

TOWARD SUSTAINABLE RECREATION ON COLORADO'S FOURTEENERS

Rebecca Sokol*

Colorado's fourteen-thousand-foot mountains, commonly known as fourteeners, are attracting visitors in unprecedented numbers. As people flock to the state's most popular peaks, hikers degrade the environment and create safety problems. This Comment addresses potential approaches to recreation management on fourteeners and argues that traditional use-limit management methods, like visitor quotas, do not align with sustainability objectives. The Forest Service, the primary land management agency for most fourteeners, has a duty to promote sustainable recreation by incorporating environmental, social, and economic factors into its decision-making processes. However, the Forest Service tends to rely on use limits even though these methods would not be the most scientifically or socially sustainable management choice on fourteeners. This Comment explains why the Forest Service often resorts to use limits to manage recreation. In doing so, it provides an analysis of the agency's historical role as a land regulator. This Comment also suggests an alternative strategy to mitigate recreational overuse on fourteeners that focuses on fostering sustainability through changing hiker behavior.

INTRODUCTION	346
I. A TRAIL THIRTY FEET WIDE: A CASE STUDY OF MOUNT BIERSTADT	349
II. THE FOREST SERVICE AND RECREATION MANAGEMENT ..	353

* J.D. Candidate, 2020, University of Colorado Law School; Associate Editor, University of Colorado Law Review. Thank you to my editors Stephen Pepper, Austin Slaughter, and Rachel Calvert for their thoughtful feedback throughout the publication process. I am grateful to Professors Sarah Krakoff and Mark Squillace for their invaluable advice and insight, and to Tighe Beach for his writing suggestions and willingness to hike tall mountains. Lastly, thanks to all of the members of the University of Colorado Law Review for their devotion and hard work.

A. <i>The Sustainable Recreation Obligation</i>	354
B. <i>Use Limits as a “Default” Management Strategy</i>	361
1. Background on Use Limits.....	362
2. Shortcomings of Use-Limit Systems.....	365
C. <i>Historical Obstacles to Sustainable Recreation and the Staying Power of Use Limits</i>	371
III. BEYOND USE LIMITS: COMMUNITY-BASED SOCIAL MARKETING AS A SUSTAINABLE SOLUTION	376
CONCLUSION	383

INTRODUCTION

Colorado is home to fifty-eight mountains that rise above fourteen thousand feet.¹ Over the last several decades, the number of hikers on these “fourteeners” has increased dramatically.² “Peak-bagging” has grown in popularity as more hikers attempt to summit all of Colorado’s fourteeners, whether they do so in one summer or over an entire lifetime.³ In 2017, an estimated 334,000 people hiked a fourteener during the summer season.⁴

Large numbers of hikers are causing safety problems and environmental degradation on many fourteeners, especially those that are easier climbs and close to the burgeoning Denver metropolitan area.⁵ Large crowds can damage fragile tundra ecosystems by walking off-trail and leaving behind trash and

1. Rebecca Davidson, *Colorado’s Beloved Fourteeners*, YOUR NAT’L FORESTS MAG., Winter/Spring 2017, at 16–17, <https://www.nationalforests.org/our-forests/your-national-forests-magazine/colorados-beloved-fourteeners> [https://perma.cc/EZW7-Q35N]. To be classified as an official fourteener, a peak must rise somewhere between two hundred and five hundred feet above the saddle that connects it to the nearest peak. There are five other tall peaks in Colorado that do not fit this criterion and thus are not considered official fourteeners. However, many hikers, including the author of this Comment, agree that any peak over fourteen thousand feet should be considered a fourteener for recreational purposes, and many guidebooks accept this view. *See, e.g.*, Kevin S. Blake, *Colorado Fourteeners and the Nature of Place Identity*, 92 GEOGRAPHICAL REV. 155, 173 n.3 (2002); *14er Peak List*, 14ERS.COM, https://www.14ers.com/photos/photos_14ers1.php (last visited Sept. 11, 2019) [https://perma.cc/5NYB-5CX7].

2. Davidson, *supra* note 1, at 16–17.

3. Blake, *supra* note 1, at 164. “Peak bagging” is the trend of trying to complete all of the summit climbs in a particular group or range of mountains. *Id.* at 165.

4. *Hiking Use Estimates*, COLO. FOURTEENERS INITIATIVE, <https://www.14ers.org/2017-colorado-14er-hiking-use-estimates/> (last visited Sept. 11, 2019) [https://perma.cc/CNU7-MPB8].

5. Davidson, *supra* note 1, at 18.

human waste.⁶ Human urine attracts mountain goats who can grow aggressive toward hikers in the quest for salt.⁷ Parking lots at fourteeners trailheads fill up quickly, causing traffic and safety concerns in the early morning hours when hikers begin trekking to the summit.⁸

The environmental and safety issues caused by large crowds of hikers on Colorado's fourteeners are symbolic of a larger trend across the nation: the "loving nature to death" phenomenon.⁹ Public land agencies face significant challenges as more and more people visit the same natural areas at the same time.¹⁰ Disputes about how much and what kinds of recreation should be allowed on public lands complicate agency decision-making and create conflicts among recreationists.¹¹ One of the most controversial methods of regulating recreation in high-use areas is through the imposition of use limits.¹² Use limits restrict the amount of people who can access a particular area at one time.¹³

6. *Id.*

7. Steph Yin, *Mountain Goats on Your Trail? They Like You, and Your Urine*, N.Y. TIMES (Aug. 3, 2017), <https://www.nytimes.com/2017/08/03/science/mountain-goats-urine-pee-glacier-national-park-montana.html> [<https://perma.cc/5HPU-9L2F>].

8. Matt Kroschel, *Pay To Hike? It's Under Consideration at Popular High Country Trail*, CBS 4 DENVER (July 18, 2017, 3:55 PM), <https://denver.cbslocal.com/2017/07/18/mt-bierstadt-colorado-hiking-fee/> [<https://perma.cc/LYY2-QW3U>].

9. The "loving nature to death" phenomenon refers to the environmental degradation that occurs when many people recreate in the same area. Lindsey Koehler, *Are We Loving Colorado's Wild Places to Death?*, 5280 (Oct. 2017), <https://www.5280.com/2017/09/loving-colorados-wild-places-death/> [<https://perma.cc/H5DA-R3AM>]; see also Charlotte Simmonds et al., *Crisis In Our National Parks: How Tourists Are Loving Nature to Death*, THE GUARDIAN (Nov. 20, 2018), <https://www.theguardian.com/environment/2018/nov/20/national-parks-america-overcrowding-crisis-tourism-visitation-solutions> [<https://perma.cc/5CWT-2MLZ>]; Dayton Duncan, Opinion, *Are We Loving Our National Parks to Death?*, N.Y. TIMES, Aug. 6, 2016, at SR3.

10. See Jan G. Laitos & Rachael B. Gamble, *The Problem with Wilderness*, 32 HARV. ENVTL. L. REV. 503, 538–42 (2008); see also Koehler, *supra* note 9; Simmonds, et al., *supra* note 9; Duncan, *supra* note 9, at SR3.

11. Jan G. Laitos & Rachael B. Reiss, *Recreation Wars for Our Natural Resources*, 34 ENVTL. L. 1091, 1103–07; see also John C. Adams & Stephen F. McCool, *Finite Recreation Opportunities: The Forest Service, the Bureau of Land Management, and Off-Road Vehicle Management*, 49 NAT. RES. J. 45, 80–86 (2009).

12. Troy E. Hall, *Use Limits in Wilderness: Assumptions and Gaps in Knowledge*, in ROCKY MOUNTAIN RESEARCH STATION, U.S. FOREST SERV., RMRS-P-20, VISITOR USE DENSITY AND WILDERNESS EXPERIENCE: PROCEEDINGS 39 (2001), https://www.fs.fed.us/rm/pubs/rmrs_p20.pdf [<https://perma.cc/KK82-66X5>].

13. *Id.*

To date, hiking on Colorado's fourteeners has remained unrestricted except for generalized limitations that attach to land designations where fourteeners are located.¹⁴ However, the United States Forest Service (Forest Service), which manages fifty-three out of fifty-eight fourteeners in Colorado, is considering actions to regulate hiking on some mountains.¹⁵ The Forest Service manages the thirty-three fourteeners located in designated wilderness areas. Wilderness is "an area of undeveloped federal land retaining its primeval character and influence . . . and which has outstanding opportunities for solitude or a primitive and unconfined type of recreation."¹⁶ Wilderness designations impose the strictest limitations on recreation and management activities; accordingly, this Comment focuses on management strategies that would be acceptable in wilderness areas. There is wide speculation that the Forest Service may institute a use-limit system to restrict the number of hikers who can visit the most popular peaks, most of which are located within wilderness areas.¹⁷

Although use limits might seem like an easy and effective way to prevent the public from loving Colorado's fourteeners to death, such a strategy is not the best management choice for these high-altitude mountains. To adopt a use-limit system on fourteeners as a "default" management method would forgo the Forest Service's sustainability mandate, which requires that all land-planning decisions within the agency advance environmental, social, and economic sustainability.¹⁸ Instead, the Forest Service should adopt management alternatives that do not restrict the number of hikers on fourteeners but rather focus on changing hiker behavior. In this way, the agency can effectively

14. For information about public land designations, see *America's Public Lands Explained*, U.S. DEP'T OF THE INTERIOR (June 13, 2016), <https://www.doi.gov/blog/americas-public-lands-explained> [<https://perma.cc/3ESC-MRT9>]; see also Aer Parris, *Your Guide to Understanding Public Lands*, REI CO-OP J., <https://www.rei.com/blog/hike/your-guide-to-understanding-public-lands> (last visited June 6, 2019).

15. Kroschel, *supra* note 8. Fifty-three fourteeners are located within six different national forests. Rebecca Sokol, *Colorado's 14ers with Wilderness, FS, and BLM Lands*, ARCGIS (Nov. 2, 2018), <https://arcg.is/1WWHeS> [<https://perma.cc/2272-3BBR>]. Redcloud Peak, Sunshine Peak, and Handies Peak are on Bureau of Land Management land. Long's Peak is within Rocky Mountain National Park, and Culebra Peak is on private property. *Id.*

16. 16 U.S.C. § 1131(c) (2018).

17. Kroschel, *supra* note 8.

18. 36 C.F.R. § 219.8 (2019).

and equitably work toward its goal of sustainable recreation.

Part I of this Comment introduces the problem of recreational overuse on one of Colorado's most popular fourteeners, Mount Bierstadt. Part II examines the Forest Service's current approach to recreation management, discussing first why the Forest Service has a duty to promote sustainable recreation while considering environmental, social, and economic factors in management decisions. Part II then analyzes why the Forest Service tends to rely on use-limit methods despite the fact that use limits are not the most sustainable or effective form of management. Part II also explains why the Forest Service's history frustrates the development of more sustainable and innovative recreation management methods. Part III discusses recreation management alternatives and introduces "community-based social marketing"—a strategy borrowed from the field of sustainable behavior change—as an approach that could be applied on fourteeners.

I. A TRAIL THIRTY FEET WIDE: A CASE STUDY OF MOUNT BIERSTADT

At 14,060 feet above sea level, Mount Bierstadt stands tall over Colorado's Front Range and the Denver metropolitan area.¹⁹ Crowds of hikers flock to Mount Bierstadt every summer.²⁰ In 2017, the Colorado Fourteener's Initiative estimated that thirty-nine thousand people hiked Mount Bierstadt.²¹

The Forest Service is in the early stages of exploring management solutions on Mount Bierstadt, and one potential solution is to restrict the number of hikers who can access the mountain.²² The situation on Mount Bierstadt sets the scene for this Comment's main argument: although the harms caused by recreational overuse are serious and significant, placing a hard cap on the number of hikers on Colorado's fourteeners would be unsustainable and overbroad.

19. Koehler, *supra* note 9; see also *Evans and Bierstadt (Main Page)*, 14ERS.COM, <https://www.14ers.com/photos/peakmain.php?peak=Mt.+Evans> (last visited Sept. 11, 2019) [<https://perma.cc/R7FY-PF5Y>].

