



MEMORANDUM

January 13, 2010

To: Hon. Dan Boren  
Attention: Wendy Kirchoff

From: Ross W. Gorte, Specialist in Natural Resources Policy, 7-7266

Subject: The Wilderness Act, 45 years later

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This memorandum responds to your request for information on wilderness designations and impacts. It repeats your specific questions, and responds to each accordingly. If you have additional questions, or wish to discuss any particular issues or concerns in more depth, please do not hesitate to contact me.

## Wilderness Designations

1. How many acres of wilderness have been designated since the enactment of the Wilderness Act of 1964? Please identify the location and how many of these acres were incorporated within the Bureau of Land Management, the National Forest System, the National Park Service and the National Wildlife Refuge System. What are the trends? How many acres of land were evaluated for inclusion within the wilderness system but were never designated as wilderness?

### Wilderness System History<sup>1</sup>

The National Wilderness Preservation System, created by the 1964 Wilderness Act,<sup>2</sup> now contains 759 wilderness areas, totaling nearly 110 million acres, in 44 states. Table 1 shows acreage currently in the System, by state for each of the four major federal management agencies—the National Forest System administered by the Forest Service (USFS) in the Department of Agriculture; the National Park System administered by the National Park Service (NPS) in the Department of the Interior (DOI); the National Wildlife Refuge System administered by the DOI Fish and Wildlife Service (FWS); and the public lands administered by the DOI Bureau of Land Management (BLM).

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<sup>1</sup> Much of this information is also contained in CRS Report RL31447, *Wilderness: Overview and Statistics*, by Ross W. Gorte.

<sup>2</sup> P.L. 88-577, 16 U.S.C. §§1131-1136.

**Table 1. Federal Designated Wilderness Acreage, by State and by Agency**

	USDA Forest Service	National Park Service	U.S. Fish and Wildlife Service	Bureau of Land Management	Total Designated
Alabama	41,367	0	0	0	41,367
Alaska	5,753,899	33,079,611	18,692,615	0	57,526,125
Arizona	1,345,008	444,055	1,343,444	1,396,466	4,528,973
Arkansas	116,578	34,933	2,144	0	153,655
California	5,083,169	6,118,671	9,172	3,798,155	15,009,167
Colorado	3,151,625	309,805	2,560	205,888	3,669,878
Connecticut	0	0	0	0	0
Delaware	0	0	0	0	0
Florida	74,495	1,296,500	51,252	0	1,422,247
Georgia	114,537	8,840	362,107	0	485,484
Hawaii	0	155,509	0	0	155,509
Idaho	3,961,789	43,243	0	517,827	4,522,859
Illinois	28,063	0	4,050	0	32,113
Indiana	12,463	0	0	0	12,463
Iowa	0	0	0	0	0
Kansas	0	0	0	0	0
Kentucky	18,132	0	0	0	18,132
Louisiana	8,679	0	8,346	0	17,025
Maine	11,233	0	7,392	0	18,625
Maryland	0	0	0	0	0
Massachusetts	0	0	3,244	0	3,244
Michigan	89,529	143,758	25,309	0	258,596
Minnesota	807,853	0	6,180	0	814,033
Mississippi	6,046	4,080	0	0	10,126
Missouri	64,119	0	7,730	0	71,849
Montana	3,372,503	0	64,535	6,347	3,443,385
Nebraska	7,794	0	4,635	0	12,429
Nevada	1,087,624	309,539	0	2,056,545	3,453,708
New Hampshire	138,418	0	0	0	138,418
New Jersey	0	0	10,341	0	10,341
New Mexico	1,387,498	56,392	39,908	167,220	1,651,018

	USDA Forest Service	National Park Service	U.S. Fish and Wildlife Service	Bureau of Land Management	Total Designated
New York	0	1,363	0	0	1,363
North Carolina	102,634	0	8,785	0	111,419
North Dakota	0	29,920	9,732	0	39,652
Ohio	0	0	77	0	77
Oklahoma	14,543	0	8,570	0	23,113
Oregon	2,232,231	0	940	246,506	<u>2,479,677</u>
Pennsylvania	9,002	0	0	0	9,002
Rhode Island	0	0	0	0	0
South Carolina	16,671	15,010	29,000	0	60,681
South Dakota	13,426	64,144	0	0	77,570
Tennessee	66,349	0	0	0	66,349
Texas	38,483	46,850	0	0	85,333
Utah	772,894	124,406	0	261,052	1,158,352
Vermont	100,870	0	0	0	100,870
Virginia	136,740	79,579	0	0	216,319
Washington	2,686,296	1,739,763	805	7,140	<u>4,434,004</u>
West Virginia	119,309	0	0	0	119,309
Wisconsin	46,414	33,500	29	0	79,943
Wyoming	3,111,232	0	0	0	<u>3,111,232</u>
Territories	10,000	0	0	0	10,000
<b>U.S. Total</b>	<b>36,159,515</b>	<b>44,139,471</b>	<b>20,702,901</b>	<b>8,663,146</b>	<b>109,663,992</b>

Source: CRS Report RL31447, *Wilderness: Overview and Statistics*, by Ross W. Gorte. Data are current through December 31, 2009.

The first lands in the National Wilderness Preservation System were the 9.1 million acres of National Forest System lands that had been identified administratively as wilderness areas or wild areas. Since the Wilderness Act created the National Wilderness Preservation System in 1964, Congress has enacted 117 additional laws designating new wilderness areas or adding to existing ones, as shown in Table 2. These additional laws commonly refer to the Wilderness Act for general management guidance, but do not amend the 1964 Wilderness Act. The 90<sup>th</sup> Congress began expanding the Wilderness System in 1968. Five laws were enacted by that Congress, creating five new wilderness areas with 792,750 acres in four states. Wilderness designations generally increased in each succeeding Congress, rising to a peak of 60.8 million acres designated during the 96<sup>th</sup> Congress (1979-1980). The largest acreage enacted in one law was 56.4 million acres of wilderness designated (35 new areas) in the Alaska National Interest Lands Conservation Act in 1980 (ANILCA; P.L. 96-487).<sup>3</sup>

<sup>3</sup> This law enacted and significantly modified the many national monuments proclaimed by President Jimmy Carter in 1978, (continued...)

**Table 2. Additions to the National Wilderness Preservation System**

Congress	Number of Laws <sup>a</sup>	Number of States	Number of Areas New (Additions)	Acres Designated <sup>b</sup>
88 <sup>th</sup>	1	13	54 (0)	9,125,721
89 <sup>th</sup>	0	0	0 (0)	0
90 <sup>th</sup>	5	4	5 (1)	792,750
91 <sup>st</sup>	3	13	25 (0)	303,612
92 <sup>nd</sup>	9	7	8 (1)	913,337
93 <sup>rd</sup>	4	22	35 (0)	1,271,535
94 <sup>th</sup>	8	23	35 (0)	2,428,327
95 <sup>th</sup>	7	18	28 (5)	4,680,519
96 <sup>th</sup>	7	10	71 (11)	60,753,605
97 <sup>th</sup>	6	6	7 (0)	83,309
98 <sup>th</sup>	21	21	177 (49)	8,530,657
99 <sup>th</sup>	5	5	11 (2)	99,153
100 <sup>th</sup>	7	8	22 (4)	1,422,730
101 <sup>st</sup>	5	5	68 (3)	3,501,160
102 <sup>nd</sup>	2	2	6 (4)	426,290
103 <sup>rd</sup>	2	2	79 (14)	8,272,871
104 <sup>th</sup>	2	2	1 (2)	29,970
105 <sup>th</sup>	1	1	0 (1)	160
106 <sup>th</sup>	8	7	18 (1)	1,081,465
107 <sup>th</sup>	5	5	18 (13)	529,590
108 <sup>th</sup>	2	2	15 (0)	801,784
109 <sup>th</sup>	6	7	25 (11)	1,030,748
110 <sup>th</sup>	1	1	1 (0)	106,000
111 <sup>th c</sup>	1	9	50 (27)	2,096,150
<b>Total</b>	<b>118</b>	<b>44</b>	<b>759 (149)</b>	<b>109,663,992</b>

Source: CRS Report RL31447, *Wilderness: Overview and Statistics*, by Ross W. Gorte. Data are current through December 31, 2009.

a. Excludes laws with minor boundary and acreage adjustments (less than 10 acres of net change).

(...continued)

creating new national parks, national preserves, national monuments, and national wildlife refuges, as well as a new national conservation area and a new national recreation area, while designating 26 rivers as part of the National Wild and Scenic River System and enacting many provisions affecting the public lands in Alaska.

- b. This total differs from the total of the column because of acreage revisions by agencies after completing surveys of the designated areas. (Legislation typically identifies estimated acreage.)
- c. Through December 31, 2009.

Since 1980, two Congresses have designated substantial wilderness acreages. The first was the 98<sup>th</sup> Congress, following a dispute over USFS wilderness recommendations. (Wilderness reviews and the USFS study and challenge are discussed below.) A compromise between Hon. John Seiberling, Chair of the House Interior and Insular Affairs Subcommittee on National Parks and Public Lands, and Hon. James McClure, Chair of the Senate Committee on Energy and Natural Resources, over “release language”—providing congressional direction on the nature and timing of future wilderness reviews and on management of areas not designated as wilderness until that future review—led to enactment of numerous “statewide” wilderness bills that generally addressed all the roadless national forest lands in the states.<sup>4</sup>

The 103<sup>rd</sup> Congress also enacted substantial wilderness designations. This was primarily due to one law addressing federal lands in southern California—the California Desert Protection Act of 1994 (P.L. 103-433). In addition to designating 74 wilderness areas with 7.7 million acres, the Act created three new national parks or preserves, designated several other special areas, provided guidance on military use in or near the areas designated in the bill, and included other provisions.

