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Interpreting the Wilderness Act of 1964

Gordon Steinhoff

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Interpreting the Wilderness Act of 1964

Gordon Steinhoff
EDITOR'S PERSPECTIVE

Professor Gordon Steinhoff authors our summer article, *Interpreting the Wilderness Act of 1964*. Professor Steinhoff explores the quandary that although the Wilderness Act of 1964 mandates the preservation of wilderness character, it does not indicate what “wilderness character” actually means. Professor Steinhoff proposes how wilderness character should be understood and highlights the problems that arise during the management of the wilderness. The article shows how leaders in wilderness management have relegated the concept of wilderness character to a guiding principle rather than as an active requirement in management. Disagreeing with other scholar’s interpretations of the Wilderness Act, Professor Steinhoff argues that the Wilderness Act mandates a stringent preservation of wilderness character. This interpretation of wilderness character, the article concludes, requires the preservation of unhindered natural processes and a prohibition of manipulating wilderness for a wilderness manager’s desired ends.

Turning to our student pieces, Kameron M. Lawson authors our lead Note entitled *Washing Machines, Water Efficiency, and Federal Preemption: California's Quest to Regulate Water Consumption Under the EPCA*. Kameron explores the holding in *California Energy Comm’n v. Dep’t of Energy* – that the Department of Energy’s rejection of a waiver application from the California Energy Commission to waive Energy Policy and Conservation Act standards was arbitrary and capricious - to discuss the concept of cooperative federalism and the future of California’s water preservation. In doing so, Kameron reveals the importance of the concept of cooperative federalism to Environmental law and shows how states can serve as laboratories of experiment in environmental regulation, which other states can subsequently replicate, decline to participate in, or modify.

Thomas C. Smith authors our second Note, *Global Warming & Common Law Tort Claims: Did The Fifth Circuit Open Up Pandora’s Box*. Tom’s Note analyzes the Fifth Circuit’s decision in *Comer v. Murphy Oil USA*, initially holding that the plaintiffs’ claim of private damages resulting from global warming did not present a nonjusticiable political question and the plaintiffs did have Article III standing. It should be noted, however, that this decision was subsequently vacated due to the
Fifth Circuit granting a rehearing en banc. Thereafter, a recusal resulted in a loss of quorum and due to this, the court dismissed the appeal and left the district court’s decision in place.

Nonetheless, the editors of this edition felt strongly that Tom’s Note was more relevant than ever, as it sets the stage for an academic discussion on the future of the political question doctrine, Article III standing as it pertains to plaintiffs bringing suit for global warming harm, and how federal courts throughout the nation have addressed these legal questions. Tom argues that Comer has important implications for those wishing to bring suit against contributors to global warming and that it opens the door to mass tort litigation involving global warming.

Aaron Sanders authors our third Note, Decades of Uncertainty End with Error, which discusses the 2009 United States Supreme Court decision Entergy Corp. v. Riverkeeper, Inc. In Entergy Corp., the Court held that the EPA’s interpretation of a statute – allowing for a cost benefit analysis when setting national performance standards for cooling water intake structures and variances from those national standards - was permissible. Aaron argues that although the Court’s decision ends decades of uncertainty concerning the Clean Water Act’s mandate to use the best technologies available in cooling water intake structures in order to minimize adverse environmental impacts, it goes against Congressional intent.

Michael A. Moorefield authors our fourth and final Note of the edition, The Times Are They a-Changin’?: What Kivalina Says About the State of Environmental “Political Questions,” which also addresses the political question doctrine issues in global warming claims that Tom’s note examines. Mike discusses the implications the court’s holding - that the plaintiff’s claims of harm resulting from global warming against the defendants were not justiciable under the political question doctrine and the plaintiffs lacked Article III standing – has on the future of global warming lawsuits. Specifically, Mike argues that: (1) the current jurisprudence of the political question doctrine, coupled with the current political climate, leaves environmental litigants harmed by global warming with little avenue for redress; and (2) the decision’s framework reveals strategies on how to overcome the political question doctrine and bring suit for global warming claims.
Volume 17 concludes with seven updates discussing recent court holdings throughout the country that impact Environmental law.

We would like to extend a special thanks to the 2009 – 2010 Board for their hard work on Volume 17 of the Journal. Their passion and dedication throughout the year is the sole reason this Journal continues to enjoy its success. Additionally, thanks are in order to the 2010 – 2011 Board, who contributed to the editing of this issue. The Journal is blessed to have an accomplished incoming Board that will lead it to new heights. During the next year, MELPR will be unveiling a new Ideas Section geared towards attracting thought provoking pieces, raising money in hopes of starting a writing competition, and laying groundwork to put on our first symposium.

Finally, and most importantly, thanks goes to our advisor, Professor Thom Lambert, who has guided us through another edition and has been available at a moment’s notice to answer all of our questions and deal with any problems that occur.

ERIN P. SEELE
EDITOR-IN-CHIEF, 2009 – 2010

MICHAEL A. MOOREFIELD
EDITOR-IN-CHIEF, 2010 - 2011
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I. INTRODUCTION

The Wilderness Act of 1964 includes a definition of wilderness. The first sentence in the definition is probably the most frequently quoted sentence from the Act:

A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain.¹

The meaning of "untrammeled by man" is, of course, critical and is not obvious. The definition is merely a definition, however; it does not provide management direction. The definition in itself does not mandate the preservation of untrammeled wilderness. Explicit management direction is found in other sections of the Act. In a later section, the Act states,

Except as otherwise provided in this [Act], each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character.²

Explicit management direction is also found in the Act's opening statement of policy, which states that wilderness areas

shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and

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2 Id. § 1133(b).
so as to provide for . . . the preservation of their wilderness character.\(^3\)

The Act mandates the preservation of wilderness character, but surprisingly does not indicate what is meant by this expression. "Wilderness" is defined within the Act, but not wilderness character. It seems reasonable to interpret wilderness character in light of the Act's definition of wilderness, but given the language within the Act there is no pressing need to do this. In this article I will discuss in detail how wilderness character should be understood. It is a rich concept, and certainly does justice to our intuitive idea of what wilderness is. Problems arise, however, in the application of this concept in the actual management of wilderness. As I will discuss, leaders in wilderness management interpret the Act as mandating preservation of only limited aspects of wilderness character, or they interpret the Act as presenting contradictory requirements. In their interpretations, wilderness character has been relegated to the role of an ideal that hopefully guides management but is not required in management. Managers are allowed and even encouraged to extensively manipulate wilderness for desired ends. There has been much interference in natural processes and loss of naturalness. I will discuss interpretations of the Act presented by Hendee and Dawson, and other leaders in the discipline, and I will argue that their interpretations are not accurate. I will argue for the contrary view: the Wilderness Act requires the preservation of wilderness character in all its richness, including natural conditions with unhindered natural processes. This is not merely an ideal. I will conclude by joining with others in urging stricter adherence to the Wilderness Act.

II. WILDERNESS CHARACTER

As mentioned, the Wilderness Act does not indicate the meaning of wilderness character. This expression is best interpreted, however, as referring to those properties that make up wilderness and distinguish it from other kinds of lands. Such an interpretation fits well with the

\(^3\) Id. § 1131(a).
meaning of "character." The constitutive and distinguishing properties of wilderness are used to define wilderness within the Act. These are the essential properties of wilderness. Without any one of them, an area could not be wilderness. Wilderness management experts agree that wilderness character includes the distinguishing features of wilderness, and that for these we should look to the definition of wilderness within the Act.

The definition of wilderness within the Act consists of two sentences. The first was written by Howard Zahniser, the primary author of the Wilderness Act: "A wilderness . . . is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." Zahniser purposively chose the word "untrammeled," which has led to much confusion. As will be discussed, it does not mean pristine. When the proposed legislation was debated and revised in Congress, lawmakers sought to clarify the definition. According to the historical account presented by Doug Scott, lawmakers expanded the definition of wilderness by adding this sentence written by Senator Murray:

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

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4 "Character" is defined as: an attribute or feature that makes up and distinguishes an individual. See Merriam-Webster Online Dictionary, available at http://www.merriam-webster.com/dictionary/character.

5 See Peter Landres, Developing Indicators to Monitor the "Outstanding Opportunities" Quality of Wilderness Character, 10 INT'L J. WILDERNESS 8, 9 (2004); see also Jerry F. Franklin & Gregory H. Aplet, Wilderness Ecosystems, in WILDERNESS MANAGEMENT: STEWARDSHIP AND PROTECTION OF RESOURCES AND VALUES 263, 269-70 (John C. Hendee & Chad P. Dawson eds., 2002).

6 16 U.S.C. § 1131(c).

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.\(^8\)

Senator Murray explained, “The added detail in the definition of wilderness is in response to requests for additional and more concrete details in defining areas of wilderness.”\(^9\)

Wilderness character consists of properties taken from the above definition. Among wilderness management experts there is fairly good agreement on the properties that make up wilderness character. Peter Landres includes in his list: untrammeled, natural conditions, undeveloped, and outstanding opportunities for solitude or a primitive and unconfined type of recreation.\(^10\) In their classic wilderness management text, Hendee and Dawson write that a distinguishing feature of wilderness is its “substantially natural ecological conditions.”\(^11\) These authors do not discuss wilderness character in detail, but they would presumably include natural conditions within wilderness character. Franklin and Aplet place within wilderness character untrammeled, natural conditions, and outstanding opportunities for solitude or a primitive and unconfined type of recreation.\(^12\) In generating a list of properties that make up wilderness character, it is best to be concise. “Natural conditions” is best interpreted as meaning that an area is generally free of human influence. An area that is managed to preserve its natural conditions should be, then,

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\(^8\) Id.; 16 U.S.C. § 1131(c).
\(^9\) Scott, supra note 7, at 77.
\(^10\) Landres, supra note 5, at 9.
\(^11\) WILDERNESS MANAGEMENT: STEWARDSHIP AND PROTECTION OF RESOURCES AND VALUES 22-23 (John C. Hendee & Chad P. Dawson eds., 2002) [hereinafter Hendee & Dawson].
\(^12\) Franklin & Aplet, supra note 5, at 270-71. Though they mention other properties from the definition, these authors appear to limit wilderness character to these three properties.
undevolved, and lack permanent improvements and human habitation.\textsuperscript{13} Among the experts there is good agreement, then, that wilderness character consists of these properties: untrammeled, natural conditions, and outstanding opportunities for solitude or a primitive and unconfined type of recreation.

