from southern Alaska to central California, the Pacific yew grows most densely along the South Fork of the Clearwater River in Idaho. Small and shrublike compared to the grand firs and western hemlock that tower over it, yew was often discarded during logging operations because it had little value as timber. But in the 1970s, scientists isolated taxol from the yew tree bark, a substance which has proven effective at fighting cancer. Discoveries like these underscore why we must never write off a species as worthless and expendable.

not listed

Canada lynx

Lynx canadensis

Called by Clark "the wild cat of the North," the elusive lynx frequents deep forests, often staying out of sight. Even the explorers only saw a pelt rather than the animal itself. Its large furry paws help the lynx hunt snowshoe hares even in the deepest snow. Listed as a threatened species in 2000, the lynx has lost large tracts of habitat to logging and snowmobile use.

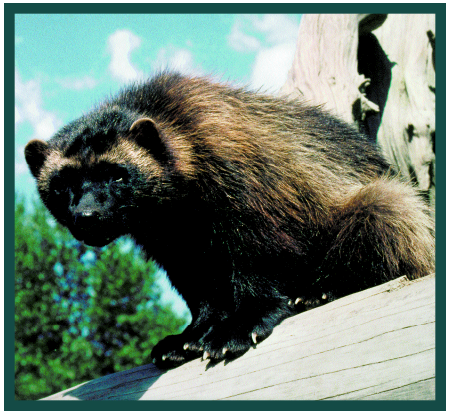
federally threatened

Sea otter

Enhydra lutris

Anticipating sea otters, Clark thought he saw them in the Columbia, but they turned out to be seals. When the explorers reached the coast, however, they found plenty, and Lewis and Clark traded the Native Americans blue beads, a vest, and a knife, among other items, for the lustrous furs. This same lively fur trade would eventually eliminate the otter between Alaska and California. Reintroduction efforts brought otters back to the Washington coast, where they once again live in kelp forests and eat sea urchins.

federally threatened



Wolverine

Gulo gulo

Though it's a member of the weasel family, the wolverine looks like a small bear with a light stripe on its rump. It seeks out backcountry and wilderness areas, denning in rock crevices or in hollow logs. Females with young are particularly wary of humans and will abandon dens if anyone comes too close. Though the wolverine used to inhabit territory from Washington to Maine, the wolverine vanished from the eastern and midwestern states during the 1800s. Currently, the largest populations are in Montana, where wolverines live in the Cabinet-Yaak ecosystem, as well as other northern forests. They are threatened by the proposed Rock Creek copper and silver mine and continued heavy logging and roadbuilding.

federal species of concern, state threatened

Big sagebrush

Artemisia tridentata

In his travels, Lewis noticed not just one but several species of sagebrush. He wrote, "[O]f this last the A[n]telope is very fond; they feed on it, and perfume the hair of their foreheads and necks with it by rubing against it." Sagebrush ecosystems play an important role for many species, from the pronghorn and elk that use the shrubs as winter forage to the sage grouse that perform their mating dances in gaps between plants. Native Americans use sagebrush, too, as medicine, basket materials, and dye. Overgrazing has altered the composition of some of these communities, as has invasion of non-native weeds like cheatgrass, which burns much more quickly than the native sagebrush. *not listed*

CLOCKWISE FROM LEFT: MERREL ACKLEY, CA ACADEMY OF SCIENCE ERWIN & PEGGY BAUER/U.S. F&W LYNN STARNES/U.S. F&W WASHINGTON DEPARTMENT OF F&W WEBBER

Sierra Club Recommendations

In order to make it to the 400th anniversary of the Corps of Discovery, the species listed in this report need concrete action by governments, communities, and citizens. As part of the Lewis and Clark campaign, the Sierra Club has been working in a variety of ways to preserve wild-lands and the species that depend on them.

Up to four times a year, the Sierra Club sponsors an outing with unconventional scenic highlights: a dam tour. Volunteers visit the Lower Granite Dam, the dam farthest upstream on the Lower Snake River to learn about the plight of the salmon. They observe the concrete fish ladders, which are designed to help salmon around the 100-foot high dam and its turbines. Volunteers also learn about the barges and trucks that haul young fish downstream because the rivers have been made unsafe for salmon. They return with the information and passion they need to make a difference for the future of salmon.

From the grasslands of the Great Plains to the forests and rivers of the Pacific Northwest, staff and volunteers are educating the public, holding conservation outings, working to restore habitat, organizing tours of threatened lands, throwing community celebrations, and urging our public officials to protect our wildlands and important habitats.

The Nebraska Chapter planned a conference called "Vision for the Missouri River—Wild River" to pool ideas on protecting this key piece of the Lewis and Clark wildland legacy. In South Dakota and North Dakota, the Sierra Club is working with a variety of groups including Native American tribes and hunting groups to secure wilderness protection for National Grasslands as well as improved protection for many critical prairie species.

Capable of flourishing in many places where other trees don't grow at all, cottonwoods assisted Lewis and Clark along much of their journey, serving as boats and shelter. Photo by Charles Webber.

In Montana, Sierra Club staff and volunteers documented trail damage from off-road vehicles such as dirt bikes in the Gallatin National Forest, producing a report demonstrating the need for land protection. Volunteers in Idaho greet visitors to Lolo Pass in the summer, handing

out flyers and gathering signatures to protect wildlands and wildlife. In Wyoming, Montana, and Idaho, the Sierra Club is working with each state to create sound grizzly bear management plans, and raise public awareness about the need to store garbage properly and live responsibly in grizzly bear habitat.

In Washington, organizers pushed for the Wild Skykomish country north of Seattle to be protected as wilderness and worked to protect faltering salmon runs. Oregon staff and volunteers pulled together the Tillamook State Forest Celebration and an educational event at Fort Clatsop National Memorial that brought people out to learn about these wildlife-rich and historically significant areas. All of this effort pays off every time another wild area is protected or another species returns in healthy populations.

What must be done

The Sierra Club has developed the following recommendations to protect these wildlands and ensure survival for the animals that depend on them.