## Trends in Wilderness Designations

It is difficult to discern any pattern or trend in wilderness designations over the past 45 years. It seems unlikely that additions comparable to ANILCA could occur again, as the acreage of relevant or qualified federal land would limit such additions. The large designations in 1984 and 1994—the 20<sup>th</sup> and 30<sup>th</sup> anniversaries of the Wilderness Act—seem more coincidental than by design. The compromise release language that was the primary source of the large 1984 designations was the result of the on-going litigation and debate over release language versions that had begun in 1980; and the California Desert Protection Act that was the primary source of the large 1994 designation had been introduced in several preceding Congresses.

For several Congresses, through the 1980s and into the 1990s, wilderness legislation generally followed state boundaries, typically addressing the USFS lands (and occasionally other federal lands) within a state. This was likely due to the state-by-state recommendations of the USFS in 1979, combined with the successful litigation over the recommendations in California. (See the discussion of USFS wilderness reviews, below.) In contrast, despite state-by-state wilderness recommendations from the BLM in 1991, only one statewide BLM wilderness statute (the Arizona Desert Protection Act of 1991, P.L. 101-626) has been enacted, and it was enacted before the BLM recommendations were completed. (The California Desert Protection Act of 1994 only addressed BLM lands in southern California, not all BLM lands in the state.)

Before 1979, and more recently, wilderness legislation either has addressed one or a few areas in relative proximity (e.g., in a county) or has combined a few discrete areas within several wilderness proposals or bills. The Omnibus Public Lands Management Act of 2009 (P.L. 111-11) was of the latter type, with 13 separate wilderness subtitles, most of which had previously been introduced as free-standing wilderness

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<sup>4</sup> For a history of the debate over release language provisions, see out-of-print CRS Report 93-280 ENR, *Wilderness Legislation: History of Release Language, 1979-1992*, by Ross W. Gorte and Pamela Baldwin (available from the author).

bills. This practice—a one-area bill or an omnibus bill containing several one-area bills—seems likely to continue.

## Wilderness Reviews

Future wilderness legislation may depend, in part, on pending wilderness recommendations from the agencies. All four federal land management agencies have recommended additional lands be added to the Wilderness System. The studies leading to these recommendations have all come at the direction of Congress. The Secretaries of Agriculture and the Interior historically produced an annual report on the status of the National Wilderness Preservation System, including designated wilderness areas, pending wilderness recommendations, and areas under review as possible wilderness. The last report appears to be the 22<sup>nd</sup> report on the status for calendar year 1985. A complete, up-to-date list of pending wilderness recommendations is not available.

## National Park System

The Wilderness Act directed the Secretary of the Interior to evaluate the wilderness potential of National Park System lands, and to present recommendations to the President and to Congress within 10 years (i.e., by 1974). Separate recommendations were made for each area. Many of the areas recommended for wilderness have been designated, although some of the recommendations are still pending.

The NPS maintains lists of areas designated, recommended, proposed, and under study as possible wilderness.<sup>5</sup> The lists include 37 recommended and proposed wilderness areas, with a total acreage of 25.8 million acres, or 33% of all NPS lands.<sup>6</sup> (This excludes the 249,339 acres of wilderness designated in Rocky Mountain National Park in Subtitle N of Title I of P.L. 111-11, the Omnibus Public Lands Management Act of 2009.) The majority of proposed wilderness, 12 areas with 16.1 million acres, is in Alaska. However, other significant areas are on the list, including Grand Canyon National Park and Glen Canyon National Recreation Area (AZ, 2,346,137 acres), Glacier National Park (MT, 927,550 acres), Lake Mead National Recreation Area (NV, 1,492,600 acres), Great Smoky Mountains National Park (TN/KY, 390,500 acres), Big Bend National Park (TX, 538,250 acres), five national parks in Utah (647,772 acres in total), and Grand Teton and Yellowstone National Parks (WY, 2,131,988 acres). The Park Service also has wilderness studies proceeding at five areas (one in Alaska, one in California, two in Florida, and one in Wisconsin), totaling 3.1 million acres.

## National Wildlife Refuge System

The Wilderness Act also directed the Secretary of the Interior to evaluate the wilderness potential of National Wildlife Refuge System lands, and to present recommendations to the President and to Congress within 10 years. Separate recommendations were made for each area. Many of the areas recommended for wilderness have been designated, although some of the recommendations are still pending.

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<sup>5</sup> See <http://wilderness.nps.gov/maplocator.cfm>.

<sup>6</sup> The NPS identifies an area as recommended when the President or Secretary of the Interior has recommended that the area be designated as wilderness. Proposed wilderness areas have been recommended by the NPS, but have not had a recommendation from the President or Secretary.

The FWS does not publish comparable information on pending recommendations or areas under study for possible wilderness designation. The latest published list (which did not contain acreages) was for 1985.<sup>7</sup> At that time, 20 areas (excluding those subsequently designated as wilderness by Congress) totaling about 189,009 acres were recommended for wilderness, and recommendations have been deferred for two large wildlife refuges in the West (Desert NWR in Nevada and C.M. Russell NWR in Montana).<sup>8</sup> The FWS administers the recommended areas to protect their wilderness characteristics.

## National Forest System

The Wilderness Act directed the Secretary of Agriculture to review the wilderness potential of its administratively identified primitive areas. Acting at its own discretion, and at the behest of an employee named Aldo Leopold, the FS created the first wilderness area in the Gila National Forest (NM) in 1924. In the succeeding decades, the agency created a system of wilderness, wild, and primitive areas that grew to 14.6 million acres by 1964. The administratively identified wilderness and wild areas were designated as wilderness in the 1964 Wilderness Act.

In 1970, the USFS expanded the required review of primitive areas to include many additional areas in the National Forest System. This, the first Roadless Area Review and Evaluation (RARE), was begun under the agency's administrative authority. It was abandoned in 1972, before any recommendations were made, because of a lawsuit asserting the review had been restricted in ways that violated the National Environmental Policy Act of 1969 (NEPA).<sup>9</sup>

In 1977, the USFS began its second Roadless Area Review and Evaluation (RARE II). This study of 62 million acres of national forest roadless areas, was an acceleration of part of the land management planning process mandated by the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA) and the National Forest Management Act of 1976 (NFMA).<sup>10</sup> The RARE II Final Environmental Statement was issued in January 1979, recommending more than 15 million acres (24.3% of the study area) for addition to the Wilderness System. In addition, nearly 11 million acres (17.4%) were to be studied further in the ongoing USFS planning process under NFMA. The remaining 36 million acres (58.3% of the RARE II area) were to be available for other uses—such as logging, energy and mineral developments, and motorized recreation—which might be incompatible with preserving wilderness characteristics. In April 1979, President Jimmy Carter presented the recommendations to Congress with minor changes.

In 1980, the State of California successfully challenged the FS RARE II recommendations for 47 areas allocated to non-wilderness uses.<sup>11</sup> The Reagan Administration responded in 1983 by directing a re-evaluation of all RARE II recommendations, except in states with wilderness laws containing release language (described above). Tensions between the Administration and Congress, and among interest groups, led to a particularly intense debate during the 98<sup>th</sup> Congress (1983-1984). A compromise version of release language, achieved in May 1984, led to the many wilderness laws enacted by the 98<sup>th</sup> Congress.

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<sup>7</sup> Richard E. Lyng, Secretary of Agriculture, and Donald Hodel, Secretary of the Interior, *Twenty-Second Annual Wilderness Report on the Status of the National Wilderness Preservation System for the Calendar Year 1985*, submitted to the President, dated July 17, 1986 (Lyng) and March 28, 1987 (Hodel).

<sup>8</sup> Deferrals of the recommendations were requested in 1974 to allow completion of mineral studies. While the studies were undoubtedly completed, no recommendations were subsequently sent to Congress.

<sup>9</sup> P.L. 91-190; 42 U.S.C. §§4321-4347.

<sup>10</sup> Respectively: Act of August 17, 1974; P.L. 93-378; and Act of October 22, 1976; P.L. 94-588. 16 U.S.C. §§1600-1614.

<sup>11</sup> *California v. Bergland*, 690 F.2d 753 (9<sup>th</sup> Cir. 1982), finding that the RARE II process did not comply with NEPA.

Completion of RARE II and subsequent enactment of many wilderness bills designating national forest wilderness areas has not ended the debate. First, the USFS is, at least implicitly, required to review the wilderness potential of its lands periodically in NFMA planning. Specifically, NFMA requires that the land management plans be revised at least every 15 years and be consistent with the Multiple Use-Sustained Yield Act of 1960 (MUSYA).<sup>12</sup> That law further articulated the purposes of national forest management (as set forth in 1897). It also stated that “The establishment and maintenance of areas of wilderness are consistent with the purposes and provisions of this Act.” Thus, management planning consistent with MUSYA likely must examine the potential wilderness values of national forest lands.

