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# Managing Recreation in New York's Adirondack Park: A Case Study of Public Perceptions and Preferences for Reducing User Impacts to the High Peaks Wilderness Complex

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## Executive Summary

This qualitative case study research investigated public perceptions and preferences regarding management options for addressing recreational impacts to the High Peaks Wilderness Complex (HPWC) in New York State's six-million-acre Adirondack Park. The Park is the largest in the contiguous United States, attracting local and international visitors from Philadelphia, Montreal, Boston, and New York City, major cities within 350 miles of the HPWC. The Park saw 12.4 million visitors in 2018, resulting in crowding, trail erosion, clandestine trails/campsites, water pollution, and plant/wildlife impacts. Data was gathered from 1,200 individuals via an online questionnaire, semi-structured interviews with NGOs, community influentials, and agency representatives, and participant observation. Findings showed the public strongly supported passive management options such as increased funding for education, trail reconstruction, enhanced management of the HPWC, and the Department of Environmental Conservation (DEC) promotion of alternatives to the most popular wilderness trails during busy months. The public was split in their support of direct management techniques such as temporary trail closures, limiting the number of hikers, and mandatory permits for hikers/parking. NGOs expressed a diversity of preferences for direct wilderness management, but widely supported enhanced education, trail improvements, and funding increases for management and the hiring of more rangers.

The results of this research provide insights for improving management practices that facilitate sustainable recreation while also protecting and restoring federal and state designated wilderness. This manuscript culminates in a suite of management implications based on our research findings, including filling all vacancies within the Adirondack Park Agency Board with professionally and culturally diverse individuals, including women, Tribal representatives, minority communities, environmental attorneys, natural scientists, and regional planners. Funding should be allocated for the hiring of additional rangers, Summit Stewards, and trail crews, for enhanced trail maintenance and hiker education efforts. We also

recommend implementing the Wildland Monitoring Program in order to better understand trail carrying capacity and ecological limits. Limiting the number of hikers/vehicles through a permit system is but one solution if efforts to heighten ranger presence, education, and improve trails all fail to address resource degradation.

### Keywords

*Adirondack Park, High Peaks Wilderness Complex, public perceptions, wilderness management, public lands*

## Introduction

Facilitating wilderness-based recreation while also protecting unique ecosystems is a challenging endeavor. In 2018, 45 million people spent time in wilderness within the U.S., all with the potential to deteriorate popular, highly visited sites (Outdoor Foundation, 2018). New York State's six-million-acre Adirondack Park was created in 1892 as a boundary to consolidate the state's purchases so that "the lands of the state... constituting the forest preserve... shall be forever kept as wild forest lands" (NYS DOS, 2015, p. 37).

The High Peaks Wilderness Complex (HPWC) lies in the northeastern Adirondacks (Figure 1) and contains 42 of 46 of the "Adirondack High Peaks" (mountains over 4,000 ft. in elevation) making it a destination for hikers<sup>1</sup>. The 274,000-acre region is designated as wilderness and, similar to the federal Wilderness Act of 1964, is defined in the Adirondack Park State Land Master Plan as "An area where the Earth and its community of life are untrammled by man—where man himself is a visitor who does not remain" (APA, 2016, p. 22). The HPWC contains northern hardwoods, high-elevation boreal forest, alpine tundra, habitat for endangered species, and is the headwater of the Hudson River (McNeil et al., 2006).

The Park saw 12.4 million visitors in 2018, an increase from 10 million visitors in 2001 (Sheehan, 2018a). Three million visitors access the HPWC annually, the majority (73%) were NY residents who came to the Park almost exclusively for recreation (94%). The majority of users are white, middle-aged, and upper-middle class (Levine, 2018). During summer months the HPWC experiences high rates of visitor use, resulting in congestion on trails (Mann, 2016).

The debate on how to best manage the HPWC involves multiple stakeholders including the hiking community, environmental advocates, state and local government, and park residents. Because the Park encompasses both public and private lands, 130,000 individuals reside full-time inside the Park (Bauer, 2018). The majority of Park residents are middle class and heavily reliant on the \$1.3 billion tourism industry which supports 21,000 jobs (U.S. Census Bureau, 2017; Oxford Economics, 2011). This case study research investigated public preferences and perceptions of management options to balance opportunities for wilderness-based recreation with preservation of wilderness ecosystems found in the HPWC.

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<sup>1</sup>The uneven boundary of the HPWC is a result of NYS giving away lands after the Revolution War, tax default acquisition, industrial and private preserve boundaries, and land purchases by NYS beginning in 1885 (Van Valkenburgh, 1985).

**Figure 1**

*Location of the 274,000 acre High Peaks Wilderness Complex within New York's Adirondack Park (Map by Charles Bettigole)*

**Management of the High Peaks Wilderness Complex**

The Park's state lands (Forest Preserve, +/- 2.7 million acres), are managed by the Department of Environmental Conservation (DEC), while the Adirondack Park Agency (APA) has responsibility for the classification, management guidelines, and long-range planning in consultation with the DEC. While the DEC is the natural resource and land manager, the APA sets policy and reviews DEC unit management plans (UMP) for compliance with the classification scheme and management guidelines of the Adirondack Park State Land Master Plan. Forest Preserve classifications range from highly restrictive "Wilderness" to "Intensive Use," such as the state-sponsored Whiteface Mountain ski area.<sup>2</sup>

In 1999, the APA approved the DEC's High Peaks Wilderness Complex Unit Management Plan and stated its intent to "emphasize the preservation, enhancement, and restoration of natural environmental conditions in the HPWC, in perpetuity for the people of the State of NY as an area of wilderness that is not adversely affected by human activities" (p. 4).