20. Koehler, *supra* note 9.

21. Press Release, Colo. Fourteeners Initiative, An Estimated 334,00 People Hiked Colorado's 14ers in 2017 (July 19, 2018), <https://www.14ers.org/wp-content/uploads/2017-Hiking-Use-Estimates-Press-Release-7.19.2018.pdf> [<https://perma.cc/38AA-L5TV>].

22. Kroschel, *supra* note 8.

Mount Bierstadt is located within the 74,400-acre Mount Evans Wilderness, which is named for a neighboring fourteener.²³ As part of the Pike National Forest, the Mount Evans Wilderness is managed under a 1984 Forest Management Plan (FMP).²⁴ The FMP sets the overall management direction for the National Forest, guiding management activities at a forest-wide scale.²⁵ However, the Pike FMP, which is one of the oldest, non-revised FMPs in the entire national forest system,²⁶ provides little direction about how to manage recreation in the Mount Evans Wilderness.²⁷ The FMP does acknowledge the “role that outdoor recreation plays in the Forest management situation,” and how “[r]apidly expanding population centers along the Colorado Front Range . . . promise rapidly increasing use of the Forest’s recreation resources.” It does not, however, describe specific management strategies to address overuse.²⁸ Recreational use of the Mount Evans Wilderness is characterized in terms of supply and demand. As the FMP states, “[u]se levels are expected to increase significantly in coming years. Demand is projected to exceed supply by mid planning [sic] period. In certain favorite destination locations, demand is already exceeding apparent capacity.”²⁹

23. *History & Management*, FRIENDS OF MOUNT EVANS & LOST CREEK WILDERNESS, <http://www.fomelc.org/mount-evans-trails> (last visited Sept. 11, 2019) [<https://perma.cc/2R69-B82W>]. Special protection for the Mount Evans Wilderness area began in 1956, but the Mount Evans Wilderness was officially designated by Congress in 1980. Colorado Wilderness Act of 1980, Pub. L. No. 96-560, § 102(a)(10), 94 Stat. 3265, 3267 (1980). The Mount Evans Wilderness is located within two national forests, Pike National Forest and Arapaho National Forest. *History & Management*, *supra*. In 1994, the two forests agreed to manage the Mount Evans Wilderness as a single unit, and the South Platte District of the Pike National Forest became the leading management unit of the wilderness, though it continues to coordinate with Arapahoe National Forest staff in all management decisions. *Id.*

24. U.S. DEP’T OF AGRIC., U.S. FOREST SERV., THE PIKE AND SAN ISABEL NATIONAL FORESTS, LAND AND RESOURCE MANAGEMENT PLAN xiii (1984) [hereinafter PIKE & SAN ISABEL LRMP], https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsm9_032376.pdf [<https://perma.cc/5DTA-HGJN>].

25. U.S. DEP’T OF AGRIC., U.S. FOREST SERV., A CITIZENS’ GUIDE TO NATIONAL FOREST PLANNING 9 (2016), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd509144.pdf [<https://perma.cc/U4Z8-EVQU>].

26. U.S. DEP’T OF AGRIC., U.S. FOREST SERV., STATUS OF FOREST SERVICE LAND MANAGEMENT PLANS 1 (March 14, 2018), https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd593201.pdf [<https://perma.cc/8DGF-PLLM>].

27. *Id.* Forest management plans are to be revised every fifteen years. 36 C.F.R. § 219.7 (2019).

28. PIKE & SAN ISABEL LRMP, *supra* note 24, at II-31.

29. *Id.* at II-45. The mid-planning period, when demand was predicted to

As predicted in the FMP, the number of visitors who recreate in the Mount Evans Wilderness and on Mount Bierstadt has increased rapidly over the last several decades.³⁰ Mount Bierstadt, located thirty miles from Denver and considered a relatively easy “class two” hike,³¹ attracts more hikers than any other fourteenner in the state.³² In 2018, an average of twenty-eight people were at the Mount Bierstadt summit at any given time on a weekend.³³ On one day, 133 visitors were observed at the summit.³⁴ A different study concluded that an average of eight hundred people hiked the main summit trail on a typical weekend day.³⁵

Hikers on Mount Bierstadt significantly impact the mountain’s alpine ecosystem and recreational infrastructure. The trails leading to Mount Bierstadt’s summit are in disrepair from erosion caused by many pairs of hiking boots, and hikers have formed “rogue” trails as they forge their own paths up and down the mountain.³⁶ “The trail on Bierstadt was originally four feet wide,” commented Brian Banks, a district ranger for Pike National Forest. “Now, it’s 30 feet wide in many places.”³⁷ Alpine plants have been trampled along the most crowded routes up the mountain.³⁸

exceed supply, was 2007. *Id.*

30. Use levels on those fourteenners with reliable data collection histories suggest overall hiker use is growing 6 or 7 percent annually. COLO. FOURTEENERS INITIATIVE, 2017 14ER HIKER USE REPORT BACKGROUND 6, <https://www.14ers.org/wp-content/uploads/CFI-2017-Hiking-Use-Report-Methodology-and-Background.pdf> [<https://perma.cc/35RN-Q7BY>].

31. *14er Routes: Evans and Bierstadt*, 14ERS.COM, <https://www.14ers.com/routelist.php?peak=Evans+and+Bierstadt> (last visited Sept. 11, 2019) [<https://perma.cc/MVN7-WQ8Y>]. Hiking routes on fourteenners are assigned a difficulty rating using the Yosemite Decimal System. Hike are rated as ‘classes’ ranging from one (easiest) to five (most difficult). *See Route Difficulty Ratings*, 14ERS.COM, <https://www.14ers.com/difficultyratings.php> (last visited Sept. 11, 2019) [<https://perma.cc/E9PG-H96J>].

32. Press Release, Colo. Fourteeners Initiative, *supra* note 21.

33. *Id.*

34. RES. SYS. GRP., ARAPAHOE AND ROOSEVELT NATIONAL FORESTS TRANSPORTATION SYSTEMS ALTERNATIVES STUDY: FINAL REPORT 239 (2016), <https://flh.fhwa.dot.gov/programs/flpp/studies/documents/Arapaho%20and%20Roosevelt%20National%20Forests%20Transportation%20Systems%20Alternatives%20Study%20Final%20Report.pdf> [<https://perma.cc/8Y7C-ZE3N>].

35. *Id.* at xxviii.

36. Koehler, *supra* note 9.

37. *Id.*

38. *Id.*

Parking at the trailhead is another major concern.³⁹ Though there are only 106 parking spots at the Mount Bierstadt trailhead at Guanella Pass, the Forest Service has reported up to four hundred vehicles in the area during peak hiking times.⁴⁰ Many hikers park in unendorsed roadside spaces along the Guanella Pass Scenic Byway, which raises concerns about automobile accidents.⁴¹ Nearly twice as many cars park in unendorsed spaces as in designated lots.⁴²

Rumors abound that the Forest Service will soon implement new restrictions limiting the number of hikers on Mount Bierstadt.⁴³ Between 2011 and 2016, the Forest Service commissioned a study in response to concerns about vehicle congestion and visitor crowding at three different recreation sites, including Guanella Pass, where the Mount Bierstadt Trailhead is located.⁴⁴ Although the study focused primarily on vehicle-traffic issues, it also analyzed the “wilderness resource capacity” of the Mount Evans Wilderness.⁴⁵ The study advocated for the adoption of a “visitor-based crowding threshold” at the summit of Mount Bierstadt, suggesting that no more than 15 percent of visitors at the summit should see more than twenty-two other people at one time.⁴⁶ To achieve this goal, the study proposed that the Forest Service implement use limits via a wilderness permit system.⁴⁷ The permit system would impose a quota of no more than four hundred hikers per day,

39. See HALEY PECKETT & BENJAMIN RASMUSSEN, U.S. DEP’T OF TRANSP., TRANSIT FEASIBILITY ANALYSIS AND RECOMMENDATIONS: ARAPAHO-ROOSEVELT NATIONAL FOREST TRANSPORTATION SYSTEM ALTERNATIVES STUDY 25 (June 2015), <https://rosap.nrl.bts.gov/view/dot/12242> [<https://perma.cc/S8EX-GG26>].

40. Kroschel, *supra* note 8.

41. PECKETT & RASMUSSEN, *supra* note 39, at 25.

42. *Id.*

43. See Kroschel, *supra* note 8.

44. RESOURCE SYSTEMS GROUP, *supra* note 34, at 1.

45. *Id.* at 424–25, 436.

46. *Id.* at xxix, 433. This threshold was determined by surveys, which attempted to measure visitors’ perceptions of crowds and thresholds for crowding on the Mount Bierstadt summit. *Id.* at xxix.

Respondents to the 2014 survey of Mount Bierstadt Trail hikers were asked to indicate, for each of several simulated photos of varying numbers of people on the summit of Mount Bierstadt, if they would feel crowding being on the summit with that number of people. Survey results were used to identify an empirically based crowding threshold that serves to balance the popularity and accessibility of the area with concerns for the quality of Wilderness resources.

Id.

47. *Id.* at xxix.

which would reduce hikers on the mountain by 50 percent on typical summer days.⁴⁸

The Forest Service has not yet adopted the suggestions offered in the study, nor has it made any definitive decisions about restricting hiker use on Mount Bierstadt.⁴⁹ Yet, in 2017, the Forest Service stated it was exploring solutions to the overuse problem, including potentially establishing a numerical capacity for the Mount Bierstadt summit and a limited-entry permit system.⁵⁰ The Forest Service shared that “the idea of fees or a permitting system is far beyond where we are in the process” and that any proposed recreation management changes at Mount Bierstadt would undergo extensive environmental review and include opportunities for public input.⁵¹

The situation on Mount Bierstadt positions the Forest Service at an important crossroads. Certainly, some action must be taken on the mountain to mitigate environmental degradation and address safety concerns. But what kind of action? Even though the Forest Service may be inclined to limit recreational use on Mount Bierstadt to a defined numerical capacity, the Forest Service has the statutory authority and regulatory flexibility to craft a more effective, equitable, and sustainable solution.

II. THE FOREST SERVICE AND RECREATION MANAGEMENT

A synthesis of the Forest Service’s contemporary approach to recreation management sheds light on the various recreation management methods that could be adopted on fourteeners. First, this Part discusses the Forest Service’s statutory and regulatory duty to promote sustainable recreation. Next, this Part describes how the Forest Service tends to rely on use-limit methods even though these methods have significant flaws. Finally, this Part puts forth a historical theory as to why use limits are continually employed by the Forest Service, notwith-

48. *Id.* at xxix–xxx.

49. Any proposed changes to recreation management on Mount Bierstadt are required to undergo an environmental review process under the National Environmental Policy Act (NEPA) and would include opportunities for public input. Kroschel, *supra* note 8. Thus, the Forest Service cannot simply adopt the suggestions proposed in the study without first complying with the procedural requirements of NEPA and other administrative laws. *Id.*

50. *Id.*

51. *Id.*

standing the Forest Service's sustainable-recreation mandate.

A. The Sustainable Recreation Obligation

Under its multiple-use mandate, the Forest Service has broad power to manage recreation as a legitimate use of national forest lands.⁵² As this Section explains, the Forest Service's authority includes a sustainability obligation⁵³ that provides the agency with the flexibility to develop innovative and inclusive recreation management strategies on Mount Bierstadt and other fourteeners. The Forest Service's duty to promote environmental, economic, and social sustainability should empower it to make recreation management choices on fourteeners that transcend traditional use limits.

First, it is important to understand the statutory framework that guides the Forest Service in managing recreation on fourteeners. Three statutes define the Forest Service's duties as they relate to recreation: the Multiple Use and Sustained Yield Act (MUSYA), the National Forest Management Act (NFMA), and the Wilderness Act.⁵⁴ MUSYA and NFMA apply to all Forest Service management decisions, while the higher standards imposed by the Wilderness Act only apply to the thirty-three fourteeners located in wilderness areas.