PROTECT OUR WILD SANCTUARIES

- *Permanently protect our undeveloped wildlands—including designating areas in National Forests, National Grasslands and Bureau of Land Management lands as wilderness, national monuments, and national recreation and conservation areas.*
- *Implement a permanent ban on new roadbuilding and logging in all remaining roadless areas as a first step to protect the watersheds and habitats of these last wild places.*
- *Keep dirt bikes, snowmobiles and other off-road vehicles out of our sensitive areas. The growing use of these loud, destructive*

Roads, Rigs, and Weak Regulations: National Threats to Wildlife

While federal bounties for wolf carcasses and other large carnivores are things of the past, actions and attitudes of the U.S. government continue to put species at risk. Protecting roadless areas, halting reckless energy development, and shoring up the Endangered Species Act are three of the most critical areas where national leadership is needed.

WILD FORESTS

At the end of 2000, the U.S. Forest Service issued the Roadless Area Conservation Rule, a visionary plan that protected the 58.5 million acres of undeveloped national forest land from new roadbuilding and logging. Ever since that time, the rule has been under attack by the Bush administration, which has ignored the more than 1 million public comments received in favor of the plan. When the logging industry and the state of Idaho sued to quash the rule, the government offered a weak defense and then failed to appeal a preliminary injunction that stopped the rule from taking effect. The administration is also discussing weakening the rule through revisions.

"Roads are generally the most destructive thing for wildlife," says Larry Mehlhaff, the Sierra Club's deputy national field director. "Most of the big species and many of the smaller ones rely on roadless areas, particularly in the Pacific Northwest and the Northern Rockies."

ENERGY DEVELOPMENT

Much of the energy development envisioned by the Bush administration on public lands is scheduled for Lewis and Clark country. The Rocky Mountain Front in Montana, currently shielded from natural-gas drilling, may soon have those protections stripped away. The oil and gas industry is also eyeing the Bridger-Teton National Forest in Wyoming, which abuts Yellowstone National Park and extends habitat for wolves and grizzlies. The Jack Morrow Hills of the Red Desert, also in Wyoming, have been proposed as a National Park since the 1930s. This high desert landscape, home to hawks and ancient marine fossils, is slated for 65 oil and gas wells. In addition, the oil industry plans 600 new wells for the Little Missouri National Grasslands in North Dakota, a site proposed for a 218,000-acre wilderness area.

ENDANGERED SPECIES ACT

When Congress passed the Endangered Species Act in 1973, it gave the Department of the Interior responsibility for "listing" most species and designating critical habitat they require for survival. (The Department of Commerce is responsible for marine mammals and anadromous fish, like salmon.) The law, properly administered, has saved many species from extinction, including the bald eagle, grizzly bear and California sea otter. But the Bush administration is proposing changes that would strip away these vital protections. One of the administration's first actions was a budget proposal undermining the right of citizens to file lawsuits to list species. It was, fortunately, rebuffed. The Department of the Interior is now focused on weakening and in some cases ignoring or rescinding critical habitat designations for species such as salmon and steelhead, including 19 endangered salmon runs in the Pacific Northwest.

Many species have been saved with far-sighted federal actions and many won't survive without a similar national commitment. See page 35 for details on the Sierra Club's involvement in fighting these threats and for ways you can help.

machines in the wild country harms habitat for sensitive wildlife and ruins opportunities for solitude and traditional family recreation.

- *Ban oil and gas drilling in sensitive areas to protect places like the Yellowstone and Northern Continental Divide Ecosystems.*

RESTORE OUR ECOSYSTEMS

- *Reduce the expansive network of roads on our federal public lands to restore large blocks of habitat and essential migration corridors for wildlife, and to protect water quality and fisheries.*
- *Reduce polluted runoff to improve water quality, and increase water flows to restore healthy ecosystems capable of supporting native species through road reclamation and the replanting of native vegetation in clearcut areas.*
- *Increase government commitment to buy private lands that provide critical wildlife habitat.*
- *Acquire conservation and public-access easements to protect the Missouri River from sprawling development and provide for family recreation.*

RECOVER CRITICAL SPECIES

- *Keep the grizzly bear listed as a threatened species until adequate habitat has been protected to allow healthy populations of the great bear to recover. Because the grizzly is an indicator species, when we protect its habitat, we protect habitat for hundreds of other native plants and animals as well.*
- *Establish bison and prairie dog reserves as a part of the National Grasslands. This will also provide essential habitat for prairie chickens, sage grouse and the remaining rare herds of wild prairie elk.*
- *Remove the earthen sections of the four lower Snake River dams to restore 140 miles of free-flowing river and fabled salmon and steelhead runs that are in danger of extinction.*
- *Create key habitat reserves and protect recreational opportunities on state-owned lands.*

How you can help

Find out how you can help by contacting one of the offices below.

NORTHWEST REGIONAL OFFICE: 180 Nickerson St., Suite 207, Seattle, WA 98109, (206) 378-0114

NORTHWEST-PORTLAND FIELD OFFICEAND OREGON CHAPTER OFFICE: 2950 SE Stark St., Suite 100, Portland, OR 97214, (503) 243-6656

INLAND NORTHWEST FIELD OFFICE: 10 N. Post St., Suite 447, Spokane WA, 99201, (509) 456-8802

NORTHERN ROCKIES FIELD AND CHAPTER OFFICE: P.O. Box 552, Boise, ID 83701 (208) 384-1023

MONTANA FIELD AND CHAPTER OFFICE: P.O. Box 1290, Bozeman, MT 59771, (406) 582-8365

MONTANA-MISSOULA FIELD OFFICE: P.O. Box 9283, Missoula, MT, 59807, (406) 549-1142

MONTANA-BILLINGS FIELD OFFICE: 2822 3rd Ave. N., Suite 208, Billings, MT 59101, (406) 248-4339

NORTHERN PLAINS REGIONAL OFFICE: 23 N. Scott, Room 27, Sheridan, WY 82801, (307) 672-0425

NORTH DAKOTA FIELD OFFICE: 311 E. Thayer St., Suite 113, Bismarck, ND 58501 (701) 530-9288

SOUTH DAKOTA "EAST RIVER" OFFICE: 231 S. Phillips Ave. #250, Sioux Falls, SD 57104, (605) 331-6001

SOUTH DAKOTA "WEST RIVER" OFFICE: 1101 E. Philadelphia St., Rapid City, SD 57701, (605) 342-2244

NEBRASKA-LINCOLN FIELD OFFICE: 941 O. St., Terminal Bldg., Suite 206, Lincoln, NE 68521, (402) 475-2292

NEBRASKA-OMAHA FIELD OFFICE: 115 N. 53rd St., Omaha, NE 68132, (402) 556-5198

REFERENCES:

Lewis and Clark: Pioneering Naturalists by Paul Russell Cutright. University of Nebraska Press, Lincoln, 1969.