As visitor numbers increased, trail conditions and wilderness character has at times suffered. Public-interest conservation organizations criticized the DEC and APA for failing to update the UMP to protect wilderness ecosystems and their wilderness character (Mann, 2018). The DEC's UMP (1999) documented the impacts of high use in the HPWC, including trailhead crowding, soil erosion, clandestine trails/campsites,

<sup>2</sup>The 1980 Winter Olympics were hosted at Whiteface Mountain and Lake Placid.

water pollution, and wildlife impacts. A 2018 study conducted by the Adirondack Council found that 130 miles of HPWC trails were still being damaged from high use, poor design, and lack of maintenance (Sheehan, 2018b). Additionally, high use affects visitor experiences, such as limiting opportunities for solitude. Further, congested parking, crowded summits, litter and human waste, noise pollution, and pressure from conservation organizations were among the factors that caused DEC to amend the High Peaks Wilderness UMP (Mann, 2016). While some organizations are advocating for the DEC and APA to implement parking permits, others have proposed a back-country permit (reservation) or limited entry system (Matson, 2019).

In November 2019, the DEC chose 22 people to meet twice monthly (behind closed doors) as part of the High Peaks Strategic Planning Advisory Group, to propose short- and long-term solutions to better manage high use in the HPWC. While the Advisory Group reviews public feedback submitted through email, the public cannot attend meetings. The Advisory Group is working to provide proposals to the state by the end of 2020 which will be used by the DEC to draft a strategic plan for more sustainable use of the HPWC. Once completed, the draft will be made available for public review and comment (Lynch, 2019).

### Prior Research on Outcomes of High Use of Public Lands and Parks

Prior research found that high use causes crowding and conflict, degrading the quality of recreational experiences (Manning et al., 1998). Research specific to crowding has explored the negative impacts to visitor's social experiences as well as damage to physical resources (Manning et al., 2000). Studies define the social carrying capacity as the aspect of total carrying capacity concerned with the number of other people that users can tolerate, and still maintain a "quality experience" (O'Mahony et al., 2009). In the Adirondack Park, Dawson et al. (1997) examined measures of "solitude" and reported that for users of the Adirondacks dimensions of the natural environment were more important than privacy in determining overall experience. Other studies found nature (scenic beauty) and solitude to be the most important factors for Park visitors (Connelly et al., 2004). Van Riper et al. (2010) studied perceptions of environmental and social impacts of outdoor recreation in the HPWC on Cascade Mountain and found that most visitors reported some level crowding, with researchers suggesting more intensive management in the HPWC. And in order to identify coping behaviors related to wilderness recreationists' high satisfaction levels (despite overcrowding), Johnson and Dawson (2004) interviewed and surveyed hikers in the HPWC and reported the development of hiker strategies to maintain multiple satisfactions, including spatial or temporal displacement, altering their expectations and experiential definition of wilderness, and complex combinations of these strategies.

Crowding can cause ecological damage, compaction and deposition of soil, alter drainage and erosion patterns, trampling of high alpine flora, and the spread of invasive species (Hadwen et al., 2007). Studies with short study periods found low levels of trampling could be just as impactful as high levels (Cole & Monz, 2002; Kuss & Hall, 1991). Erosion on mountain trails has been attributed to increases in the use of older trails not designed to accommodate high volumes of hikers (Godin & Leonard, 1979).

Climbers at popular areas in the Adirondack Park reported crowding on Giant Mountain as an issue of concern in addition to litter, erosion, damaged trees, and noise (Monz, 2009). Prior ecological research on popular HPWC summits reported that much of the alpine communities have been lost to trampling and erosion, many of which are rare species found nowhere else in NY (Ketchledge et al., 1985; Van Riper et

al., 2010; Goren & Monz, 2011). As a result, in 1990 the DEC, Adirondack Mt. Club, and Adirondack Chapter of The Nature Conservancy began working to educate the public in order to address impacts to rare and endangered plants through the creation of the Adirondack High Peaks Summit Stewardship Program. In 1990, Summit Stewards communicated with 7,500 hikers/yr., while in 2017, the same number of stewards communicated with 35,000 hikers/yr. (four paid stewards and 21 volunteers) (White & Goren, 2017). In 2018, the program reported a milestone of educating 500,000 hikers during its 29 year history (Jones, 2018). Utilizing historical and contemporary photo-point monitoring to document 10–45 years of changes in HPWC alpine vegetation, Goren and Monz (2011) reported that as a result of the high volume of visitor contacts via the HPWC Summit Steward Program, ground cover had been maintained and even increased, on select wilderness peaks.