In 1960, Congress passed MUSYA, which directed the Forest Service to manage forest lands for outdoor recreational use, along with six other uses.⁵⁵ The Act provides that national forests "shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes. . . . [D]ue consideration shall be given to the relative values of the various resources in particular areas."⁵⁶ Although MUSYA does not de-

52. Multiple-Use Sustained-Yield Act of 1960, 16 U.S.C. § 528 (2018).

53. 36 C.F.R. § 219.8 (2019).

54. Multiple-Use Sustained-Yield Act of 1960 §§ 528–31; National Forest Management Act of 1976, 16 U.S.C. § 1604 (2018); Wilderness Act of 1964, 16 U.S.C. § 1131 (2018). There are five main types of statutes that provide recreation management direction for the Forest Service: (1) statutes that provide general direction from Congress, (2) statutes governing agency land management planning, (3) statutes establishing special management direction for designated areas such as wilderness, (4) statutes governing specific recreation situations such as ski resorts, and (5) statutes that are not directed at recreation management but still affect it, such as the Endangered Species Act. Adams & McCool, *supra* note 11, at 58–59.

55. Multiple-Use Sustained-Yield Act of 1960 § 528 (2018).

56. *Id.* §§ 528–29.

fine outdoor recreation nor distinguish between different types of recreation, it was the first statute to codify the Forest Service's obligation to provide recreational opportunities on forest lands.⁵⁷

Though the multiple-use mandate established by MUSYA continues to guide the Forest Service today, it is often criticized as a justification for the federal subsidization of commodity-based industries, like logging and grazing.⁵⁸ The federal government bolsters these industries to ensure that forest lands meet the multiple-use mandate, leading to "over-utilization, waste, below-cost sales, and economic inefficiency."⁵⁹ Another criticism of the multiple-use mandate is that a disproportionate number of agency resources are spent buttressing extractive uses of forest land, even though extractive activities are decreasing.⁶⁰ Consequently, these resources cannot be devoted to recreation management. Many scholars call for a new approach.⁶¹

Regardless, the Wilderness Act of 1964 has statutorily shielded many fourteeners from extractive industries.⁶² The Wilderness Act signaled a new congressional commitment to preservation and set in motion a process excluding extractive activities on millions of acres of public lands.⁶³ Because thirty-three fourteeners are located within wilderness areas,⁶⁴ the Forest Service has a special commitment to ensuring that these areas maintain their wilderness character.

Wilderness is defined partially by the recreational oppor-

57. Jan G. Laitos & Thomas A. Carr, *The Transformation on Public Lands*, 26 *ECOLOGY L.Q.* 140, 165 (1999).

58. *Id.* at 205.

59. *Id.*

60. *Id.* at 206.

61. *Id.* at 208–11; see also Martin Nie, *Statutory Detail and Administrative Discretion in Public Lands Governance: Arguments and Alternatives*, 19 *J. ENVTL. L. & LITIG.* 223, 227 (2004) (explaining how MUYSA fails to address the needs of all Americans and how it also neglects to define the scale at which the multiple-use mandate should be applied); Michael Blumm, *Public Choice Theory and the Public Lands: Why "Multiple Use" Failed*, 18 *HARV. L. REV.* 405 (1994) (arguing that the MUYSA fosters land agency bias favoring commodity users).

62. The Wilderness Act, 16 U.S.C. § 1131 (2018).

63. There are several exceptions to the Wilderness Act's general prohibition on commodity extraction in wilderness areas. These exceptions include timber cutting for control of fire, insects, and diseases, a twenty-year grace period for certain types of mining, and the grandfathering in of acceptable grazing existing prior to 1964. 16 U.S.C. § 1133(d)(1), (3), (4) (2018).

64. See Sokol, *supra* note 15.

tunities it provides. To be designated as wilderness, an area must have “outstanding opportunities for solitude or a primitive and unconfined type of recreation.”⁶⁵ The Wilderness Act mandates that land management agencies manage wilderness to preserve “wilderness values,” which include not only opportunities for solitude but also ecological, geological, scientific, educational, scenic, and historical values.⁶⁶ Wilderness areas are managed by the land agency that had jurisdiction over the land before it was designated as wilderness by Congress.⁶⁷

For the Forest Service, wilderness designations impose greater restraints on both recreational and extractive land uses than would otherwise be acceptable under multiple-use principles.⁶⁸ Commercial development, construction of roads and structures, and operation of motorized or mechanized vehicles are prohibited in all wilderness areas.⁶⁹ On Mount Bierstadt, for example, the rules governing the Mount Evans Wilderness prohibit mountain bikes, the use of chain saws for trail maintenance, and camping within one hundred feet of trails, lakes, or streams.⁷⁰

Another major statute was adopted in 1976, NFMA, which expanded the Forest Service’s land management duties.⁷¹ At its core, NFMA directs the Forest Service to engage in comprehensive land-management planning.⁷² Forest

65. 16 U.S.C. § 1131(c) (“In contrast with those areas where man and his own works dominate the landscape, [wilderness] is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain.”).

66. *Id.*

67. *Id.* § 1131(a), (b).

68. Laitos & Carr, *supra* note 57, at 164. J. Douglas Wellman provides insight about the relationship between the Forest Service and wilderness policy:

Wilderness is primarily a Forest Service story. Other federal agencies manage wilderness, and there are even some state areas that possess many of the requisite characteristics of wilderness. However, wilderness policy has been hammered out primarily through controversy over national forest lands management. In turn, Forest Service recognition of wilderness as a legitimate use was prompted largely by challenges from the National Park Service, as both agencies attempted to respond to growing popular interest in wildland recreation.

J. DOUGLAS WELLMAN, WILDLAND RECREATION POLICY 128 (1987).

69. WELLMAN, *supra* note 68, at 128.

70. *Mount Evans Wilderness Rules and Regulations*, U.S. DEP’T OF AGRIC., U.S. FOREST SERV., https://www.fs.usda.gov/detail/arp/about-forest/?cid=fsm91_058242 (last visited Mar. 15, 2019) [<https://perma.cc/7ZZV-KFUY>].

71. National Forest Management Act of 1976, 16 U.S.C. § 1604 (2018).

72. *Id.* § 1604(a).

management plans, like the one governing Mount Bierstadt, must “include coordination” of the acceptable uses of forest lands.⁷³ Along with range, timber, watershed, and wildlife and fish uses, NFMA requires that outdoor recreation be considered in forest planning.⁷⁴

In 2012, the Forest Service adopted new regulations corresponding to NFMA through the 2012 Planning Rule. Many national forests throughout the country are currently in the process of revising their forest management plans under the 2012 Planning Rule.⁷⁵ This Rule guides the Forest Service in the “collaborative” and “science-based” development and revision of forest management plans.⁷⁶ Overall, the 2012 Planning Rule grants the Forest Service high levels of discretion and flexibility in managing forest lands for recreation.⁷⁷

A significant new requirement created by the 2012 Planning Rule is that all new and revised forest management plans contribute to social, economic, and ecological sustainability.⁷⁸ The 2012 Planning Rule defines sustainability as “the capability to meet the needs of the present generation without compromising the ability of future generations to meet their needs.”⁷⁹ Ecological sustainability refers to the capability of ecosystems to maintain ecological processes and support a diverse community of organisms.⁸⁰ Economic sustainability is the capability of society to produce, consume, or otherwise benefit from goods and services, including contributions to jobs and markets.⁸¹ Social sustainability refers to the capability of soci-

73. *Id.* § 1604(e)(1).

74. *Id.* Additionally, NFMA provides that the use of forest lands as wilderness is an acceptable use. *Id.* § 1604(e)(1), (g)(3)(A).

75. 36 C.F.R. § 219.1 (2019).

76. *Id.*; see also *2012 Planning Rule*, U.S. DEP’T OF AGRIC., U.S. FOREST SERV., <https://www.fs.usda.gov/detail/planningrule/home/?cid=stelprdb5359471> (last visited Mar. 15, 2019) [<https://perma.cc/7NRZ-U9GU>]. For more about the processes and events that led to the adoption of the 2012 Planning Rule, see Charles Wilkinson & Daniel Cordalis, *Heeding the Clarion Call For Sustainable, Spiritual Western Landscapes: Will the People Be Granted a New Forest Service?*, 33 PUB. LAND & RES. L. REV. 1, 27 (2012).

77. See National Forest System Land Management, 77 Fed. Reg. 21,162 (Apr. 9, 2012) (codified at 36 C.F.R. pt. 219); see also Gordon Steinhoff, *Biodiversity Conservation in the National Forests and the 2012 Planning Rule*, 8 WASH. J. ENVTL. L. & POL’Y 1, 36 (2018).

78. 36 C.F.R. § 219.8 (2019).

79. *Id.* § 219.19.

80. *Id.*

81. *Id.*

ety to support “the network of relationships, traditions, culture, and activities that connect people to the land and to one another, and [to] support vibrant communities.”⁸² The 2012 Planning Rule also defines sustainable recreation as “the set of recreation settings and opportunities on the National Forest System that is ecologically, economically, and socially sustainable for present and future generations.”⁸³

When revising or developing a forest management plan, the Forest Service must incorporate standards or guidelines to contribute to social and economic sustainability, in addition to ecological sustainability.⁸⁴ The plan must account for the following “social” criteria, among other environmental criteria:

- (1) Social, cultural, and economic conditions relevant to the area influenced by the plan;
- (2) Sustainable recreation; including recreation settings, opportunities, and access; and scenic character;
- (3) Multiple uses that contribute to local, regional, and national economies in a sustainable manner;
- (4) Ecosystem services;
- (5) Cultural and historic resources and uses; and
- (6) Opportunities to connect people with nature.⁸⁵

The 2012 Planning Rule requires the Forest Service to take a holistic approach to sustainability by considering its tripartite composition. Environmental, economic, and social sustainability should be considered when making management decisions, and the agency should not always favor environmental integrity above all else.⁸⁶ As for recreation, this means forest management plans must balance the environmental impacts of recreation against its social and economic benefits. In revising the forest management plan that governs Mount Bierstadt, for

82. *Id.*

83. *Id.*

84. *Id.* § 219.8.

85. *Id.* § 219.8(b).

86. *Id.* § 219.8.

example, the Forest Service should consider hikers' impacts on local economies of mountain towns in the Front Range, in addition to hikers' effects on Mount Bierstadt's alpine environment.

Further, the agency should consider the social benefits of maintaining unrestricted access to fourteeners. Many people gain enjoyment or fulfillment from summiting fourteeners; if people did not like hiking these mountains, overuse would not be a problem. OutThere Colorado, a recreation blog, interviewed hikers about their first fourteener experience. The responses illustrate the different types of fulfillment people find while hiking: "It truly is an amazing, euphoric feeling!"⁸⁷ "It feels incredible . . . Great view, a good feeling of accomplishment on a Saturday morning."⁸⁸ "It was sucky at first, but totally worth it."⁸⁹ "My first [fourteener] was Quandary, and to my surprise at the top my (now) husband proposed. Couldn't have asked for a better surprise!! It fit right in with our love of hiking and all things outdoors."⁹⁰ Because many people find it important and desirable to connect with nature by hiking fourteeners, restricting the number of hikers on these mountains would frustrate the agency's obligation to contribute to the public's connection with nature.

The environmental, social, and economic directives imposed by the 2012 Planning Rule apply to wilderness areas, but plans developed under the 2012 Planning Rule must comply with Wilderness Act requirements.⁹¹ Again, the Wilderness Act requires that wilderness areas be managed to provide "outstanding opportunities for solitude or a primitive and unconfined type of recreation."⁹² The circumstances on Mount Bierstadt illustrate what seems like a clash in the Forest Service's legislative mandate: how can the Forest Service protect opportunities for solitude and unconfined recreation in wilderness areas while also providing "opportunities to connect with nature"⁹³ for the many people seeking these opportunities? There

87. R. Scott Rappold, *Your First 14er Climb Will Be the Thrill, and Challenge, of a Lifetime*, OUTTHERE COLO. (Nov. 14, 2015), <https://www.outtherecolorado.com/your-first-14er-climb-will-be-the-thrill-and-challenge-of-a-lifetime/> [https://perma.cc/7NC2-KRAN].