Several interpretations of "natural conditions" or (the term often used by the experts) "naturalness" have been proposed. Landres suggests this helpful characterization: "substantially free from the effects of modern civilization.\textsuperscript{14} David Cole characterizes naturalness as "a relative lack of human influence,"\textsuperscript{15} but this is too weak. With this characterization, a wilderness area could be developed with genetically altered forests, carefully cultivated gardens, paved trails, park benches, information kiosks, shelters at every campground, etc. and the area would still be considered as retaining its natural conditions compared to, say, the downtown area of a large city. The interpretation adopted here combines elements from the above characterizations. "Natural conditions" (naturalness) will be understood as: generally free of human influence.

There is some disagreement among management experts concerning the meaning of untrammeled. Hendee and Dawson adopt the explanation given by Zahniser. As Zahniser explained, "untrammeled" means "not subject to human controls and manipulations that hamper the free play of natural forces."\textsuperscript{16} To express this perhaps somewhat more clearly, the meaning is: not subject to deliberate human control or manipulations that would hinder natural ecological processes ("hamper the free play of natural forces"). "Untrammeled" does not mean pristine, that is, entirely unmodified by humans, and Hendee and Dawson do not interpret it in this way. As they acknowledge, untrammeled wilderness

\textsuperscript{13} Landres likely includes "undeveloped" since this property is readily observable. He intends that his list be used in monitoring wilderness character. See Landres, \textit{supra} note 5, at 9.

\textsuperscript{14} \textit{Id}.

\textsuperscript{15} David N. Cole, \textit{Management Dilemmas that Will Shape Wilderness in the 21st Century}, 99 J. FORESTRY 4, 6 (2001). Cole's interpretation of the Act will be considered in more detail below.

\textsuperscript{16} Hendee & Dawson, \textit{supra} note 11, at 109; \textit{Mark Harvey, Wilderness Forever: Howard Zahniser and the Path to the Wilderness Act} 203 (Univ. of Wash. Press 2005).
may have been modified to some extent; there may be some evidence of human activity. But any deliberate manipulations are minor, not substantial enough to hinder or obstruct natural processes. Cole and other management experts interpret untrammeled in too strong a way. According to Cole's interpretation, "untrammeled" means simply: free from deliberate human control and manipulations. This does not allow any deliberate control or manipulation of untrammeled wilderness, even that which does not hinder natural processes, which is too strong. The meaning of "untrammeled" allows minor human manipulations as long as natural processes remain unhindered.

A fourth property should be included within wilderness character: the natural appearance of wilderness. Surely a distinguishing feature of wilderness is that (following the definition) an area generally appears to have been affected primarily by natural forces. Any evidence of human activity is "substantially unnoticeable." Hendee and Dawson emphasize that the Act requires the preservation of the natural appearance of wilderness, its "apparent naturalness." Wilderness character consists, then, of these four constitutive and distinguishing properties: (1) untrammeled—not subject to deliberate human control or manipulations that would hinder natural processes, (2) natural conditions (naturalness)—an area is generally free of human influence, (3) natural appearance—generally appears to have been affected primarily by the forces of nature, with evidence of human activity substantially unnoticeable, and (4) outstanding opportunities for solitude or a primitive and unconfined type of recreation. The Act's mandate to preserve wilderness character is a

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17 Hendee & Dawson, supra note 11, at 109-10.
19 Hendee & Dawson, supra note 11, at 469-70.
20 Primitive recreation includes hiking, backpacking, primitive camping, fishing, nature photography, etc. Id. at 375, 392, 397-99. Why does the definition specify outstanding opportunities for solitude or a primitive and unconfined type of recreation? Hendee and Dawson offer two theories. The first is that this wording makes the definition more inclusive. It allows an area to count as wilderness if, for example, it offers outstanding opportunities for solitude even though it may not offer truly outstanding wilderness recreation. The second theory (the one these authors prefer) is that "outstanding
mandate to preserve each of these properties. Wilderness areas are to be protected from substantial human influence, which may be inadvertent, for example global climate change (a difficult task), pollution, and human-transported exotic species. Threats to natural conditions also include intentional influences such as farming, mining, and economic development. Natural processes are to be protected from deliberate human control and manipulations such as farming, timber harvesting, the construction of dams (which hinders natural hydrological processes), the construction of roads (which causes erosion and fragments wildlife habitat), building fences, etc. Minor manipulations of wilderness are allowed — for example, the placement of directional signs for visitor safety — as long as manipulations are substantially unnoticeable (signs must be properly designed and placed) and the area remains generally free of human influence. Also, manipulations may not hinder natural ecological processes.

Natural appearance is an important aspect of wilderness character. Manipulations of wilderness such as the placement of too many directional signs, or signs that are poorly designed and “stand out” against their background, are not allowed even though the area may remain generally free of human influence. The problem in such cases is not loss of natural conditions or hindering natural processes. This is not, strictly speaking, trammeling. The problem is readily observable evidence of human activity, and so loss of natural appearance. According to trail construction guides, trails should be constructed so they follow the natural contours of the landscape. According to one guide, a trail should lay “lightly on the land,” appearing as though part of the natural landscape, as though it “just happened.” By contrast, a poorly designed trail that is, say, too linear within its setting is readily observable evidence of human activity. It appears out of place. Although wilderness character includes natural conditions and unhindered natural processes, natural appearance is also

opportunities for solitude” and “[outstanding opportunities for] a primitive and unconfined type of recreation” are two ways of saying the same thing. Both phrases were used to clarify the intent. Id. at 110.

21 See generally id. at 351-69 (discussing various threats to wilderness).
23 Id.
highly important.

The Wilderness Act prohibits uses that would degrade wilderness character, including commercial enterprises and the building of permanent roads.\(^\text{24}\) The Act also prohibits (with certain exceptions) the building of temporary roads, the construction of structures or installations, the use of motor vehicles, motorized equipment, motorboats, or any mechanical transport, and the landing of aircraft.\(^\text{25}\) The impact of motorboats, aircraft, and motor vehicles on natural processes and natural conditions is arguable. Such uses are clearly problematic in wilderness, however, because they are highly noticeable signs of human activity and so compromise natural appearance. They also result in loss of solitude.

### III. THE TRAMMELING OF WILDERNESS

In spite of the definition of wilderness as untrammeled and the explicit mandate within the Wilderness Act to preserve wilderness character, managers have extensively manipulated wilderness to achieve desired ends. Managers do far more than install directional signs. There has been much trammeling of wilderness and loss of naturalness. Hendee and Dawson, and other leaders in wilderness management, adopt interpretations of the Act that allow managers much discretion in manipulating these areas. In this section we will consider some examples of management manipulations of wilderness. These examples will be helpful in the later discussion.

Artificial stocking of fish is common in wilderness lakes.\(^\text{26}\) Stocking lakes with fish is deliberate manipulation of wilderness that hinders natural processes,\(^\text{27}\) and so counts as trammeling. Fish stocking in wilderness is highly controversial. Hendee and Dawson write that fish stocking and the methods used (aerial stocking) compromise the


\(^{25}\) \textit{Id.} As will be discussed below, the Act allows exceptions in emergencies and to meet minimum requirements for administering an area for the purpose of the Act.

\(^{26}\) \textit{See} Peter Landres et al., \textit{The Wilderness Act and Fish Stocking: An Overview of Legislation, Judicial Interpretation, and Agency Implementation}, 4 ECOSYSTEMS 287, 287 (2001); \textit{see also} Donald A. Duff, \textit{Fish Stocking in U.S. Federal Wilderness Areas: Challenges and Opportunities}, 1 INT'L J. WILDERNESS 17, 17 (1995).

\(^{27}\) As discussed below, trout and other introduced fish prey on amphibians.
naturalness of wilderness. Yet they recommend continued stocking in those lakes for which the practice has been well established. Cole, on the other hand, suggests that fish stocking should be eliminated in wilderness. Landres and others report that the vast majority of high-elevation western lakes were historically fishless, which raises "serious questions," they write, concerning the appropriateness of continuing to stock these lakes. Fish stocking in federally designated wilderness areas is routinely carried out by state wildlife agencies. The four agencies responsible for the management of federal wilderness areas — the United States Forest Service, the National Park Service, the U.S. Fish and Wildlife Service, and the U.S. Bureau of Land Management — have adopted regulations restricting artificial stocking in wilderness lakes. These federal agencies work in cooperation with state agencies on special stocking projects.

For example, the U.S. Forest Service and other federal agencies have recently approved a plan proposed by the Montana Fish, Wildlife, and Parks Department to stock twenty-one lakes in the Bob Marshall Wilderness Area with westslope cutthroat trout. The plan involves poisoning hybrid trout already present in the lakes and then restocking with genetically pure westslope cutthroat trout. The goal is to protect the genetic purity of this special subspecies (the official state fish) within the South Fork Flathead watershed. The agencies are concerned that hybrid trout living in these lakes will be washed downstream during storms and

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28 Hendee & Dawson, supra note 11, at 342.
29 Id. at 343.
30 See David N. Cole, Ecological Impacts of Wilderness Recreation and Their Management, in WILDERNESS MANAGEMENT: STEWARDSHIP AND PROTECTION OF RESOURCES AND VALUES, supra note 11, at 414.
31 Landres et al., supra note 26, at 288; see also Duff, supra note 26, at 17 (stating that "[d]ecreases in native aquatic fauna have been attributed to fish stocking in wilderness waters ....").
32 See Landres et al., supra note 26, at 287; see also Duff, supra note 26, at 17.
33 BONNEVILLE POWER ADMINISTRATION, SOUTH FORK FLATHEAD WATERSHED WESTSLOPE CUTTHROAT TROUT CONSERVATION PROGRAM, DRAFT ENVIRONMENTAL IMPACT STATEMENT S-3 (June 2004) [hereinafter BONNEVILLE DRAFT EIS]. The Bonneville Power Administration is funding the project and is the lead agency. The Montana Fish, Wildlife and Parks Department is a cooperating agency, as is the U.S. Forest Service.
will breed with the westslope cutthroats in the streams and lower lakes.

