

Understanding the Prohibition of Mechanical Transport, Including Bicycle Use, in the National Wilderness Preservation System

The Wilderness Act of 1964 prohibits 10 uses in wilderness - one of these is “mechanical transport.”¹ Consequently, bicycles, a form of mechanical transport, are not permitted in designated wilderness areas.

The Wilderness Act clearly states “there shall be... no use of motor vehicles..., motorboats, no landing of aircraft, no[r] other form of mechanical transport.”² Bicycles, as a form of mechanical transport, are clearly prohibited. Consequently, each of the four federal wilderness managing agencies prohibit bicycles and other forms of mechanical transport in their implementation of the Wilderness Act. The text of each agency’s policy and regulations are different, but each share the same general description. Prohibited mechanical transport are devices that:³

- are powered by a living or non-living source
- transport people or material
- have moving parts that create mechanical advantage

An important exception which allows for use of a form of mechanical and motorized transport is with the use of wheelchairs. The Americans with Disabilities Act allows for “wheelchair use in a wilderness area by an individual whose disability requires its use,”⁴ and defines an allowable wheelchair as, in part, “suitable for use in an indoor pedestrian area.”⁵ Wheelchair use in wilderness may be less common for traveling long distances in wilderness, and more likely to be used for moving around the campsite once a person has traveled in by canoe or horseback; but either way, such use is permitted and encouraged. “For some people who have mobility impairments, a ‘wheelchair’ is their means of daily mobility; it is their footwear.”⁶

Disagreement About the Intent of the Wilderness Act in Regard to Bicycles

Some bicycle proponents argue that the prohibition of mechanical transport does not apply to bicycle use. A leading bicycle proponent, in his detailed consideration of the topic, concluded “Congress did not

¹ 16 USC § 1133(c), Wilderness Act

² Ibid

³ 43 CFR § 6301.5, Bureau of Land Management, Management of Designated Wilderness Areas - policy, 6340 § 1.6 B.2.h., July 13, 2012; 50 CFR § 32.45(iii) & 32.55(xi), US Fish and Wildlife Service, Wilderness Stewardship - policy, 610 FW 1 §1.5, November 7, 2008 (amend. July 27, 2010); 36 CFR § 261.18(b) & 293.6(a), US Forest Service, Recreation, Wilderness, and Related Resource Management - policy, § 2320.5.3, Dec. 26, 2006; 36 CFR § 4.30(h)(2), National Park Service, Reference Manual #41 § 3.1, 2013.

⁴ 42 USC §12207(c)(1), Americans with Disabilities Act

⁵ 42 USC §12207(c)(2), Americans with Disabilities Act

⁶ Zeller, Janet, Wilderness and Accessibility. International Journal of Wilderness 14(1), 2008

intend for the Act to prohibit human-powered transport.”⁷ In arguments that Congress did not intend to prohibit bicycles in wilderness, bicycle advocates essentially argue that “mechanical transport” is synonymous with “motorized transport,” and with that interpretation, bicycles are not prohibited because they are not motorized. However, if motorized and mechanical transport are not synonymous, they further argue the prohibition applies to transporting human passengers or materials on “trailers, tankers, wagons, ore carts, and the like,” rather than a person riding a bicycle in wilderness.⁸

Though written discussion of bicycle use in wild lands prior to the Wilderness Act is rare, both bicycle and wilderness advocates note that some use of bicycles was occurring on federal wild lands. Advocacy for that use, however, was not prevalent. For example, in 1933 Benton Mackay, originator of the Appalachian Trail, reacted to a proposal to build a section of the Trail through Shenandoah National Park as a bicycle path. McKay’s reaction was that the trail was to be a “real wilderness footpath... not a wheelway.”⁹ At its formation in 1935, the Wilderness Society included in its reasons for forming the society, the loss of areas which “had known only natural modes of travel.”¹⁰ Though bicycles are not specifically mentioned, the concern of a “mechanical invasion in its various killing forms” was expressed.¹¹

The lack of discussion about bicycles in testimony addressing the Wilderness Bill is cited as proof of a general acceptance of bicycle use as a norm in wilderness. There were numerous discussions regarding the use of motorized transportation in wilderness recorded in the transcripts of congressional hearings. For example, one submission in support of the Wilderness Act, expressed concern that “Americans will continue to saturate choice recreation sites opened to motorized entry,” while a submission in opposition protested that “they would bar roads and airplanes and motorboats... so that the relatively few persons able and willing to get there afoot, on horse, or by canoe could enjoy nature.”¹² Bicycle advocates seem to take the position that since similar discussion of bicycles did not occur in hearings, and because there is evidence that there were society-wide concerns for fitness at that time, the Congress could not have intended to prohibit human-powered recreational use in wilderness.¹³ This deduction does not consider that motorized activity was more prevalent than bicycle activity on the public lands when the Wilderness Act was debated, and so the prohibition of motors was prone to debate unlike the use of bicycles. A leading bicycle advocate noted that in 1964, “Bicycles were usually a means of neighborhood travel for those too young to have earned their first driver’s license.”¹⁴