The other reason why controversy over USFS potential wilderness persists is the extensive roadless areas that have not been designated as wilderness—both in states where Congress has enacted wilderness laws and chosen not to designate some roadless areas, and in states where Congress has not addressed all USFS lands since RARE II was completed (i.e., states without statewide wilderness bills, notably Idaho and Montana). To address the 58.5 million acres of inventoried roadless areas (primarily RARE II areas not designated as wilderness),<sup>13</sup> President Clinton directed the Secretary of Agriculture to develop regulations to provide “appropriate long-term protection for most or all of the currently inventoried “roadless” areas, and to determine whether such protection is warranted for any smaller roadless areas not yet inventoried.” The USFS responded with an environmental impact statement (EIS) on alternatives to protect NFS roadless areas, and a nationwide roadless area protection rule, on January 12, 2001. The rule has been controversial: implementation was delayed, then enjoined; the injunction was overturned and another injunction was set in place; President Bush replaced the nationwide rule with a state-petition rule, but it too was enjoined. Legislation has also been introduced, but no congressional action has occurred on the bills.<sup>14</sup>

At this point, because of the continuing uncertainty over national forest roadless areas, because of the cyclical nature of USFS planning, and the USFS does not maintain a list of pending wilderness recommendations, the extent of pending wilderness recommendations and of National Forest System lands that are under review as potential wilderness is uncertain.

## BLM Public Lands

The Federal Land Policy and Management Act of 1976 (FLPMA)<sup>15</sup> directed the Secretary of the Interior to conduct a review of the wilderness potential of “those roadless areas of five thousand acres or more and roadless islands” administered by the BLM. These areas were identified as “Wilderness Study Areas” (WSAs) under §603 of FLPMA.

As the Act required, the BLM submitted its recommendations to the President within 15 years (i.e., by 1991), and presidential recommendations have been submitted to Congress. However, under §603(c), all WSAs—those recommended to be wilderness and those recommended not to be wilderness—are to be managed to protect their wilderness character until Congress determines otherwise. Thus, all WSAs are administered under the BLM’s “non-impairment” criteria. Legislation to terminate the §603(c) protection of WSAs was introduced in the 106<sup>th</sup>, 107<sup>th</sup>, and 108<sup>th</sup> Congresses, but no action was taken on the bills.

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<sup>12</sup> P.L. 86-517, 16 U.S.C. §§528-531.

<sup>13</sup> This acreage has not been adjusted for inventoried roadless areas that have subsequently been designated wilderness.

<sup>14</sup> See CRS Report RL30647, *National Forest System Roadless Area Initiatives*, by Kristina Alexander and Ross W. Gorte.

<sup>15</sup> P.L. 94-579, 43 U.S.C. §§1701 et seq.

Current WSAs administered by the BLM—excluding lands designated as wilderness and those released from the non-impairment standards of §603—total 12.9 million acres in 12 western states (including Alaska).<sup>16</sup>

Further BLM wilderness reviews have also been controversial. FLPMA requires the BLM to prepare land and resource management plans for the public lands its administers. Section 201 requires an inventory of the lands as a step in developing plans. In 1996, the Clinton Administration's Secretary of the Interior, Bruce Babbitt, used this §201 inventory process to identify additional potential wilderness areas in Utah. Although the stated purpose of the inventory was only to ascertain which lands had wilderness characteristics, the State of Utah filed suit alleging various flaws in the process and that the inventory was illegal, even under §201. After a preliminary injunction and a remand order to dismiss most claims,<sup>17</sup> the Bush Administration's Interior Secretary, Gale Norton, settled the case and issued new wilderness guidance, that: 1) the §603 authority was terminated following presidential recommendations in 1993; 2) BLM cannot conduct further wilderness reviews; 3) BLM cannot administratively create more WSAs under §603 or other authority (including §201); and 4) the §603(c) non-impairment standard cannot be applied to non-WSA lands.

Whether the wilderness potential of some BLM lands might be reviewed again is uncertain. Unlike USFS plans, which must be revised periodically, BLM is not required to revise its plans on a specified cycle. Rather, the BLM is required to revise its land and resource management plans "when appropriate" (43 U.S.C. §1712(a)). Thus, there is no definite planning cycle that would provide a consistent opportunity to review BLM lands for their possible suitability for wilderness designation. In addition, while MUSYA includes wilderness as an appropriate use of national forest lands, FLPMA does not include wilderness in its definition of multiple use for BLM lands. Instead, FLPMA directed a one-time study of wilderness potential in a section separate from the definitional and planning titles. Thus, it is unclear whether a BLM management plan revision would be required to consider wilderness potential of lands that might qualify as wilderness.

## History and Intent of the Wilderness Act

**2. An examination of the legislative history of the Wilderness Act and the historical congressional intentions for such legislation. More specifically, an evaluation determining if the lands that are selected for wilderness and wilderness study areas are consistent with the original intent of the Wilderness Act. Are there areas that Congress has placed within the wilderness system that did not meet that original statutory definition? Please identify those areas.**

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<sup>16</sup> U.S. Dept. of the Interior and Bureau of Land Management, *Public Land Statistics, 2008*, pp. Table 5-5, [http://www.blm.gov/public\\_land\\_statistics/pls08/pls5-5\\_08.pdf](http://www.blm.gov/public_land_statistics/pls08/pls5-5_08.pdf). The acreage is approximate, with the total shown in *Public Land Statistics, 2008* reduced for BLM wilderness designations in P.L. 111-11, the Omnibus Public Land Management Act of 2009.

<sup>17</sup> *Utah v. Babbitt*, 137 F. 3d 1193 (10<sup>th</sup> Cir. 1998).

## The Wilderness Act<sup>18</sup>

The original statutory definition of what constitutes a wilderness area suitable for inclusion in the National Wilderness Preservation System is eloquent, but imprecise. Specifically, §2(c) describes what a wilderness is:

(c) A wilderness, in contrast with those areas where man and his works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value. [16 U.S.C. §1311]

This definition/description suggests that the property must meet some explicit standards: (1) federal land; (2) without permanent improvements or human habitation; and (3) at least 5,000 acres or of sufficient size to preserve its wilderness characteristics. It also includes some imprecise "standards": (a) untrammelled by man; (b) retaining its primeval character; (c) generally appears to have been affected primarily by the forces of nature; and (d) the imprint of man's work substantially unnoticeable.

In addition to this definition/description, the Wilderness Act includes specific guidance on activities that are prohibited and that are permitted. The Act generally prohibits commercial activities, motorized uses, and roads, structures, and facilities in wilderness areas. Specifically, §4(c) states:

Except as specifically provided for in this Act, and subject to existing private rights, there shall be no commercial enterprise and no permanent road within any wilderness area designated by this Act and, except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety of persons within the area), there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area.

The Wilderness Act also authorizes activities that do not conform with these general restrictions, usually subject to regulation by the appropriate Secretary.<sup>19</sup> Specifically:

- §4(d)(1) allows "the use of aircraft or motorboats, where these uses have already become established," subject to "desirable" restrictions;
- §4(d)(1) also allows "such measures ... as may be necessary in the control of fire, insects, and diseases," subject to "desirable" conditions;

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<sup>18</sup> Much of the information in this and the subsequent section are from CRS Report RL33827, *Wilderness Laws: Permitted and Prohibited Uses*, by Ross W. Gorte.

<sup>19</sup> The Wilderness Act generally referred to the Secretary of Agriculture, because the act initially only designated wilderness areas in the National Forest System. Subsequent wilderness laws refer to the Secretary of Agriculture or Secretary of the Interior, depending on who has jurisdiction over the designated areas.

- §4(d)(2) allows mineral prospecting conducted “in a manner compatible with the preservation of the wilderness environment”;
- §4(d)(3) provides for establishing and developing valid mineral rights, “subject, however, to such reasonable regulations governing ingress and egress as may be prescribed” consistent with using the land for mineral development, and with leases, permits, and licenses containing “such stipulations as may be prescribed ... for the protection of the wilderness character of the land consistent with the use of the land ... ”;<sup>20</sup>
- §4(d)(4) allows the President to authorize water project development, including road construction and use;
- §4(d)(4) also allows livestock grazing, “where established prior to the effective date of this Act ... subject to such reasonable regulations as are deemed necessary”; and
- §4(d)(6) allows commercial services “which are proper for realizing the recreational or other wilderness purposes of the areas.”

Thus, while the Wilderness Act set some clear standards—no permanent improvements, no motorized or mechanical access, no commercial resource exploitation, and more—the Act also included exceptions to these standards, mostly to allow continuation of pre-existing uses and exercise of valid existing rights. Thus, the Act at least implicitly acknowledges the necessary political balance of designating wilderness areas for “solitude or a primitive and unconfined type of recreation” and preserving their relatively pristine conditions with the practical reality of existing federal land conditions and management.

## Subsequent Wilderness Statutes

As mentioned above, statutes designating wilderness areas commonly refer to the Wilderness Act, but do not amend it. In addition, such statutes may contain additional provisions providing additional guidance for one or more areas designated in the act. Some provisions reinforce the standards of the Wilderness Act; other provisions provide for exceptions to the management standards of the Wilderness Act (e.g., exceptions to the requirements of no permanent improvements or no motorized or mechanical access).

Two types of provisions have been included in many subsequent wilderness statutes, not because the existing language in the Wilderness Act is unclear, but to emphasize the original standard. One type is withdrawal language. In addition to the withdrawal from access under the Wilderness Act, many wilderness statutes have explicitly withdrawn the designated areas from entry, appropriation, and disposal under the public land laws, mining laws, and mineral and geothermal leasing laws.<sup>21</sup> See, for example, the Omnibus Public Land Management Act of 2009 (P.L. 111-11), §1202(i), §1503(b)(2), §1602(d), §1803(d), §1851(d)(3), and §2405(a).