This project is controversial for several reasons, one of which is that historically these lakes were fishless. Historically, westslope cutthroat trout lived lower in the watershed, in the streams and lower lakes, but not in these high lakes. Waterfalls and other obstacles prevented fish from moving upstream into the high lakes. Studies have shown that trout and other predaceous fish negatively impact amphibians. Many species of amphibians are in steep decline across the United States and around the world. In the western United States, a major problem is the introduction of non-native, predaceous fish into lakes and streams. Biologists have recommended managing high mountain lakes in Montana for quality amphibian habitat, which would involve maintaining at least some lakes in a fishless condition. The Environmental Impact Statement (EIS) for the Montana fish-stocking project notes that northern leopard frogs are believed to exist in the project area. This is presumably one of only two remnant populations known to exist in western Montana. Bryce Maxell recommends that the Forest Service and the state of Montana “initiate habitat improvement projects around the remaining populations” of northern leopard frogs in western Montana. The EIS does not adequately discuss the impacts of predaceous fish on amphibians, however, and there is no mention of recommendations to manage high wilderness lakes for amphibian habitat.

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34 See generally David S. Pilliod & Charles R, Peterson, Local and Landscape Effects of Introduced Trout on Amphibians in Historically Fishless Watersheds, 4 ECOSYSTEMS 322, 322 (2001) (reporting that in surveys in a wilderness area in Idaho, “the abundance of amphibians at all life stages was significantly lower in lakes with fish.”).


36 SMITH & KEINATH, supra note 35, at 3.

37 Pilliod & Peterson, supra note 34, at 331.

38 BONNEVILLE DRAFT EIS, supra note 33, at 3-18.

39 MAXELL, supra note 35, at 146.

40 Id.

41 See BONNEVILLE DRAFT EIS, supra note 33. The EIS includes this statement: “In streams and lakes throughout the South Fork Flathead, native westslope cutthroat trout
In comments on this project, citizens and environmental organizations urged the agencies to consider leaving these lakes in their fishless, natural condition. One citizen correctly pointed out that there was no need to restock the lakes. Eliminating the hybrid trout and leaving the lakes fishless would satisfy the purpose of the project: preserving the genetic purity of westslope cutthroat trout in the watershed. The U.S. Environmental Protection Agency suggested that the agencies cooperating in this project consider leaving at least some of the lakes fishless for future comparisons of lakes with and without fish. The agencies refused to evaluate such an alternative in the EIS, claiming that the goal of the project is to preserve westslope cutthroat trout, not to create fishless lakes. The EIS makes clear that the agencies were sensitive to the importance of trout fishing to the local economy. The goal of this project was actually to maintain both the fish and outstanding wilderness angling opportunities.

Mountain goats have been introduced into federal wilderness areas in Utah by the Utah Division of Wildlife Resources. Apparently, mountain goats are not native to the state. There is no direct evidence (including fossil evidence) that mountain goats ever lived in Utah prior to the first introduction in 1967. The Utah Division of Wildlife Resources has declared that the goats are native, however, based on speculation and native amphibians coexist much as they do naturally in these streams.”

42 For example, American Wildlands commented that the organization “does not believe it is appropriate to ‘restore’ westslope cutthroat trout to lakes and streams where the fish never naturally occurred.” BONNEVILLE POWER ADMINISTRATION, SOUTH FORK FLATHEAD WATERSHED WESTSLOPE CUTHROAT TROUT CONSERVATION PROGRAM, FINAL ENVIRONMENTAL IMPACT STATEMENT 1-65 (July 2005) [hereinafter BONNEVILLE FINAL EIS].

43 Id. at 1-287.

44 Id. at 1-19.

45 Id. at 1-190. One concern expressed by the agencies was that leaving the lakes fishless would encourage individuals to illegally introduce non-native fish. See id. at 1-198.

46 Id. at 1-328 to -29.

concerning the migration of goats during the Pleistocene.\textsuperscript{48} Citizens have expressed concern with this loss of naturalness, but Forest Service policy gives the state wildlife agency responsibility for determining whether or not the goats are native.\textsuperscript{49} According to the state agency’s goat management plan, the goats are thriving in their new homes, an indication (the agency claims) of suitable habitat.\textsuperscript{50} Apparently, the goats do not compete with native bighorn sheep.\textsuperscript{51} The shaggy white mountain goats are extremely popular with wilderness visitors.\textsuperscript{52} There is some concern, however, with possible impacts on fragile alpine vegetation. The state agency plans to closely monitor the goats’ use of available forage.\textsuperscript{53} The agency plans to regulate numbers of goats as needed, with perhaps further introductions.\textsuperscript{54}

One problem may be goat impacts on rare and endemic plants. Utah is home to a large number of rare and endemic plant species.\textsuperscript{55} Observations have led biologists to believe that non-native mountain goats in Washington’s Olympic National Park have altered abundances of rare and endemic plants through grazing, trampling, and wallowing.\textsuperscript{56} Studies

\textsuperscript{48} Id. at 4, 7-10.
\textsuperscript{49} See Dick Carter, \textit{Maintaining Wildlife Naturalness in Wilderness}, 3 INT’L J. WILDERNESS 17, 19 (1997); see also USDA FOREST SERV., \textit{FOREST SERV. MANUAL}, ch. 2640 (1995) (stating that “the State has the responsibility to make the determination as to which wildlife and fish species are native or indigenous.”).
\textsuperscript{50} UTAH DIV. OF WILDLIFE RESOURCES, \textit{supra} note 47, at 8.
\textsuperscript{51} Id. at 2.
\textsuperscript{52} Id. at 3.
\textsuperscript{53} Id.
\textsuperscript{54} Id. at 3-5.

According to this document,

Mountain goats of Olympic National Park are but one example of the pervasive influence of humans on the Earth’s biota . . . . Introduced exotic or alien species often disrupt established ecosystem processes and pose management problems for national parks. This is the situation in Olympic National Park: goats have
have not shown that the goats threaten the existence of any of these plants, but some of the plants are extremely rare, and biologists are concerned with the possibility of goat-induced extinctions.\(^57\) Current management options under consideration include eliminating all goats in the park through aerial shooting.\(^58\) Introducing and regulating mountain goats in wilderness areas in Utah represents significant human influence in wilderness, and so loss of naturalness. This is also trammeling, deliberate human manipulations that hinder natural ecological processes, since the introduced goats feed on alpine vegetation, compete with deer and elk,\(^59\) etc. Introducing non-native mountain goats into wilderness is similar to introducing cows into wilderness. Both actions compromise naturalness, and they hinder natural processes and so constitute trammeling.

Facilities have been constructed to provide water for desert bighorn sheep in the Kofa Wilderness Area in Arizona. The Arizona Game and Fish Department, in cooperation with the U.S. Fish and Wildlife Agency, has constructed watering facilities called “guzzlers” in response to significant declines in numbers of sheep during recent years.\(^60\) Suspected causes of the declines include predation, hunting, and drought.\(^61\) These facilities have been constructed in such a way that they are not readily observable. The water storage tanks are underground, hidden from view. Low profile concrete structures placed in nearby washes divert rainwater into the storage tanks through underground pipes.\(^62\)

Wilderness Watch and other environmental organizations filed a complaint in federal court, claiming violations of the Wilderness Act and

modified the vegetation—as all large herbivores do—and, thereby, have affected endemic plants. \(\textit{Id.}\)

\(^57\) \textit{Id.} at ch. 13 (stating “[w]e remain concerned about the persistence of rare plants in mountain goat habitat.”).

\(^58\) \textit{Id.} at ch. 14. Regulating goat populations is challenging. Live capture is not a good option since it is inefficient and tends to seriously harm the goats. \textit{Id.} Ironically, some of the goats introduced into Utah were donated by Olympic National Park. \textit{See} Carter, \textit{supra} note 49, at 19.

\(^59\) \textit{UTAH DIV. OF WILDLIFE RESOURCES, supra} note 47, at 3.


\(^61\) \textit{Id.} at *3.

\(^{62}\) \textit{Id.} at *3-4.
the National Environmental Policy Act. The case is now on appeal. Plaintiffs argue that the project degrades wilderness character by, among other things, modifying the area’s natural conditions. The permanent availability of water in this desert landscape draws animals to the area, plaintiffs assert, and one concern is that the sheep are more vulnerable to predation by mountain lions. Another problem, not raised in the complaint, is that the sheep are more vulnerable to predation by humans. The project is supported by local hunting organizations. The project represents significant human influence in wilderness, and so loss of naturalness. Also, the project represents deliberate human manipulation of wilderness that hinders the ecological processes that naturally govern numbers of sheep, and so constitutes trammeling.

Finally, the St. Mary’s Wilderness Area in Virginia has been treated with lime in an effort to counteract the effects of acid rain. Increased acidity in the St. Mary’s River and its tributaries caused dramatic losses of native trout and aquatic macroinvertebrates. According to the Forest Service, approximately fifty percent of native fish and aquatic macroinvertebrate species were lost. The river and streams were reportedly almost lifeless. One goal of the project was to restore the native brook trout fishery. A helicopter deposited limestone sand (calcium carbonate) at selected sites along headwater streams to raise pH levels. While limestone is common in the lower Shenandoah Valley, it does not occur naturally in this wilderness area. The limestone deposits were expected to be a different color than the surrounding rock and soil, and noticeable to visitors to these areas. The Forest Service did not claim that this wilderness area was being restored to its natural conditions; rather, it

63 Id. at *1.
66 Id. at *13-14.
67 Id. at *1.
69 Id. at 2.
70 Id. at 11.
claimed enhanced native biodiversity.\textsuperscript{71} It has been suggested that such treatments take place every five to ten years.\textsuperscript{72} This is deliberate manipulation of wilderness that hinders natural processes, for example those that govern the mineral content of the stream water, and so constitutes trammeling.