### Management Tools for Regulating High Use on Public Lands and Wilderness Areas

Prior research on management tools used in parks and wilderness areas provides insights into implementation, outcomes, and challenges. Permits are one tool for limiting the number of users of public lands (Reeling et al., 2016). While some permits are free, other permits require fees; typically these fees<sup>3</sup> are kept low to ensure that people of all income brackets can afford access to these spaces (Reeling et al., 2016). Studies showed high rates of visitor compliance to permit systems; in Sequoia and Kings Canyon National Parks (CA), 97% of visitors obtained the permits (Parsons, Stohlgren & Kraushaar et al., 1982), while a second study in Yosemite National Park (CA) reported 92% success (van Wagtenonk & Benedict, 1980).

The NYS DEC implemented a no-cost permit reservation system for Catskill Park's Peekamoose Blue Hole to “protect popular blue hole area and reduce overuse issues” (DEC, 2018, p. 1). Examples of larger permit systems include lottery-based permits for river trips in Western U.S. states; however, the revenue generated through permits does not always stay in the local area (Hjerpe & Kim, 2007; Ohler et al., 2014).

### Previous Research on Public Preferences for Management of the High Peaks Wilderness Complex

Van Riper et al. (2011) reported that visitors to the HPWC (Cascade Mountain), Cadillac Mt. (ME) and Camel's Hump (VT) were concerned with degradation to alpine ecosystems, preferred seeing few other people, and preferred low-intensity management. However, regarding tradeoffs, hikers were supportive of more intensive management to protect resources. Authors wrote that “It may be wise for managers of Cascade to consider increasing educational and/or interpretative signage at the summit or otherwise employing techniques to change visitor behavior” (p. 243).

Two research efforts in 2017 and 2018 worked to better understand visitor preferences of management options in the HPWC. The 2017 research conducted by the DEC and Adirondack Council surveyed hikers of Cascade Mountain, exploring hiker preferences for limiting trailhead parking, temporarily closing eroded trails, and perceptions of crowding (Adirondack Council, 2019; Sheehan, 2018b). Data indicated that 70% of the public supported preserving wilderness character; the majority also supported passive management techniques, including an increase in funding for park management and hiker education. In relation to parking permits, researchers found 2:1

<sup>3</sup>The Bureau of Land Management charges \$5 per person/day in the Aravaipa Canyon Wilderness in Arizona (BLM, 2020)

support for a combination of reservations, and first-come, first-served parking access. Our research effort built upon this above-mentioned research by exploring a broader range of management techniques, incorporating a diverse range of respondents (via online and in-person surveys), and included perspectives from conservation organizations, and NY State DEC and APA representatives. The purpose of this research was to better understand public preferences and perceptions of management options for reducing the impacts of high use recreation in the HPWC.

## Methods

### Instrumentation, Data Collection, and Analysis

The case study approach was employed as our research worked to address both descriptive and explanatory questions in order to better understand public perceptions (Yin, 2011). According to Yin, a “case” is generally a bounded entity (a person, organization, behavioral condition, event, or other social phenomenon)” (p. 6). Case study approaches entail thoroughness and work to present depth and richness of data, for instance, not how widespread the phenomenon of high use is beyond the HPWC, in the hundreds of other wilderness designations nationwide. Our data was derived from multiple sources of evidence, telling the story “in its diversity, allowing the story to unfold from the many-sided, complex, and sometimes-conflicting stories that the actors in the case have told researchers” (Flyvbjerg, 2011, p. 311). As such, we utilized purposeful sampling and we triangulated both the methods and sources (Creswell, 2013; Yin, 2011).

Our 38-item Qualtrics questionnaire was complemented by 11 one-hour-long semi-structured interviews with the NYS DEC, APA, and representatives from conservation organizations. The questionnaire was designed to mirror the established framework implemented in research by the Department of the Interior’s National Park Service in Yosemite National Park (CA), utilized to understand opinions about a hiker permit system (Pettebone et al., 2013). Survey questions included open-ended text responses, slider bars, Likert scales, and multiple choice. The online survey link was distributed via social media outlets, the *Adirondack Almanack*, posters, and flyers distributed in retail stores and community events in NY. A total of 1,249 respondents completed the questionnaire between February 2019 and April 2019. Further, we conducted participant observation at the Adirondack Park Lobby Day in Albany, NY, in February 2020, attended by 100 citizens, Adirondack Park Rangers, and representatives of conservation organizations. Our participation involved accompanying lobbyists, visiting elected officials, gathering literature, note taking, and “being identified as a researcher but also filling a real-life role in the scene being studied” (Yin, 2011, p. 10).

Semi-structured interviews were conducted in-person, via Zoom, and over the phone, utilizing a digital voice recorder. Semi-structured interview data were transcribed and coded to identify emerging topical trends (Creswell, 2013). Creswell’s (2013) approach is interrelated and not necessarily linear/hierarchical, and incorporates organization and preparation of the data for analysis; analysis of transcriptions for meaning; coding of the data (identifying and detailing topical trends and categories); and more interpretation and analysis (“What were the lessons learned?”). As such, the findings below are presented through representative quote charts as well as descriptive narratives of participant responses. Presenting and evaluating descriptive narratives has proven useful in prior research as a low-inference data analysis technique for iden-

tifying topics and themes espoused by respondents, and to describe the multiple research findings (Schneller, 2008). Findings were also validated by identifying accounts of deviant cases and discrepant information (Creswell, 2013). The data analysis also incorporated Type 1 tabulations as prescribed by Silverman (2006); percentages were assigned to more accurately report the frequency of responses.