The Natural History of the Lewis and Clark Expedition by Raymond Darwin Burroughs, Michigan State University Press, East Lansing, 1995.

The Journals of Lewis and Clark ed. by Bernard Devoto, Houghton Mifflin, Boston,1953.

Birds and Mammals Observed by Lewis and Clark in North Dakota by Russell Reid and Clell G. Gannon, State Historical Society of North Dakota, Bismark, 1999.

Species Scientifically Discovered by Lewis and Clark

Below is the list of species that Lewis and Clark discovered and introduced to science, along with a number of important species that inhabit the lands they explored. The list is adapted from the book *Lewis and Clark: Pioneering Naturalists* by Paul Russell Cutright and contains the scientific name, the common name, the place and date the species was discovered or described by the Corps of Discovery (if available), and a color code indicating its current status—see the key at right. A question mark (?) after the date and place that Lewis and Clark encountered the species indicates that their taxonomic identification is not absolutely certain. Over the years, some species' common and scientific names have been changed. We've used the versions from the Cutright book.

STATUS KEY

- ● federally listed ENDANGERED species
- ◆ federally listed THREATENED species
- ■ other official designation
  This includes candidates for federal listings; species that are state endangered, state threatened, state species of concern, state designated or state proposed, state candidate. Also includes those species subject to special protection and management actions, or partners in flight priority species. State listed indicates that the species is listed in one of the states in Lewis and Clark country: Idaho, Montana, Wyoming, Nebraska, North Dakota, South Dakota, Washington or Oregon.
- ○ not listed
  The species is not federally or state listed or designated for protection.

Status	scientific name	COMMON NAME	Place and date when encountered by Lewis and Clark
	ANIMALS		
●	*Acipenser transmontanus*	WHITE STURGEON	Pacific coast, north of Cape Disappointment, Nov. 11, 1805
■	*Aechmophorus clarkii*	CLARK'S GREBE	Fort Clatsop, March 7, 1806
■	*Alces alces shirasi*	SHIRAS'S MOOSE	Near mouth of the Milk River, May 10, 1805
○	*Anser albifrons frontalis*	GREATER WHITE-FRONTED GOOSE	Fort Clatsop, March 15, 1806
■	*Antilocapra americana americana*	PRONGHORN	Near mouth of Ball Creek, September 14, 1804
○	*Antilocapra americana oregona*	OREGON PRONGHORN	Columbia River below Celilo Falls, April 16, 1806
■	*Apalone spinifera spinifera*	SPINY SOFTSHELL TURTLE	Junction of the Tongue River and the Yellowstone River, July 29, 1806 (?)
○	*Aplodontia rufa rufa*	MOUNTAIN BEAVER	Fort Clatsop, February 26, 1806
■	*Athene cunicularia*	BURROWING OWL	
■	*Aythya collaris*	RING-NECKED DUCK	Near Fort Clatsop, March 28, 1806
○	*Blarina brevicauda brevicauda*	NORTHERN SHORT-TAILED SHREW	Fort Mandan, April 7, 1805 (?)
○	*Bonasa umbellus sabini*	OREGON RUFFED GROUSE	Along the Lolo Trail, Sept. 20, 1805
■	*Bos bison*	BISON	*
●	*Brachylagus idahoensis*	PYGMY RABBIT	*
○	*Branta canadensis hutchinsii*	RICHARDSON'S (HUTCHINS') GOOSE	Near mouth of Poplar River, May 5, 1805
■	*Branta canadensis leucopareia*	ALEUTIAN CANADA GOOSE	Fort Clatsop, March 8, 1806

* These species are found in Lewis and Clark country but were not introduced to Western science by Lewis and Clark.

○	*Bubo virginianus occidentalis*	MONTANA GREAT HORNED OWL	North Dakota, April 14, 1805
■	*Bufo boreas boreas*	COLUMBIAN TOAD	Camp Chopunnish near Clearwater River, May 30, 1806
■	*Calcarius mccownii*	MCCOWN'S LONGSPUR	Along the Marias River, June 4, 1805
○	*Canis latrans latrans*	COYOTE	South Dakota, September 18, 1804
●	*Canis lupus*	GRAY WOLF	*
**	*Canis lupus nubilus*	PLAINS GRAY WOLF	Kansas, May 30, 1804
○	*Cardvelis tristis pallidus*	PALE (AMERICAN) GOLDFINCH	Along the Marias River, June 8, 1805
○	*Castor canadensis missouriensis*	MISSOURI BEAVER	Missouri, July 3, 1804
■	*Catoptrophorus semipalmatus*	WESTERN WILLET	Montana, May 9, 1805
■	*Centrocercus urophasianus*	GREATER SAGE-GROUSE	Along the Marias River, June 5, 1805
○	*Cervus canadensis roosevelti*	ROOSEVELT'S ELK	Tongue Point, December 2, 1805
○	*Cervus elaphus*	ELK	*
◆	*Charadrius melodius*	PIPING PLOVER	*
○	*Chordeiles minor hesperis*	PACIFIC NIGHTHAWK	Near Great Falls, June 30, 1805 (?)
○	*Colaptes auratus luteus*	NORTHERN (YELLOW-SHAFTED) FLICKER	Fort Mandan, April 11, 1805
○	*Corvus brachyrhynchos hesperis*	WESTERN COMMON CROW	Tongue Point, November 29, 1805
○	*Corvus caurinus*	NORTHWESTERN CROW	Fort Clatsop, March 3, 1806
○	*Corvus corax sinuatus,*	AMERICAN RAVEN	Fort Clatsop, March 3, 1806
■	*Crotalus viridis oreganus*	NORTHERN PACIFIC RATTLESNAKE	Washington, April 25, 1806
■	*Crotalus viridis viridis*	PRAIRIE RATTLESNAKE	Near the Great Falls of the Missouri River, June 15, 1805
○	*Cyanocitta stelleri annectens*	BLACK-HEADED (STELLER'S) JAY	Fort Clatsop, Sept. 20, 1805
■	*Cygnus buccinator*	TRUMPETER SWAN	*
■	*Cynomys ludovicianus ludovicianus*	BLACK-TAILED PRAIRIE DOG	Nebraska, September 7, 1805
○	*Dendragapus obscurus richardsonii*	RICHARDSON'S BLUE GROUSE	Montana, July 21, 1805
○	*Dryocopus pileatus picinus*	WESTERN PILEATED WOODPECKER	Fort Clatsop, March 4, 1806
◆	*Enhydra lutris nereis*	SEA OTTER	Near Columbia estuary, November 20, 1805
■	*Eremophila alpestris leucolaema*	PRAIRIE HORNED LARK	Fort Mandan, April 10, 1805 (?)
○	*Erethizon dorsatum epixanthum*	NORTH AMERICAN PORCUPINE	Near Poplar River, May 3, 1805
○	*Euphagus cyanocephalus*	BREWER'S BLACKBIRD	Near Great Falls, June 25, 1805
○	*Tamias townsendii*	TOWNSEND'S CHIPMUNK	Fort Clatsop, February 25, 1806
○	*Falcipennis canadensis franklinii*	FRANKLIN'S SPRUCE GROUSE	Along the Lolo Trail, Sept. 20, 1805
○	*Fulmarus glacialis rodgersii*	PACIFIC (NORTHERN) FULMAR	Fort Clatsop, March 7, 1806
○	*Gavia arctica*	ARCTIC LOON	Fort Clatsop, March 7, 1806 (?)
●	*Grus americana*	WHOOPING CRANE	*
■	*Gulo gulo*	WOLVERINE	*