Many other examples could be described. Considering the liming project in the St. Mary’s Wilderness Area, the goal of restoring the aquatic ecosystems and the native trout fishery seems justifiable. In the other examples, however, the goals and the methods for achieving them seem (frankly) dubious. As in these examples, through management activities there has been much trammeling and loss of naturalness within federal wilderness areas.

IV. **HENDEE AND DAWSON**

Hendee and Dawson have interpreted the Wilderness Act in their classic wilderness management text, in its third edition.\textsuperscript{73} These authors interpret the Act as mandating the preservation of only limited aspects of wilderness character. The Act defines wilderness, in part, as “managed so as to preserve its natural conditions.”\textsuperscript{74} But the definition further describes wilderness as “generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable.”\textsuperscript{75} Hendee and Dawson interpret this second sentence as limiting management responsibilities under the Act. They agree that the Act mandates the preservation of natural conditions (naturalness), but only to the extent that natural conditions are perceived by most visitors to wilderness. Most visitors are not professionally trained and are unable to perceive actual naturalness, they write. These people perceive, rather, “apparent naturalness.”\textsuperscript{76} Hendee and Dawson provide this example: a campsite may be severely impacted by use. Vegetation may have been severely trampled or lost altogether, and the soil may be severely

\textsuperscript{71} Id. at 2.
\textsuperscript{72} Id. at 3.
\textsuperscript{73} Hendee & Dawson, supra note 11.
\textsuperscript{74} 16 U.S.C. § 1131(c) (2006).
\textsuperscript{75} Id.
\textsuperscript{76} Hendee & Dawson, supra note 11, at 469.
compacted, but most people will not notice this loss of naturalness. The naturalness they perceive, "apparent naturalness," may be minimally affected or unaffected. Hendee and Dawson claim that the Wilderness Act mandates the preservation of apparent rather than actual naturalness. That is, according to these authors, the Act mandates preservation of the natural appearance of wilderness rather than actual natural conditions. These authors write, "It is the 'apparent naturalness' perceived by visitors that is important under the Wilderness Act and also to visitor's experience." The Act mandates preservation of a high degree of apparent naturalness. Wilderness must "generally appear," they write, "to be primarily affected by nature with man's imprint substantially unnoticeable." The text includes a reference to a well-known legal analysis of the Act by Michael McCloskey. McCloskey expressed concern that this "qualifying language" (as he put it) — "generally appears to have been affected primarily by the forces of nature," etc. — would be interpreted as seriously limiting the force of the earlier descriptions of wilderness within the definition, including untrammeled, undeveloped, and (presumably) natural conditions.

The Act defines wilderness in part as "untrammeled by man," but Hendee and Dawson insist that untrammeled wilderness is an ideal not required in management. The Act "says quite clearly," they point out, that wilderness "should be a setting where the forces of nature [natural processes] operate free from human influence." Wilderness should be this way, untrammeled, but they believe this ideal would be too restrictive if required by the Act. They add,

The definition of wilderness in section 2(c) gives important clues to the congressional view of wilderness. Recognizing that the ideal did not exist, they added a working definition

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77 Id. Franklin and Aplet write, "The degree of naturalness in ecological terms is a function of ecosystem factors and, if quantified, will often differ from the visitor's perception of naturalness." Franklin & Aplet, supra note 5, at 275.
78 Hendee & Dawson, supra note 11, at 469.
79 Id.
81 Hendee & Dawson, supra note 11, at 20.
Based on reality. . . . [T]he act accommodates reality by stating that these areas "generally appear" to be "primarily affected" by nature with man's imprint "substantially unnoticeable."\footnote{Id. at 110.}

According to Hendee and Dawson, as Congress debated and revised the proposed legislation it accommodated reality (the reality of management) by providing a second, "working definition" that focuses on the appearance of wilderness and visitors' experiences of it. This "working definition" is supposedly found in the long sentence added to the Act's wilderness definition by Senator Murray that begins: "An area of wilderness is further defined to mean in this Act. . . ."\footnote{16 U.S.C. § 1131(c) (2006).} Hendee and Dawson interpret the Wilderness Act as mandating the preservation of wilderness as described only in this second, "working definition," complete with qualifying language. Managers are not legally responsible, then, for the preservation of untrammeled wilderness (unhindered natural processes), as they are not legally responsible for the preservation of an area's overall natural conditions (generally free of human influence). They are legally responsible for the preservation of natural appearances. Wilderness must generally appear to be affected primarily by natural forces, with evidence of human activity substantially unnoticeable.

Hendee and Dawson rely on comments by Congressman Saylor, a staunch supporter of the Act at the time of its passage. In his analysis of the Act, Saylor claimed that the first sentence in the Act's definition of wilderness states the nature of wilderness in an ideal concept of area... untrammeled by man, who visits but does not remain. The second sentence describes an area of wilderness as it is to be considered for the purposes of the Act — areas where man's works are substantially unnoticeable, where there is outstanding opportunity for solitude . . . .\footnote{Bill Worf, \textit{Response to "Ecological Manipulation in Wilderness"} by Dr. David N. Cole, 3 \textsc{Int'l J. Wilderness} 30, 30 (June 1997).}
Hendee and Dawson, and others, consider these words authoritative. They supposedly make clear Congressional understanding of the Act. The exact language in the Act's wilderness definition gives no indication, however, that the first sentence expresses the ideal and the second sentence expresses a distinct, "working definition." The second sentence begins with the phrase: "An area of wilderness is further defined to mean in this Act," but this wording likely indicates that the original definition has been expanded for the sake of clarification. Indeed, the author of this sentence, Senator Murray, indicated that this was his intention. He stated (paraphrasing) that in response to requests he added more concrete details to the definition of wilderness. He did not indicate that his intention was to provide a second, more practical or "working" definition, a distinct conception of wilderness. From the quotes provided by Scott in his legislative history of the Act, several members of Congress commented on the Act at the time of its passage, and there was no uniform understanding of the wilderness definition. Given the actual language in the Act, there is only one definition of wilderness, a seamless whole.

Within Hendee and Dawson's interpretation, untrammelled wilderness is not dismissed as a mere ideal. Managers are strongly encouraged to accept untrammelled wilderness as a guide in their day-to-day decision making. Managers should seek to protect natural wilderness processes from human control and manipulation to the extent possible, they claim. "The clear intent" of the Act, they write, is "minimal influence with evolution and processes." Hendee and Dawson accept that wilderness managers are obligated to fulfill this intent, but this is

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85 See Hendee & Dawson, supra note 11, at 110.
86 Scott, supra note 7, at 77.
87 Id.
88 Scott will strongly disagree with this assessment. He believes that the wilderness definition consists of two definitions, one expressing the ideal of wilderness and one that is to be applied as an area is evaluated for wilderness designation. He also considers Congressman Saylor's comments on the Act as authoritative. See id. But he provides quotes from several members of Congress who commented on the Act, including Senator Murray. Scott sees uniformity in Congressional understanding of the Act that is not reflected in the quotes he provides. See id.
89 Hendee & Dawson, supra note 11, at 20.
considered a moral rather than a legal obligation. The legal obligation extends to natural appearances, not natural processes. These authors discuss a principle that is, they claim, generally accepted by wilderness managers: the principle of non-degradation. According to this principle, existing environmental conditions within designated wilderness areas (including natural ecological processes) are to be maintained unless conditions have already been degraded and are below minimum standards, in which case managers are to restore “minimum quality levels.” These authors do not claim that this principle rests on a legal obligation under the Wilderness Act. They accept that managers are morally obligated to follow this principle, given Congressional intent, and only to the extent possible. In some cases, they acknowledge, managers may find it necessary to accept some “diluting” of natural conditions and solitude.

Hendee and Dawson agree that the Wilderness Act mandates the preservation of wilderness character, but only limited aspects of it. Untrammeled wilderness is considered an ideal not required in management. Naturalness must be preserved, but limited to natural conditions as perceived by most visitors, the untrained visitors (apparent naturalness). According to these authors, the Wilderness Act also requires that managers provide outstanding opportunities for solitude or a primitive and unconfined type of recreation. In this interpretation of the Act, managers are legally responsible for maintaining natural appearances and opportunities for (generally speaking) high quality wilderness experiences. Yet in actual management even these aspects of wilderness character function as ideals through (these and other experts insist) sheer necessity. In a chapter contributed to the Hendee and Dawson text, Cole describes efforts to mitigate impacts from heavy use in the more popular wilderness areas, for example, by concentrating camping into campgrounds that have already been somewhat damaged in order to protect less damaged areas. This attempt to concentrate use (“containment”) compromises natural conditions and solitude. In popular campgrounds, facilities have been installed such as fireplaces, shelters, tent pads, toilets, sources of drinking

90 Id. at 193-95.
91 See id. at 192, 195.
92 Id. at 461.
93 Cole, supra note 30, at 435.
water, trashcans, and stockholding facilities. Such facilities help protect vegetation, soil, and wildlife from visitor impacts, but they are readily observable evidence of human influence and so compromise apparent naturalness. In all of its aspects, wilderness character has been relegated to the role of ideal.