88. *Id.*

89. *Id.*

90. *Id.*

91. 36 C.F.R. § 219.1(f).

92. 16 U.S.C. § 1131(c) (2018).

93. 36 C.F.R. § 219.8(b)(6).

is no easy answer, but as the next few sections of this Comment illustrate, restricting the public's access to fourteeners would be a hurried and overbroad way to resolve this problem in the long run.

Beyond the regulations codified in the 2012 Planning Rule, administrative policy, procedure, and guidance also advise the Forest Service to promote sustainable recreation on forest lands.⁹⁴ These administrative directives suggest that the agency should only prohibit or restrict recreation opportunities when all other managerial tactics have been conclusively unsuccessful.⁹⁵ The Forest Service Manual directs agency staff⁹⁶ to “maximize visitor freedom within the wilderness, minimize direct controls and restrictions, and apply controls only when they are essential for protection of the wilderness resource and after indirect measures have failed.”⁹⁷ Further, agency staff are directed to use information, interpretation, and education as the primary tools for management of wilderness visitors.⁹⁸

Another piece of administrative guidance important to sustainable recreation management is the Forest Service's Sustainable Recreation Framework (“Framework”).⁹⁹ Published in 2010, the Framework serves as a national strategy to meet the “growing challenge of sustaining outdoor recreation opportunities [and] the environmental, social, and economic needs of present and future generations.”¹⁰⁰ The 2012 Planning Rule was adopted to ensure that Forest Service regulations remain consistent with the Framework and other agency policies.¹⁰¹

The gist of the Framework is that although natural, cul-

94. 36 C.F.R. § 200.4 (2019).

95. U.S. DEP'T OF AGRIC., U.S. FOREST SERV., FOREST SERVICE MANUAL § 2322.12 (Jan. 22, 2007).

96. While the Regional Forester is responsible for requiring visitor registration and/or permits to measure visitor use in a wilderness area, the Forest Supervisor is responsible for limiting the number of visitors, parties, party size, or duration of visitor stays in a specific area when the wilderness resource is threatened or damaged because of excessive use. The District Ranger is responsible for maintaining signs, instruments, and other minor improvements, as well as maintaining trail management schedules. *Id.* § 2322.04d.

97. *Id.* § 2322.12(1).

98. *Id.* § 2322.12(2).

99. U.S. DEP'T OF AGRIC., U.S. FOREST SERV., CONNECTING PEOPLE WITH AMERICA'S GREAT OUTDOORS: A FRAMEWORK FOR SUSTAINABLE RECREATION (June 25, 2010) [hereinafter SUSTAINABLE RECREATION].

100. *Id.* at 3.

101. National Forest System Land Management, 77 Fed. Reg. 21,162 (Apr. 9, 2012) (codified at 36 C.F.R. pt. 219).

tural, and scenic environments must be protected for the enjoyment of future generations, recreation should be encouraged and supported because it is vital to “renewing body and spirit” and “inspiring passion for the land.”¹⁰² The Framework suggests that unmanaged recreation should be resolved through a well-designed network of roads, trails, and facilities, and by educated citizen stewardship and partnerships.¹⁰³ Further, field staff should be present to provide quality recreation experiences while reducing the impacts of visitor use on the landscape.¹⁰⁴ At no point does the Framework encourage the adoption of use-limit methods.¹⁰⁵

The Forest Service is obligated to manage recreation consistently with its sustainability mandate, as directed by both federal statutes and administrative guidance. As described, the agency has the statutory authority and flexibility to design and implement sustainable solutions for recreational overuse. Why, then, does the agency rely on use limits as a recreation management strategy?

B. Use Limits as a “Default” Management Strategy

Since the 1960s, the Forest Service has depended on the concept of recreational carrying capacity to implement use limits on forest lands. Land managers can implement use limits through several different mechanisms. Usually, a limited number of permits are made available to allow recreationists to access a particular area for a specific amount of time.¹⁰⁶ Permits can be issued online, by in-person reservation, through lottery systems, or on a first-come, first-served basis at a trailhead or ranger station.¹⁰⁷ Additionally, the Forest Service can

102. SUSTAINABLE RECREATION, *supra* note 99, at 1.

103. *Id.* at 5.

104. *Id.*

105. *Id.*

106. *See generally, Passes and Permits*, U.S. FOREST SERV., <https://www.fs.fed.us/visit/passes-permits> (last visited Mar. 10, 2019) [<https://perma.cc/QLT8-ELNY>].

107. For varying examples of permit systems across the country, see *Indian Peaks Wilderness*, U.S. DEPT OF AGRIC., U.S. FOREST SERV., <https://www.fs.usda.gov/recarea/arp/recarea/?recid=80803> (last visited Mar. 10, 2019) [<https://perma.cc/92HK-NDA7>] (requiring submission of an application form and a five dollar payment to ranger district office); *Mt. Adams Summit*, U.S. DEPT OF AGRIC., U.S. FOREST SERV., <https://www.fs.usda.gov/recarea/giffordpinchot/recarea/?recid=80023> (last visited Mar. 10, 2019) [<https://perma.cc/9DBG-M8GH>].

choose to issue permits for free or at cost.¹⁰⁸

Despite the Forest Service's historical reliance on the concept of carrying capacity, the concept has major weaknesses and should not be adopted on Colorado's fourteeners. First, this Section provides background on recreational carrying capacity and its adoption into public land management through use-limit methods. The Forest Service has been so quick to implement use limits that they are now considered the "default" management strategy.¹⁰⁹ Second, this Section explains how use limits often have harmful environmental and social repercussions and why they are not the right management tool for Colorado's fourteeners.

1. Background on Use Limits

The notion of ecological carrying capacity has existed for hundreds of years.¹¹⁰ Yet it was only after World War II, when the United States experienced a rapid rise in outdoor recreation, that land managers began incorporating recreational carrying capacity concepts into their decision-making processes. A 1936 report on recreation in California was the first to ask the seminal question: "How large a crowd can be turned loose in a wilderness without destroying its essential qualities?"¹¹¹ Recreational carrying capacity is used as a tool to understand

(requiring visitors to purchase a fifteen dollar permit, in-person or by mail, to climb above seven thousand feet. Visitors staying below seven thousand feet need to fill out a free permit form at a trailhead.); *Enchantment Area Wilderness Permits*, U.S. DEPT OF AGRIC., U.S. FOREST SERV., https://www.fs.usda.gov/detail/okawen/passes-permits/recreation/?cid=fsbdev3_053607 (last visited Mar. 10, 2019) [<https://perma.cc/29PL-7DD8>] (utilizing a lottery system with an online application form).

108. Congress established the Forest Service's ability to charge fees for recreation in areas where there are "substantial Federal investments" and certain amenities, including "interpretive exhibits, a permanent toilet, and security services." Federal Lands Recreation Enhancement Act, 16 U.S.C. § 6802 (2018); see also, *Scherer v. U.S. Forest Serv.*, 653 F.3d 1241, 1242 (10th Cir. 2011).

109. Noelle L. Meier, *Sustainable Outdoor Recreation and the Forest Service: Agency Culture, Response to Change and Implications for the Future* (2013) (unpublished Master of Science paper, Utah State University) (on file with Utah State University Merrill-Cazier Library Digital Commons).

110. See, e.g., THOMAS MALTHUS, *ESSAY ON THE PRINCIPLE OF POPULATION* (1803) (applying carrying capacity concepts to the human population).

111. Whittaker et al., *Capacity Reconsidered: Finding Consensus and Clarifying Differences*, 29 J. PARK & RECREATION ADMIN. 1, 2 (2011) (quoting E. LOWELL SUMNER, *SPECIAL REPORT ON A WILDLIFE STUDY IN THE HIGH SIERRA IN SEQUOIA AND YOSEMITE NATIONAL PARKS AND ADJACENT TERRITORY* (1936)).

what types of use, and how much, can be accommodated within a particular area before its important values (whatever they may be) are diminished.¹¹²

Inherent to the concept of recreational carrying capacity is the idea that land managers must determine the maximum capacity of a specific area and then implement strategies to ensure recreational use stays within that limit. The decision to implement use limits typically follows a similar pattern. First, recreational use is allowed or encouraged in an area.¹¹³ At some point, the use and subsequent impacts become unacceptable. Land managers then decide that they need to identify a capacity and restrict use in that area to that capacity.¹¹⁴ However, there is often no follow-up plan or reevaluation after the use restriction is enforced.¹¹⁵

Carrying capacity is often understood through a supply-and-demand framework, as illustrated in the 1984 Forest Management Plan that governs Mount Bierstadt.¹¹⁶ When the demand for recreation exceeds the supply of recreational opportunities, “tragedy of the commons” problems arise.¹¹⁷ A supply-and-demand view of carrying capacity was first employed in the context of land management when Congress established the Outdoor Recreation Resources Review Commission (ORRRC) in 1958.¹¹⁸ ORRRC’s task was to inventory and review the nation’s outdoor recreation resources, including facilities such as campgrounds and picnic tables.¹¹⁹ ORRRC reports supported political efforts to increase the “supply” of recreation resources through major statutes including the Wilderness Act, the Land and Water Conservation Fund Act (1964), and the

112. *Id.* at 2.

113. Meier, *supra* note 109, at 153.

114. *Id.*

115. *Id.*

116. PIKE & SAN ISABEL LRMP, *supra* note 24, at II-45 (“Demand is projected to exceed supply by mid planning [sic] period. In certain favorite destination locations, demand is already exceeding apparent capacity.”); *see also* Whittaker et al., *supra* note 111, at 2; Laitos & Gamble, *supra* note 10, at 544.

117. Laitos & Gamble, *supra* note 10, at 545. For an explanation of the tragedy of the commons phenomenon, see Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 124 (1968).

118. Whittaker et al., *supra* note 111, at 2; *see also* Brent. A. Olson, *Paper Trails: The Outdoor Recreation Resource Review Commission and the Rationalization of Recreational Resources*, 41 GEOFORUM 447–56 (2010).

119. Whittaker et al., *supra* note 111, at 2.

Wild and Scenic Rivers Act (1968).¹²⁰

After ORRRC's adoption of a supply-and-demand framework in 1958, geographer J. Alan Wagar produced some of the first research on recreational carrying capacity in the land management context.¹²¹ Agency land managers were already accustomed to thinking of land management in terms of restrictions, like allowable timber harvests and acceptable numbers of livestock on rangelands.¹²² According to Wagar, land managers should simply apply this restrictive approach to control recreation in high-use areas.¹²³ Because the concept of carrying capacity was rooted in traditional, science-based natural resource management, it appealed to land managers as a means of solving recreational overuse.¹²⁴

Many high-use areas—across the country and across all different types of land designations—have use-limit systems in place.¹²⁵ For instance, Yosemite National Park began limiting visitors in certain areas in 2015,¹²⁶ and Zion National Park is in the process of evaluating and instituting visitor caps.¹²⁷ The

120. *Id.* For more information about the Land and Water Conservation Fund, see U.S. DEPT OF THE INTERIOR, *Land and Water Conservation Fund*, <https://www.doi.gov/lwcf> (last visited June 30, 2019) [<http://perma.cc/RF5E-N5KB>]; LWCF COAL., *About LWCF*, <https://www.lwcfcoalition.com/about-lwcf> (last visited June 30, 2019) [<http://perma.cc/KUN6-LJE2>]. For more information about the Wild And Scenic Rivers Act, see NAT'L WILD & SCENIC RIVERS SYS., *About the WSR Act*, <https://www.rivers.gov/wsr-act.php> (last visited June 30, 2019) [<http://perma.cc/5WQK-ZNV7>].

121. J. Alan Wagar, *The Carrying Capacity of Wild Lands for Recreation*, 7 FOREST SCI. MONOGRAPH 2 (1964).

122. *Id.*

123. *Id.*

124. Meier, *supra* note 109, at 39.

125. Courts have largely upheld land management agencies' ability to limit recreational use on public lands. See *High Sierra Hikers Ass'n v. Blackwell*, 390 F.3d 630, 647 (9th Cir. 2004) (explaining that recreation restrictions in wilderness areas should protect the current supply of wilderness for future generations, and that the single most important factor to consider is the amount of use the wilderness can tolerate). Courts have not considered whether use limits are the most statutorily faithful way to protect wilderness areas from impairment.