** *Canis lupus nubilus*, also known as the "buffalo wolf" and the "loafer," lived in the Great Plains and was widely thought to be extinct by the 1920s. But debate about the number of gray wolf subspecies has called that classification into question. Recent studies suggest that wolves in Minnesota,Wisconsin, and Michigan are descendants of this subspecies.

■	*Gymnorhinus cyanocephalus*	PINON JAY	Along the Jefferson River, August 1, 1805
○	*Heterodon nasicus nasicus*	WESTERN HOG-NOSE SNAKE	Montana, June 11, 1805
○	*Hiodon alosoides*	GOLDEYE	Marias River, June 11, 1805 (?)
○	*Pseudacris regilla*	PACIFIC CHORUS FROG	Camp Chopunnish near the Clearwater River, May 30, 1806
○	*Ictalurus furcatus*	BLUE CATFISH	Missouri River, Aug. 25, 1804 (?)
○	*Ictalurus Punctatus*	CHANNEL CATFISH	Missouri River, above the Platte, July 24, 1804
■	*Lanius ludovicianus excubitorides*	WHITE-RUMPED (LOGGERHEAD) SHRIKE	Mouth of Marias River, June 10, 1805
○	*Larus glaucescens*	GLAUCOUS-WINGED GULL	Fort Clatsop, March 7, 1806 (?)
○	*Larus occidentalis*	WESTERN GULL	Fort Clatsop, March 7, 1806 (?)
○	*Larus philadelphia*	BONAPARTE'S GULL	Fort Clatsop, March 7, 1806 (?)
○	*Lepus townsendii campanius*	WHITE-TAILED JACK RABBIT	South Dakota, September 14, 1804
◆	*Lynx canadensis*	CANADA LYNX	*
○	*Lynx rufus fasciatus*	OREGON BOBCAT	Fort Clatsop, February 21, 1806
■	*Lynx rufus pallescens*	NORTHERN BOBCAT	Fort Mandan, April 7, 1805 (?)
○	*Marmota flaviventris avara*	YELLOW-BELLIED MARMOT	Along the Columbia, April 24, 1806
○	*Marmota flaviventris nosophora*	YELLOW-BELLIED MARMOT	Near the Lemhi River, August 20, 1805
■	*Martes pennanti*	FISHER	*
■	*Melanerpes lewis*	LEWIS'S WOODPECKER	Montana, July 20, 1805
○	*Mephitis mephitis budsonica*	STRIPED SKUNK	Near mouth of the Musselshell River, May 25, 1805
○	*Mephitis mephitis notata*	STRIPED SKUNK	Fort Clatsop, February 28, 1806
○	*Mustela erminea invicta*	ERMINE	Along the Lemhi River, August 20, 1805 (?)
○	*Mustela frenata longicauda*	LONG-TAILED WEASEL	Fort Mandan, November 9, 1804
●	*Mustela nigripes*	BLACK-FOOTED FERRET	*
○	*Mylocheilus lateralis*	COLUMBIA RIVER CHUB	Columbia River, April 26, 1806 (?)
○	*Neotoma cinerea cinerea*	BUSHY-TAILED WOOD RAT; PACK RAT	Near Great Falls, July 2, 1805
○	*Neotoma floridana*	EASTERN WOOD RAT	Missouri
●	*Notropis topeka*	TOPEKA SHINER	*
○	*Nucifraga columbiana*	CLARK'S NUTCRACKER	On the Lemhi River, August 22, 1805
■	*Numenius americanus americanus*	LONG-BILLED CURLEW	Near Great Falls, June 23, 1805
○	*Odocoileus hemionus columbianus*	COLUMBIAN BLACK-TAILED DEER	Near Cape Disappointment, November 19, 1805
○	*Odocoileus hemionus hemionus*	MULE DEER; BLACK-TAILED DEER	South Dakota, September 17, 1804
■	*Odocoileus virginianus macroura*	WHITE-TAILED DEER	Missouri, May 19, 1804
○	*Cygnus columbianus*	WHISTLING (TUNDRA) SWAN	Fort Clatsop, March 9, 1806
○	*Oncorhynchus clarki*	CUTTHROAT TROUT	Great Falls of the Missouri, June 13, 1805