## Findings

### Stakeholder Perspectives

#### *Indirect Management*

In conjunction with review of amendments to the UMP, we note that the DEC has more recently taken actions to limit parking, enforce illegal roadside parking, and to build a new trail on Cascade Mountain to limit erosion. Tate Connor - DEC's Wilderness Land Manager for the HPWC stated:

This year there are double the amount of resources to address on-the-ground trail related management... We've seen amazing progress. I'm in the process of hiring 10 trail crew workers. I didn't have that opportunity last year, when I had the opportunity to hire five...up from nothing. So that's progress! (personal communication, 2019).

DEC's actions have brought enhanced management of the HPWC to the forefront of stakeholders' agendas (each with differing opinions on various issues, Table 1). During Adirondack Lobby Day we documented broad support among public participants and the diversity of stakeholders (including state assemblymembers and senators) for increased funding for the DEC to better manage the HPWC, with an emphasis on hiring additional rangers, and increased funding for trail restoration/redesign. Respondents explained that poor trail design coupled with high-use has eroded trails, and 10 out of 11 stakeholders suggested that redesigned trails could support higher use while also mitigating ecological impacts. David Gibson (Managing Partner at Adirondack Wild) suggested the addition of 10 rangers (up from 6 at present) for the HPWC; at the median ranger salary this would cost NY a total of \$628,000 per year and would allow rangers to engage in education and stewardship duties, as opposed to search and rescue.

Respondents also discussed that enhanced public education regarding wilderness etiquette and usage was also an option for reducing user impacts, as well as to increase public safety without limiting the number of wilderness users. Pete Nelson, of Adirondack Wilderness Advocates, provided anecdotal data about recovery of alpine plant communities where Summit Stewards are present, a statement confirmed by Kayla White, Summit Steward Coordinator (personal communication, 2020). Leave-No-Trace messaging throughout the DEC is intended to create consistent messaging for wilderness users, complementing the current work of the Adirondack Trail Improvement Society, Adirondack Mountain Club's Summit Stewards, and the 46ers working on trail restoration and education.

#### *Direct Management*

The abovementioned passive management improvements can be facilitated without limiting user number. More direct management, such as limiting the number of users via a hiker permit system, was not supported universally. Of the NGOs focused



on recreation and preservation within the HPWC, three supported some form of a permit (Adirondack Wild, The Adirondack Council, and Protect the Adirondacks), while two were opposed (Adirondack Trail Improvement Society and the Adirondack Mountain Club). Chad Dawson (APA) and Rick Fenton (former Supervising Forester, DEC) supported a limited entry permit system, while Pete Nelson (Adirondack Wilderness Advocates), Tate Connor (DEC), and Andy Mossey (Catskill Center) wanted more quantitative data, and were cautious to support the idea, unless attempts at passive management techniques proved ineffective. Nelson further clarified that:

Permit systems as they exist today almost all the time are inherently biased, classist, and pose significant barriers to people I want here. The very word “permit” is an uncomfortable, difficult word for many Black people who see it as an imposition of some kind of enforcement or legal standard that is going to be hostile to their interests. We don’t ignore those issues if we’re going to do this right (personal communication, 2020).

Among the NGOs, support for direct management in the form of a permit system varied by the organizational priorities. For instance, the Adirondack Mountain Club was opposed to hiker permit systems, while Adirondack Wild was in strong support, and leading the charge for a permit system that would limit the number of hikers, seasonally, on HPWC trails with the highest use and in the worst condition (Gibson, 2019). Stakeholder disagreement over direct management makes the implementation of a permit system complex.

In order to inform any decisions about limiting use via a permit system, interview respondents agreed on the need for more carrying capacity data in the HPWC, measuring numbers of visitors on each trail, ongoing impacts, and evidence of potential recovery of HPWC ecosystems. For instance, the Summit Steward Program Coordinator described that:

Summits that have Stewards have seen a dramatic increase in revegetation than summits that do not have that regular presence. We conducted another analysis in 2015 and found that there was no statistically significant difference from our analysis in 2009, showing that Summit Stewards are holding the line in spite of high recreational use (White, personal communication, 2020).

While this evidence has generated cause for both concern (and optimism), it is incomplete in light of the dearth of data on carrying capacity, ecological damage, and/or recovery on individual trails and alpine plant communities, and to establish permit numbers and allocations. In response to this lack of data the DEC is developing a Wildland Monitoring Plan, and according to DEC’s Tate Connor, the research will help provide the information for understanding carrying capacity (personal communication, 2019). The DEC has established a two-year timeline to develop the monitoring plan that incorporates all of the research needs, and once the data is gathered, stakeholders should be able to make more compelling arguments about what type of management (and funding) is required to ensure protections in the HPWC.