126. *New Yosemite Preservation Plan Includes Limit On Visitors*, CBS S.F. BAY AREA (Feb. 14, 2014), <https://sanfrancisco.cbslocal.com/2014/02/14/visitor-cap-part-of-new-yosemite-preservation-plan/> [<http://perma.cc/27CU-D7VY>]; see also *Merced Wild and Scenic River Final Comprehensive Management Plan*, U.S. NAT'L PARK SERV., <https://parkplanning.nps.gov/projectHome.cfm?projectID=18982> (last visited Mar. 15, 2019) [<http://perma.cc/2D9J-EFE8>].

127. Jim Robbins, *How a Surge in Visitors Is Overwhelming America's National Parks*, YALE ENV'T 360 (July 31, 2017), <https://e360.yale.edu/features/greenlock-a-visitor-crush-is-overwhelming-americas-national-parks> [<http://perma.cc/4RCX-YX76>].

Forest Service implemented a permit system to manage crowds on California's 14,505-foot Mount Whitney as early as 1971.¹²⁸

2. Shortcomings of Use-Limit Systems

Although the tradition of applying carrying-capacity concepts to recreation management might be long-standing, use-limit systems are fraught with problems. Use limits on hikers raise a slew of environmental, social, safety-related, and economic concerns.

Use limits are one of the “most controversial . . . but least understood” recreation management methods.¹²⁹ Concerns about the ecological efficacy of use limits remain largely unanswered because recreational impacts are not always related to the number of users in a particular area.¹³⁰ Indeed, environmental degradation in recreation areas can be strongly affected by other factors, like poorly built trails, unauthorized use, lack of visitor education, and insufficient enforcement personnel.¹³¹

Use limits often displace environmental impacts rather than alleviate them.¹³² When an entire region—such as Colorado's entire Rocky Mountain region—is analyzed, evidence suggests that placing use limits in high-use areas simply transfers environmental impacts to other areas.¹³³ This is partially because use-limit systems provide no incentive for recreationists to learn how their actions impact ecosystems or how their actions can be mitigated.¹³⁴ For example, if the number of hikers on Mount Bierstadt were cut in half, as has been proposed, excluded hikers might end up hiking the other easy Front Range fourteeners, like Mount Evans, Grays Peak, or Torreys Peak. These three mountains are already experiencing environmental degradation similar to that on Mount Bierstadt.¹³⁵

128. Koehler, *supra* note 9.

129. Stephen F. McCool, *Limiting Recreational Use in Wilderness: Research Issues and Management Challenges in Appraising Their Effectiveness*, in VISITOR USE DENSITY AND WILDERNESS EXPERIENCE: PROCEEDINGS 49 (2001).

130. *Id.*

131. Whittaker et al., *supra* note 111, at 9.

132. Meier, *supra* note 109, at 153.

133. *Id.* at 156.

134. McCool, *supra* note 129, at 52.

135. See COLO. FOURTEENERS INITIATIVE, ESTIMATED HIKING USE ON COLORADO'S 14ERS, <https://www.14ers.org/wp-content/uploads/2017-Colorado->

Adding displaced Mount Bierstadt hikers to these mountains would only exacerbate environmental problems.

Alternatively, displaced Mount Bierstadt hikers might choose not to hike other fourteeners but instead to hike on less-crowded trails.¹³⁶ However, transferring recreational impacts to low-use areas does not solve the problem either.¹³⁷ When visitors are displaced to areas where impacts are relatively low, they create more overall degradation as the new places are impacted and the old places are not adequately restored.¹³⁸ Because impacts in high-use areas have already occurred, the incremental impact of additional visitors is minimal, whereas low-use areas are more sensitive to recreational impacts.¹³⁹ This means the Forest Service must spend more money, time, and energy rehabilitating an ever-growing range of areas. Certainly, this method is unsustainable.

Additionally, use-limit systems result in the exclusion of certain groups from the outdoors. The decision to employ use limits includes an inherent value judgment about who should be included in and excluded from recreation on public lands.¹⁴⁰ Restricted access to public lands affects groups differently. Each restrictive mechanism (i.e., lottery, queue, reservation) discriminates against a certain type of user.¹⁴¹ For example, a queue or first-come, first-served system favors those who have enough time to wait in line or who live close to the ranger station. Alternatively, an online reservation system favors those who can plan ahead and who have consistent internet access. Permits that require payment can pose financial burdens on those seeking outdoor recreation opportunities.¹⁴² And, as jour-

14er-Hiker-Use-Days-Estimate-7.19.2018.pdf (last visited Mar. 15, 2019) [<http://perma.cc/JY84-8SCZ>].

136. Dale J. Blahna, *Introduction: Recreation Management*, in PROCEEDINGS: NATIONAL WORKSHOP ON RECREATION 104 (Linda E. Kruger et al., eds., 2005).

137. *Id.*

138. *Id.*; see also Stephen F. McCool & David N. Cole, *Thinking and Acting Regionally: Toward Better Decisions About Appropriate Conditions, Standards, and Restrictions on Recreation Use*, 18 GEORGE WRIGHT F. 85, 85–86 (2001).

139. See generally McCool & Cole, *supra* note 138.

140. *Id.* at 50; see also Patricia J. Winters, *Equity in Access to Recreation Opportunities: A Synthesis of Research and Management Implications*, in PROCEEDINGS: NATIONAL WORKSHOP ON RECREATION 167 (Linda E. Kruger et al., eds., 2005).

141. See generally Winters, *supra* note 140.

142. Wes Siler, *Hikers Shouldn't Have to Pay Trail Fees*, OUTSIDE ONLINE (Oct. 31, 2018), <https://www.outsideonline.com/2361271/user-fees-wont-save-public-lands-wyoming> [<http://perma.cc/P825-S24N>].

nalist Wes Siler observed while commenting on the consequences of excluding people from public lands, “[b]y limiting access to public lands, we’d also be limiting the number of people who care about those lands. By applying a user fee, we’d be decreasing the number of people willing to vote to protect them.”¹⁴³

Use limits can also create safety problems in high-altitude, mountainous terrain, like that of Colorado’s fourteeners. Evidence indicates that use-limit systems lead to more hiking accidents and emergency rescues.¹⁴⁴ Some wilderness rangers believe that people who receive permits through a lottery become stubborn about reaching the summit and are more likely to put themselves in dangerous situations because they perceive they only have one chance to hike.¹⁴⁵ For example, to climb California’s Mount Whitney, the highest peak in the continental United States, hikers obtain permits through a lottery system.¹⁴⁶ Only one hundred people per day are permitted for day hikes, plus sixty more for overnight backpacking trips.¹⁴⁷ The success rate of the lottery system is 35 percent.¹⁴⁸ Search and rescue teams have to make between six and twenty rescues every season, and fatalities on the mountain are not infrequent.¹⁴⁹ According to Bill Kirk, the author of a Mount Whitney hiking blog who has summited Whitney seven times, “[y]ou can educate all you want, but people spent their \$15, got their permit, now they want to go play . . . there’s no Plan B up there. People want to summit no matter what.”¹⁵⁰

Under a use-limit system, hiker safety might be compromised if people feel like they only have one opportunity to summit a particular peak. Like hikers on Mount Whitney, many people on Colorado’s fourteeners try to reach the summit “no matter what.”¹⁵¹ In 2017, Colorado experienced its deadli-

143. *Id.*

144. Megan Michelson, *Whitney Has Turned into an Overcrowded Catastrophe*, OUTSIDE ONLINE (Aug. 9, 2018), <https://www.outsideonline.com/2330916/mount-whitney-climbing-accidents> [<http://perma.cc/9KEK-X2BN>].

145. *Id.*

146. *Mount Whitney Lottery – Permit Reservations*, U.S. DEP’T OF AGRIC., U.S. FOREST SERV., <https://www.fs.usda.gov/detail/invo/passes-permits/recreation/?cid=stelprdb5150055> (last visited Nov. 18, 2018) [<http://perma.cc/X5CP-TQW6>].

147. *Id.*

148. *Id.*

149. *Id.*

150. Michelson, *supra* note 144.

151. Sarah Tory, *Death in the Alpine*, HIGH COUNTRY NEWS (May 14, 2018),

est summer in terms of fatalities on fourteeners.¹⁵² News reports suggest that social media also fuels hikers' desire to get the "summit selfie" and can make people falsely believe that hiking fourteeners does not involve great risk.¹⁵³ On the other hand, fewer people on a mountain could mean fewer people getting hurt. It is difficult to predict exactly how hiker safety will be affected by a use-limit system. In this sense, the Forest Service should thoroughly investigate how hiker safety might be compromised or strengthened by use limits before implementing them.

Economically, use limits can harm local communities near recreational areas. The Forest Service reports that across the nation annual wilderness visitor expenditures create and support more than 8,400 jobs (\$270 million in labor income), and create more than \$700 million in total economic output.¹⁵⁴ In Colorado, hiking on fourteeners is a significant source of economic development for mountain towns and trailhead communities.¹⁵⁵ In 2017, recreation on fourteeners delivered \$90 million in statewide economic impact.¹⁵⁶ Hikers contribute to local economies by spending money on food, gas, lodging, and gear.¹⁵⁷ The median amount a hiker spends on a fourteener trip is \$221, \$191 of which is spent within twenty-five miles of the peak on hotels, food, and other services.¹⁵⁸ If the number of hikers on fourteeners is cut in half, the economic benefits received by local communities would also decrease.¹⁵⁹

<https://www.hcn.org/issues/50.8/recreation-death-in-the-alpine> [http://perma.cc/YS3H-7WYQ].

152. *Id.*

153. *Id.*; see generally Kaitlin Bain, *Social Media Role in Mountaineering Mishaps Growing*, U.S. NEWS & WORLD REP. (June 9, 2018, 3:05 AM), <https://www.usnews.com/news/best-states/washington/articles/2018-06-09/social-media-role-in-mountaineering-mishaps-growing> [http://perma.cc/H8YS-NCT8].

154. Evan Hjerpe et al., *National and Community Market Contributions of Wilderness*, 30 SOC'Y & NAT. RES. 265, 273 (2017).

155. *14ers Boost Colorado Economy*, ASPEN TIMES (Aug. 13, 2007), <https://www.aspentimes.com/news/14ers-boost-colorado-economy/> [http://perma.cc/7M37-3W2W].

156. Colo. Fourteeners Initiative, *supra* note 21, at 2. See also John Loomis & Catherine Keske, *Did the Great Recession Reduce Visitor Spending and Willingness to Pay for Nature-Based Recreation? Evidence from 2006 and 2009*, 30 CONTEMP. ECON. POL'Y 238, 238–37 (2012).

157. Colo. Fourteeners Initiative, *supra* note 21, at 2.

158. *14ers Boost Colorado Economy*, *supra* note 155.

159. Use limits have additional flaws that are not addressed in this Comment. See, e.g., Ted Alvarez, *Our Favorite Mountains Are Under Siege: Blame Your Selfie*, OR. PUB. BROAD. (Sept. 4, 2018, 10:00 AM), <https://www.opb.org/>

This Comment does not argue that use limits should never be implemented on public lands. In some circumstances, the implementation of use limits is the only immediate way to prevent severe environmental degradation or public health problems. Sites cannot fit indefinite numbers of people. Use limits may be necessary to restrict recreational activities with particularly high environmental impacts, like camping, driving vehicles, and horseback riding.¹⁶⁰ The story of Conundrum Hot Springs provides a good example of when the implementation of a use limit was immediately necessary to prevent major environmental and health-related concerns.¹⁶¹ Located near Aspen, Colorado, Conundrum Hot Springs is a popular area with natural hot springs and mineral pools.¹⁶² Until 2018, the area saw up to three hundred visitors every night.¹⁶³ Many visitors camped for multiple nights near the pools, resulting in large amounts of human waste.¹⁶⁴ “To be quite frank, that’s a lot of poop,” commented Katy Nelson, wilderness manager for the Aspen-Sopris Ranger District of the White River National Forest.¹⁶⁵ Rangers had to collect human waste and pack it out in trash bags.¹⁶⁶ The area also became recognized as a party scene: rangers saw people hike in Weber grills and fire-works.¹⁶⁷

To remedy the environmental impacts and the health concerns associated with contaminated water, the Forest Service

news/article/washington-cascades-the-enchantments-social-media-crowds/
[<http://perma.cc/86WD-J7ZX>] (explaining how use limits can be difficult to enforce).