The other type of provision is the “no-buffer-zone” language. Despite the lack of authority in the Wilderness Act to regulate any activity on surrounding lands, “no-buffer-zone” type language has been included in many wilderness statutes. Generally, these provisions specify that activities or uses on lands

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<sup>20</sup> The authority to establish new mineral rights expired in 1983. No attempts to establish new rights were attempted until the Reagan Administration, and then Congress included provisions in the Interior appropriations acts prohibiting establishing new mineral rights until the Wilderness Act’s expiration of that authority.

<sup>21</sup> Withdrawal from the public land laws is largely irrelevant, as most of these laws that provided the public opportunities to obtain title to federal lands were repealed with the enactment of the Federal Land Policy and Management Act of 1976 (FLPMA, P.L. 94-579).

outside the designated wilderness areas, right up to the boundary, are not to be precluded because the uses or activities can be seen or heard from within the wilderness areas. See, for example, the Omnibus Public Land Management Act of 2009, §1202(f), §1503(b)(10), §1972(b)(4), and §2405(c). Occasionally, provisions are enacted specifically directing no effect on particular activities or areas; see, for example, the Omnibus Public Land Management Act of 2009, §1802(1)(C) directing no effect on the adjacent U.S. Marine Corps Mountain Warfare Training Center and §1902(1)(B)(i) directing no effect on the cabins in and adjacent to Mineral King Valley.

Five particular non-conforming uses have been authorized in several subsequent wilderness statutes: access to private lands; access for wildfire, insect, or disease control; access for livestock grazing; low-level military overflights; and access for hydrological, meteorological, and climatological equipment. In addition, specific exceptions have been provided for access to lands, access to waters, and access by air, as well as for water infrastructure and other types of infrastructure.

### Access to Private Lands

Access to private lands within the boundaries of designated wilderness areas is generally preserved by the Wilderness Act. Section 5 specifically provides for access to non-federal lands or “valid occupancies” within wilderness areas:

(a) In any case where State-owned or privately owned land is completely surrounded by national forest lands within areas designated by this Act as wilderness, such State or private owner shall be given such rights as may be necessary to assure *adequate* access to such State-owned or privately owned land by such State or private owner and their successors in interest ... (emphasis added)

(b) In any case where valid mining claims or other valid occupancies are wholly within a designated national forest wilderness area, the Secretary of Agriculture shall, by *reasonable regulations* consistent with the preservation of wilderness, permit ingress and egress to such surrounded areas by means which have been or are being customarily enjoyed with respect to other such areas similarly situated. (emphasis added)<sup>22</sup>

Thus, the Wilderness Act provided for adequate and reasonable (i.e., not unlimited) access to non-federal lands and rights within designated wilderness areas. Several subsequent wilderness statutes have essentially reiterated this direction, allowing for adequate access to private lands within designated wilderness areas. See, for example, the Omnibus Public Land Management Act of 2009, §1503(b)(7), §1602(c)(5)(A), §1702(b)(4), and §1803(f).

### Access for Wildfire, Insect, or Disease Control

As noted above, the Wilderness Act explicitly provided for measures needed to control wildfires, insects, and diseases, subject to reasonable regulations. As catastrophic wildfires have apparently gotten more frequent and more intense in recent years,<sup>23</sup> this authority for non-conforming activities in wilderness areas to control fire, insects, and diseases has essentially been repeated in recent wilderness statutes. See,

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<sup>22</sup> As noted above, the Wilderness Act initially designated only national forest lands as components of the National Wilderness Preservation System. Thus, many references in the Wilderness Act are to the Secretary of Agriculture and the National Forest System lands. With the subsequent designation of Interior agency lands, the references have generally been extended to the Secretary of the Interior and to the DOI agency lands.

<sup>23</sup> See CRS Report RL30755, *Forest Fire/Wildfire Protection*, by Ross W. Gorte.

for example, the Omnibus Public Land Management Act of 2009, §1202(h), §1405(c)(2), §1503(b)(9), §1803(e), §1851(d)(4), §1952(g), §1972(b)(3), and §2405(e).

## Access for Livestock Grazing

Access for livestock management has fostered concerns over the years. After discussions in several Congresses, the 101<sup>st</sup> Congress provided detailed guidelines for managing livestock grazing in wilderness areas in H.Rept. 101-405, the Interior and Insular Affairs Committee's report on the Arizona Desert Wilderness Act of 1990 (P.L. 101-628). Appendix A of the report (pages 41-43) is titled "Grazing Guidelines," and states (among other provisions):

The maintenance of supporting facilities, existing in an area prior to its classification as wilderness (including fences, line cabins, water wells and lines, stock tanks, etc.), is permissible in wilderness. Where practical alternatives do not exist, maintenance or other activities may be accomplished through the occasional use of motorized equipment .... Such motorized equipment uses will normally be permitted in those portions of a wilderness area where they had occurred prior to the area's designation as wilderness or are established by prior agreement.

The construction of new improvements or replacement of deteriorated facilities in wilderness is permissible if in accordance with these guidelines and management plans governing the area involved ....

The use of motorized equipment for emergency purposes such as rescuing sick animals or the placement of feed in emergency situations is also permissible.

Because of continuing concerns about agency use of wilderness designations as an excuse to reduce livestock grazing levels, the language from the Wilderness Act and from the Committee report on the Arizona Desert Wilderness Act of 1990 have been repeated or referenced several times. See, for example, the Omnibus Public Land Management Act of 2009, §1405(c)(3), §1503(b)(3), §1602(c)(3), §1702(b)(3), §1752(b)(3), §1803(h), §1851(d)(5), §1972(b)(2), and §2405(b).

## Native and Tribal Rights and Access

Beginning in 1988, several wilderness statutes have provided for access to the designated wilderness areas for native traditional cultural and religious purposes. The 1988 act establishing the El Malpais Wilderness (P.L. 100-225, §507(a)) directed the Secretary of the Interior to "assure nonexclusive access ... by Indian people for traditional cultural and religious purposes ... consistent with the purposes and intent of the American Indian Religious Freedom Act ... [and] the Wilderness Act ..."

Since that initial language, two types approaches have been enacted. One directs that nothing in the act "alters, modifies, enlarges, diminishes, or abrogates the treaty rights ..." This rights approach has been used several times, including five times in the Omnibus Public Land Management Act of 2009 (§1303(a), §1705, §1755, §1654(1), and §1972(b)(7)). The other approach directs the Secretary to "ensure access for traditional cultural and religious purposes" and to allow temporary closures (i.e., exclusive access) for the smallest possible area and minimum possible period. This approach has been used three times: in the California Desert Protection Act of 1994 (P.L. 103-433, §705(a)), the North California Coastal Wild Heritage Wilderness Act (P.L. 109-362, §4(k)) and §1851(d)(6) of the Omnibus Public Land Management Act of 2009. Other provisions have also directed cooperation, memoranda of understanding, and agreements to provide access to and protection of important tribal use areas (e.g., the Omnibus Public Land Management Act of 2009, §1207(c), §1303(b), and §1506).

## Low-Level Military Overflights

Since 1990, several wilderness statutes have included provisions to allow low-level military overflights of wilderness areas. The Arizona Desert Wilderness Act of 1990 (P.L. 101-628, §101(I)), directs that “nothing in this title shall preclude low level overflights of military aircraft, the designation of new units of special airspace, or the use or establishment of military flight training routes over wilderness areas designated by this title.” This language was expanded in Title VIII, the California Military Lands Withdrawal and Overflights Act of 1994, of the California Desert Protection Act of 1994 (P.L. 103-433). Similar provisions have subsequently been enacted several times. See, for example, the Omnibus Public Land Management Act of 2009, §1503(b)(11), §1803(g), and §1851(d)(7).

## Access for Hydrological, Meteorological, and Climatological Equipment

Several wilderness statutes have included provisions allowing the installation and maintenance of weather-related equipment and facilities within one or more of the areas designated by the statute. The first such provisions were enacted in the Arizona Wilderness Act of 1984 (P.L. 98-406, §101(a)(13)), and the Utah Wilderness Act of 1984 (P.L. 98-428, §305). In two statutes (Clark County Conservation of Public Land and Natural Resources Act of 2002, P.L. 107-282, §210, and Lincoln County Conservation, Recreation, and Development Act of 2004, P.L. 108-424, §211), the authorization is conditional: if the facilities “are essential to flood warning, flood control, and water reservoir operation activities.” Another statute (Caribbean National Forest Act of 2005, P.L. 109-118, §3(d)) authorizes the facilities if “essential to the scientific research purposes of the Luquillo Experimental Forest,” while yet another (Northern California Coastal Wild Heritage Wilderness Act, P.L. 109-362, §4(g)) authorizes equipment “to further the scientific, educational, and conservation purposes” of the areas.

## Motorized Access—Land

Provisions have been enacted in wilderness statutes that generally allow access to one or more areas for continued motorized access, often for provide for maintenance of pre-existing facilities, for continued wildlife management activities, or for continued use of pre-existing rights-of-way.