### Table 1

## Stakeholder Perspectives on Management of the HPWC

### Public Perspectives

Funding	Permits	Education	Data	Recreation vs. Conservation	Trails
<p>It's always about funding. All of us are pushing for more rangers. The legislature is saying it's crazy, but they're not willing to buck a governor who says "no, we're freezing everything."- David Gibson, Adirondack Wild (Managing Partner)</p>	<p>Wilderness managers like to tackle problems with "indirect" management - less intrusive measures - first. High use levels are having big impacts on the physical, biological, and social environment of the area. We've been talking about a camping permit system for years. It's time to stop talking and just do it. - Rick Fenton, (Former Supervising Forester, DEC)</p>	<p>There's been a lot of good science out there about when people are educated they cause less natural resource damage, their impact is lighter on the overall system...but I don't think that's sustainable. David Gibson, Adirondack Wild (Managing Partner)</p>	<p>We need to have the scientific component - doing the research to determine the carrying capacity, trail by trail, for the most heavily used trails, and then taking information to decide daily visitor numbers for trail corridors and how reservations are to be made. David Gibson, Adirondack Wild (Managing Partner)</p>	<p>We need to create wilderness areas, but if people do not have the opportunity to connect with these places and experience wilderness, it is unlikely that there will be the political will to create more wilderness areas. - Cathy Pedler, Adirondack Mountain Club (Director of Government Relations and Conservation)</p>	<p>On holiday weekends there's a significant spike in the numbers of people who hike and camp. They can cause major physical impacts to trails and campsites, making them more susceptible to continuing erosion throughout the year. - Rick Fenton, (Former Supervising Forester, DEC)</p>
<p>The Cuomo administration in particular has just mystifyingly refused to make a serious investment in the management of the High Peaks. - Peter Bauer, Protect the Adirondacks (Executive Director)</p>	<p>While parking permits are not the primary focus at this time, they are one of many tools being considered to comprehensively address overuse." Jackie Bowen, Adirondack Council (Conservation Associate) -</p>	<p>From research and experience, education is the biggest factor that influences user behavior and impacts to user experience, and impacts to natural resources. - Tate Connor, DEC (Wilderness Land Manager for High Peaks)</p>	<p>We'd like to know how you're making decisions, so the idea of monitoring is to systematically collect data, analyze data, and use it to adjust management. - Chad Dawson, APA (Out of Park Board Member), SUNY ESF (Professor)</p>	<p>We're very mindful of the public's desire for a 'High Peaks experience.' But, we're also very mindful of maintaining this Wilderness ethos and make investments that we need to protect natural resources and experiences, which the State hasn't done. - David Gibson, Adirondack Wild (Managing Partner)</p>	<p>We really need to build sustainable trails...the majority of trails run right up the mountain and have erosion and degradation problems. - Peter Bauer, Protect the Adirondacks (Executive Director)</p>
<p>When I was on the job, the state budget for materials and the people who maintain Forest Preserve facilities was significantly less than necessary. The State needs to make a long-term financial commitment to the protection of the HPWC. - Rick Fenton, (Former</p>	<p>I think there are a lot of management techniques that could be implemented before a permit system goes into place - Andy Mossey, Catskill Center (Stewardship &amp; Advocacy Coordinator)</p>	<p>If you just do regulation without education and outreach, you just get a really upset public. - Andy Mossey, Catskill Center (Stewardship &amp; Advocacy Coordinator)</p>	<p>I would be interested to see from a statistic or metric background where people are going, and where overcrowding is an issue before implementing a permit system. - Andy Mossey, Catskill Center (Stewardship &amp; Advocacy Coordinator)</p>	<p>There's no place that's completely wild. The idea that there is perfectly pristine Wilderness...no. It's an ideal -- Chad Dawson, APA (Out of Park Board Member), SUNY ESF (Professor)</p>	<p>Most of the trails you find in drainages were never intended to be trails...they were herd paths...socially constructed trails. - Chad Dawson, APA (Out of Park Board Member), SUNY ESF (Professor)</p>

**Table 1 (cont.)**

Funding	Permits	Education	Data	Recreation vs. Conservation	Trails
Fenton, (Former Supervising Forester, DEC)			Advocacy Coordinator)		
It's absolutely a funding problem. The state has two trail crews working in the HPWC. We have hundreds of miles of identified trails that need to be greatly changed or totally rebuilt. It's not sustainable. There's no way that the state can even keep up. - Pete Nelson, Adirondack Wilderness Advocates (Co-Founder)	A limited entry system says in spades, you want a "Wilderness experience" - David Gibson, Adirondack Wild (Managing Partner)	The Summit Stewards report that vegetation on Cascade is starting to regrow. It's education, proper dispersal on the summit, a wilderness ethic with which people can be imbued that makes the difference...not the numbers. - Pete Nelson, Adirondack Wilderness Advocates (Co-Founder)	In theory, a parking area would be sized for a certain number of vehicles, which would relate to what the forest preserve planners had determined through a scientific investigation as the carrying capacity for a trail. - Peter Bauer, Protect the Adirondacks (Executive Director)	If you have 500 people on the summit of Cascade, it's not an opportunity for solitude in a Wilderness - Tate Connor, DEC (Wilderness Land Manager for High Peaks)	Our experts who build and maintain trails say that the biggest issue in the eastern High Peaks isn't the level of people, but how the trails were made. - Neil Woodworth, Adk Mountain Club (Executive Director)
	The idea that anybody shouldn't be able to climb Cascade Mt. is anathema to everything I believe. So while I want to passionately protect the wilderness I am highly skeptical of limitations. I am opposed to using permits until we know there's a good reason, and we don't have another option. - Pete Nelson, Adirondack Wilderness Advocates (Co-Founder)	Summits that have stewards have seen a dramatic increase in revegetation than summits that do not have that regular presence. - Kayla White, ADK Mt. Club (Summit Steward Coordinator)	If high use is damaging the resource or the wilderness experience that we want to protect, then that <i>high use</i> is <i>overuse</i> ...but we need to measure it, define our terms, revisit and iterate on those measurements. - Pete Nelson, Adirondack Wilderness Advocates (Co-Founder)	If I don't want to see anybody in the HPWC that's a piece of cake. If I <i>do</i> want to see people I can go on the Cascade Trail. But I will argue the fact we have huge usage spikes on the Cascade Trail...that does not constitute overuse. - Pete Nelson, Adirondack Wilderness Advocates (Co-Founder)	The trail problems need to be divorced from this overuse discussion because they're unrelated. The bad trails are because of the topography, soils, water flow, and the fact that they were never designed or hardened by people who know how to build trails. I chafe at the idea that we see damage to the Park which is legitimate, and that it means we have an overuse problem and we have to limit people. - Pete Nelson, Adirondack Wilderness Advocates (Co-Founder)

