Received: 15 July 2024 | Revised: 6 February 2025 | Accepted: 24 March 2025

DOI: 10.1111/csp2.70051

CONTRIBUTED PAPER

Conservation Science and Practice
A journal of the Society for Conservation Biology
Open Access
WILEY

Tradeoffs and win-wins between large landscape conservation and wildlife viewing in protected areas

Hilary Byerly Flint[1] | **Aaron J. Enriquez**[2] | **Drew E. Bennett**[1] | **Leslie Richardson**[3] | **Arthur D. Middleton**[4]

[1]Haub School of Environment and Natural Resources, University of Wyoming, Laramie, Wyoming, USA

[2]U.S. Geological Survey, Fort Collins Science Center, Fort Collins, Colorado, USA

[3]National Park Service, Economics Program, Fort Collins, Colorado, USA

[4]Department of Environmental Science, Policy and Management, University of California, Berkeley, Berkeley, California, USA

Correspondence
Hilary Byerly Flint, Haub School of Environment and Natural Resources, University of Wyoming, 804 E Fremont St., Laramie, WY 82072, USA.
Email: hilary.byerlyflint@uwyo.edu

Funding information
Greater Yellowstone Coalition; BAND foundation; University of Wyoming NPS Small Grants Program

Abstract

Wildlife conservation around protected areas is critical and costly, yet its beneficiaries—particularly protected area visitors who enjoy viewing wide-ranging wildlife—rarely contribute towards landscape-scale conservation. We characterize the importance of wildlife viewing in two U.S. protected areas: Yellowstone and Grand Teton National Parks. We surveyed park visitors ($N = 991$) and used the travel cost method to test whether changes in the viewing experience would justify support for visitor-funded conservation. We find that benefits from wildlife viewing are substantial and dependent on protecting wide-ranging species and maintaining their abundance. Large carnivores, particularly grizzly bears, are especially important to wildlife viewers, who are willing to pay more to visit the parks by about 50%. Additionally, we gauged support for three conservation fundraising mechanisms within parks: a mandatory fee, a voluntary fund, and a tax on goods and services. Overall, we find that species population declines could have a greater effect on visitation than that from imposing conservation costs onto visitors, which visitors largely support regardless of income or politics. Our results demonstrate tradeoffs between maintaining visitor experience quality and protected area visitation, with a potential win-win for conservation beneficiaries to contribute towards action at a scale necessary for biodiversity protection.

KEYWORDS

conservation funding, large landscape conservation, nonmarket valuation, protected area management, travel cost method, wildlife viewing

1 | INTRODUCTION

Protected areas are key to maintaining biodiversity and ecological processes globally, but their relatively small size and isolation limit their effectiveness (Joppa & Pfaff, 2009; Ward et al., 2020). These challenges are particularly pronounced for wide-ranging wildlife—animals like bears, wolves, elk, and deer—whose foraging, dispersal, and migratory behaviors take them beyond protected area boundaries (Newmark, 1987; Woodroffe & Ginsberg, 1998). Global biodiversity conservation initiatives, including the Kunming-Montreal Global Diversity

This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.
© 2025 The Author(s). *Conservation Science and Practice* published by Wiley Periodicals LLC on behalf of Society for Conservation Biology.

Framework's international commitment to protect 30% of the world's land, inland water, and coastal and marine areas by 2030, could falter or fail if protected areas are not adequately connected to nearby habitat (Williams et al., 2022; Worboys et al., 2010). One proposed solution to the limits of protected areas is large landscape conservation (Ward et al., 2020). In this approach, practitioners work across jurisdictional boundaries, often anchored around protected areas, to enhance environmental quality on multi-use lands (Hilty et al., 2020; McKinney et al., 2010). However, large landscape conservation initiatives are often stymied by their high costs (Maxwell et al., 2020; McCarthy et al., 2012). For wildlife conservation, these costs may include purchasing development rights, improving infrastructure to increase landscape permeability, investing in habitat restoration, and providing compensation for wildlife conflict (Dickman et al., 2011; Nyhus, 2016).