Bicycle advocates cite a 1962 report by the Outdoor Recreation Resources Review Commission (ORRRC – a commission authorized by Congress to study recreation on federal lands), which predated the Wilderness Act, states: “In our judgment, wilderness recreation will be available in areas having the

⁷ Stroll, Theodore J., Congress's Intent in Banning Mechanical Transport in the Wilderness Act of 1964, Penn State Environmental Law Review, Vol. 12:3, August 9, 2004

⁸ Ibid

⁹ Scott, Douglas W., Mountain Biking in Wilderness; Some History, Wild Earth, Spring 2003, Vol. 13, No. 1

¹⁰ Anderson, Harold, Harvey Broome, Bernard Frank, Aldo Leopold, Benton Mackaye, Robert Marshall, Ernest Oberholtzer, and Robert Yard, The Wilderness Society, January 21, 1935

¹¹ Ibid

¹² Hearings Before The Committee on Interior and Insular Affairs on S. 1176, United States Senate, 85th Congress, First Session, June 19&20, 1957

¹³ Stroll, Op.cit.

¹⁴ Stroll, Op.cit.

following characteristics... Not open to auto, jeep, truck, motorcycle, motorboat, airplane, helicopter, or other means of mechanized travel.”¹⁵ Bicycle advocates conclude that because all the preceding examples in the list are motorized, mechanical transport is a reference to other motorized transportation. However, the ORRRC report also provides a definition of a wilderness tract being “open to overnight public use and entry by foot, horseback, or hand-propelled vessel.”¹⁶ A dictionary definition from 1960 defines a machine, in part, as “a vehicle or conveyance; - applied formerly to a coach, cart, etc., now variously to an automobile, airplane, bicycle, etc.”¹⁷ The position that mechanical transport could only refer to motorized forms is not consistent with plain language.

Bicycle advocates comment that anything that aids human overland transport could be deemed mechanical transport, and such a broad prohibition was not the intent of the Wilderness Act. For example, one leading bicycle advocate states that skis, rowboats, climbing gear, and even antishock hiking poles can be considered mechanical transport, as well as devices that aid transport of objects, such as wheelbarrows, game carts, and fishing reels.¹⁸ Two other bicycle advocates go a step further suggesting “shoes and saddles” are mechanical transport and “since we allow those... the mechanical allegation regarding bicycles is illegitimate.”¹⁹ This argument implies an all or nothing approach. If one non-motorized transportation aid is prohibited, all non-motorized transportation aids should be prohibited, and if one is allowed, all should be allowed.

Bicycle advocates further argue that the Wilderness Act only “prohibit[s] permanent installations or structures... that might facilitate a human powered activity,” but not the human powered activity itself. This is a problematic argument to offer, because trails, as well as their water control features, their bridges, and their signs, are installations, and their prohibition would severely curtail biking. Bicycle advocates then point to the National Trail System, established in 1968 just four years after the Wilderness Act, that allows bicycles on some components of the National Trail System. This, they assert, is further evidence that societal norms would have assumed bicycles as appropriate in wilderness. However, they omit that the provision in the National Trails Act only allows for bicycles when consistent with other Federal laws.²⁰ This provision itself indicates that Congress did not find bicycle use appropriate on all public lands. The Wilderness Act was undoubtedly the principle law on the mind of Congress with this limitation in the National Trails System.

One leading bicycle advocate calls for the four Federal agencies responsible for managing wilderness to re-interpret the Wilderness Act to allow for bicycles, cautioning against a legislative change because “if Congress were to amend the Act... [it may include] changes that could undermine the character of wilderness and diminish its luster.”²¹

¹⁵ Wilderness and Recreation--a Report on Resources, Values, and Problems. Report to the Outdoor Recreation Resources Review Commission by the Wildland Research Center, University of California, 1962.

¹⁶ Ibid

¹⁷ Webster’s New College Dictionary, 1960

¹⁸ Stroll, Op.cit.

¹⁹ Hasenauer, Jim and Gary Sprung, Bicycles in Wilderness. <http://www.wildernessbicycling.org/index.html>

²⁰ 16 USC § 1246 (j), National Trail System Act

²¹ Stroll, Op.cit.