160. This is because ecological impacts differ greatly depending on the type of recreational activity. David N. Cole, *Minimizing Conflict Between Recreation and Nature Conservation*, in *ECOLOGY OF GREENWAYS: DESIGN AND FUNCTION OF LINEAR CONSERVATION AREAS* 111 (D.S. Smith and P.C. Hellmund, eds., 1993). For example, in a controlled experiment on a grassland in Montana, two hundred passes by a motorcycle removed twice as much vegetation as the same number of passes by a horse and nine times as much vegetation as two hundred hikers. T. Weaver and D. Dale, *Trampling Effects of Hikers, Motorcycles and Horses in Meadows and Forests*, 15 *J. APPLIED ECOLOGY* 451, 453–56 (1978).

161. Sam Brasch, *Conundrum Hot Springs Has a Poop Problem, So You May Have to Bag Your Business*, COLO. PUB. RADIO (July 17, 2017), <https://www.cpr.org/news/story/conundrum-hot-springs-human-waste-problem> [<http://perma.cc/9F59-4X8Q>].

162. *Id.*

163. *Id.*

164. *Id.*

165. *Id.*

166. *Id.*

167. *Id.*

implemented a paid-permit system and a “human waste awareness” campaign, which involves rangers distributing “wag bags” at the trailhead.¹⁶⁸ The system has already resulted in far less waste near the hot springs.¹⁶⁹ Interestingly, the permit system at Conundrum Hot Springs has not decreased the overall number of visitors.¹⁷⁰ Instead, it has evenly distributed visitors throughout the season, resulting in fewer wildlife interactions, illegal fire rings, litter damage, and human waste incidents.¹⁷¹

Hikers’ impacts on Mount Bierstadt and other Colorado fourteeners are very different from those caused by visitors at Conundrum Hot Springs. To start, fourteeners have fewer human waste problems because few visitors spend multiple nights camping while hiking at this altitude.¹⁷² Hikers that do camp overnight often do so for one night only.¹⁷³ Further, the health problems associated with contaminated hot springs do not exist on fourteeners; that is a problem unique to Conundrum. Although use limits were necessary and effective at Conundrum Hot Springs, this does not mean use limits are the right recreation management strategy for Colorado’s fourteeners.

In sum, implementing a use-limit system on Colorado’s fourteeners would constitute reliance on an outdated concept that could cause a variety of ecological, social, safety-related, and economic problems. The flaws inherent in use-limit systems counteract the Forest Service’s duty to promote environmental, social, and economic sustainability on Colorado’s fourteeners. These mountains provide the Forest Service with the unique opportunity to develop innovative solutions to recreational overuse that diverge from traditional use-limit methods.

168. Natalia V. Navarro, *Now that Permits Are in Place, Conundrum Hot Springs Feels a Little Cleaner*, COLO. PUB. RADIO (Sept. 5, 2018), <https://www.cpr.org/news/story/now-that-permits-are-in-place-conundrum-hot-springs-feels-a-little-cleaner> [<http://perma.cc/KP3A-U573>]. A “wag bag” is a catch-all term for portable products that store human waste for safe disposal. *Id.*

169. *Id.*

170. *Id.*

171. *Id.*

172. *See, e.g., Trip Reports*, 14ERS.COM, <https://www.14ers.com/php14ers/tripmain.php> (last visited June 30, 2019) [<http://perma.cc/A7RK-8MVF>]. Though there are no recorded statistics as to how many hikers camp on fourteeners, the 14ers.com trip report forum illustrates that the majority of hikers start and finish their hike on the same day.

173. *See id.*

C. *Historical Obstacles to Sustainable Recreation and the Staying Power of Use Limits*

If use limits are acknowledged as flawed and unsustainable, why does the Forest Service continue to impose them? Recreation management is not free from the influences of the past. The Forest Service tends to rely on use-limit methods because its historical role as a commodity-focused land management agency continues to inform its contemporary recreation management choices.¹⁷⁴ Although the Forest Service has the statutory and regulatory authority to develop sustainable and equitable recreation management programs, its organizational history and lack of economic resources holds it back from doing so.

Charles Wilkinson, a professor of natural resource law at the University of Colorado, coined the phrase “lords of yesterday” to describe how the history of natural resource use has shaped modern land management in the American West.¹⁷⁵ The lords of yesterday are “a battery of nineteenth-century laws, policies and ideas that arose under wholly different social and economic conditions but that remain in effect due to inertia, powerful lobbying forces, and lack of public awareness.”¹⁷⁶ Because the Forest Service was initially created to regulate timber harvesting, the agency has faced growing pains when it comes to managing land beyond traditional custodial forestry.¹⁷⁷ Accordingly, the Forest Service continues to rely on use limits because this method aligns with the traditional timber management strategies that restricted resource extraction to increase supply of the resource.¹⁷⁸

The nation’s forests were brought under a federal management scheme first and foremost to ensure regulated and sustained timber harvests.¹⁷⁹ The federal government began

174. See, e.g., Meier, *supra* note 109, at 108–17.

175. CHARLES WILKINSON, *CROSSING THE NEXT MERIDIAN* 17–27 (1992).

176. *Id.* at 17. Other scholars describe the Forest Service as “caught in between” or experiencing a “mid-life crisis,” as the agency’s role has shifted dramatically since its creation. Meier, *supra* note 109, at 108; James J. Kennedy, & Thomas M. Quigley, *Evolution of Forest Service Organizational Culture and Adaption Issues In Embracing An Ecosystem Management Paradigm*, 40 *LANDSCAPE & URBAN PLAN.* 113, 115 (1998).

177. WILKINSON, *supra* note 175, at 20–21.

178. Meier, *supra* note 109, at 110–11.

179. WILKINSON, *supra* note 175, at 120–24, 129–31.

setting aside public lands as “forest reserves” in 1891.¹⁸⁰ Six years later, Congress passed the Organic Act of 1897, creating the National Forest Service.¹⁸¹ The Organic Act of 1897 remained the statutory mandate for the Forest Service for almost eighty years,¹⁸² guiding the new agency in its mission “to improve and protect the forest . . . to furnish a continuous supply of timber for the use and necessities of citizens of the United States.”¹⁸³ The initial role of Forest Service employees was custodial in nature; Forest Rangers roamed over large swaths of isolated reserves, enforcing timber harvesting regulations.¹⁸⁴ The trope of the tough as nails, militaristic Forest Ranger blossomed during this period.¹⁸⁵

Although Gifford Pinchot, the founding father of the Forest Service, accepted the use of forest lands for grazing, water development, and other limited commercial uses, he viewed the national forests as existing “for the benefit of the home-builder first of all.”¹⁸⁶ The Organic Act of 1897 did not include recreation among the enumerated purposes of the national forest system and Pinchot never fully acknowledged that outdoor recreation was a legitimate use of the national forests.¹⁸⁷ Forest Service leadership did eventually recognize that the public enjoyed national forests for their recreational opportunities; around 1910, the concept of national forests’ “products” was expanded to include public values like recreation, although funds were not allocated toward recreation until much later.¹⁸⁸

In the period after World War II, forest lands saw a huge upswing in demand for both timber and recreation.¹⁸⁹ Widespread infrastructural development had taken place on public lands as a part of Franklin D. Roosevelt’s New Deal, providing

180. *Id.* at 122.

181. Forest Service Organic Administration Act of 1897, 16 U.S.C. § 475 (2018).

182. WILKINSON, *supra* note 175, at 124.

183. Forest Service Organic Administration Act of 1897 § 475.

184. JAMES G. LEWIS, THE FOREST SERVICE AND THE GREATEST GOOD: A CENTENNIAL HISTORY 50–51 (2005).

185. *Id.*

186. WILKINSON, *supra* note 175, at 128–29.

187. WELLMAN, *supra* note 68, at 128.

188. Liz Close, *Use or Abuse of the Enduring Resource?*, 25 J. LAND RES. & ENVTL. L. 41, 42 (2005).

189. LEWIS, *supra* note 184, at 125. Until 1940, 98 percent of the timber cut in the United States was harvested on private lands, but by the 1950s, national forest lands provided one-third of the country’s total timber. *Id.*

new roads and access routes to previously isolated locales.¹⁹⁰ In 1946, 18 million people visited the national forests, but by 1956 that number skyrocketed to 52.5 million visits.¹⁹¹ Recreational use increased from 27 million to 178 million recreation visitor-days per year between 1950 and 1971.¹⁹² The trend of increasing timber demand reversed course starting in the late 1970s and 1980s,¹⁹³ but the demand for recreation has steadily grown since the 1950s.¹⁹⁴

The transformation of public lands from sites of extraction to locations of recreation and preservation is attributed to several factors. First, domestic industries now rely less on the natural resources located on public lands, as they have either switched to purchasing privately owned resources or have abandoned the United States as a source of supply altogether.¹⁹⁵ Beginning with the environmental protection laws of the 1960s, American legal institutions discouraged commodity development by significantly decreasing the land base on which extractive activities could occur.¹⁹⁶ Many local communities now prefer non-extractive alternatives, like recreation, to traditional commodity development.¹⁹⁷ Western economies have shifted away from relying on commodity resources, and outdoor recreation has significant economic worth to communities located close to public lands.¹⁹⁸ The Forest Service is now the largest supplier of public outdoor recreation in the country.¹⁹⁹

190. See generally HAROLD K. STEEN, *THE U.S. FOREST SERVICE: A HISTORY* 196–221 (2004).

191. LEWIS, *supra* note 184, at 126.

192. *Id.*

193. U.S. FOREST SERV., *U.S. FOREST RESOURCE FACTS AND HISTORICAL TRENDS* 36–41 (Aug. 2014), https://www.fia.fs.fed.us/library/brochures/docs/2012/ForestFacts_1952-2012_English.pdf [<https://perma.cc/9FEB-8GJU>].

194. Laitos & Carr, *supra* note 57, at 162.

195. *Id.* at 167.

196. *Id.* at 172–73 (explaining how public lands “cannot support a resource extraction industry if they are (1) classified as national park system units, wilderness, or wildlife refuges; (2) designated as critical habitat for endangered species; (3) developed for recreational use (e.g., for mountain biking or skiing); or (4) subject to access restrictions that prevent commodity development”).

197. *Id.* at 174–76.

198. *Id.* at 181.

199. CHARLES I. ZINSER, *OUTDOOR RECREATION: UNITED STATES NATIONAL PARKS, FORESTS, AND PUBLIC LANDS* 231 (1995); see also Adams & McCool, *supra* note 11, at 60. In 2016, 185,362 million visitor-days were recorded on national forest lands, 8,980 of which were in designated wilderness areas. U.S. FOREST SERV., *NATIONAL VISITOR USE MONITORING SURVEY RESULTS, NATIONAL SUMMARY REPORT: DATA COLLECTED FY 2012 THROUGH FY 2016* 10 (2016),

As the Forest Service continues to grapple with the transformation of public lands, it struggles to break away from the lords of yesterday. The transformation of public lands has forced the Forest Service to rethink its role as a public land manager:

[The Forest Service] went through stages of denial, confusion, and mourning for the good-old-days of an elite, white, male forester fraternity—with clarity of purpose and a supportive national mystique. It would also receive mixed messages from conservative administrations and commodity oriented budgets (renewed in the recent 104th Congress) versus growing environmental demands of a post-industrial American society and its own employees.²⁰⁰

The Forest Service came of age in an era characterized by commodity-based resource extraction, when sustainability was defined only in terms of the sustained yield of commodity resources.²⁰¹ As such, many land managers still conceive of modern recreation management through a supply-and-demand framework. The Forest Service falls back on use limits because this method aligns with the traditional timber, mineral, and range management strategies that restrict extraction to increase supply of the resource. Additionally, use limits appear relatively simple and cheap to implement.²⁰²

Similarly, the Forest Service's historical role as a forest custodian and top-down enforcer of regulation informs what Dr. Dale Blahna, a research scientist for the Forest Service, describes as "biocentric bias."²⁰³ The Forest Service defines high-

<https://www.fs.fed.us/recreation/programs/nvum/pdf/5082016NationalSummaryReport062217.pdf> [<https://perma.cc/GR5P-GGJ2>].