Protected-area visitation provides a potential source of revenue for large landscape conservation. The presence of wildlife within protected areas generates considerable value to society, and protected areas receive billions of visits annually (Balmford et al., 2009, 2015). For many protected areas, visitors are an important source of funding for infrastructure and conservation activities within park boundaries (Buckley et al., 2012). Yet, only a small number of protected areas leverage visitation to support large landscape conservation (Middleton et al., 2021). Surveys of visitors at protected areas show they are willing to pay additional fees to support wildlife conservation and viewing opportunities inside protected areas (e.g., Bhattarai et al., 2021; Richardson et al., 2014; Schutgens et al., 2019). We extend the existing body of work by examining how hypothetical losses of wide-ranging wildlife populations might influence visitor demand for recreation within protected areas. Separately, we predict how an additional fee on visitors—the proceeds of which would be used to protect wildlife—may affect visitor demand. We then compare outcomes under two hypothetical scenarios: losses in wildlife populations versus increases in the visitor fee.

There are tradeoffs involved in imposing additional costs on visitors to fund conservation. An increase in the price of visiting a protected area is expected to decrease the quantity of visits demanded, resulting in fewer people enjoying the protected area. Such a loss could disproportionately affect lower-income visitors. At the same time, failure to maintain the quality of visitors' experiences (e.g., by failing to conserve valued species) could also reduce visitation, or it could reduce the overall net benefits, also known as consumer surplus, attained by those who do visit. Park managers thus face a conundrum: how does asking park visitors to fund conservation, which increases cost and is thus expected to decrease visits demanded, compare to failing to fund conservation, which decreases trip quality and is thus expected to also decrease visits demanded?

We explore this question in the context of Yellowstone and Grand Teton National Parks, two adjacent protected areas in the western United States. These parks attract more than 7 million visits annually, in considerable part because of wildlife viewing opportunities (National Park Service, 2010, 2019). The two parks are at the core of the Greater Yellowstone Ecosystem (GYE)—one of the world's largest and mostly intact temperate ecosystems and home to abundant wide-ranging wildlife, including large carnivores (e.g., grizzly bears and wolves) and ungulates (e.g., bison, elk, mule deer, pronghorn, moose, and bighorn sheep) (Middleton et al., 2020). These species rely on the core protected areas for habitat but also require ranges that extend beyond park boundaries.

The grizzly bear, for example, depends on expansive landscapes with a variety of habitats and resources. The lifetime home range of a male grizzly bear in the GYE can be more than 1500 square miles, and many grizzlies regularly cross park boundaries (White et al., 2017). The migrations of elk, mule deer, and pronghorn can extend tens or even hundreds of miles between seasonal ranges within and beyond national park boundaries (Middleton et al., 2020). Under the protection of endangered species law and hunting regulations, these and other wide-ranging wildlife of the GYE have generally rebounded from near extirpation over the past century.

As populations of wide-ranging wildlife have grown in the GYE, their movement outside the parks has increased, and so have the challenges and costs experienced by surrounding landowners and communities. For example, grizzly bears sometimes kill livestock or destroy property (van Manen et al., 2024) and some have moved into housing developments in search of food (Koshmrl, 2021), increasing economic damages from grizzly bear-human conflict incidents (Enriquez & Finnoff, 2021). Migratory ungulates that spend winters outside the national parks can spread disease to livestock and damage crops (Cross et al., 2010; Irby et al., 1996).

At the same time, wildlife can bring increased visitor satisfaction and economic benefits, as from increased bear viewing opportunities in protected areas like Yellowstone National Park (Richardson & Enriquez, 2024). The implication is that surrounding communities pay a spatial subsidy for the benefits of viewing wildlife experienced by national park visitors (Chester et al., 2022). This tension between who bears the costs of and who benefits from wide-ranging wildlife has attracted regional policy interest. Wyoming and Montana's legislatures both

passed resolutions that the National Park Service collect a "conservation fee" from park visitors to fund conservation outside Yellowstone and Grand Teton National Parks (Montana Legislature, 2021; Wyoming Legislature, 2018). As the GYE experiences unprecedented development and increasing human–wildlife conflict, failure to fund conservation beyond protected area boundaries could lead to declines in wide-ranging wildlife populations once again (Middleton et al., 2022).

The economic concept of social welfare (i.e., overall wellbeing to all members of society) is useful for evaluating the potential impacts of a fee to fund conservation, or—conversely—the potential impacts of fewer wildlife. Here, we use data from an intercept survey of visitors to Yellowstone and Grand Teton National Parks to consider changes in social welfare under two different scenarios: one in which a conservation fee is imposed on park visitors for the benefit of wide-ranging wildlife management, and one in which such a fee is not implemented. A complete social welfare analysis would entail quantifying all potential effects from the fee on the economic benefits and damages to all members of society. Given data limitations, we simplify by characterizing only the direct hypothetical impacts on recreation demand and fundraising in support of wide-ranging wildlife conservation. Our paper, which uses empirical data in combination with broad assumptions, is intended as a starting point for future conversations and analyses related to funding large landscape conservation.