Hendee and Dawson’s interpretation of the Wilderness Act is not accurate. As mentioned, the language of the Act’s wilderness definition gives no indication that untrammeled wilderness is an ideal not required in management. Another consideration is that the primary author of the Act, Zahniser, accepted as the ideal not untrammeled wilderness, but pristine wilderness, wilderness entirely free of human influence. In his writings and speeches, Zahniser often referred to wilderness as undeveloped, unmodified, unspoiled, and uncut. According to his biographer, Zahniser resisted attempts to persuade him to rewrite the wilderness definition, replacing “untrammeled” with “undisturbed.” As mentioned, he accepted that untrammeled wilderness may have been modified to some extent. Hendee and Dawson set up as the ideal, not required in management, the conception of wilderness that according to Zahniser (and the exact language of the Act) is required in management: lands that are untrammeled, free from deliberate human control and manipulations that would hinder natural processes. Hendee and Dawson claim that managers should, as a moral obligation, preserve natural processes to the extent possible. This is the intent of the Act, they claim. But this is too weak. The Act presents managers with a non-degradation requirement at the level of natural processes. Bill Worf made this point years ago. Worf argued that

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94 Id. at 434; Hendee & Dawson, supra note 11, at 477-80.  
95 Yet wilderness character includes the constitutive and distinguishing properties of wilderness. The clear implication is that as wilderness is manipulated through management to the extent of hindering natural processes (trammeling), with loss of natural conditions and solitude, genuine wilderness is lost. See Roderick Nash & John C. Hendee, Historical Roots of Wilderness Management, in WILDERNESS MANAGEMENT: STEWARDSHIP AND PROTECTION OF RESOURCES AND VALUES, supra note 11, at 31-32.  
97 HARVEY, supra note 16, at 203; see also Scott, supra note 7, at 75.
in accordance with the Act there is "no basis to take deliberate action that will modify natural processes."\(^98\)

The Act also gives no indication that this part of the definition, "generally appears to have been affected primarily by the forces of nature," etc. limits management responsibilities. This is not obviously qualifying language. The opening, policy section of the Act clearly mandates preserving wilderness "unimpaired for future use and enjoyment as wilderness."\(^99\) This fits well with the definition of wilderness as managed to preserve its natural conditions. It would not make sense for Congress to include this mandate within the Act if it intended to limit management responsibilities to preserving natural appearances. This part of the definition, "generally appears to have been affected primarily by the forces of nature," etc. was added not as qualifying language but to more effectively protect the natural appearance of wilderness. As mentioned earlier, some manipulations of wilderness, such as the placement of too many directional signs or signs that are poorly designed, are ruled out not because they would result in loss of natural conditions — the area may remain generally free of human influence — but because they would compromise the natural appearance of wilderness. As also mentioned, a major problem with a poorly designed trail that does not fit well into its landscape is loss of natural appearance. A poorly designed trail is readily observable evidence of human activity. The Act was carefully written to protect different aspects of wilderness: its natural processes, its overall natural conditions, as well as its natural appearance.

A more practical problem is that under Hendee and Dawson's interpretation the Wilderness Act cannot be used effectively to criticize agency projects that intuitively violate the intent of the Act. Consider the previously described, bighorn sheep watering project in the Kofa Wilderness Area in Arizona. Under the Hendee and Dawson interpretation, the U.S. Fish and Wildlife Service is not in violation of the Act since management responsibilities are limited to the preservation of the area's natural appearance. From descriptions of the watering facilities, they are substantially unnoticeable. Storage tanks and lines are buried;

\(^{98}\) Worf, supra note 84, at 31. As will be discussed below, the Act is written to allow exceptions, for example in case of fire, insects, or disease.

collecting devices are low profile and hidden from view in nearby washes. The project obviously compromises naturalness, representing significant human influence in wilderness. But under this interpretation of the Act this is not a problem since the agency is not required to protect natural conditions beyond what is readily observable. Hendee and Dawson urge managers to preserve natural processes to the extent possible. The agency claims that construction of these facilities is necessary to meet minimum requirements for managing this area to conserve its wildlife. The agency will respond that this action preserves natural processes to the extent possible given the need for the project. Hendee and Dawson are presumably critical of this project. In their text, they provide as an example of management over-manipulation of wilderness (without mentioning names) a project in which watering facilities are constructed for desert bighorn sheep. Yet their interpretation leaves them unable to criticize the project as a violation of the Wilderness Act. They would say, perhaps, that it violates the spirit of the Act. Intuitively, this project is not consistent with the intent of the Act. The opening, policy section of the Act begins with a declaration of Congressional concern that our civilization is gradually occupying and modifying all natural areas in the United States.

The Ninth Circuit’s decision in Wilderness Society v. United States Fish and Wildlife Service is particularly relevant to the Hendee and Dawson interpretation. The U.S. Fish and Wildlife Service granted a permit to a non-profit corporation for a fish-stocking operation in Tustumena Lake, within the Kenai Wilderness Area in Alaska. The operation involved collecting eggs from sockeye salmon returning to the lake during the annual salmon migration, raising the fry in a fish hatchery, and then releasing six million juvenile salmon into the lake each year. The operation benefited commercial fisherman who caught the salmon

101 Id. at *9.
102 Hendee & Dawson, supra note 11, at 361.
104 Wilderness Soc’y v. U.S. Fish & Wildlife Serv., 353 F.3d 1051 (9th Cir. 2003).
105 Id. at 1055-56.
outside wilderness boundaries during the annual salmon migration. The Ninth Circuit ruled that the operation violated the Wilderness Act since it was clearly a commercial enterprise that did not serve purposes related to the wilderness area, and as such was prohibited by the Act. The court determined that it was irrelevant that the fish-stockoping operation would have been virtually unnoticeable to most visitors (“millions of fry unseen beneath the waters . . . the project would hardly be noticed by those visiting the wilderness”). Writing for the majority, Judge Gould noted,

The Act’s declaration of policy states as a goal the “preservation and protection” of wilderness lands “in their natural condition,” so as to leave them “unimpaired for future use and enjoyment as wilderness and so to provide for the protection of these areas, [and] the preservation of their wilderness character.” . . . The Wilderness Act’s opening section first sets forth the Act’s broad mandate to protect the forests, waters and creatures of the wilderness in their natural, untrammeled state.

In contrast to Hendee and Dawson’s interpretation, the Ninth Circuit clearly interpreted the Act as mandating the preservation of the natural conditions of wilderness, its “natural, untrammelled state,” rather than mere appearances.

V. NATURALNESS OR WILDERNESS?

David Cole has adopted a simpler interpretation of the Wilderness Act, but it is also not accurate. Other management experts (for example, Peter Landres) understand the Act in a similar way. Cole interprets the Act as mandating the preservation of untrammelled wilderness. He understands “untrammelled” in too strong a way, however, as meaning free from all

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106 Id. at 1065.
107 Id. The Act generally prohibits commercial enterprise in wilderness, except “to the extent necessary” for recreational or other wilderness purposes. 16 U.S.C. § 1133(d)(6).
108 Wilderness Soc’y, 353 F.3d at 1062, 1065.
109 Id. at 1061-62.
deliberate human control and manipulations. He calls this property "wildness." The Act mandates, he claims, the preservation of natural conditions (naturalness) and also wildness. Cole emphasizes that in actual management this requirement presents managers with conflicts. In their day-to-day decision making, he writes, managers must choose to emphasize either naturalness or wildness. He insists that in practice managers cannot maintain both naturalness and wildness. Wilderness areas have been subjected to a variety of widespread human influences, he points out, for example the suppression of natural fires, acidification, invasions by exotic species, and global climate change. Wilderness areas are becoming gradually unnatural. Fire suppression policies in place for decades have resulted in unnatural accumulations of fuels and unnatural distributions of plants and animals. The Wilderness Act mandates restoring these areas to a natural condition, he claims. This requires the use of prescribed, human-induced fire in some areas, since (it is believed) lightning-caused fires are not frequent enough to mimic a natural fire regime. But this conflicts with the mandate to maintain these areas free from human control and manipulations. Cole is concerned about the extent of the manipulations required to restore natural conditions. He is concerned about substantial losses of wildness. He writes,

Managers face a serious dilemma when assessing the appropriateness of actively manipulating wilderness conditions towards a more natural state, if this affects a large area or must be continued indefinitely.

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110 David N. Cole et al., Naturalness and Beyond: Protected Area Stewardship in an Era of Global Environmental Change, 25 GEORGE WRIGHT FORUM 36, 42 (2008) (Cole, Landres, and other management experts write, "To be untrammeled, a place should not be intentionally controlled or manipulated for any purpose."); see also Cole, supra note 15, at 6.
112 Id. at 15-16; see also Cole, supra note 15, at 4-8.
114 Cole, supra note 111, at 15-16.
115 Cole, supra note 15, at 7. Cole provides examples of small-scale manipulations that are "generally acceptable," such as the restoration of a campsite, trail, or mine, or the
The dilemma managers face, then, is to either maintain wildness by not manipulating wilderness (which would allow an area to become increasingly unnatural), or restore naturalness through extensive manipulations of wilderness (with much loss of wildness).116

Within this interpretation, wilderness character is an ideal to strive for in management. According to Cole, in their day-to-day decision making managers should seek an appropriate balance of naturalness, wildness, and opportunities for solitude and (generally) high quality wilderness experiences.117 Managers should use their best judgment, he believes. They should also proceed cautiously. Cole and Hammitt point out that our scientific knowledge is not complete enough to allow managers to know precisely what to aim for as they attempt to restore natural conditions.118

As mentioned, Cole misinterprets the term "untrammeled," understanding it as ruling out all deliberate human manipulations of wilderness. This makes the Act appear too restrictive and unreasonable. The Act does not mandate the preservation of "wildness," as Cole understands this term. As discussed, given Zahniser's explanation, the meaning of "untrammeled" within the Act allows minor manipulations of wilderness as long as they do not hinder natural processes, for example, installing properly designed and placed directional signs for safety. As discussed, in accordance with the Act manipulations must also be substantially unnoticeable and leave an area in its natural conditions, control of an exotic plant with chemicals in a small area. Id.; see also Cole, supra note 111, at 17.

116 Worf responds by arguing that the Act does not present a dilemma. The mandate to preserve wilderness character is a mandate to preserve "untrammeled" or pristine wilderness to the extent possible, he writes. Managers must not manipulate wilderness to the point of hindering natural processes, he claims, since wilderness is to be managed for scientific and educational uses. Worf, supra note 84, at 31. Cole would reply that unmanipulated but unnatural wilderness areas have some scientific and educational value, but manipulated, more natural areas also have scientific and educational value. See Cole, supra note 15, at 7-8.