- Endangered American Wilderness Act of 1978 (P.L. 95-237, §2(i)) allows local government access for maintaining current and future watershed facilities in one unit in Utah.
  - Absaroka-Beartooth Wilderness Act (P.L. 95-249, §4) preserved a right-of-way claim in one unit being litigated at that time.
  - Boundary Waters Canoe Area Wilderness Act (P.L. 95-495, §4(e)) allows snowmobile use in certain units; §4(d) and §4(g) allow mechanized portages in certain units; §4(h) allows continued motorized uses only; and §4(i) allows motorized access for emergencies and administrative purposes.
  - Alaska National Interest Lands Conservation Act of 1980 (P.L. 96-487, §703(b)) allows mechanized portage equipment in a specific unit.
  - Colorado Wilderness Act of 1980 (P.L. 96-560, §102(a)(17)) allows motorized access for maintenance of water resource facilities in one unit.
  - California Wilderness Act of 1984 (P.L. 98-425, §101(a)(2) and (25)) allows continued access for livestock facilities in two specific units; §101(a)(6) allows motorized
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administrative use of a fire road between contiguous wilderness units; and §101(a)(24) allows a right-of-way for construction.

- Utah Wilderness Act of 1984 (P.L. 98-428, §302(b)) allows access for local government to maintain current and future watershed facilities in 9 of the 12 units designated.
- Wyoming Wilderness Act of 1984 (P.L. 98-550, §201(a)(11)) allows motorized federal access for bighorn sheep management in one designated unit.
- Arizona Desert Wilderness Act of 1990 (P.L. 101-628, §101(a)(3)) allows access for operating and maintaining a pipeline in one unit; §101(a)(20) provides access and use of a powerline right-of-way in one unit; and §101(k) allows continued use and maintenance of a particular road.
- Los Padres Condor Range and River Protection Act (P.L. 102-301, §2(5)) allows continued use of a road corridor in one unit until a bypass is completed.
- Colorado Wilderness Act of 1993 (P.L. 103-77, §8(d)) allows motorized access for use, operation, maintenance, repair, and replacement of water resource facilities in existence upon enactment in all designated units.
- California Desert Protection Act of 1994 (P.L. 103-433, §102(1) and (13)) provides rights-of-way for military access across two designated units; and §103(f) allows state motorized access for wildlife management.
- Spanish Peaks Wilderness Act of 2000 (P.L. 106-456, §3(a)) allows continued historic uses of the Bulls Eye Mine Road.
- Omnibus Public Land Management Act of 2009 (P.L. 111-11, §1503(b)(8)(B)(ii)) allows occasional and temporary use of motor vehicles for wildlife management in all units.

### Motorized Access—Water

Several wilderness statutes include provisions to allow continued use of motorboats, sometimes with more restrictive conditions, for lakes or watercourses within the designated wilderness areas.

- Okefenokee National Wildlife Refuge Wilderness Act (P.L. 93-429, §2(1)) allows powered watercraft of 10 horsepower or less within the unit.
- Boundary Waters Canoe Area Wilderness Act (P.L. 95-495, §4(c)) identifies horsepower limits and duration (some access is temporary) for motorboats in specific counties and/or lakes within the unit; and §4(f) limits motorboat use to historic levels, except for homeowners.
- Florida Wilderness Act of 1984 (P.L. 98-430, §1(4)) allows continued motorboat use in one unit.
- Omnibus Public Land Management Act of 2009 (P.L. 111-11, §1653(b)) allows continued use of boats with electric motors on two lakes.

### Motorized Access—Air

Originally, certain provisions allowed for continued aircraft (including helicopter) landing or access within a wilderness area. Since 1990, statutes have commonly authorized low-level military overflights of wilderness areas. (See above.)

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- Endangered American Wilderness Act of 1978 (P.L. 95-237, §2(i)) allows helicopter access for sanitary facilities in one unit in Utah.
- Central Idaho Wilderness Act of 1980 (P.L. 96-312, §7(a)(1)) allows continued landing of aircraft within a designated unit.
- Utah Wilderness Act of 1984 (P.L. 98-428, §302(b)) allows helicopter access for sanitary facilities in 10 of the 12 designated units.
- National Defense Authorization Act for FY2000 (P.L. 106-65, §3032) authorizes low level overflights of military aircraft, special airspace units, and military flight training routes over the Cabeza Prieta Wilderness designated by §301(a)(4) of P.L. 101-628.
- Consolidated Natural Resources Act of 2008 (P.L. 110-229, §101(b)(4)) authorizes continued use of float planes on one lake.
- Omnibus Public Land Management Act of 2009 (P.L. 111-11), §1503(b)(8)(C) allows the state (ID) to use aircraft, including helicopters, for wildlife management in all units.

## Water Infrastructure

As noted above, the Wilderness Act allows the President to authorize water project developments in wilderness areas designated by Congress. Some subsequent statutes have addressed access for construction, operation, and maintenance of water infrastructure within specific wilderness areas. However, two laws included provisions prohibiting presidential authorization of new water projects in wilderness areas designated by the acts.

### Statutes addressing water projects:

- Endangered American Wilderness Act of 1978 (P.L. 95-237, §2(e)) protects rights for water diversion and use, including operations, maintenance, repair, and replacement of water project facilities in one unit in Colorado.
  - New Mexico Wilderness Act of 1980 (P.L. 96-550, §102(a)(9)) retains existing management, rules, and regulations for a municipal watershed in one unit.
  - Colorado Wilderness Act of 1980 (P.L. 96-560, §102(a)(5)) protects rights for water diversion and use, including operation, construction, maintenance, and repair of water project facilities in one unit.
  - California Wilderness Act of 1984 (P.L. 98-425, §101(a)(25)) protects rights for water diversion and use, including construction, operation, maintenance, and repair of water project facilities in one unit.
  - Wyoming Wilderness Act of 1984 (P.L. 98-550, §201(c)) protects rights for water diversion and use, including construction, operation, maintenance, and modification of water project facilities in four units.
  - Arizona Desert Wilderness Act of 1990 (P.L. 101-628, §101(l)) protects flood control dam operations in one unit; and §301(e) and §302 direct that the two units abutting the Colorado River shall have no effect on upstream dams or on water management in the Upper Colorado River Basin, respectively.
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- Colorado Wilderness Act of 1993 (P.L. 103-77, §2(a)(13)) protects rights for water diversion and use, including construction, operation, use, maintenance, and repair of water project facilities in one unit.
- California Desert Protection Act of 1994 (P.L. 103-433, §202 and §203) directs that the two units abutting the Colorado River shall have no effect on upstream dams or on water management in the Upper Colorado River Basin, respectively.
- Clark County Conservation of Public Land and Natural Resources Act of 2002 (P.L. 107-282, §208(d)) authorizes structures and facilities for wildlife water development projects, if the Secretary of the Interior determines they will enhance wilderness values and if the visual impacts “can reasonably be minimized.”
- Big Sur Wilderness and Conservation Act of 2002 (P.L. 107-370, §8) authorizes construction and maintenance of a new water line and corresponding spring box adjacent to an existing domestic water service in one unit.

#### Statutes prohibiting water projects:

- Lincoln County Conservation, Recreation, and Development Act of 2004 (P.L. 108-424, §204(d)(4)) prohibits most water facility development in the designated areas, except for wildlife water facilities, as authorized in §209(d), if the Secretary of the Interior determines they will enhance wilderness values and if the visual impacts “can be reasonably minimized.”
- Ojito Wilderness Act (P.L. 109-94, §3(i)(4)) prohibits water facility development in the area, except for “wildlife guzzlers.”<sup>24</sup>

#### Other Infrastructure and Activities

Numerous other structures and activities within designated areas have been authorized in wilderness statutes. Most authorize continued access or maintenance of pre-existing structures.

- Endangered American Wilderness Act of 1978 (P.L. 95-237, §2(c) and §2(d)) allows fire prevention and watershed protection activities in two units.
- Central Idaho Wilderness Act of 1980 (P.L. 96-312, §5(d)(1)) allows prospecting and exploration for and development of cobalt within part of one unit.
- New Mexico Wilderness Act of 1980 (P.L. 96-550, §102(a)(5)) allows construction of additional fencing for livestock grazing in one unit.
- Charles C. Deam Wilderness Act (P.L. 97-384, §3) allows access to and maintenance of a cemetery in one unit in Indiana.
- Vermont Wilderness Act of 1984 (P.L. 98-322, §104(c)) allows maintenance of trails and associated facilities in all designated units.
- Arizona Wilderness Act of 1984 (P.L. 98-406, §101(a)(13)) allows installation and maintenance of telecommunication equipment in one unit.

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<sup>24</sup> A guzzler is a device to collect and store rain or snow for subsequent use by wildlife. They vary wildly in details, depending on the natural precipitation in the area and the type of wildlife being served (big game, upland game birds, etc.).