■	*Oncorhynchus clarki lewisi*	WESTSLOPE CUTTHROAT TROUT	*
○	*Oncorhynchus gorbuscha*	PINK SALMON	*
◆	*Oncorhynchus keta*	CHUM SALMON	*
●	*Oncorhynchus kitutch*	COHO SALMON	*
●	*Oncorhynchus mykiss*	STEELHEAD	Fort Clatsop, Mar. 13, 1806
●	*Oncorhynchus nerka*	SOCKEYE SALMON	*
●	*Oncorhynchus tshawytscha*	CHINOOK SALMON	*
○	*Oreamnos americanus americanus*	MOUNTAIN GOAT	Lemhi Mountains, August 24, 1805
■	*Oreortyx pictus pictus*	MOUNTAIN QUAIL	Near mouth of Multnomah River, April 7, 1806
■	*Ovis canadensis*	BIGHORN SHEEP	*
EXTINCT #	*Ovis canadensis auduboni*	AUDUBON'S (BIGHORN) MOUNTAIN SHEEP	Mouth of the Yellowstone River, April 26, 1805
○	*Catostomus platyrhynchus*	MOUNTAIN SUCKER	July 16, 1806 (?)
○	*Perisoreus canadensis obscurus*	OREGON (GRAY) JAY	Fort Clatsop, January 3, 1806
■	*Phalacrocorax auritus auritus*	DOUBLE-CRESTED CORMORANT	Columbia River, October 20, 1805 (?)
○	*Phalaenoptilus nuttallii nuttallii*	NUTTALL'S POOR-WILL	Near mouth of Cannonball River, October 17, 1804
○	*Phoca vitulina richardii*	HARBOR SEAL	Columbia River narrows, October 23, 1805
■	*Phrynosoma cornutum*	PLAINS HORNED TOAD, TEXAS HORNED LIZARD	May 18, 1804
○	*Phrynosoma douglassi douglassi*	PIGMY SHORT-HORNED TOAD	Camp Chopunnish near the Clearwater River, May 29, 1806
○	*Pica hudsonia*	BLACK-BILLED MAGPIE	South Dakota, September 16, 1804
○	*Picoides villosus harrisi*	HAIRY WOODPECKER	Near mouth of Willamette River, April 5, 1806 (?) (subspecies unclear)
○	*Picoides villosus hyloscopus*	HAIRY WOODPECKER	Along Lolo Trail, June 15, 1806 (?)
○	*Piranga ludoviciana*	WESTERN TANAGER	Camp Chopunnish near the Clearwater River, June 6, 1806
■	*Pituophis catenifer sayi*	BULL SNAKE; SAY'S PINE SNAKE	Near Niobrara River, Aug. 5, 1804
○	*Platichthys stellatus*	STARRY FLOUNDER	Fort Clatsop, Mar. 13, 1806 (?)
■	*Podiceps grisegena holbollii*	RED-NECKED GREBE	Fort Clatsop, March 10, 1806
○	*Procyon lotor hirtus*	NORTHERN RACCOON	Missouri, June 13, 1804
○	*Pseudomys troosti elegans*	WATER TERRAPIN	Near Great Falls, June 25, 1805 (?)
○	*Ptychocheilus oregonensis*	NORTHERN PIKEMINNOW	Walla Walla River, April 29, 1806 (?)
■	*Puma concolor (or Felis concolor)*	MOUNTAIN LION, PANTHER, COUGAR, PUMA	Along the Jefferson River, August 3, 1805
■	*Rana pretiosa*	OREGON SPOTTED FROG; WESTERN FROG	Near mouth of Lewis' River, Mar. 29, 1806
●	*Rangifer tarandus caribou*	WOODLAND CARIBOU	*
◆	*Salvelinus confluentus*	BULL TROUT	*
■	*Scapanus townsendii*	TOWNSEND'S MOLE	Fort Clatsop, February 26, 1806

Other subspecies are listed as federally endangered

●	*Scaphirhynchus albus*	PALLID STURGEON	*
○	*Sceloporus occidentalis*	WESTERN FENCE LIZARD	Washington, April 24, 1806 (?)
■	*Sciurus griseus griseus*	WESTERN GRAY SQUIRREL	Fort Clatsop, February 25, 1806
○	*Selasphorus platycercus platycercus*	BROAD-TAILED HUMMINGBIRD	Along the Lolo Trail, June 15, 1806
○	*Spermophilus columbianus columbianus*	COLUMBIAN GROUND SQUIRREL	Camp Chopunnish, May 27, 1806
■	*Spermophilus tridecemlineatus pallidus*	THIRTEEN-LINED GROUND SQUIRREL	Near Great Falls, July 8, 1805
●	*Sterna antillarum athalassos*	INTERIOR LEAST TERN	Missouri River, August 5, 1804 (Federally endangered)
■	*Sterna forsteri*	FORSTER'S TERN	Near mouth of Yellowstone River, August 7, 1806 (?)
■	*Stizostedion canadense*	SAUGER	Missouri River, June 11, 1805 (?)
◆	*Strix occidentalis caurina*	NORTHERN SPOTTED OWL	*
○	*Sturnella neglecta neglecta*	WESTERN MEADOWLARK	Near Great Falls, June 22, 1805
○	*Sylvilagus audubonii baileyi*	DESERT COTTONTAIL	South Dakota, September 15, 1804 (?)
○	*Tamiasciurus douglasii douglasii*	DOUGLAS'S SQUIRREL; CHICKAREE	Fort Clatsop, February 25, 1806
○	*Tamiasciurus hudsonicus richardsoni*	RICHARDSON'S RED SQUIRREL	Fort Clatsop, February 25, 1806
■	*Taxidea taxus neglecta*	WESTERN (AMERICAN)BADGER	Fort Clatsop, February 26, 1806
○	*Thaleichthys pacificus*	EULACHON; CANDLE FISH	Fort Clatsop, Feb. 24, 1806
○	*Thamnophis ordinoides vagrans*	NORTHWESTERN GARTER SNAKE	Montana, July 24, 1805 (?)
○	*Thamnophis sirtilas concinnus*	COMMON GARTER SNAKE	Deer Island, Mar. 28, 1806 (?)
○	*Thamomys talpoides rufescens*	NORTHERN POCKET GOPHER	Near mouth of Knife River, April 9, 1805 (?)
○	*Triturus torosus torosus*	CALIFORNIA NEWT; WARTY SALAMANDER	Near grand rapids of the Columbia, March 11, 1806
■	*Troglodytes troglodytes pacificus*	WESTERN WINTER WREN	Fort Clatsop, March 4, 1806 (?)
■	*Tympanuchus cupido pinnatus*	GREATER PRAIRIE CHICKEN	*
■	*Tympanuchus phasianellus campestris*	PRAIRIE SHARP-TAILED GROUSE	South Dakota, September 12, 1804
■	*Tympanuchus phasianellus columbianus*	COLUMBIAN SHARP-TAILED GROUSE	Fort Clatsop, March 1, 1806
◆	*Ursus arctos horribilis*	GRIZZLY BEAR	Near the mouth of the Heart River near Bismarck, October 20, 1804
○	*Vulpes vulpes*	RED FOX	Fort Clatsop, February 21, 1806
■	*Vulpes velox*	SWIFT FOX	Near Great Falls, July 6, 1805
○	*Zenaidura macroura marginella*	WESTERN MOURNING DOVE	Near Lolo Creek and the Bitterroot River, July 1, 1806