Statutory Interpretation of the Wilderness Act

The interpretation of the Wilderness Act must be implemented through principles of statutory interpretation, not other means. We will look at the Wilderness Act through principles identified in the Congressional Research Service Report titled *Statutory Interpretation: General Principles and Recent Trends*.²² Three of the principles from the report are most relevant: First, Statutory Language Not to be Construed as “Mere Surplusage;” Second, Ordinary Meaning and Dictionary Definitions; and, third, the *De Minimis* Principle.

Mere Surplusage. Statutes are interpreted in a manner that gives effect to all their provisions, so that no part will be inoperative, redundant, void, or irrelevant.²³ The Wilderness Act prohibits motor vehicle use over land,²⁴ motorboats, landing of aircraft, or other forms of mechanical transport.²⁵ The separate modes identified cover the full array of potential motorized conveyance. The next term in the list “mechanical transport” brings non-motorized transportation into the list of prohibitions.²⁶ Just as the term “vehicle” cannot not be construed to be redundant with motorboat or aircraft²⁷, mechanical transport must not be construed to be redundant with motor vehicle transport. Each item is listed because it has a specific meaning. If “mechanical transport” were to mean “motorized transport,” the term would be redundant with motor vehicles, motorboats, and some forms of aircraft landing, and the principle that “statutory language not to be construed as ‘mere surplusage,’” would be defied. The prohibition of “Mechanical transport” is the means to prohibit transportation modes without a motor.

Ordinary Meaning. Because the Wilderness Act does not provide a definition, we need to consider the ordinary meaning of “mechanical transport.” This is not a term with a dedicated definition, and so the dictionary definitions of several terms, working in unison, need to be considered. Standard dictionary definitions from 1964 include the following:²⁸

- Mechanical: “having to do with machinery... operated by machinery or a mechanism”
- Machinery: “machines collectively... any combination of things... by which something is kept in action”
- Mechanism: “the working parts or arrangement of parts of a machine... a system who’s parts work together like those of a machine”
- Machine: “a device that transmits, or changes the application of energy... simple machines”
- Simple machine: “any one of the six devices, including the lever, wheel and axle, pulley, wedge, screw, and inclined plane”
- Transport: “to carry from one place to another, especially over long distances”

A comprehensive definition of “mechanical transport” is then the utilization of modes of travel that rely on a device with a combination of simple machines to convey something from one place to another over distance, regardless of the power source.

²² *Statutory Interpretation: General Principles and Recent Trends*, Congressional Reference Service, 2008

²³ *Ibid*

²⁴ 1 USC 4: (defining “‘Vehicle’ as including all means of land transportation.”)

²⁵ 16 USC § 1133(c), Wilderness Act

²⁶ 16 USC § 1133(c), Wilderness Act

²⁷ 1 USC 4

²⁸ Webster’s New World Dictionary of the American Language; College Edition, 1964

De Minimis. The *de minimis* principle directs that, unless otherwise specified, all statutes are implemented in a manner under which trifling deviations from a standard are not included, intended to be addressed, or implicated by the statute.²⁹ Consequently, as described under the “ordinary meaning” and interpreted through the *de minimis* principle, transport that relies on a single simple machine does not constitute “mechanical transport,” nor does minor movement of things or people over short distances. Under both a complexity and a distance standard, mechanical transport utilizes an assemblage of simple machines or provides transport for more than short distances. Anything less may be identified as a trifling deviation of the standard and not of concern under the statute.

In sum, transport of people or materials by living or non-living power sources which utilize either a combination of simple machines and provide transport over long distances is prohibited under the Wilderness Act. The line is mostly distinct, but inevitably there will be some grey area, and so we next turn to agency policy.

Federal Agency Policy

To provide clarity, each of the four federal wilderness managing agencies, in policy, describe prohibited mechanical transport and provide a partial list of prohibited and non-prohibited examples for illustration purposes. The definitions and lists are provided in regulation and policy. Though there are differences in how each agency’s regulations and policies present, describe, and detail the prohibition of mechanical transport, all agencies regulations and policy share several common elements.³⁰ Mechanical transport includes:

- devices powered by a living or non-living source.
- devices that transport people or material (BLM further specifies that the transport must be over a great distance)
- moving parts that create mechanical advantage (BLM and NPS further distinguish that moving parts are essential, suggesting static parts such as screws do not make something mechanical transport)