**Wilderness Based Recreation in the HPWC**

Survey respondents were 95% white (1127/1183), 63% male (748/1186), with mean age of 53. A total of 77% lived within NY (917/1192), with 20% residents of Adirondack Park (224/1192). Most respondents (84%; 1004/1190) had visited the HPWC and visited an average of 16 times/yr. The most popular activities in the HPWC were hiking (79%; 947/1192) and camping (54%; 649/1192).

The majority of respondents (86%; 821/952) answered affirmatively when asked in the online survey "Have you ever had an experience where you felt the wilderness character of the HPWC was degraded due to human impacts?" Respondents discussed that resource degradation is a problem, ranking visible trash and human waste, graffiti/defacement of trees/rocks, trampled vegetation, trail erosion, and encountering large numbers of people as the most notable problems. The majority of respondents (86%; 809/933) explained that they avoid busy hiking trails and busy days. When asked if the

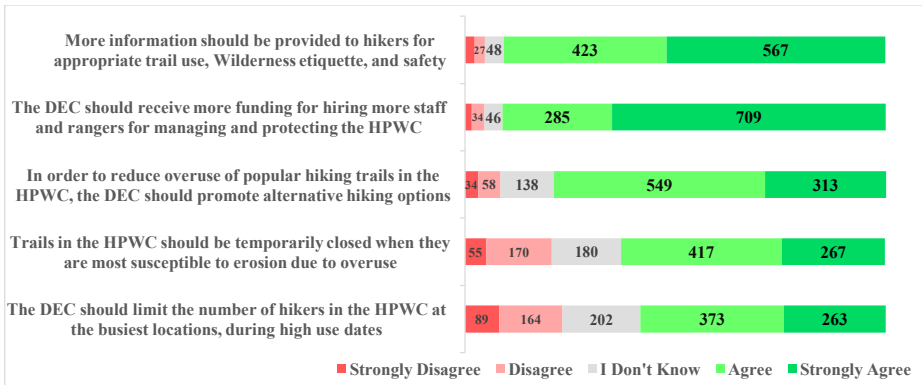
DEC should prioritize wilderness character over the expansion of recreational opportunities, 77% of respondents either agreed or strongly agreed.<sup>4</sup>

**Indirect Management**

A comparison of public preferences for management options is found in Figure 2, as well as the representative quote chart (Table 2), where the public espoused a greater preference for passive management. The majority of respondents (73%) had experienced problems finding parking at trailheads that access the HPWC, yet management approaches to parking congestion had mixed support, with most supporting a business-as-usual first-come, first-served parking system with enforcement of parking to the capacity of the lot. Respondents were overall opposed to implementing an online parking permit reservation system, with only 26% supporting. In regard to hiking permits, respondents were evenly split. Those in favor of a permit system to limit the number of hikers discussed benefits to the wilderness character, recreational experiences, and enhanced opportunities for solitude. Arguments against a permit system included concerns over limiting spontaneous access to public lands and over-regulation, and that passive management should be implemented before facilitating new permit systems.

**Direct Management**

**Figure 2**  
*Public Preferences for Managing the HPWC*



Open-ended responses also focused on how permits should be obtained (reservations), if a permit should be required for parking and/or hiking, fee vs. free permits, and when and where a permit would be necessary (timing & location) (Table 3). There was widespread disagreement regarding how permits should be obtained. The public suggested online reservations, a lottery system, and a first-come first-served system (at trailheads). Respondents discussed unused reservations as a reason to prioritize first-come, first-served permits, while non-locals preferred advanced reservations. In terms of a fee, respondents were again split. Similar to the USFS Recreation Fee Program, many respondents vehemently disagreed with charging the public for access to public lands (without amenities). Some respondents argued that a reasonable fee could

<sup>4</sup>Only 17% (174/1038) believed that the DEC should prioritize recreational opportunities over the protection of Wilderness character.

be charged, which could in turn be used to fund trail improvements and educational efforts. There was greater agreement for when and where a hiker permit could be implemented, with most respondents citing summer weekends and holidays, as well

**Table 2**

*Public Preferences Regarding Implementation of a Hiker Permit System to Reduce High Use in the HPWC*