PLANTS

○	*Abies grandis*	GRAND FIR	Feb. 6, 1806
○	*Abies lasiocarpa*	SUBALPINE FIR	Sept. 15, 1805
○	*Acer circinatum*	VINE MAPLE	Great rapids of Columbia, Oct. 30, 1805
○	*Acer glabrum*	ROCKY MOUNTAIN MAPLE	Aug. 13, 1805
○	*Acer macrophyllum*	BIGLEAF MAPLE	Great rapids of the Columbia, Apr. 10, 1806

Actaea rubra arguta	RED BANEBERRY	Aug. 13, 1805
Allium geyeri	GEYER'S ONION	July 23, 1805
Allium tolmiei	TOLM'S ONION	May 30, 1806
Alnus rhombifolia	WHITE ALDER	Nov. 6, 1805
Alnus rubra	RED ALDER	March 26, 1806
Alnus viridis sinuate	SITKA ALDER	
Amelanchier alnifolia	SASKATOON SERVICEBERRY	The Narrows of Columbia River, Apr. 15, 1806
Andropogon gerardii	BIG BLUESTEM	*
Angelica arguta	LYALL'S ANGELICA	June 25, 1806
Aquilegia flavescens	YELLOW COLUMBINE	June 16, 1806
Arbutus menziesii	PACIFIC MADRONE	Columbia, November 1st, 1805
Artemisia campestris borealis	FIELD SAGEWORT	Oct. 1, 1804
Artemisia dracunculus	TARRAGON	Sept. 15, 1804
Artemisia longifolia	LONGLEAF WORMWOOD	Wild sage on the bluffs, Oct. 1, 1804
Artemisia ludoviciana	WHITE SAGEBRUSH	Columbia River, April 10, 1806
Artemisia tridentata	BIG SAGEBRUSH	April 20, 1806
Artemisia tridentata arbuscula	LITTLE SAGEBRUSH	April 20, 1806
Asarum caudatum	BRITISH COLUMBIA WILDGINGER	June 27, 1806
Astragalus accumbens	ZUNI MILKVETCH	Sept 18, 1804 (?)
Atriplex canescens	MOUNDSCALE	Big bend of the Missouri, Sept. 21, 1804
Atriplex gardneri	GARNER'S SALTBUSH	Plains of the Missouri, July 20, 1806
Balsamorhiza sagittata	ARROWLEAF BALSAMROOT	Rocky Mountains, July 7, 1806
Betula occidentalis	WATER BIRCH	August 3, 1805
Brodiaea minor	VERNALPOOL BRODIAEA	Columbia plains, Apr. 20, 1806
Bromus marginatus	MOUNTAIN BROME	(?)
Calochortus elegans	ELEGANT MARIPOSA LILY	On the Clearwater, May 17 1806
Camassia quamash	SMALL CAMAS	Weippe Prairie, June 23, 1806
Camissonia subacaulis	DIFFUSEFLOWER EVENING-PRIMROSE	Weippe Prairie, June 14, 1806
Cardamine nuttallii	NUTTALL'S TOOTHWORT	On the Columbia, April 1, 1806
Ceanothus sanguineus	REDSTEM CEANOTHUS	On Collins Creek, June 27, 1806
Ceanothus velutinus	STICKY LAUREL; MOUNTAIN BALM	Rocky Mountains, probably June 24, 1806
Celtis laevigata	NETLEAF HACKBERRY	Oct. 12, 1805 (?)
Chrysothamnus viscidiflorus	RABBIT BRUSH	Big bend of the Missouri, Sept. 2, 1804
Cirsium drummondii	DWARF THISTLE	July 23, 1805 (?)
Cirsium edule	EDIBLE THISTLE	Fort Clatsop, March 13, 1806