- Utah Wilderness Act of 1984 (P.L. 98-428, §305) allows installation and maintenance of communication equipment in 9 of 12 designated units.
- Washington Park Wilderness Act of 1988 (P.L. 100-668, §102) allows the maintenance, repair, and replacement of an underground powerline through one unit.
- Arizona Desert Wilderness Act of 1990 (P.L. 101-628, §301(g)) allows continued border operations within one designated unit.
- Illinois Wilderness Act of 1990 (P.L. 101-633, §9) allows access to and maintenance of a cemetery in one unit.
- Los Padres Condor Range and River Protection Act (P.L. 102-301, §3(b)) allows fire prevention and watershed protection activities in one unit.
- California Desert Protection Act of 1994 (P.L. 103-433, §103(g)) allows motorized law enforcement activities within all designated units.
- Dugger Mountain Wilderness Act of 1999 (P.L. 106-156, §2(d)) allows motorized use of a road for two years to disassemble and remove a fire tower that was scheduled for removal, with the road permanently closed thereafter.
- New England Wilderness Act of 2006 (P.L. 109-382, §213(c)) authorizes continuance of the Appalachian National Scenic Trail, the Long Trail, and the Catamount Trail, and the marking and maintenance of the trails and associated structures, consistent with the Green Mountain National Forest Plan.
- Consolidated Natural Resources Act of 2008 (P.L. 110-229, §101(b)(3)) authorizes helicopter access to construct and maintain a telecommunication repeater site and §101(b)(5) authorizes continued operation and maintenance of a fire lookout station.
- Omnibus Public Land Management Act of 2009 (P.L. 111-11, §1001(c)) authorizes continuing a competitive running event.
- Omnibus Public Land Management Act of 2009 (P.L. 111-11, §1503(b)(3)(C)) authorizes construction and maintenance of fences around the wilderness areas, for livestock grazing management.
- Omnibus Public Land Management Act of 2009 (P.L. 111-11, §1803(j) and §1903(e)) directs that horseback riding in or the entry of recreational or commercial saddle or pack stock into any designated units are not precluded.
- Omnibus Public Land Management Act of 2009 (P.L. 111-11, §1851(b)(3)) directs that nothing prohibits “the construction, operation, or maintenance, using standard industry practices, of existing utility facilities ...” outside the wilderness or in the designated wilderness additions.
- Omnibus Public Land Management Act of 2009 (P.L. 111-11, §1972(b)(11)) authorizes “structures and facilities for wildlife water development projects, including guzzlers” if they enhance wilderness values and the visual impacts can reasonably be minimized.

## Impact on Natural Resources

**3. The Wilderness Act’s effects on the landscape for a number of natural resource management objectives. These metrics include, but are not limited to, the Act’s implications for Federal and**

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associated State natural resource management objectives. Specifically:

**What is the ecological health of existing wilderness areas as compared to adjacent and/or comparable non-wilderness federal lands?**

**What is the condition of the land and the fish and wildlife resources as compared to adjacent and/or comparable non-wilderness federal lands that allows and utilizes active, professional fish and wildlife management techniques? This would include the examination of fire as a management tool and its effects to the vegetation and fish and wildlife resources and how invasive species are being managed.**

## Ecological Health

Ecological health is an important concept for land and resource management, but it is ill-defined and difficult to measure. Sometimes, ecological health is equated with ecological integrity or environmental sustainability, but these concepts are similarly difficult to measure. A related concept that has become more widely discussed within the context of global climate change is ecosystem resilience—the ability of an ecosystem to maintain its health or integrity under changing conditions. This concept is, however, equally difficult to quantify.

Management to protect, maintain, or restore ecological health/integrity/resilience of a wilderness or other area generally begins with identifying a baseline condition. In the 1990s, an approach was developed known as historic range of natural variability.<sup>25</sup> This idea is based on the ecological reality that ecosystems are dynamic, not static—that ecosystems have varied over time in structure, species composition, seral stage,<sup>26</sup> and other characteristics. The historic range of natural variability, essentially, is an ecosystem's past range or variation in these and other conditions.<sup>27</sup>

Using historic range of variability can be difficult. It requires first defining the appropriate geographic area and time scale, and then quantifying the historic values of the important ecosystem attributes.<sup>28</sup> The historic range of natural ecosystem variability is commonly limited to conditions prior to the arrival and influence of people of European descent, and thus typically includes native or aboriginal influences on ecosystems. However, this implicitly presumes that those historic natural conditions are desirable. This may be appropriate for managing wilderness areas, given the legislative language in the Wilderness Act, but is not necessarily appropriate for other wildlands. Thus, comparisons of the ecological health/integrity/resilience of wilderness areas with other wildlands may be invalid, as the other wildlands might not be managed for ecological values and historical conditions.

It should be recognized that using the historic range of natural variability as a management goal presumes that maintaining lands and resources within their historic range, or restoring them to within the historic range, is feasible. This may not always be the case. For example, Dr. Nancy Langston has documented more than a century of federal land and resource management in the Blue Mountains of northeastern

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<sup>25</sup> Several similar terms are used for this general concept, including historic range and variability (HRV), historic range of variability, range of natural variability, and more.

<sup>26</sup> Seral stages are the steps in an area's vegetative development. For a forest, this would be the development from bare earth through the initial plants, then tree seedlings, followed by saplings, and eventually a mature forest.

<sup>27</sup> Peter B. Landres, Penelope Morgan, and Frederick J. Swanson, "Overview of the Use of Natural Variability Concepts in Managing Ecological Systems," *Ecological Applications*, vol. 9, no. 4 (1999), pp. 1179-1188.

<sup>28</sup> Robert E. Keane, Paul F. Hessburg, and Peter B. Landres, et al., "The Use of Historic Range and Variability (HFV) in Landscape Management," *Forest Ecology and Management*, vol. 258 (2009), pp. 1025-1037.

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Oregon.<sup>29</sup> One conclusion from her book is that the open ponderosa pine stands that dominated the Blue Mountains in 1900 probably cannot be restored, because the loss of beavers has so radically altered the surface and groundwater hydrology. With ongoing climate change, our ability to restore and maintain lands and resources to within their natural variability may be increasingly difficult.

Because of the substantial research support needed to apply the concept of historic range of natural variability in particular instances, its use has generally been limited to large-scale planning and decision-making, such as land and resource management planning for the national forests under NFMA. Its application to a more limited geographic area, such as a designated wilderness, may have merit, as the geographic and temporal scales can be more precisely defined. However, no examples of its use at this scale could be found, and no evidence could be identified that compared the ecological health of designated wilderness areas with the health of adjacent, non-designated areas. Hence, no conclusions can be drawn at this time about the impacts of wilderness designations on ecological health. Some might argue that the restrictions on management imposed by wilderness designations may inhibit managers' ability to achieve future desired conditions. Others, however, assert that any human management activities necessarily alter (some might even say prevent) nature's ability to sustain itself, and that by preventing some activities, the management restrictions of wilderness designations might help to maintain and restore natural conditions in those areas.

## Management Practices

The question of how wilderness designations affect management for fish and wildlife, as well as the use of fire and the control of invasive species, implies a greater impact than seems likely. Wilderness designations do not automatically preclude all management activities from designated areas. As discussed above, the designation generally precludes permanent structures and facilities and motorized or mechanized access. Thus, activities that require neither facilities nor mechanical support would not be affected by a wilderness designation. For example, prescribed burning to reduce biomass fuels for wildfires only require temporary fire lines to contain the prescribed fire, and fire lines on wildfires are commonly dug by hand using shovels and other hand tools. Thus, prescribed burning might be unaffected by a wilderness designation.

Some management activities for fish and wildlife, for controlling invasive species, and for other purposes clearly require some permanent structures or facilities (e.g., guzzlers for wildlife) or motorized or mechanical access (e.g., to capture and transport wildlife). As discussed above, many wilderness statutes have included provisions allowing such facilities or access to specific areas, often restricted to specific purposes. Additional guidelines on fish and wildlife management activities in wilderness areas has also been set forth in a Committee report. (See below.)

The extent to which the management activity restrictions of wilderness designations inhibit effective land and resource management of the designated areas is unclear. No studies were found on this issue. Certainly some activities are proscribed, while others are permitted as specific exceptions to the general management restrictions. However, no documented situations where the restrictions have caused any significant harm to the lands or resources could be found in the literature.

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<sup>29</sup> Nancy Langston, *Forest Dreams, Forest Nightmares: The Paradox of Old-Growth in the Inland West* (Seattle: Univ. of Washington Press, 1995).

## Fish and Wildlife Coordination

### **4. Coordination with state fish and wildlife agency wildlife and fisheries habitat plans, including access to our public wilderness lands for wildlife and fishery conservation management practices.**

Coordination with state fish and wildlife management is not explicitly addressed in most wilderness statutes. Section 4(d)(8) of the Wilderness Act explicitly retains state authority over fish and wildlife: "Nothing in this Act shall be construed as affecting the jurisdiction or responsibilities of the several States with respect to wildlife and fish in the national forests." Many subsequent wilderness statutes similarly specify that the designations are not to affect state authority over fish and wildlife management. For example, 6 of the 15 subtitles designating wilderness areas in the Omnibus Public Land Management Act of 2009 explicitly provide for continued state jurisdiction (§1001(e), §1202(g), §1405(c)(4), §1503(b)(8)(A), §1602(c)(4), and §1972(b)(10)(A)).

Access for wildlife management has fostered concerns over the years. After discussions in several Congresses, the 101<sup>st</sup> Congress provided detailed guidelines addressing this issue in H.Rept. 101-405, the Interior and Insular Affairs Committee's report on the Arizona Desert Wilderness Act of 1990. Appendix B of H.Rept. 101-405 (pages 44-51) is entitled "Wildlife Management Guidelines." It provides guidance similar to the grazing guidelines in Appendix A of H.Rept. 101-405 (discussed above), and reads in part:

This language [§4(c) of the Wilderness Act] is viewed as direction that all management activities within wilderness be done without motor vehicles, motorized equipment, or mechanical transport, unless truly necessary to administer the area or are specifically permitted by other provisions in the Act. It means that any such use should be rare and temporary; that no roads can be built; and that wilderness managers must determine such use is the minimum necessary to accomplish the task. Any use of motorized equipment or mechanical transport requires advance approval by the administering agency....

Flow-maintenance dams, water developments, water diversion devices, ditches and associated structures, and other fish and wildlife habitat developments necessary for fish and wildlife management (which were in existence before wilderness designation) may be permitted to remain in operation.