117 Cole, supra note 111, at 15.

generally free of human influence. Zahniser's explanation should guide our understanding of the meaning of "untrammeled" not only because he was the primary author of the Act, but also because his explanation allows managers some leeway to manipulate wilderness in minor ways for protection of resources and for visitor safety.

Cole also misinterprets "natural conditions." He assumes that natural conditions or naturalness can be restored through extensive human manipulations of wilderness, such as the use of prescribed, human-induced burning to restore a natural fire regime. As mentioned, Cole defines "naturalness" to mean "a relative lack of human influence." But, as argued earlier, this definition is too weak, allowing human influence in wilderness (for example genetically altered forests, cultivated gardens, paved trails, shelters at every campground, etc.) that is intuitively inconsistent with natural conditions. Landres and others correctly point out that the Wilderness Act expresses the "divergent view" of the relation between nature and human culture. Nature is considered distinct from human culture. According to the Act, wilderness is to be kept largely free of cultural influences—"man is a visitor who does not remain." Indeed, as mentioned, the opening, policy statement of the Act declares Congressional concern that our civilization is occupying and modifying all lands within the United States.

To be accurate to its meaning within the Act, "natural conditions" (naturalness) must be interpreted as excluding human influence, at least to a large extent. "Natural conditions" is best understood as: generally free of human influence. Natural conditions cannot be restored through the extensive manipulations Cole and others have in mind, manipulations that constitute trammeling and represent significant human influence in wilderness. In such manipulations, wilderness areas are shaped in accordance with human beliefs and human designs that are applied. For

119 Cole, supra note 15, at 7; see also Cole, supra note 111, at 15-16.
122 Id. at 379.
example, prescribed, human-induced burning hinders natural processes such as photosynthesis and respiration, and so constitutes trammeling.\textsuperscript{124} Such actions obviously represent significant human influence in wilderness and cannot restore genuinely natural conditions.\textsuperscript{125} Managers must rely on current beliefs concerning what constitutes a natural fire regime. Hendee and Dawson point out that we do not know exactly what constitutes a natural fire regime.\textsuperscript{126} One issue is: should fires set by Native Americans prior to European-American settlement of the continent be considered part of a natural fire regime?\textsuperscript{127} An expert in fire management, Norman Christensen, discusses reasons to doubt that managers will be able to recreate fire regimes that occurred historically.\textsuperscript{128} Cole and other management experts interpret the Act's mandate to preserve natural conditions as mandating the restoration of wilderness areas so they mimic landscapes believed to have existed prior to European-American settlement.\textsuperscript{129} Such efforts involve use of prescribed, human-induced fire and other means to clear understory vegetation and create open, parklike spaces within the forests. This involves, of course, much human manipulation.\textsuperscript{130} What is restored through such efforts is not genuinely

\begin{thebibliography}{9}
\bibitem{124} See Franklin & Aplet, \textit{supra} note 5, at 277.
\bibitem{125} As Landres and others write, "All contemporary anthropogenic impacts ... compromise naturalness." Peter B. Landres et al., \textit{Naturalness and Natural Variability: Definitions, Concepts, and Strategies for Wilderness Management, in Wilderness and Natural Areas in Eastern North America: Research, Management and Planning} 41, 44 (David L. Kulhavy & Michael H. Legg eds., 1998).
\bibitem{126} Hendee & Dawson, \textit{supra} note 11, at 300.
\bibitem{127} \textit{Id.}
\bibitem{129} See Cole, \textit{supra} note 111, at 15.
\bibitem{130} David Graber explains that in Sequoia National Park in California, efforts to restore pre-settlement landscapes involved use of prescribed, human-induced fire to clear understory growth and stimulate reproduction of the "heroic" giant sequoia. The goals of the park fire program were to create a special forest structure and aesthetics, he writes. David M. Graber, \textit{Resolute Biocentrism: Managing for Wildness in National Parks, in}
\end{thebibliography}
natural conditions, but at best the appearance of naturalness determined by management beliefs concerning how these landscapes once appeared and designs that have been applied. There is a sense that wilderness areas are being transformed into large gardens. Cole is sensitive to this problem. He is concerned that wilderness is gradually becoming a human construction. With extensive, restorative manipulations of some areas for long durations of time, he writes, “it will be unclear how natural they are.”

“All wildlands will be consciously constructed artifacts,” he writes.

The Wilderness Act does not present managers with conflicting requirements. The dilemma Cole finds within the Act—to either maintain wildness or restore naturalness—arises only because “natural conditions” has been misinterpreted. In accordance with the meaning of this term within the Act, managers do not have the option of restoring naturalness through the extensive manipulations they propose, manipulations that hinder natural processes (trammeling) and represent significant human influence as human beliefs and designs are imposed upon these areas. Such manipulations only push wilderness further from naturalness.

It is interesting to note that Landres and other management experts agree with Cole that the Act presents managers with conflicting requirements, and they are also concerned with the extent of the required manipulations as managers seek to restore naturalness. But the management dilemma (and the irony) arises, they claim, only because wilderness managers assume a certain interpretation of “natural conditions” that is not accurate to the original meaning of this term within the Act. Managers accept the “convergent view,” they write, in which there is no distinction between nature and human culture. In this view, the

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1 Cole, supra note 15, at 8.
2 Id. at 7.
4 Landres et al., supra note 121, at 378 (“Management dilemma and irony can be seen when either wildness or naturalness must be compromised to enhance the other.”).
restoration of natural conditions properly involves injecting culture into nature. They find this view expressed within certain modern movements within land management. Landres and others do not recommend acceptance of this view; they merely point out that the Wilderness Act is interpreted in light of this perspective, with the resulting conflict. They acknowledge that such a “holistic” view deviates from the understanding of nature and culture expressed within the Wilderness Act as passed by Congress in 1964. The Wilderness Act, they write, is “legislation born of dichotomy between nature and culture.” Landres and others agree that the Act in itself, free of modern interpretations imposed on its terms, does not present conflicting requirements. The Act in itself requires preservation or restoration of natural conditions, understood as distinct from human culture, with unhindered natural processes (untrammeled).

VI. NATURALNESS CHALLENGED

In a recent article, Cole, Landres, and other leading management experts summarize their discussions at a 2007 protected areas workshop. In this article, these experts acknowledge a critical point, that naturalness (natural conditions) cannot be restored through extensive human manipulations of nature. They write, “Since naturalness implies both a lack of human effect and a lack of human control, one of the meanings of naturalness will be violated whatever is done. . . .” According to the article, workshop participants were divided over whether naturalness should continue to be a central goal in the management of national parks, wilderness, and other protected areas. The prevailing view in the article is that naturalness should be abandoned in favor of other goals, perhaps restoring ecological integrity or ecological resilience. According to the article, naturalness offers little guidance in management. “Natural conditions are not attainable given the ubiquity of human impact.” The article emphasizes the necessity of interventions

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135 Id. at 379.
136 Id.
137 Cole et al., supra note 110.
138 Id. at 41 (here adopting the view that nature is distinct from human culture).
139 Id. at 39-40.
140 Id. at 44.
in wilderness to achieve desired ends. The authors write,

In many parks and wildernesses, if we are to conserve native biodiversity, it will be important to maintain some past human influences. The key challenge to stewardship of park and wilderness ecosystems is to decide where, when, and how to intervene in physical and biological processes to conserve what we value in these places.

The article describes restoration projects that involve extensive manipulations of wilderness to preserve valued resources, for example, the previously described liming project in the St. Mary’s Wilderness Area, intended to restore the native trout fishery (see above, pages 507-508). The article favorably discusses the previously described Montana fish-stocking project (see above, pages 502-504). In this project, again, hybrid trout will be eliminated in twenty-one high wilderness lakes and genetically pure westslope cutthroat trout will be introduced. The purpose of the project is to protect this subspecies from hybridization. This is an example, the article states, of conserving regional biodiversity even though natural conditions will not be restored. Again, these lakes were historically fishless. The article proclaims, “Biodiversity conservation trumps naturalness.” This is supposedly an example of the benefits of abandoning naturalness as a goal in management. Managers have greater flexibility to conserve “what we value,” in this example, this subspecies of trout as well as outstanding recreational opportunities.

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141 Id. at 39.
142 Id. at 49.
143 Id. at 41.
144 Id. at 42.
145 BONNEVILLE DRAFT EIS, supra note 33, at S-1.
146 Cole et al., supra note 110, at 42. Since westslope cutthroat trout are not native to these lakes, this is considered an example of conserving regional rather than native biodiversity.
147 Id. at 42, box 2.
148 Id. at 41-42.
This is an extremely important article for several reasons. Cole, Landres, and other management experts make clear their view that natural conditions cannot be restored through extensive human manipulations of wilderness. This helps clarify the stark choice managers face. They may seek to preserve natural wilderness conditions, but this rules out extensive manipulations of wilderness (which introduce significant human influence). The alternative is to seek to accomplish some other goal, perhaps restoring ecological integrity or ecological resilience. A difficulty with going in this direction is that managers are (in the words of Landres and others) injecting, or further injecting, human culture into nature. Wilderness can no longer be considered truly natural, preserved in its natural conditions. It becomes (as Cole worries) a human construction, recreated by management in accordance with a human design to achieve desired ends. The choice, then, is to manage for naturalness and resist controlling and manipulating nature, or to intervene in natural processes and lose the naturalness of wilderness. The above article recommends the latter course. The Wilderness Act (properly interpreted) requires the former course. The article is also important (and alarming) for this reason. The authors briefly discuss the Wilderness Act and other environmental legislation that requires, they acknowledge, preservation of natural conditions within national parks, wilderness, and other protected areas. Yet the recommendation that naturalness be abandoned as a goal in the management of these areas, as well as the more specific recommendations at the end of the article, are not consistent with this legal requirement. The authors note that the interventions they describe are not consistent with the Act’s definition of wilderness as untrammeled. Written by leaders in the field, this article represents an attempt to remove protected area management from the restrictions provided by the Wilderness Act and other environmental legislation and policies.