In addition to a description of mechanical transport, each agency provides examples of modes that meet the definition of mechanical transport, and modes that do not. All agencies list game carts as mechanical transport. The BLM, FS, and NPS also list bicycles, and wagons, and the BLM and NPS also list wheelbarrows. Modes identified as not being mechanical transport include skis, sleds, snowshoes, rafts, canoes, drift boats, horse bits, travois, pulleys, pry bars, and winches, though it is clearly stated that the lists are not all-inclusive. These examples of inclusions and exclusions are consistent with the principles of statutory construction: 1) Statutory Language Not to be Construed as “Mere Surplusage;” 2) Ordinary Meaning and Dictionary Definitions; and, 3) the De Minimis Principle. Earlier in this paper it

²⁹ Statutory Interpretation: General Principles and Recent Trends, Congressional Reference Service, 2008

³⁰ 43 CFR § 6301.5, Bureau of Land Management, Management of Designated Wilderness Areas - policy, 6340 § 1.6 B.2.h., July 13, 2012; 50 CFR § 32.45(iii) & 32.55(xi), US Fish and Wildlife Service, Wilderness Stewardship - policy, 610 FW 1 §1.5, November 7, 2008 (amend. July 27, 2010); 36 CFR § 261.18(b) & 293.6(a), US Forest Service, Recreation, Wilderness, and Related Resource Management - policy, § 2320.5.3, Dec. 26, 2006; 36 CFR § 4.30(h)(2), National Park Service, Reference Manual #41 § 3.1, 2013.

was noted that arguments have been made that climbing gear, antishock hiking poles, fishing reels, shoes and saddles are mechanical transport. None of these are listed in agency regulation or policy as prohibited as mechanical transport because no reasonable question exists as to whether these modes would be included under the principles of statutory construction discussed earlier; they are not. Agency consideration of the prohibition of mechanical transport is consistent, rational and principled.

Wilderness Character

Mechanical transport creates a conflict with Congress' expressed policy for the National Wilderness Preservation System "to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions."³¹ Another significant conflict is that the uses prohibited under the Wilderness Act,³² including mechanical transport, conflict with the mandate given in the Act to preserve wilderness character.³³ In particular, bicycles conflict with the wilderness character qualities of natural, undeveloped, and outstanding opportunities for solitude or a primitive and unconfined type of recreation (see Keeping it Wild 2³⁴ for definitions).

The Natural Quality of Wilderness Character. Bicycles can impact the natural quality of wilderness character in a variety of ways. This quality includes biophysical resources which include soils, water, vegetation, and wildlife. Every site will have a different vulnerability based on species present, type of habitat, type of soils, terrain relief, timing, intensity and duration of bicycle use, and trail design factors. Currently, gaps in scientific studies of bicycle effects exist, and the studies present mixed results, and result in mixed opinions.³⁵ However, one common impact noted is the speed and silence of mountain biking allows for greater disturbance of some animals because they do not detect a person on a bicycle until well within the animal's normal flight response zone.³⁶ Sprung concludes that studies to date do not support a conclusion that bicycles cause more biophysical impact,³⁷ while Vandeman concludes that current studies indicate bicycle impacts are several times greater than those of hikers.³⁸ Vandeman also notes that some wildlife need separation from the presence of humans in order for them to survive, and the best way to accomplish separation is to restrict the technologies people use for transport.

³¹ 16 USC § 1131(a), Wilderness Act

³² 16 USC § 1133(c), Wilderness Act

³³ 16 USC § 1131(c), Wilderness Act

³⁴ Keeping it Wild, General Technical Report RMRS-GTR-212, July, 2008.

³⁵ Quinn, Michael and Greg Chernoff, Mountain Biking: A Review of the Ecological Effects, Miistakis Institute - University of Calgary, February 2010; Vandeman, Michael J., The Impacts of Mountain Biking on Wildlife and People, A Review of the Literature, ARPN Journal of Science and Technology, Vol. 4, No.7, July, 2014; Sprung, Gary, Natural Resource Impacts of Mountain Biking <https://www.americantrails.org/resources/natural-resource-impacts-of-mountain-biking>

³⁶ Quinn and Chernoff, Op.cit.

³⁷ Sprung, Op.cit.

³⁸ Vandeman, Op.cit.