The guidelines provide additional direction and examples of authorized activities for various specific fish and wildlife management activities, including population surveys and sampling, fish stocking, wildlife transplanting, and more. This appendix to H.Rept. 101-405 has been referenced in many subsequent wilderness statutes as relevant guidance for administering grazing and wildlife in the designated wilderness areas.

In addition, as discussed above, numerous exceptions to the wilderness standards of no facilities and no motorized or mechanical access have been enacted in various wilderness statutes to allow for certain facilities or for certain access privileges to implement wildlife management practices.

## Impact on Recreation

**5. Fish and wildlife-dependent recreational opportunities, including hunting and fishing participation and satisfaction. Other forms of passive recreational opportunities and their attendant participation and satisfaction, i.e. mountain-biking. Specifically:  
Do formal wilderness designations increase or decrease public use and enjoyment of areas designated?**

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In general, formal wilderness designations do not alter the use of the areas. Areas that qualify as wilderness, as identified by the agencies in their land management planning exercises, are generally administered to preserve their wilderness characteristics (as discussed above). Thus, non-conforming uses, such as off-highway vehicle driving and mountain biking, are typically already precluded from such areas. On the other hand, a wide array of outdoor recreational activities can and do occur in wilderness areas, such as hiking and backpacking, fishing and hunting, and more. The wilderness designation, in effect, makes current use patterns permanent.

Data on types and levels use in particular areas, wilderness or otherwise, are imprecise, at best. One source described Forest Service data on use levels as “horseback estimates,” with use estimated as an “increase or decrease from the previous year’s level, a figure which itself was based more on a manager’s rough sense of use than on any direct quantitative measurement.”<sup>30</sup> More recent use data is based on visitor interviews at specific sites through the National Visitor Uses Monitoring program; this program allows for a more systematic approach to estimating use for regions and national forests, and sometimes for sub-forest areas.<sup>31</sup> To date, this program has apparently not been applied to specific wilderness areas, and thus estimates on use, and on changes in use subsequent to a wilderness designation, are not published.

Other researchers have examined wilderness use trends more broadly. One study showed that, in the 1990s, wilderness use levels were rising faster than wilderness area designations, with most wilderness areas experiencing increased use.<sup>32</sup> This was contrasted with earlier reports that had determined that wilderness use in the 1980s had been stable. A more recent report shows that wilderness use continues to grow slowly, more slowly than other nature-based recreational activities.<sup>33</sup> Other researchers have looked at wilderness user demographics to assess likely future wilderness use levels. They report that certain groups—Hispanics, African Americans, older Americans, and dwellers of more urban settings—are less likely to use wilderness areas, while other demographics—males and higher-income and better-educated individuals—indicate more likely use of wilderness areas.<sup>34</sup> Based on expected U.S. demographic trends, these researchers project that wilderness use level will rise slowly, at less than the increase in population levels, over the next 50 years. Accordingly, the implications of all this for outdoor recreation are unclear.

Concerns about the impact of wilderness designation on the use of some areas has led Congress to include various provisions addressing those uses and impacts in wilderness statutes (as discussed above). Particular concerns are related to outfitters and guides and their use of horses in wilderness areas. This concern was first addressed in the Wilderness Act itself. Section 4(d)(6) states: “Commercial services may be performed within the wilderness areas designated by this Act to the extent necessary for activities which are proper for realizing the recreational or other wilderness purposes of the areas.” This is clearly an exception to the “no commercial enterprise” provision of §4(c) of the Act. Nonetheless, concerns persist, at least at times. As noted above, two provisions (§1803(j) and §1903(e)) of the Omnibus Public

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<sup>30</sup> V. Alaric Sample, *The Impact of the Federal Budget Process on National Forest Planning* (New York: Greenwood Press, 1990), p. 188.

<sup>31</sup> Eric M. White, Stanley J. Zarnoch, and Donald B.K. English, *Area-Specific Recreation Use Estimation Using the National Visitor Use Monitoring Program Data*, USDA Forest Service, Pacific Northwest Research Station, Res. Note PNW-RN-557, Portland, OR, July 2007, [http://www.fs.fed.us/pnw/pubs/pnw\\_rm557.pdf](http://www.fs.fed.us/pnw/pubs/pnw_rm557.pdf).

<sup>32</sup> David M. Cole, *Wilderness Recreation Use Trends, 1965 Through 1994*, USDA Forest Service Intermountain Research Station, Res. Paper INT-RP-488, Ogden, UT, April 1996, [http://www.fs.fed.us/rm/pubs\\_int/int\\_rp488.pdf](http://www.fs.fed.us/rm/pubs_int/int_rp488.pdf).

<sup>33</sup> H. Ken Cordell, “The Latest on Trends in Nature-Based Outdoor Recreation,” *Forest History Today*, Spring 2008.

<sup>34</sup> J.M. Bowker, D. Murphy, and H.K. Cordell, et al., “Wilderness and Primitive Area Recreation Participation and Consumption: An Examination of Demographic and Spatial Factors,” *Journal of Agricultural and Applied Economics*, vol. 38, no. 2 (August 2006), pp. 317-326.

Land Management Act of 2009 explicitly direct that the wilderness designation does not preclude horseback riding in or the entry of recreational or commercial saddle or pack stock into any of the units designated in those subtitles.

## Economic Impacts of Wilderness Designation

### 6. The state and local economic cost/benefit of designated wilderness areas as compared to adjacent and /or comparable non-wilderness federal lands?

There are two aspects of local economic impacts that have been discussed in the literature. One is the direct impact of the restrictions on access, facilities, and commercial operations imposed by wilderness designations. The other is the impact of wilderness designations on local amenity values (scenery, clean air and water, quality of life, etc.).

### Resource Development and Use

Local opposition to wilderness designations is common because of the belief that the management restrictions of wilderness will reduce local resource development and use. Three particular resource uses are the focus of opposition: limitations on mineral development; restrictions on timber harvesting; and impacts on motorized recreation (e.g., off-road vehicle (ORV) use). (As noted above, livestock grazing and water resource developments are generally permitted in wilderness areas.)

While many commercial activities cannot occur in wilderness areas, in general, the management restrictions only prevent *potential* development and use, not current activities. If roads existed to provide access for mineral exploration and extraction or for timber harvesting, the areas would not likely be considered to qualify as wilderness, and would not likely be proposed for designation. Similarly, if ORV use were common in the area, the impacts on the resources and natural values of the area would have been affected, and the area would not likely have been considered or proposed for wilderness designation. Thus, the management restrictions of wilderness designation generally do not constrain existing activities, but only possible future activities in the designated areas.

One question is whether restricting potential future use would constrain local economic development. This is more readily addressed by examining each of the three affected resource uses.

### Mineral Development

Designated wilderness areas are generally withdrawn from access under the mining and mineral leasing laws.<sup>35</sup> Thus, new mining claims and new mineral leases cannot be established once an area has been

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<sup>35</sup> The 1872 General Mining Law (30 U.S.C. §22 et seq.) permits individuals and firms to explore any available federal lands, and to stake a claim to any minerals found. The claimant must file the claim, prove that the minerals exist, and then can maintain the claim indefinitely with annual work and an annual fee. A claimant can gain title to the land (called patenting the land) for a relatively modest fee. See CRS Report RL33908, *Mining on Federal Lands: Hardrock Minerals*, by Marc Humphries. Mineral leasing laws (primarily the 1920 Mineral Leasing Act, 30 U.S.C. §181 et seq.) establish a system for leasing (for a period of time) available federal lands for energy minerals (e.g., coal, oil, and natural gas) or certain other minerals (e.g., phosphates), with bonus bids (auction values for acquiring the lease), annual payments, and royalties on minerals extracted. See CRS Report R40237, *Federal Lands Managed by the Bureau of Land Management (BLM) and the Forest Service (FS): Issues for the 111th Congress*, coordinated by Ross W. Gorte and Carol Hardy Vincent.

designated.<sup>36</sup> However, the Wilderness Act and subsequent wilderness statutes designate the areas *subject to valid existing rights*. Mining claims and mineral leases, providing they are proven to be valid, establish rights to the minerals. Thus, mining claims and mineral leases within designated wilderness areas can be developed. The Wilderness Act, in §4(d)(3), provides extensive direction on such potential development: the claims or leases remain valid:

subject, however, to such reasonable regulations governing ingress and egress as may be prescribed [by the Secretary] consistent with the use of the land for mineral location and development and exploration, drilling, and production, and use of land for transmission lines, waterlines, telephone lines, or facilities necessary in exploring, drilling, producing, mining, and processing operations, including where essential the use of mechanized ground or air equipment .... Mining locations lying within the boundaries of said wilderness areas shall be held and used solely for mining or processing operations and uses reasonably incident thereto; and hereafter, subject to valid existing rights, all patents issued under the mining laws ... shall convey title to the mineral deposits within the claim, together with the right to cut and use so much of the mature timber therefrom as may be needed in the extraction, removal, and beneficiation of the mineral deposits, if needed timber is not otherwise reasonably available, and if the timber is cut under sound principles of forest management ..., but each such patent shall reserve to the United States all title in or to the surface of the lands. ... Mineral leases, permits, and licenses ... shall contain such reasonable stipulations as may be prescribed [by the Secretary] for the protection of the wilderness character of the land consistent with the use of the land for the purposes for which they are leased, permitted, or licensed.