The Montana fish-stocking project will not genuinely enhance native or regional biodiversity since amphibian species in the area,

149 Landres et al., supra note 121, at 379-80.
151 Cole et al., supra note 110, at 38.
152 Id. at 50-52 app.
153 Id. at 42.
especially northern leopard frogs, are in serious decline and this project
does nothing to address amphibian habitat needs. The EIS for the project
does not discuss amphibian habitat requirements or biologists’
recommendations to manage for quality amphibian habitat. The project
will at best help preserve selected biodiversity: a favored subspecies of
tROUT. As managers intervene in national parks and wilderness areas to
conserve “what we value,” without respect for natural conditions, they risk
losing species such as amphibians that have typically been overlooked in
our dealings with nature yet are highly specialized in their habitat
requirements. Biologists have found that amphibians require several
different habitat types, in close juxtaposition, to complete the different
stages of their life cycles. Severe declines in numbers of amphibians
across the United States and around the world are attributed in large part
to habitat destruction. Natural conditions serves as a template within
nature that, if maintained, helps ensure the preservation of native
biodiversity, including species such as amphibians that have typically been
overlooked in our dealings with nature (they are not particularly
charismatic) yet are extremely sensitive to human manipulations of their
environment.

To shift examples, the problem with introducing mountain goats
into wilderness areas in Utah in which they are apparently not native is
loss of naturalness (see above, pages 504-507). The goats are quite
popular with visitors. By maintaining these goats the state wildlife
agency is conserving “what we value.” But the goats possibly threaten rare
and endemic plants in these areas. As described earlier, non-native
mountain goats introduced into Olympic National Park have been found to
alter abundances of rare and endemic plants, some of which are extremely
rare. Natural conditions (without goats) helps ensure the survival of

154 See BONNEVILLE DRAFT EIS, supra note 33, at 3-18; see also BONNEVILLE FINAL EIS,
supra note 42, at S-27.
155 See MAXELL, supra note 35; see also SMITH & KEINATH, supra note 35.
156 MAXELL, supra note 35, at 5; SMITH & KEINATH, supra note 35, at 3; see also Andrew
R. Blaustein & David B. Wake, The Puzzle of Declining Amphibian Populations, 272
157 See UTAH DIV. OF WILDLIFE RESOURCES, supra note 47, at 2-3.
158 See NAT’L PARK SERV., MOUNTAIN GOATS IN OLYMPIC NAT’L PARK, supra note 56, at
ch. 1.

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such species. These plants have been overlooked in management decisions. There is no indication that possible impacts to Utah’s rare and endemic plants were studied prior to the introduction of goats into wilderness areas.159 These examples support this strong claim (which requires further support): naturalness as a goal in protected area management is essential in the preservation of native biodiversity.

VII. WILDERNESS: MANAGED TO BE LEFT UNMANAGED

Cole, Landres, and other management experts emphasize that wilderness managers face challenges that Zahniser and others who wrote the Wilderness Act did not envision or did not sufficiently appreciate, including the widespread and even global impacts of human activities.160 Examples include acidification of wilderness lakes, the spread of exotic species, and global climate change. In their view, wilderness has already been pushed from natural conditions by these human influences, and active management with interventions is required to restore native biodiversity or to achieve some other desired end. According to his biographer, however, Zahniser was concerned about widespread human impacts on the environment, such as water pollution and the spread of pesticides. He publicized these issues in the popular journal he edited.161 Zahniser was aware of such problems, but he accepted a “leave it alone” approach to wilderness management that is reflected in the Wilderness Act. Zahniser wrote that wilderness areas should be (a frequently quoted phrase) “so managed as to be left unmanaged.”162 Zahniser was highly optimistic. He believed that we can restore natural conditions without further interference in natural ecological processes. We can have

159 According to the account by Carter, managers simply transported the goats into, or near to, wilderness areas without adequate studies. See Carter, supra note 49, at 20.
160 Cole & Hammitt, supra note 118, at 58; Landres et al., supra note 121, at 377-78; Cole, supra note 15, at 6; see also David M. Graber, Ecological Restoration in Wilderness: Natural versus Wild in National Park Service Wilderness, 20 GEORGE WRIGHT FORUM 34, 34 (2003) (“Like many other laws, [the Wilderness Act] is a prisoner of its time. It is limited to an understanding of the world that existed in 1964. Both the degree of our understanding and the world itself have changed substantially since then.”).
161 HARVEY, supra note 16, at 249.
162 ZAHNISER, supra note 96, at 59.
wilderness that is both natural and untrammeled. In response to such problems as acid rain and climate change, Zahniser would urge us to fight these problems at their sources and allow wilderness areas to recover in a natural way. We should, in his words, “remove the human trammels that keep the natural changes from taking place.”‡  

Zahniser believed in letting nature take its own course. In wilderness we should be “guardians not gardeners,” he wrote.‡  

Zahniser was critical of the Leopold Report of 1963, which recommended that national park wilderness areas be restored to mimic pre-settlement landscapes. Zahniser believed that the required extensive manipulations, including the introduction of wildlife, would be, in the words of his biographer, “antithetical to wilderness.”

A frequently cited court case illustrates Zahniser’s approach to wilderness management. In Sierra Club v. Lyng,‡  decided by the Federal District Court for the District of Columbia, the U.S. Forest Service implemented a program to eradicate the southern pine beetle in wilderness areas in Arkansas, Louisiana, and Mississippi. The program involved extensive tree cutting and chemical spraying. The Forest Service relied on language from the Act, arguing that it was authorized to take “such measures . . . as may be necessary in the control of fire, insects, and diseases.”‡ In the court’s opinion, Judge Gesell noted that the plaintiffs had submitted “considerable data indicating the program’s dubious effectiveness.”‡ The court adopted a strict interpretation of the Wilderness Act. It is “the declared national policy,” Judge Gesell wrote, “to preserve pristine wilderness ecology and values.” The eradication program was “hardly consonant with the preservation and protection of these areas in their natural state.”‡ Judge Gesell also wrote, “These are

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‡‡ Id. at 252 (quoting Howard Zahniser, Guardians Not Gardeners, THE LIVING WILDERNESS 2 (Spring-Summer 1963)).
‡§ HARVEY, supra note 16, at 252.
‡† Sierra Club, 662 F. Supp. at 42.
‡‡ Id.
‡§§ Id. at 43.
delicate, sensitive places where the often mysterious and unpredictable processes of nature were to be preserved for the study and enjoyment of mankind.\textsuperscript{172} The court was particularly concerned with possible harm to the ecological processes that naturally control beetle infestations. Evidence before the court suggested that "as mature pines are destroyed by the beetle there will be less and less possibility of outbreaks infecting neighboring areas."\textsuperscript{173} The idea was that the beetles and the pines naturally reach equilibrium before the beetles destroy an entire forest. Judge Gesell added, "Only a clear necessity for upsetting the equilibrium of the ecology could justify this highly injurious, semi-experimental venture of limited effectiveness."\textsuperscript{174} The court ruled that the eradication program violated the Wilderness Act. The court agreed with plaintiffs that the eradication program was not necessary since it had not been demonstrated that the program was effective.\textsuperscript{175}

The District Court interpreted the Act as declaring the national policy of preserving "pristine wilderness ecology."\textsuperscript{176} This is too strong. As discussed, the Act actually allows minor human manipulations of wilderness. According to the court, the Act requires the preservation of wilderness areas "in their natural state."\textsuperscript{177} In contrast to Hendee and Dawson's interpretation, the court did not interpret the Act's mandate as limited to the preservation of natural appearances. The court was concerned with the loss of apparent naturalness that would result from the use of chain saws, for example,\textsuperscript{178} but the court's concern went well beyond visitors' perceptions. The court was properly protective of the underlying ecological processes, "the often mysterious and unpredictable processes of nature."\textsuperscript{179} Evidence before the court suggested that as the infestations spread they would naturally diminish without agency intervention. Judge Gesell wrote that only a clear showing of necessity

\textsuperscript{172} Id.
\textsuperscript{173} Id.
\textsuperscript{174} Id.
\textsuperscript{175} Id.
\textsuperscript{176} Id. at 42.
\textsuperscript{177} Id. at 43.
\textsuperscript{178} Id.
\textsuperscript{179} Id.
could justify upsetting the natural processes that govern the infestations.\textsuperscript{180} This is consistent with Zahniser's "leave it alone" approach to wilderness management. As mentioned, Zahniser believed that nature should be left to take its own course. He believed in the ability of damaged nature to heal itself.

Typically, this may well be the best approach. Cole and Hammitt briefly describe an interesting problem: years of fire suppression and invasion by an exotic fungus, whitepine blister rust, has led to alarming losses of whitebark pine in the northern Rocky Mountains.\textsuperscript{181} These experts claim that restoring whitebark pine forests will require the use of prescribed, human-induced fire and the cultivation of genetically altered, rust-resistant pines.\textsuperscript{182} According to Hendee and Dawson, however, the invasion of whitepine blister rust is probably best handled by "allowing natural ecological response and succession" to take place.\textsuperscript{183} There is a definite theme throughout the Hendee and Dawson text of letting nature follow its own course. These authors point out that on occasion managers manipulate wilderness by introducing fish or wildlife, or attempting to eradicate exotic species, and their manipulations result in further problems.\textsuperscript{184} They write, "Wilderness management should not mold nature to suit people." Rather, "It should manage human use and influence so as not to alter natural processes."\textsuperscript{185} In a later article, Chad Dawson laments, "We seem to have a nearly insatiable need to 'improve' and manipulate everything in our environment."\textsuperscript{186}

The Wilderness Act includes language that allows agency managers to intervene in wilderness as needed to respond to fire, disease, and insect pests: "Such measures may be taken as may be necessary in the control of fire, insects, and diseases."\textsuperscript{187} As in \textit{Sierra Club v. Lyng},\textsuperscript{188} the

\begin{thebibliography}{99}
\bibitem{180} Id.
\bibitem{181} Cole & Hammitt, \textit{supra} note 118, at 60.
\bibitem{182} Id.
\bibitem{183} Hendee & Dawson, \textit{supra} note 11, at 361.
\bibitem{184} Id. at 360-61.
\bibitem{185} Id. at 24.
\bibitem{186} Chad P. Dawson, \textit{Can We Let Wilderness Just Be Wilderness?}, 11 INT'L J. WILDERNESS 3 (2005).
\end{thebibliography}
courts will insist that an agency demonstrate that a proposed action is necessary. The article by Cole, Landres, and other management experts emphasizes the need for greater flexibility in management to deal with environmental stresses and, generally, to conserve "what we value." It is important to point out that the Act provides flexibility in management as needed to control fire, insects, and disease.