200. Kennedy & Quigley, *supra* note 176, at 115.

201. See Robert L. Glicksman, *Wilderness Management by the Multiple Use Agencies: What Makes the Forest Service and the Bureau of Land Management Different?*, 44 ENVTL. L. 447, 465–66 (2014).

202. Meier, *supra* note 109, at 52 (synthesizing William R. Burch Jr., *Much Ado About Nothing—Some Reflections on the Wider and Wilder Implications of Social Carrying Capacity*, 6 LEISURE SCI. 487–96 (1984)).

203. Dale J. Blahna, *Introduction: Recreation Management*, in PROCEEDINGS: NATIONAL WORKSHOP ON RECREATION 105 (Linda E. Kruger et al., eds., 2005). Biocentricism is "the position that human needs, goals, and desires should not be taken as privileged or overriding in considering the needs, desires, interests, and goals of all members of all biological species taken together, and in general that

use areas as ecological problems rather than opportunities to provide preferred recreational experiences, mitigate impacts, and protect surrounding landscapes from displaced use.²⁰⁴ Blahna writes, “These all strike me as symptoms of a discipline that is still in its infancy; one that has not had the research or administrative attention needed to evaluate management effectiveness that is on a par with the level of both benefits and impacts resulting from recreation use.”²⁰⁵

There are several other factors beyond history that shape the Forest Service’s tendency to rely upon use-limit methods. Inadequate funding is the most significant obstacle preventing the Forest Service from implementing alternative solutions to recreational overuse. Even though recreation is now one of the dominant uses of public lands, recreation programs are perpetually underfunded.²⁰⁶ The lack of funding is exacerbated when political administrations cut discretionary domestic programs.²⁰⁷ Forest Service budgets have been declining since the 1990s, as both Democrat and Republican administrations have cut funding for the agency.²⁰⁸ In 2019, Forest Service recreation programs received \$22,562,000 less than they did in 2018.²⁰⁹

There are several other organizational, cultural, and legal reasons why the Forest Service relies on use limits. Structurally, the Forest Service has always been a highly decentralized agency.²¹⁰ This means that innovation within the agency is often siloed, and agency staff cannot easily collaborate with and learn from their colleagues across the agency.²¹¹ When crea-

the Earth as a whole should not be interpreted or managed from a human standpoint.” Richard A. Watson, *A Critique of Anti-Anthropocentric Biocentrism*, 5 ENVTL. ETHICS 245 (1983).

204. See generally Blahna, *supra* note 203.

205. *Id.*

206. Meier, *supra* note 109, at 135–36.

207. *Id.* at 135.

208. *Id.* at 135–36.

209. U.S. FOREST SERV., FY19 BUDGET JUSTIFICATION 10 (Feb. 2018), <https://www.fs.fed.us/sites/default/files/usfs-fy19-budget-justification.pdf> [<https://perma.cc/4PMF-DM7E>].

210. See generally Meier, *supra* note 109, at 117; see also STEEN, *supra* note 190; see also ROBERT BAKER ET AL., TIMELESS HERITAGE: A HISTORY OF THE FOREST SERVICE IN THE SOUTHWEST (1988). For an analysis of the Forest Service from an organizational theory perspective, see Cindy C. Chojnacky, *Leadership Impact on Forest Service Operations: Intriguing Ideas from Public Administration*, 110 J. FORESTRY 457 (2012).

211. Meier, *supra* note 109, at 143–53.

tive, sustainable solutions to recreational overuse are successful, news of the success may not be disseminated throughout the agency. Additionally, the Forest Service's militaristic background continues to foster a hierarchical culture within the agency, making it difficult for individual land managers to challenge the dominant use-limit paradigm.²¹² Legally, the Forest Service battles "analysis paralysis," a term describing the gridlock that federal agencies experience when complying with a vast array of statutory requirements.²¹³ Agencies spend significant amounts of time and money developing and analyzing proposed actions in compliance with the Administrative Procedure Act, the National Environmental Policy Act, and other federal statutes.²¹⁴ Ensuring that a new recreation management method complies with the wide range of applicable statutes, regulations, and administrative directives is a tall task. It is easy to see why land managers might find it easier to resort to "default" use limits.

Despite a broad and forward-reaching sustainability obligation, the Forest Service's past traditions shape its tendency to rely on use limits as a default. Although the public's use of national forests has transformed drastically since WWII, vestiges of the Forest Service's historical role as a commodity-focused timber regulator continue to influence its decision-making in all arenas. To promote sustainable recreation on fourteeners, the Forest Service must transcend the lords of yesterday.

III. BEYOND USE LIMITS: COMMUNITY-BASED SOCIAL MARKETING AS A SUSTAINABLE SOLUTION

Instead of restricting the amount of people who can enjoy Colorado's tallest mountains, the key to furthering sustainable recreation on fourteeners is identifying specific management objectives through careful study of hiker behavior and the unique characteristics of each mountain.²¹⁵ Across the field of

212. *Id.*

213. See U.S. FOREST SERV., THE PROCESS PREDICAMENT: HOW STATUTORY, REGULATORY, AND ADMINISTRATIVE FACTORS AFFECT NATIONAL FOREST MANAGEMENT 21 (June 2002), <http://www.fs.fed.us/projects/documents/Process-Predicament.pdf> [<https://perma.cc/5JWZ-LLQP>].

214. *Id.*

215. Blahna, *supra* note 203, at 103 (explaining how the effectiveness of different recreation management strategies depends on the specific situation and

public land management, a variety of management frameworks have been developed to try to address recreational overuse in response to the failures of carrying capacity frameworks.²¹⁶ These frameworks have been implemented across the world—to varying degrees of success—and are broadly applicable to recreation management concerns across many types of public land.²¹⁷ Because this Comment, in contrast, is narrowly focused on managing recreation on fourteeners, a comprehensive analysis of all of these frameworks and their efficacy is beyond the scope of this Comment. However, this Comment offers a smaller-scale alternative management strategy that draws solutions from the intersection of sustainability and psychology.²¹⁸ This is not to suggest that other frameworks would be inadequate or ineffective on fourteeners. Rather, the point of this Section is to offer one innovative approach to recreation management that transcends use-limit methods and furthers sustainability objectives on fourteeners.

In order to mitigate impacts while continuing to further social, economic, and environmental sustainability, the Forest Service should address impact mitigation on fourteeners at the actual source of the problem: hiker behavior. Fostering sus-

management objectives of the area. “What worked in one area may not work in another, and it may even exacerbate the problem in yet another . . . visitor education, for example, may reduce use levels in rattlesnake or grizzly bear habitat, but similar information may increase impacts in endangered plant or small mammal habitat, as curious visitors look for rare species.”)

216. These include the Limits of Acceptable Change system, the Recreation Opportunity Spectrum, and the Visitor Impact Management process, among several others. For a side-by-side comparison of these frameworks, see Per Nilsen & Grant Tayler, *A Comparative Analysis of Protected Area Planning and Management Frameworks*, in PROCEEDINGS – LIMITS OF ACCEPTABLE CHANGE AND RELATED PLANNING PROCESSES: PROGRESS AND FUTURE DIRECTIONS (Stephen F. McCool & David N. Cole, eds., 1997). The Limits of Acceptable Change system is one framework that has been implemented in many wilderness areas across the United States. See David N. Cole & George H. Stankey, *Historical Development of Limits of Acceptable Change: Conceptual Clarifications and Possible Extensions*, in PROCEEDINGS – LIMITS OF ACCEPTABLE CHANGE AND RELATED PLANNING PROCESSES: PROGRESS AND FUTURE DIRECTIONS (Stephen F. McCool & David N. Cole, eds., 1997); Stephen F. McCool, Professor of Forestry, Univ. of Mont., Presentation at Workshop of Impact Management in Marine Parks in Kuala Lumpur, Malaysia: Limits of Acceptable Change: A Framework for Managing National Protected Areas: Experiences from the United States 2 (1996).

217. See Nilsen & Tayler, *supra* note 216, at 49–52.

218. DOUG MCKENZIE-MOHR, *FOSTERING SUSTAINABLE BEHAVIOR: AN INTRODUCTION TO COMMUNITY-BASED SOCIAL MARKETING* (2011).

tainable behavior change can be achieved through a variety of methods. One method that has been adopted by a variety of environmental professionals is community-based social marketing (CBSM).²¹⁹ Though CBSM has been applied in schools, universities, businesses, and workplaces, it has not yet been applied to recreation management on public lands. However, CBSM would constitute a better management framework for Colorado's fourteeners: it not only avoids the flaws of use-limit systems but also allows land managers to more forcefully strive toward the sustainability objectives required by the 2012 Planning Rule.

Rooted in social psychology, CBSM is a behavior-change strategy that focuses on identifying discrete behaviors in need of change and analyzing the barriers that prevent these behaviors from changing.²²⁰ The CBSM method provides a pragmatic, step-by-step approach that has been championed and adopted by sustainability and environmental programs across the world.²²¹ CBSM is better suited to address *why* hikers cause certain impacts on fourteeners than are site design or education methods. Once land managers have identified why and how hikers cause undesirable impacts on fourteeners, they can then address the fundamental question: how can better behaviors be fostered among hikers to bring about acceptable environmental and social conditions?

Using Mount Bierstadt as an example, the following describes a CBSM approach to recreation management that focuses on mitigating trail degradation. First, land managers would identify discrete hiker behaviors in need of change.²²² An example of such behavior is the tendency of hikers to take off-trail "short cuts" in steep areas with switchbacks.²²³ When hikers take these short cuts, they cause heavy erosion.²²⁴ Through observation along the Mount Bierstadt summit trail, land managers should identify the exact areas where hikers take

219. *Id.*

220. *Id.* at 8–9.

221. See Amanda L. Kennedy, *Using Community-Based Social Marketing Techniques to Enhance Environmental Regulation*, 2 SUSTAINABILITY 1138, 1142 (2010). For case studies, see Doug McKenzie-Mohr, *Promoting Sustainable Behavior: An Introduction to Community-Based Social Marketing*, 56 J. SOC. ISSUES 543, 549–51 (2000).

222. MCKENZIE-MOHR, *supra* note 218, at 11–20.

223. See generally Davidson, *supra* note 1.

224. *Id.*

these shortcuts. Once the undesired behavior is identified, land managers should formulate objectives to encourage the desired behavior. Is the management objective to prevent all hikers from taking shortcuts altogether? If only 50 percent fewer hikers take a particular shortcut, would this allow for adequate ecological recovery? What level of degradation from shortcuts is acceptable?

Next, land managers would analyze the barriers that inhibit hikers from engaging in the desired behavior.²²⁵ Why do hikers decide to walk off-trail in a particular area? Is it because the shortcut looks like an easier climb? Is the main trail damaged? CBSM suggests utilizing a variety of research methods to identify existing barriers to change.²²⁶ These include reviewing existing research, participating in on-the-ground observation, and conducting focus groups and visitor surveys.²²⁷ On Mount Bierstadt, land managers could dedicate several hours to quietly observing hikers as they walk through particular sections of trail. Land managers could also conduct informal focus groups by stopping to speak with hikers on the mountain. Additionally, the Forest Service could implement formal focus groups and surveys.