Pro-Hiking Permits	Anti-Hiking Permits
I'd much rather see a permit system and reserved camping. Wilderness exists not just for human pleasure. It should provide sanctuary for the living creatures.	I'm opposed to a hiker reservation system and parking permits. I'm a 46er, and don't want to cripple anyone else's opportunity to explore this beautiful region. Hiring more rangers to educate and enforce would be ideal.
There are many great hiking areas in the Northeast. Limiting access to the HPWC can provide a higher quality experience for visitors, though they may have to compromise quantity of visits.	I worry about degradation of Wilderness, but I also worry about lack of access. If people don't have access they may not find value in Wilderness. Privileging Wilderness over recreation is worthy but not creative.
Perhaps a permit would be good, but more like a hunting permit - where you pay for permits but are also educated about how to protect and care for the area.	I do not support a complex system just for hiking permits. I generally like the idea of proper sized parking lots, and rangers and volunteers controlling the numbers of hikers at the trailhead.
I am strongly in favor of a permit system, like what is used on some mountains out west. I have personally seen a tremendous increase in the number of people hiking the HPWC, sometimes with little regard for the environment. Something needs to change to sustain the HPWC.	We're being regulated to death in this state. Most of my hikes are planned last minute based on work and family schedules. I'd hate to reserve a parking or camping spot at the last minute because some politician thinks it's a good idea to charge me to take a walk in the woods.

as popular trails (Cascade and Giant) as ideal for a trial permit system (as opposed to throughout the HPWC).

**Recommendations and Management Implications**

**Better Informed Decision Making and Representation**

The purpose of this research was to better understand public preferences and perceptions of management options for reducing the impacts of high use recreation in the HPWC. While the authors acknowledge limitations associated with the case study approach (lack of generalizability), respondent perceptions and expectations of their HPWC experiences are just as relevant as the implications for ecological protection, best management practices, and enhanced institutional settings. Based on interviews with stakeholders, online questionnaires, and participant observation we detail a suite of recommendations. Due to the site-specific ecological conditions of this case study, the following recommendations for mitigating the effects of high use are unlikely to be replicable for other state and federally designated wilderness areas.

**Design and Implementation of the Wildland Monitoring Program**

Funding and implementing the Wildland Monitoring Program is vital to future management of the HPWC, and could be supported by funds from the NY State Lands Stewardship Account. Stakeholders explained that this research should investigate the extent to which alpine ecosystem conditions are recovering (or worsening), and incorporate quantitative visitor use monitoring to provide more holistic data that might contribute to a better scientific understanding of trail carrying capacity. While potential limitations include no central registration, multiple access points, and the network of public/private land, outcomes could still help to inform indirect/direct management decisions that might ultimately limit the numbers of hikers or redesign/improve/close trails. Quantitative data that informs a better understanding of ecological limits will

**Table 3**  
*Public Preferences for Implementation of Permit Systems in the HPWC*

<b>Permit Acquisition System</b>	<b>Parking vs. Hiking</b>	<b>Free vs. Fee</b>	<b>Time &amp; Location</b>
I think the HPWC should operate on the same level as the National Park system... a combination of online, and daily walk-up hiker permits would reduce foot traffic, but still generate income for the park.	Limits on the most popular trails is needed. By providing parking lots with barriers to prevent overflow hikers from parking within the immediate area of the trailhead, the number of hikers on trails would be limited by the number of vehicles parked in the lot.	Most people would be happy to pay a reasonable charge, especially if they're assured the money would go toward management.	Permits for weekends seems like a good idea and could help generate funding for more rangers and educational programs.
A lottery system should be used and the number of hikers per day drastically limited. This would ensure that people who get picked will be able to enjoy that 'Wilderness feeling' they're seeking.	Permits should not be given for access, but for summits. The issue is purely those who are seeking the peak, not the trails. Issuing permits for parking or trail access only moves the access location. The problem is the destination.	It would be outrageous to force taxpayers to pay even more money to park, hike, or camp in the Adirondacks. As a NY tax payer I am opposed to more fees. I already pay to camp at DEC campgrounds in the Park. Hiking through the woods and sleeping in a lean-to shouldn't cost a dime.	Permits would probably be an appropriate solution for some high volume trailheads on weekends. Other trailheads just need more parking.
The experience that I have had with advance online permit systems is that people purchase permits and then don't show up. Advance permits should be limited to no more than 50% of available sites, 25% available to reserve 1 week in advance, with the balance of unretained sites available each day on a first-come basis.	Due to the remote area of the trailheads a parking permit would be all that's necessary. People can't get to them without a vehicle.	There shouldn't be fees associated with spending time in the Park. The natural world shouldn't be something that's only available to the upper class. I think that creating a fee to access or park in the ADKs would further stratify the differences in opportunities between the classes.	I would not support an all-encompassing permit system but I do think it may be necessary for the most popular High Peaks on certain weekends.
An online reservation system and/or lottery system would be best; I live in NJ and would not be able to go in-person make reservations or acquire permits on the day of my activity. Without some guarantee of being granted access, I would likely just not bother going at all, and I feel strongly that this is NOT the point of public lands like the ADK Park.		I live out of state and I would expect to pay a "non-resident" fee higher than NY taxpayers. Although I support fees, I would first like to see legislation that defines where they get allocated. Fees assessed in the Adirondacks should remain in the Adirondacks for staff, trail work, and related issues.	Most days see relatively very little traffic compared to a few select (fall) weekends. Implementing a year-round solution would be wasteful and detrimental.