The Act also allows exceptions to its prohibitions on building temporary roads, placing structures or installations in wilderness, use of motor vehicles, motorized equipment, landing aircraft, etc. Such uses are allowed in case of an emergency involving human health and safety, or when "necessary to meet minimum requirements for the administration of the area for the purpose of this Act." Agencies rely on this language in their proposals to engage in certain actions otherwise prohibited in wilderness. The purpose of the Act is announced within the opening, policy section: "to secure for the American people of present and future generations the benefits of an enduring resource of wilderness." Hendee and Dawson interpret the above exception clause as saying that managers must provide evidence that a proposed action is the "minimum necessary for managing an area as wilderness." This is quite vague. What does it mean to manage an area "as wilderness"? To express the exception clause more accurately, managers must demonstrate that a proposed action is necessary to meet minimum requirements for managing the area so that it will continue to provide the benefits of wilderness to the American public. These are benefits provided by lands that are (from the Act's

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189 Cole et al., supra note 110, at 40-41, 49.
190 16 U.S.C. § 1133(c). In his discussion of this language, McCloskey was concerned with its ambiguity. McCloskey, supra note 80, at 309.
193 Hendee & Dawson, supra note 11, at 112.
194 According to the U.S. Forest Service Manual, for example, motorized equipment and mechanical transport are allowed in wilderness in emergencies, or "to meet minimum needs for protection and administration of the area as wilderness." USDA FOREST SERV., FOREST SERV. MANUAL, ch. 2320, 53 (2007), available at http://www.fs.fed.us/im/directives/dughtml/fsm2000.html. In general, within federal agency policies managers are given much discretion through vague interpretations of the Act's exception clause.
definition) untrammeled, retain their natural conditions and appearance, and offer outstanding opportunities for solitude, etc. The Act specifies that designated wilderness areas must be managed to provide the public with recreational, scenic, scientific, educational, conservation, and historical uses. The use of motor vehicles and motorized equipment, the construction of temporary roads, etc. will of course compromise wilderness character to some extent. The Act mandates the preservation of wilderness "unimpaired for future use and enjoyment as wilderness," and the preservation of wilderness character, which clearly implies that any loss of wilderness character in an agency action, even though under an exception, must be as minimal as possible.

For example, the project documents for the St. Mary's wilderness liming project support the claim that healthy aquatic ecosystems with native biodiversity are among the minimum requirements for managing this area for the range of wilderness benefits that must be provided to the public. It seems correct to say that healthy aquatic ecosystems with native biodiversity are among the minimum requirements for managing this area for recreational, scientific, educational, and conservation uses. The Forest Service argued that liming the headwater streams was necessary under the circumstances (continuing acid rain) to achieve this goal. The agency noted that this technique had been used successfully in other areas of the national forest. For this project, the agency successfully demonstrated that the proposed action was necessary for meeting the "minimum management requirements" for the area. Further, the agency documented its efforts to minimize (mitigate) losses of wilderness character resulting from planned tree removal and helicopter operations.

196 Id. § 1131(a).
197 See ST. MARY'S RESTORATION, supra note 68, at 2.
198 Id. The Forest Service describes efforts it is making to alleviate the problem of acid rain (remove the human trammels). The agency is involved in permit decisions and in approving pollution standards. See USDA FOREST SERV., DECISION NOTICE AND FINDING OF NO SIGNIFICANT IMPACT, PROPOSED ST. MARY'S AQUATIC RESTORATION PROJECT (1998).
199 ST. MARY'S RESTORATION, supra note 68, at 2.
200 See id. at 5, 11.
In contrast, the U.S. Fish and Wildlife Service must establish that a population of 800 desert bighorn sheep is among the minimum requirements for managing the Kofa Wilderness Area so it will provide the required wilderness benefits to the public.\(^\text{201}\) The agency argues that construction of permanent watering facilities (guzzlers) is necessary to meet this need.\(^\text{202}\) The agency is concerned with a fifty percent decline in numbers of sheep during recent years of drought, down from just over 800. Yet according to a report prepared by the state wildlife agency, the number of sheep in this area was relatively low through the 1960s and 70s. One estimate places the population at 200-375 sheep during much of the 1970s.\(^\text{203}\) From information in the report, the size of this population varies. The report attributes the recent decline to drought, predation, hunting, as well as other factors.\(^\text{204}\) The recent decline may well be, at least in part, a natural response to drought. The current smaller population may be healthy and would rebound naturally when conditions are favorable. The Fish and Wildlife Service has not demonstrated that the targeted number of sheep (800) is a minimum requirement for managing this area so it will continue to provide the required wilderness benefits to the American public. A population of this size might be optimal for some uses, especially hunting, but the number of sheep would be artificially inflated and would not represent natural conditions. The larger population would have greater ecological impacts on available forage and predators. Certain wilderness benefits required by the Act would be compromised, especially scientific and educational uses. Further, the watering facilities and required maintenance are somewhat noticeable to visitors,\(^\text{205}\) and so compromise to some extent apparent naturalness, solitude, and the


\(^{203}\) KOFA NAT’L WILDLIFE REFUGE, supra note 201, at 6.

\(^{204}\) Id.

\(^{205}\) See id. at 30; Hendee & Dawson, supra note 11, at 330 and 358 (showing photos of wildlife watering facilities).
recreational and scenic benefits provided by the area. A smaller population of bighorn sheep may more adequately provide the required range of wilderness benefits under conditions of drought than would the larger population of sheep together with the constructed guzzlers. The better course of action may well be (following Zahniser’s approach) to remove the human trammels from this population of sheep — hunting, guzzlers, and other human disturbances — and allow the population to recover through natural processes. The agency has recently proposed limited hunting of mountain lions in this area in an effort to control predation on sheep, which would of course be further trammeling of the area. The District Court declared that the agency’s decision to construct the watering facilities was owed deference, but the court did not examine in detail whether the agency actually satisfied the condition specified in the Act for an exception. The court should have asked, “why 800 sheep?” The court should not have been satisfied with vague responses Hendee and Dawson (and others) believe are appropriate, such as this is the minimum action necessary for managing this area “as wilderness.”

The Wilderness Act reflects a generally “leave it alone” approach to management, but it provides needed flexibility to intervene in wilderness to respond to environmental stresses such as acid rain, invasions by exotic species, global climate change, etc. In their recent article, Cole, Landres, and other management experts write that “conservation of native biodiversity will compel us to actively manage ecosystems,” and in some cases (for example, the St. Mary’s Wilderness Area) this may be correct. Under the Act managers must be able to demonstrate, however, that a proposed intervention involving otherwise prohibited uses (motor vehicles, motorized equipment, etc.) is necessary to meet minimum requirements for managing the area so it provides appropriate recreational, scenic, scientific, educational, conservation, and historical uses. This constraint hopefully results in less

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206 U.S. DEP’T OF THE INTERIOR FISH & WILDLIFE SERV., ENVIRONMENTAL ASSESSMENT, OPENING OF MOUNTAIN LION HUNTING ON KOFA NAT’L WILDLIFE REFUGE B3 (Oct. 2006), available at http://www.fws.gov/southwest/refuges/arizona/KofaEnvAssessment.pdf. The agency claims that mountain lions are transients and not residents of this wilderness area. Id.

207 Wilderness Watch, 2008 WL 4183040, at *15.

208 Cole et al., supra note 110, at 39.
intrusive actions, and provides a useful standard for review by citizens and the courts.

VIII. CONCLUSION

The Wilderness Act mandates the preservation of wilderness character in all its richness, including natural conditions, unhindered natural processes, natural appearance, and outstanding opportunities for solitude or a primitive and unconfined type of recreation. Each is a constitutive and distinguishing feature of wilderness. Each is critical in wilderness management. As argued, the preservation or restoration of natural conditions is essential for the preservation of native biodiversity, including amphibians, rare and endemic plants, and other species that have been overlooked in our dealings with nature yet are highly sensitive to human manipulations of their environment. It is probably true that much can be done to restore natural conditions through removing trammels that have been placed on wilderness and allowing nature to heal itself, rather than further manipulating these areas. The misinterpretations of the Act presented in the writings of management experts, and the recent recommendation to abandon naturalness as a central goal in management, rest not so much on greater ecological knowledge (as the experts claim) but on a greater willingness to intervene in nature to achieve desired ends. The Act does not allow management interventions in wilderness that would hinder natural processes (trammeling) or otherwise diminish wilderness character, except in special circumstances and under tight constraints.

Finally, it is important to point out that the different aspects of wilderness character, natural conditions, unhindered natural processes, natural appearance, solitude, etc. are what we as a society value in wilderness areas. The Wilderness Act represents a decision by our society as a whole concerning how to respond to these generally natural, unspoiled areas. As a society, we value those qualities of wilderness that distinguish these areas from farmlands, golf courses, city parks, Disneyland, etc. In comments concerning controversial projects, citizens

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often call on the agencies to follow the mandate within the Act to preserve natural conditions, meaning by this (it is fair to say) conditions generally free of human influence. Management experts argue that managers must intervene in wilderness, without the limitations of naturalness, to conserve "what we value," but as a society what we value in wilderness is naturalness itself, natural conditions including all native species whether charismatic or not, and natural processes that have not been disrupted by human activity. Naturalness as a goal in management is beneficial ecologically, and it reflects well the social and legal context of wilderness in the United States. In accordance with the Wilderness Act, and values shared within our society concerning these lands, managers should attempt to preserve or restore natural wilderness conditions with unhindered natural processes.

\footnote{See BONNEVILLE FINAL EIS, \textit{supra} note 42, at 1-65, 1-287.}