Clarkia pulchella	PINKFAIRIES	On Clearwater and Bitterroot Rivers, June 1, 1806
Claytonia lanceolata	LANCELEAF SPRINGBEAUTY	Headwaters of the Clearwater, June 27, 1806
Clematis hirsutissima	HAIRY CLEMATIS	May 4, 1806
Cleome serrulata	ROCKY MOUNTAIN BEEPLANT	On the White River, Aug. 29, 1806
Collinsia parviflora	MAIDEN BLUE EYED MARY	Rockford Camp, April 17th, 1806
Collomia linearis	TINY TRUMPET	Rockford Camp, April 17, 1806
Cornus nuttallii	PACIFIC DOGWOOD	April 1, 1806
Corylus cornuta californica	CALIFORNIA HAZELNUT	Oct. 22, 1805
Crataegus douglasii	BLACK HAWTHORN	Columbia River, April 29, 1806
Cypripedium montanum	MOUNTAIN LADY'S SLIPPER	June 30, 1806
Delphinium menziesii	MENZIES' LARKSPUR	On the Columbia, April 14, 1806
Echinacea angustifolia	BLACKSAMSON ECHINACEA	April 6, 1805 (?)
Elaeagnus commutata	SILVERBERRY	Prairie of the Knobs, July 6, 1806
Ericameria nauseosa	RUBBER RABBITBRUSH	On the Clearwater, May 6, 1806
Erigeron compositus	CUTLEAF DAISY	On the Clearwater, May 14, 1806
Eriophyllum lanatum	COMMON WOOLLY SUNFLOWER	On the Clearwater River, June 6th, 1806
Erysimum angustatum	CONTRA COASTA WALLFLOWER	On the Clearwater, June 1, 1806
Erythronium grandiflorum	YELLOW AVALANCHE-LILY	Plains of the Columbia, May 8, 1806
Euphorbia marginata	SNOW ON THE MOUNTAIN	On the Yellowstone River, July 28, 1806
Frangula purshiana	PURSH'S BUCKTHORN	On the Clearwater, May 29, 1806
Frasera fastigiata	CLUSTERED GREEN GENTIAN	Weippe Prairie, June 14, 1806
Fraxinus latifolia	OREGON ASH	Nov. 30, 1805
Fritillaria affinis	CHECKER LILY	Brant Island, April 10, 1806
Fritillaria pudica	YELLOW FRITILLARY	Plains of Columbia, May 8, 1806
Gaillardia aristata	COMMON GAILLARDIA	Rocky Mountains, July 6, 1806
Gaultheria shallon	SALAL	Coast of the Pacific Ocean, Jan. 20, 1806
Geum triflorum	OLD MAN'S WHISKERS	June 12, 1806
Grindelia nana	IDAHO GUMWEED	Near old Maha village, August 17, 1804
Gutierrezia sarothrae	BROOM SNAKEWEED	The big bend of the Missouri River
Hesperostipa comata	NEEDLE AND THREAD GRASS	
Holodiscus discolor	OCEANSPRAY	The Clearwater, May 29, 1806
Ipomopsis aggregata	SCARLET GILIA	On Hungry Creek, June 26, 1806
Iris missouriensis	ROCKY MOUNTAIN IRIS	Prairie of the Knobs, July 5, 1806
Larix occidentalis	WESTERN LARCH	Sept. 14, 1805
Lathyrus ochroleucus	CREAM PEA	June 16, 1805 (?)

Lewisia rediviva	BITTERROOT	Near Bitterroot River, July 1, 1806
Leymus cinereus	BASIN WILDRYE	June 5, 1806 (?)
Linum lewisii	PRAIRIE FLAX	Valleys of the Rocky Mountains, July 9 1806
Lomatium cous	COUS BISCUITROOT	April 29, 1806
Lomatium nudicaule	BARESTEM BISCUITROOT	On the Columbia, April 15, 1806
Lomatium triternatum	NINELEAF BISCUITROOT	On the Clearwater, May 6, 1806
Lomatium utriculatum	COMMON LOMATIUM	On the Clearwater, June 10, 1806
Lonicera ciliosa	ORANGE HONEYSUCKLE	On the Clearwater, June 5, 1806
Lonicera involucrate	TWINBERRY HONEYSUCKLE	Rocky Mountains, July 7, 1806
Lupinus alpestris	GREAT BASIN LUPINE	On the Blackfoot River, July 7, 1806
Lupinus abramsii	ABRAMS' LUPINE	Sept. 16, 1805
Lupinus barbiger	BEARDED LUPINE	On the Clearwater, June 5, 1806
Lupinus littoralis	SEASHORE LUPINE	Jan. 24, 1806
Lupinus monticola	MOUNTAIN LUPINE	Feb. 6, 1805
Machaeranthera pinnatifida	LACY TANSYASTER	Sept. 15, 1804
Maclura pomifera	OSAGE ORANGE	March 26, 1804
Mahonia aquifolium	HOLLYLEAVED BARBERRY	Great rapids of the Columbia, Apr. 11, 1806
Mahonia nervosa	CASCADE BARBERRY	Near great rapids of the Columbia, Oct. 22, 1805
Malus fusca	OREGON CRAB APPLE	Jan. 28, 1806
Matricaria discoidea	DISC MAYWEED	On the Clearwater, June 9, 1806
Mimulus guttatus	SEEP MONKEYFLOWER	On the Bitterroot River, July 4, 1806
Mimulus lewisii	PURPLE MONKEYFLOWER	August 12, 1805
Montia linearis	NARROWLEAF MINERSLETTUCE	The Rocky Mountains, June 27, 1806
Nicotiana quadrivalvis	INDIAN TOBACCO	Oct. 12, 1804
Oenothera brachycarpa	SHORTFRUIT EVENING-PRIMROSE	Near the falls of the Missouri, July 17, 1806
Opuntia fragilis	BRITTLE PRICKLYPEAR	May 20, 1805 (?)
Opuntia polyacantha	PLAINS PRICKLYPEAR	Oct. 16, 1805
Orthocarpus tenuifolius	THINLEAVED OWL'S-CLOVER	Bitterroot Valley, July 1, 1806
Oxalis oregana	REDWOOD-SORREL	March 15, 1806 (?)
Oxytropis besseyi	BESSEY'S LOCOWEED	Bitterroot River, July 1, 1806
Paxistima myrsinites	OREGON BOXLEAF	Rocky Mountains, June 16, 1806
Pedicularis sudetica scopulorum	SUDETIC LOUSEWORT	Near the Bitterroot River, July 6, 1806
Pediomelum argophyllum	SILVERLEAF INDIAN BREADROOT	Oct. 17, 1804
Pediomelum esculentum	LARGE INDIAN BREADROOT	June 30, 1804
Penstemon fruticosus	BUSH PENTSTEMON	June 1806