help protect the environment, recreational amenities, and wilderness character. Limiting the number of hikers/vehicles through a permit system is but one solution to preventing further damage to the HPWC if efforts to heighten ranger presence, increase public education, change hiker behavior, and improve trails all fail to address ecosystem degradation issues. A seasonally limited trial program focused on the most popular trailheads at the highest use times could be viable, but given multiple points of entry, limitations on use would require scaling-up numbers of rangers and enforce-

ment. Limiting use in the entirety of the HPWC through a parking/hiking permit system currently lacks infrastructure, and was met with mixed support among our stakeholders and the public, for a diversity of reasons.

### **Backcountry Educational Stewards, Adirondack Forest Rangers and Assistant Rangers, Trail Crews and Redesign**

The average ranger is responsible for patrolling 53,752 acres in the Adirondack Park (in 1970 it was 28,516 acres). Due to increased use, the number of search and rescue missions has increased twofold, while the total number of Rangers has remained static. While cellular phone technology has greatly improved the efficiency of patrols and rescues, the DEC should consider hiring additional park rangers.

Trail maintenance, redesign, and rerouting efforts should be scaled-up to accommodate high use, through DEC initiatives, combined with conservation organization assistance (Bauer, 2019). The DEC has opportunities to expand their relationships with Americorps, Youth Conservation Corps, the Student Conservation Association (SCA Trails Corps and Adirondack Corps), Adirondack Hamlets to Huts, and the Adirondack Trail Improvement Society to provide a greater number of seasonal trail crews and enhanced educational efforts regarding hiker safety, wilderness etiquette, Leave No Trace principles, and protecting sensitive alpine ecosystems.

In order to heighten awareness and reduce hiker impacts to alpine ecosystems, the DEC has opportunities to expand educational programming through the Adirondack High Peaks Summit Stewards Program, the ADK Mountain Club's 30,000 members and volunteers, Americorps, and support greater opportunities for college internship programs, promoting Leave No Trace as the central component of their educational campaign. These recommendations parallel the 2011 suggestions of Van Riper et al., who advocated for enhanced educational signage and employing techniques to change visitor behavior in the HPWC. Further, this suite of recommendations aligns with the positive ecological outcomes of the Summit Steward Program as documented in research by Goren and Monz (2011) and discussions with the Summit Steward Program (White, 2020, personal communication), who documented longitudinal recovery (and/or stability) of HPWC alpine plant communities where Stewards have a presence.

### **Enhanced Representation and Transparency**

The State's High Peaks Strategic Planning Advisory Group, DEC, and APA must continue to incorporate input from the public, researchers, scientists, Adirondack Park residents and businesses, conservation organizations, the Adirondack Diversity Initiative, and underrepresented/minority individuals. Improved transparency amongst stakeholders can be facilitated through open public forums to address HPWC management. Enhanced input and better informed decision making that protects wilderness character, wilderness experiences, and ecosystems within the HPWC, and promotes more effective and prescient leadership, can be achieved by filling all vacancies within the APA board with professionally and culturally diverse individuals. The board consists of 11 individuals; three represent state agencies, and eight are nominated by the governor and confirmed by the state senate (each serving four-year terms). The APA board is arguably at its weakest point in history, and as of spring 2020 there were three vacancies (of the eight appointed board members), and four of the five remaining members were serving in expired terms. Further, the community influentials interviewed for this research effort publicly advocated for greater professional diversity within the APA board to include appointments of environmental attorneys, ecologists/

natural scientists, and regional planners. We add that cultural and gender diversity should also receive greater representation, with the appointment of NY tribal representatives, minority representatives, and women.

### Enhanced Funding for the Adirondack Park and HPWC

The DEC must request more funding from the state legislature. The State Environmental Protection Fund (EPF) was allocated \$300 million on April 1, 2020, and is one potential funding option. The EPF funds a variety of programs including land protection and state land stewardship. The “State Lands Stewardship” category did receive enhanced funding for 2020/2021: \$34.4 million was allocated (up from \$33 million in 2019), with a new authorized use of funds for trail crews and activities related to sustainable use of state and Forest Preserve lands that are threatened by overuse. Also included for the Adirondack Forest Preserve was \$1.2 million for “Essex County Overuse.”<sup>5</sup> The pending 2020 recommendations by the High Peaks Strategic Planning Advisory Group, coupled with the outcomes of the Wildland Monitoring Program, as well as the findings presented in this study, could be highlighted in order to better inform future funding allocations. Further, a separate line-item could be created within the State Lands Stewardship Account solely for funding enhanced management and programs within the HPWC.

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<sup>5</sup> Many conservation organizations are promoting the allocation of \$1.2 million for the implementation of shuttle busses that drop hikers at trail heads to reduce illegal overflow parking. Under this scenario, high use of the most popular HPWC trails could potentially decrease if busses also drop hikers at lesser used trails. Shuttles also serve as an opportunity for backcountry stewards to ride along, educating “captive audiences” about Leave No Trace ethics and wilderness visitation behaviors that could result in the protection of alpine ecosystems.



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