This language, in essence, directs that valid existing mineral rights can be developed within “reasonable regulations” that try to preserve the wilderness characteristics of the designated areas while allowing the exercise of those valid existing rights. Whether any such mineral rights have actually been developed within a designated wilderness area could not be confirmed.

One other aspect of potential mineral resources development is relevant. Section 4(d)(2) of the Wilderness Act explicitly allows gathering information about mineral and other resources in wilderness areas, including prospecting, “if such activity is carried on in a manner compatible with the preservation of the wilderness environment.” It might seem odd to allow prospecting in areas where rights to the minerals cannot be established. However, lands have been deleted from designated wilderness areas several times. While the deletions have sometimes been boundary modifications to eliminate private lands within the wilderness area, at least one has been for commercial purposes—the deletion of about 500 acres from the Goat Rocks Wilderness (originally designated in the Wilderness Act) to allow for the expansion of a downhill ski resort, in §3(7) of the Washington State Wilderness Act of 1984 (P.L. 98-339). Thus, if a significant and valuable mineral deposit were discovered within an existing wilderness area, Congress might act to modify the original designation to allow for the extraction of the minerals.

## Motorized Recreation

The Wilderness Act and subsequent wilderness statutes generally prohibit motorized and mechanical forms of recreation (including bicycles) from designated wilderness areas. The general exception, as discussed above, is the authorization for the Secretary to allow certain motorized recreational uses to continue. Specifically, §4(d)(1) of the Wilderness Act says “Within wilderness areas designated by this

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<sup>36</sup> The Wilderness Act (§4(d)(3)) permitted new claims and leases for about 20 years after enactment (through December 31, 1983). Efforts to lease areas for possible oil and gas exploration and extraction in the early 1980s led Congress to enact brief moratoria on new claims and leases in existing wilderness areas in the annual Interior appropriations acts, until the Wilderness Act authority expired.

Act the use of aircraft or motorboats, where these uses have already become established, may be permitted to continue subject to such regulations as the [Secretary] deems desirable.”

Other than the general exception for continued motorboat and aircraft use, wilderness management restrictions generally preclude motorized or mechanical recreation within designated wilderness areas. The only site-specific exception, identified above, is §4(e) of the Boundary Waters Canoe Area Wilderness Act (P.L. 95-495), which allows snowmobile use in certain units; it is unspecified (but likely) that this is for *continued* snowmobile use in those units.

The question for assessing the local economic impact of this management limitation is whether the designation of wilderness areas limits the growth of motorized recreation and its supporting businesses. Clearly, motorized recreation is a growing although not a dominant use of federal lands; driving off-road ranked third in growth in days of participation from 2000-2007, and fifth in growth in numbers of participants.<sup>37</sup> However, no research had documented whether use restrictions on some lands constrain growth in use regionally. That is, there is no evidence to indicate that prohibiting motorized recreation in some areas restricts the number of users or their use level. Thus, it is unclear whether wilderness designations have any impact on the local economic activity generated by motorized recreationists. Similarly, it is unknown whether the restriction on motorized recreation has increased the economic benefits realized from non-motorized recreation.

## Timber Harvesting

Much of the opposition to wilderness designations in the 1970s and 1980s was over concern about the impacts on timber harvesting. Timber harvesting is clearly precluded from designated wilderness areas, except as needed in support of mineral development (as noted above).

As with motorized recreation, the question for assessing the local economic impact of this management limitation is whether the designation of wilderness areas limits or reduces total timber harvests. In contrast to motorized recreation, however, the answer for timber harvesting is unambiguously yes; in some situations, wilderness designations reduce the amount of timber available for local processing. This can occur if (1) there is little, if any, non-Forest Service timber available to supplant reduced Forest Service timber supplies, and (2) the Forest Service timber sale program in an area (e.g., for a particular national forest) is at or near the maximum allowed by law.<sup>38</sup> The first condition—limited non-Forest Service timber—is true in most of the Rocky Mountains, from Idaho and Montana through Arizona and New Mexico.

The second condition—Forest Service timber program at or near the maximum—is more complicated. The condition results from a legal requirement in §13(a) of NFMA.<sup>39</sup> This provision, known as “non-declining even-flow,” generally limits the average annual Forest Service timber sales—the allowable sale quantity (ASQ)—to a level that can be sustained in perpetuity. This essentially limits timber sales from a national forest to the total quantity of timber that is grown on the area available for timber harvesting. If the area available is reduced, such as by wilderness designation, the total timber growth on the available

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<sup>37</sup> H. Ken Cordell, “The Latest on Trends in Nature-Based Outdoor Recreation.”

<sup>38</sup> This situation only occurs with national forest wilderness areas, because timber harvests from other federal lands are either not permitted (in the case of National Park Service lands) or are not as rigidly limited as national forest timber harvests (in the case of BLM or national wildlife refuge lands).

<sup>39</sup> 16 U.S.C. §1611(a).

area is reduced, thus lowering the ASQ for the national forest. If the current timber sale program is at or near the ASQ, wilderness designations could reduce the annual timber sales from that national forest.

This second condition was relatively commonplace for the national forests in the 1980s. However, Forest Service timber sales have fallen substantially. In all seven western Forest Service regions, the average timber sale program for 2004-2008 was less than one-half of the average timber sale program for 1985-1989.<sup>40</sup> However, timber sales on a few national forests have apparently risen in the past 20 years.<sup>41</sup> It is unclear, however, whether these national forests are at or near their ASQs, because data on national forest timber sales and ASQs are not summarized or aggregated in any published source, and are only available in the land and resource management (NFMA) plan for each national forest. Nonetheless, for most western national forests, the current timber sale program is substantially below the ASQ from the 1980s, and thus wilderness designations are unlikely to constrain timber sales unless those designations substantially reduce the available timberland.

## Local Economic Activity and Values From Wilderness

The economic benefits of wilderness are less readily measurable than the benefits of developmental uses. There is the direct benefit of on-site wilderness users and the local economic benefits associated with such uses, including outfitters and guides as well as recreational equipment and local economic activity generated before entering and after leaving wilderness areas. One source has summarized the literature in describing several benefits of wilderness:<sup>42</sup>

- Direct, on-site use and associated community economic activity;
- Ecological services, including watershed protection, nutrient cycling, carbon storage, and more;
- Scientific benefits, for research and education;
- Off-site benefits, such as the value of scenic views and higher property values; and
- Passive-use benefits, including existence, option, and bequest values.

Off-site benefits have been the subject of several studies. For example, various researchers have found that amenity values, such as water quality and forests, are an important factor in creating sustainable rural economies, such as by attracting retirees or business services that are not tied to a specific location.<sup>43</sup>

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<sup>40</sup> CRS calculations from data in Debra D. Warren, *Production, Prices, Employment, and Trade in Northwest Forest Industries, All Quarters 2008*, USDA Forest Service, Pacific Northwest Research Station, Resource Bulletin PNW-RB-258, Portland, OR, July 2009, p. 156, and \_\_\_\_\_, *Fourth Quarter 1991*, Resource Bulletin PNW-RB-192, May 1992, p. 104.

<sup>41</sup> The rise in national forest timber sale revenues is implicit in the choice by several counties to continue Forest Service Payments to States under the traditional system (25% of current revenues) rather than under the Secure Rural Schools and Community Self-Determination Act of 2000 (25% of peak historic revenues). For a description of Forest Service Payments to States under these systems, see CRS Report RL33822, *The Secure Rural Schools and Community Self-Determination Act of 2000: Forest Service Payments to Counties*, by Ross W. Gorte.

<sup>42</sup> J.M. Bowker, J.E. Harvard III, and John C. Bergstrom, et al., "Chapter 9—The Net Economic Value of Wilderness," in *The Multiple Values of Wilderness*, ed. H. Ken Cordell, John C. Bergstrom, and J.M. Bowker (State College, PA: Venture Publishing, Inc., 2005), pp. 161-180.

<sup>43</sup> See, for example, Neelam C. Poudyal, Donald G. Hodges, and H. Ken Cordell, "The Role of Natural Resource Amenities in Attracting Retirees: Implications for Economic Growth Policy," *Ecological Economics*, vol. 68 (April 2008), pp. 240-248.

Others have looked at wilderness more specifically, with one researcher documenting higher land values for areas nearer designated wilderness.<sup>44</sup>

Passive-use benefits have also been described by several sources. Three types of passive-use benefits are commonly discussed. One is existence values—the value people have from knowing that wilderness exists and is protected. Another is option value—the value of maintaining the potential of wilderness areas for future on-site use and other benefits. The third is bequest value—the value of maintaining wilderness areas for on-site use and other benefits for future generations. While widely accepted as real, passive-use benefits are difficult to quantify.

While all these values are associated with wilderness, an important question is whether the designation of wilderness adds to these values. Existing research documents that these values exist and are associated with designated wilderness. However, none of the research demonstrates that the designation itself creates any of the value. Rather, the values appear to be inherent in the undeveloped nature of the areas. While the designation of an area as wilderness almost guarantees the perpetuation of its undeveloped nature, it is unclear that the designation is *required* to preserve that undeveloped nature.

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<sup>44</sup> Spencer Phillips, "Windfalls for Wilderness: Land Protection and Land Value in the Green Mountains," in *Wilderness Science in a Time of Change Conference*, ed. Stephen F. McCool, David N. Cole, William T. Borrie, et al., vol. 2: Wilderness Within the Context of Larger Systems (Ogden, UT: USDA Forest Service, Rocky Mountain Research Station, 2000), pp. 258-267.

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