○	*Penstemon serrulatus*	SERRULATE PENTSTEMON	Near the Clearwater, May 20, 1806
○	*Perideridia gairdneri*	GARDNER'S YAMPAH	Columbia River, April 25, 1806 (?)
○	*Phacelia hastata dasyphylla*	SPEARSHAPED PHACELIA	On the Clearwater, June 9, 1806
○	*Phacelia linearis*	THREADLEAF PHACELIA	Rocky Camp, April 17, 1806
○	*Philadelphus californicus*	CALIFORNIA MOCK ORANGE	Near the Clearwater, May 6, 1806
○	*Phlox speciosa*	SHOWY PHLOX	Plains of the Columbia, May 7, 1806
○	*Picea engelmannii*	ENGELMANN SPRUCE	Sept. 16, 1805
○	*Picea sitchensis*	SITKA SPRUCE	Feb. 4, 1806
○	*Pinus albicaulis*	WHITEBARK PINE	Sept. 16, 1805
○	*Pinus arizonica*	ARIZONA PINE	Oct. 1, 1805
○	*Pinus contorta*	LODGEPOLE PINE	Sept. 16, 1805
○	*Plagiobothrys tenellus*	PACIFIC POPCORN FLOWER	Rocky Camp, April 17, 1806
○	*Poa secunda*	SANDBERG BLUEGRASS	June 10th, 1806
○	*Polanisia dodecandra trachysperma*	SANDYSEED CLAMMYWEED	Aug. 25th 1804
○	*Polemonium acutiflorum*	TALL JACOB'S LADDER	Headwaters of the Clearwater, June 27, 1806
○	*Polygala alba*	WHITE MILKWORT	On the Missouri, August 10, 1806
○	*Polygonum bistortoides*	AMERICAN BISTORT	Weippe Prairie, June 12, 1806
○	*Populus angustifolia*	NARROWLEAF COTTONWOOD	June 12, 1805
■	*Populus balsamifera trichocarpa*	BLACK COTTONWOOD	Columbia River, June 9, 1806
○	*Populus deltoides monilifera*	EASTERN COTTONWOOD	*
○	*Pseudoroegneria spicata*	BLUEBUNCH WHEATGRASS	Plains of the Columbia, June 10, 1806
○	*Psoralidium lanceolatum*	LEMON SCURFPEA	On the Missouri, poss. July, 30, 1804
○	*Psoralidium tenuiflorum*	SLIMFLOWER SCURFPEA	Big bend of Missouri, Sept. 21, 1804
○	*Pteridium aquilinum*	WESTERN BRACKENFERN	Jan. 22, 1806 (?)
○	*Purshia glandulosa*	DESERT BITTERBRUSH	July 6, 1806
○	*Quercus garryana*	OREGON WHITE OAK	Columbia River, March 26, 1806
○	*Rhododendron macrophyllum*	PACIFIC RHODODENDRON	Nov. 30, 1805 (?)
○	*Rhus aromatica arenaria*	FRAGRANT SUMAC	In the neighbourhood of the Kancez River, Oct. 1, 1804 (?)
○	*Ribes aureum*	GOLDEN CURRANT	Near the narrows of the Columbia, April 16, 1806
○	*Ribes cereum*	WAX CURRANT	June 18, 1805 (?)
○	*Ribes divaricatum*	SPREADING GOOSEBERRY	March 25, 1806 (?)
○	*Ribes menziesii*	CANYON GOOSEBERRY	Columbia River, April 8, 1806
○	*Ribes oxyacanthoides cognatum*	STREAM CURRANT	June 10, 1806 (?)
○	*Ribes sanguineum*	RED FLOWER CURRANT	Columbia River, March 27, 1806
○	*Ribes viscosissimum*	STICKY CURRANT	The Rocky Mountains, June 16, 1806

Rosa nutkana	NOOTKA ROSE	June 10, 1806 (?)
Rosa pisocarpa	CLUSTER ROSE	June 10, 1806 (?)
Rosa woodsii	WOODS' ROSE	Open prairies, Sept. 5, 1804
Rubus parviflorus	THIMBLEBERRY	On the Columbia, April 15, 1806
Rubus spectabilis	SALMONBERRY	On the Columbia, March 27, 1806
Rubus ursinus	CALIFORNIA BLACKBERRY	March 25, 1806 (?)
Salix amygdaloides	PEACHLEAF WILLOW	Oct. 12, 1805 (?)
Salix exigua	NARROWLEAF WILLOW	Oct. 12, 1805 (?)
Sambucus nigra cerulea	BLUE ELDERBERRY	Feb. 2, 1806 (?)
Sarcobatus vermiculatus	GREASEWOOD	Plains of Missouri, July 20, 1806
Scutellaria angustifolia	NARROWLEAF SKULLCAP	On the Clearwater, June 5, 1806
Sedum radiatum ciliosum	COAST RANGE STONECROP	On rocks of the Clearwater, June 15, 1806
Shepherdia argentea	SILVER BUFFALO-BERRY	Mouth of the Niobrara, approx Sept. 4, 1804
Sorbus sitchensis	SITKA MOUNTAIN ASH	Sept. 4, 1805 (?)
Spartina gracilis	ALKALI CORDGRASS	
Sphaeralcea coccinea	SCARLET GLOBEMALLOW	Plains of Missouri River, July 20, 1806
Sphaeromeria argentea	SILVER CHICKENSAGE	June 6, 1805 (?)
Symphoricarpos albus	COMMON SNOWBERRY	Sept. 20, 1805 (?)
Symphyotrichum eatonii	EATON'S ASTER	On Snake River, Oct. 10, 1805
Symphyotrichum oblongifolium	AROMATIC ASTER	Big bend of the Missouri, Sept. 21, 1804
Synthyris missurica	TAILED KITTENTAILS	Hungry Creek, June 26, 1806
Taxus brevifolia	PACIFIC YEW	On the headwaters of the Missouri, Sept. 25, 1805
Thuja plicata	WESTERN RED CEDAR	Sept. 20, 1805
Trifolium macrocephalum	LARGEHEAD CLOVER	Near Rockford Camp, April 17, 1806
Trifolium microcephalum	SMALLHEAD CLOVER	Bitterroot Valley, July 1, 1806
Trillium ovatum	PACIFIC TRILLIUM	Columbia River, Apr. 10, 1806
Trillium petiolatum	IDAHO TRILLIUM	The Clearwater, June 15, 1806
Tsuga mertensiana	MOUNTAIN HEMLOCK	Feb. 5, 1806
Uropappus lindleyi	LINDLEY'S SILVERPUFFS	Rock Camp, April 17, 1806
Urtica dioica gracilis	CALIFORNIA NETTLE	Mar. 25, 1806 (?)
Vaccinium membranaceum	THINLEAF HUCKLEBERRY	Feb. 7, 1806
Vaccinium ovatum	CALIFORNIA HUCKLEBERRY	Fort Clatsop, Jan. 27, 1806
Vaccinium uliginosum	BOG BLUEBERRY	June 28, 1806 (?)
Veratrum californicum	CALIFORNIA FALSE HELLEBORE	On the Clearwater, June 25, 1806
Xerophyllum tenax	COMMON BEAR GRASS	Bitterroots, June 15, 1806
Zigadenus elegans	MOUNTAIN DEATHCAMAS	The Blackfoot River, July 7, 1806

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