The Undeveloped Quality of Wilderness Character. Bicycles, as mechanical transport, are a direct degradation to the undeveloped quality of wilderness character. In addition, bicycle transport is a conveyance requiring permanent installations to facilitate the activity. The infrastructure on which their use depends is also a degradation to the undeveloped quality. Trails currently exist in wilderness to support primitive recreation, and some of those trails could be used by non-primitive bicycle recreation as well. However, many of those trails would require modification. Bicycle use in wilderness would likely lead to more trail installations (e.g. signs to regulate speed and control off-trail use, and bridges to prevent stream erosion), and reroutes (e.g. where trail design is not sustainable for bicycle use). Adding bicycles would also likely increase the number of visitors, intensifying impacts and the need for infrastructure instalments in response. The likelihood for unauthorized trail creation, extreme riding off trail on natural features, and the use of electric bicycles would create additional issues. Practically, regulations to address many of these factors would be unenforceable, and some would require infrastructure that would further degrade the wilderness' primitive character.³⁹

The Outstanding Opportunities for Solitude or a Primitive and Unconfined Type of Recreation Quality of Wilderness Character. Bicycles are likely to impact the outstanding opportunities for solitude or a primitive and unconfined type of recreation quality of wilderness character; in particular solitude. As noted in the ORRRC report "the fascination of getting far away from civilization is real only if one can get really far away - in time and distance."⁴⁰ Motivations for preserving wilderness are based on a strong contrast to civilization,⁴¹ and this view is captured in the Wilderness Act which states "a wilderness [is] in contrast with those areas where man and his works dominate the landscape."⁴² Bicycles conflict with maintaining the contrast with non-wilderness lands, especially with impacts to solitude. Solitude, in part, encompasses connection with the land without development, machines, or technology. Wilderness solitude is "contemplative and tranquil, a calm sensation induced by an environment free from the swifter demands of urban living."⁴³ The mountain bike matches the modern busy schedule, it shrinks distance and allows for greater numbers of people to penetrate further into wilderness, and this works against the pursuit of solitude. In order to maintain solitude while adding bicycle recreation, limited entry permit systems, a confinement of use in conflict with outstanding opportunities mandated by the Wilderness Act,⁴⁴ would likely be necessary. Bicycle use also impacts solitude on the trail. Bicycles can travel at a high rate of speed, and the unease of being constantly on the lookout for a bicycle that may collide with you diminishes a sense of peace and solitude.

³⁹ Stroll, Op.cit.

⁴⁰ Wilderness and recreation, Op.cit.

⁴¹ Wilderness and recreation, Op.cit.

⁴² 16 USC § 1131(c), Wilderness Act

⁴³ Wilderness and recreation, Op.cit.

⁴⁴ 16 USC § 1131(c), Wilderness Act

Conclusion

Congress gave the mandate to preserve wilderness character to only a small part (about 5%)⁴⁵ of the United States, and it is only those areas where the prohibitions of the Wilderness Act, including the prohibition of mechanical transport, apply. The intent of the Wilderness Act was to retain some areas of federal land where restraint is practiced as an emphasis in management. Howard Zahniser, the principal author of the Wilderness Act⁴⁶ said, "I believe we have a profound fundamental need for areas of the earth where we stand without our mechanisms that make us immediate masters over our environment."

The framers of the Wilderness Act intentionally prohibited mechanical transport from wilderness in an attempt to retain land in a condition unmodified by growing mechanization. When the Wilderness Act was passed in 1964, bicycles were heavy and ill equipped for use on typical wilderness trails. Since that time, the bicycle has undergone a remarkable transformation. Through redesign, lightweight alloys and composites, and a series of advancements in its mechanization (e.g. more capable drivetrains and suspension), the modern bicycle is a machine of significant capability. Bicycles make traveling distance times shorter; they turn areas of back country into front country. They go fast; creating greater impacts to wildlife and conflicts with other visitors. They create trail conflicts; their speed places other visitors into a guarded rather than a tranquil position. The bicycle is an example of the growing mechanization⁴⁷ the framers of the Wilderness Act were concerned with restricting from wilderness.

A leading bicycle advocate states that "if the question of mountain biking were removed from the table, presumably the opposition of most mountain bikers to Wilderness expansion would dwindle or cease."⁴⁸ That may be true. Likewise, if the prohibition to off-highway vehicles were to be removed from the table, OHV enthusiasts would likely become much more enthusiastic for wilderness designations. In either case, wilderness areas would no longer be wilderness. Howard Zahniser summed up wilderness as a place "so little modified by human action as to impress its visitors with their relationships to other forms of life rather than their human prowess resulting from inventions and contrivances."⁴⁹ The use of bicycles in wilderness areas would be contrary to the goals envisioned within the Wilderness Act.

Paper lead: James Sippel for the Arthur Carhart National Wilderness Training Center

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⁴⁵ Wilderness Connect, <https://wilderness.net/learn-about-wilderness/fast-facts/default.php>

⁴⁶ Scott, Doug, *The Enduring Wilderness*, 2004

⁴⁷ 16 USC § 1131(a), Wilderness Act

⁴⁸ Stroll, Op.cit.

⁴⁹ Zahniser, Howard, *A Statement on Wilderness Preservation in Reply to a Questionnaire*, March 1, 1949