The third step of the CBSM approach is the development of strategies that focus on breaking down the barriers preventing the desired behavior.²²⁸ Strategies should be narrowly tailored to the identified barriers. CBSM identifies seven social-marketing strategies that are particularly effective at changing behavior.²²⁹ To prevent people from taking off-trail shortcuts on Mount Bierstadt, the “convenience” strategy is fitting: it attempts to make the desired behavior convenient and the undesired behavior inconvenient.²³⁰ Here, land managers could focus on designing trail systems that incentivize hikers to stay on

225. MCKENZIE-MOHR, *supra* note 218, at 21–39.

226. *Id.* at 22.

227. *Id.*

228. *Id.* at 41–44.

229. *Id.* at 41–136. The seven strategies to break down the barriers to sustainable behavior change are commitments, social norms, social diffusion, prompts, effective messages, incentives, and convenience. *Id.* Many of these strategies—such as social norms, commitment, and social diffusion—are based on the interactions of individuals in a community. Norms emerge as people interact and develop guidelines for their behavior—this phenomenon is what puts the “community” in community-based social marketing. *Id.*

230. *Id.* at 121–25.

the trail. A well-maintained trail means hikers will be less inclined to step off of the trail and onto fragile alpine flora.²³¹ Plus, trails in good condition are better at withstanding erosion, whether it is caused by rain, snow, or thousands of hiking boots.²³² Other convenience strategies include installation of natural barriers, like logs or boulders, to deter hikers from hiking off-trail.²³³

The CBSM method emphasizes the importance of piloting strategies on a small-scale before they are implemented broadly.²³⁴ Once a strategy is piloted, it should be altered and revised until most flaws are resolved. CBSM also calls for close monitoring of sustainable behavior strategies once they are implemented fully.²³⁵ Evaluation is integral to understanding the long-term effectiveness of a particular strategy.²³⁶ Some strategies can result in unpredictable negative consequences, which is why it is of the utmost importance that land managers continually monitor and evaluate implemented strategies. Evaluation can be observational, but it can also be achieved through follow-up interviews and surveys. At the Mount Bierstadt trailhead, land managers could survey hikers on their perceptions of trail quality. Whatever CBSM strategy land managers choose to employ on Mount Bierstadt, the effectiveness of the strategy can only be measured through periodic assessment, and land managers should not fear revising their management methods as needed.

CBSM is also designed to address the shortcomings of

231. See Sarah Gilman, *Meet the Woman Behind Colorado's Highest Trails*, HIGH COUNTRY NEWS (June 26, 2017), <https://www.hcn.org/issues/49.11/meet-the-woman-behind-colorados-highest-trails> [<https://perma.cc/4Z3Z-VG9S>].

232. *Id.*

233. *Id.* Mount Bierstadt has already benefitted from some trail redesign activities. COLO. FOURTEENERS INITIATIVE, *2015 End-of-Season Report*, https://www.14ers.org/wp-content/uploads/COL021_HolidayCard2015_FNL1.pdf (last visited Mar. 13, 2019) [<https://perma.cc/2SYT-KKFF>]. In 2014 and 2015, the Colorado Fourteeners Initiative completed trail reconstruction work on the trail that leads to the Mount Bierstadt summit. *Id.* Logs were put in place along the sides of the trail to create a “causeway” through a flat, muddy section of terrain. *Id.*; COLO. FOURTEENERS INITIATIVE, *2014 END-OF-SEASON REPORT*, https://www.14ers.org/wp-content/uploads/COL016_HOLIDAYCARD_2014.pdf (last visited Mar. 13, 2019) [<https://perma.cc/WGD5-2M8Z>]. During a “Logapalooza” event, forty volunteers hauled eighty-four logs high onto the mountain. *Id.*

234. McKenzie-Mohr, *supra* note 218, at 137–42.

235. *Id.* at 143–45.

236. *Id.* at 137–45.

purely educational or informational campaigns. Historically, information campaigns have been utilized on fourteeners to reduce hikers' impacts through education.²³⁷ However, when it comes to fostering sustainable behavior among recreationists, educational information campaigns rarely result in significant behavior change.²³⁸ For example, the Leave No Trace Center for Outdoor Ethics (Leave No Trace), a national organization,²³⁹ has been working to educate hikers on Mount Bierstadt since 2015. Leave No Trace designated Mount Bierstadt as a "Hot Spot" in 2015.²⁴⁰ The Hot Spot program identifies areas around the country facing heavy recreational use and offers solutions and preventative measures to reduce impacts and protect these areas for the future.²⁴¹ Leave No Trace staff visited Mount Bierstadt and worked with Forest Service to educate five hundred people about Leave No Trace principles, which include mantras such as "pack it in, pack it out," and "leave only footprints, take only memories."²⁴²

Despite these efforts in 2015, Mount Bierstadt was named

237. *Educate*, COLO. FOURTEENERS INITIATIVE, <https://www.14ers.org/what-we-do/educate/> (last visited Mar. 13, 2019) [<https://perma.cc/33LW-Z8ZW>]. CFI has a Youtube channel with short videos on educational topics ranging from alpine botany to mountain weather. CO14ersInitiative, YOUTUBE, <https://www.youtube.com/user/CO14ersInitiative/featured> (last visited Oct. 17, 2019) [<https://perma.cc/U3YH-698Z>]. The Leave No Trace Center for Outdoor Ethics utilizes a marketing model through which the public can become trained in Leave No Trace principles. Then, "trainers" teach their peers about how to lessen impacts in the outdoors. See *Training*, LEAVE NO TRACE CTR. FOR OUTDOOR ETHICS, <https://lnt.org/learn/training-structure> (last visited Mar. 13, 2019) [<https://perma.cc/8MUT-SKR2>]. CFI employs a similar model through its Peak Stewards program. *Hiker Education/Peak Stewards*, COLO. FOURTEENERS INITIATIVE, <https://www.14ers.org/what-we-do/educate/> (last visited Mar. 13, 2019) [<https://perma.cc/8DHV-MFZU>].

238. McKenzie-Mohr, *supra* note 218, at 3–8.

239. See *Learn*, LEAVE NO TRACE CTR. FOR OUTDOOR ETHICS, <https://lnt.org/about> (last visited Nov. 18, 2018) [<https://perma.cc/2WZX-CNE8>]. The Seven Leave No Trace Principles include: 1) Plan Ahead and Prepare, 2) Travel and Camp on Durable Surfaces, 3) Dispose of Waste Properly, 4) Leave What You Find, 5) Minimize Campfire Impacts, 6) Respect Wildlife, and 7) Be Considerate of Other Visitors. At least one argument has been made that Leave No Trace principles should be incorporated into federal statute. See Samuel Case, Comment, *Clearing the Path From Trailhead to Summit With a Leave No Trace Law*, 2017 WIS. L. REV. 611 (2017).

240. *Leave No Trace Returns to Mount Bierstadt for Weekend of Training, June 14-17*, U.S. DEP'T AGRIC., U.S. FOREST SERV. (June 11, 2018), <https://www.fs.usda.gov/detail/arp/news-events/?cid=FSEPRD583243> [<https://perma.cc/2PFX-YFK3>].

241. *Id.*

242. *Id.*

a “revisit location” for the Hot Spot program, and during the summer of 2018, educators returned to the mountain to educate hikers on how to lessen their impacts while enjoying the wilderness.²⁴³ The fact that Mount Bierstadt was revisited by Leave No Trace staff illustrates the weaknesses of purely educational approaches: educational information, by itself, has little to no effect on behavior, especially when it comes to creating more sustainable behavior.²⁴⁴ Studies repeatedly show that just because people know better does not mean they will do better.²⁴⁵ For example, a group of people who participated in intensive workshops about energy conservation did not exhibit significant change in behavior despite acknowledging that they had higher levels of knowledge and awareness.²⁴⁶ CBSM addresses the flaws of educational informational campaigns by attempting to break down the physical, mental, and social barriers to change.²⁴⁷

In many ways, the CBSM method is the opposite of use-limit methods. Whereas use limits provide a drastic, sweeping remedy, CBSM takes a smaller-scale approach subject to constant revision and evaluation. Use limits restrict recreation by placing a hard cap on the number of visitors who can access an area, while CBSM seeks to understand where and why these visitors engage in undesirable behaviors. Use limits mitigate recreational impacts by limiting the amount of recreation; CBSM mitigates impacts by understanding why and how they occur.

Like any other management method, CBSM has its flaws. Because CBSM requires significant staff involvement, from observational stages to periodic evaluation, applying CBSM to fourteeners is probably more expensive than implementing use limits. Additionally, the effectiveness of a CBSM method depends on whether the Forest Service intentionally and enthusiastically applies it. As illustrated in this Comment, statutes

243. *Id.*

244. McKenzie-Mohr, *supra* note 218, at 3–5, 7–8.

245. For examples of informational campaigns designed to promote sustainable behaviors and their low success rates, see E. Scott Geller, *Evaluating Energy Conservation Programs: Is Verbal Report Enough?*, 8 J. CONSUMER RES. 331, 333–34 (1981); E. Scott Geller et al., *Attempts to Promote Residential Water Conservation with Educational, Behavioral and Engineering Strategies*, 6 POPULATION & ENV'T 96, 104–10 (1983).

246. Geller, *supra* note 245, at 333–34.

247. McKenzie-Mohr, *supra* note 218, at 8–10.

and regulations are in place to allow the Forest Service to foster environmentally, economically, and socially sustainable recreation. However, historical and cultural barriers remain, and because CBSM is rooted in social psychology and not traditional natural resource management, the lords of yesterday may inhibit its adoption.

Furthermore, an open question remains as to the best structure through which CBSM could be adopted on Colorado's fourteeners. It would probably be politically challenging to incorporate a CBSM approach into a Forest Service regulatory rulemaking. CBSM could be more easily incorporated into the revised Forest Management Plan for Mount Evans Wilderness that governs Mount Bierstadt. Then, it would be up to individual land managers and agency staff to embrace this new, innovative method.

If the Forest Service were to adopt a CBSM approach to recreation management on fourteeners, it would more faithfully adhere to its sustainability obligation. CBSM would help protect the environmental integrity of alpine ecosystems without restricting the number of hikers who can enjoy them. As such, CBSM would ensure the economic sustainability of mountain communities, as hikers would continue to contribute to local economies. CBSM provides for social sustainability by maintaining the accessibility of Colorado's great mountains. Finally, CBSM avoids the problems created by use-limit methods and would allow the Forest Service to gain a better understanding of hiker behavior. Recreation would be changed for the better under a CBSM approach.

CONCLUSION

As the snow melts in the spring and the weather warms, crowds of hikers will once again seek the summit of Mount Bierstadt. Because recreation on Mount Bierstadt and other fourteeners in Colorado has yet to be regulated, the Forest Service is in a unique position. It could fall back upon traditional recreation management methods and decide to employ restrictive use limits. To do so would risk displacing environmental impacts, excluding groups of people from public lands, and harming the economies of mountain communities. Employing use limits on Mount Bierstadt would also signal that the Forest Service cannot transcend its outdated, historical function as a

commodity-focused regulator.

Instead, the Forest Service should view Mount Bierstadt and other fourteeners as opportunities to strive for more inclusive, effective, and sustainable forms of recreation management. Mount Bierstadt provides the occasion to experiment with new recreation management methods. Community-based social marketing is a method that would gather helpful information about hiker behavior while still incorporating conventional management strategies like site design. To further its sustainability mandate, the Forest Service should employ innovative methods such as CBSM to deliberately and pragmatically promote all forms of sustainability—environmental, economic, and social.

When people first began climbing fourteeners for fun, Colorado had about a half-million residents.²⁴⁸ Now, more than half that many people hike to the summit of Colorado's fourteeners every year. Though hiking fourteeners is physically exhausting, mentally demanding, and inherently risky, people are continually drawn to these peaks. They are looking for a firsthand experience on some of the country's most striking, rugged terrain. Their desire to explore these special places should not be curtailed. And as more people seek adventure on Colorado's fourteeners, protection of these mountains becomes more critical. A sustainable balance can be found, and the Forest Service has the duty—and the tools—to find it.

248. Davidson, *supra* note 1, at 19.