2 | METHODS

2.1 | Data collection

We intercepted and surveyed visitors to Yellowstone and Grand Teton National Parks in July and August of 2022. The survey asked about park visitation behavior, including the number of trips taken to the parks in the last 3 years, the importance of wildlife viewing, the animals visitors want to see, and demographics. Refer to Data S1, Supporting Information for the full survey instrument.

The survey included a stated preference question (specifically, a contingent behavior question) about how changes in wide-ranging wildlife would be expected to affect park visitation. Visitors were read descriptions of common wide-ranging wildlife in the parks and asked to indicate their agreement with the statement, "I would take fewer trips to the parks if there were fewer wide-ranging wildlife around to view." Similar methods have been used to estimate changes in visitation associated with wildlife management in Yellowstone and Grand Teton National Parks (e.g., Duffield et al., 2006; Loomis & Caughlan, 2004; Richardson et al., 2014). Such approaches have the benefit of using visitor responses to inform predictions about visitor behavior in response to management changes. The accuracy of predictions, however, depends on whether visitors would behave consistently in real life with their responses to hypothetical scenarios. Potential inconsistency between actual and observed behavior is referred to as hypothetical bias. We followed best practices from the economics literature to mitigate hypothetical bias (for a review of contemporary guidance, refer to Johnston et al., 2017).

More detailed descriptions of the data collection efforts and survey methods are provided in Data S1.

2.2 | Travel cost method analysis

To quantify the value of wildlife viewing trips in Yellowstone and Grand Teton National Parks, we used the travel cost method. With this well-established nonmarket valuation method, researchers estimate overall demand for recreation trips to a site using underlying information on the amount it costs people, in terms of expenditures like gas, to take a trip to that site. All else equal, people tend to take fewer trips over a given period to destinations that are located farther away from them, which entail higher costs to reach. However, certain destinations, such as those that provide higher quality recreation experiences, may inspire people to take on higher travel costs. Ultimately, the travel cost method yields the net economic value (i.e., total consumer surplus) of a trip to a location of interest, using information on how people make tradeoffs in terms of trip costs to access the site. The travel cost method is one of several approaches used by economists to measure consumer surplus, and it uses data on traveler behavior to *reveal* an underlying value for a trip to a destination. In the United States, the National Park Service relies on estimates of consumer surplus for use in benefit–cost analyses and a variety of other applications to inform planning and decision-making (Neher et al., 2013; Walls, 2022).

In Table S1, we include detailed descriptions of all the variables included in our travel cost analysis. We used a negative binomial regression to estimate a baseline travel cost model. We calculated a baseline consumer surplus per visitor trip by dividing the number one by the negative of the coefficient on the trip cost variable. We then scaled to a per-visitor-day basis by dividing by average trip length. We provide more details about all our travel cost method-related analyses and calculations in Data S1.

We estimated three additional travel cost models to investigate the role of wildlife viewing in generating value: one model that tests whether wildlife viewers in

general have different demand for park trips than non-viewers, one model that tests how demand varies among people with different preferences for viewing specific species, and one model that tests how demand varies among people with different preferences for viewing broad groups of species (migratory ungulates and large carnivores).

To examine the potential impact of a conservation fee on visitation, we used the trip cost coefficient from our baseline travel cost model and the average trip cost of a visit to the parks to estimate a price elasticity of demand for trips to these parks. The elasticity shows how changes in price (e.g., from an additional conservation fee levied at park entrances) might affect visitation. We considered a range of possible fee amounts (from $1 to $100) and associated funding raised for wildlife conservation. We also calculated the fee amount at which the resulting decline in park visitation would equal the decline in visitation expected from a hypothetical loss in wide-ranging wildlife.

Using responses to the contingent behavior question, we estimated the potential impact of fewer wide-ranging wildlife on park visitation, consumer surplus, and park revenue. We multiplied the proportion who "agreed" or "strongly agreed" that they would reduce their trips by the total number of visitors to the two parks over 3 years. We conservatively assumed that those who would reduce their trips due to fewer wide-ranging wildlife would do so by taking one less trip in 3 years. We explored the sensitivity of changes in park visitation to this assumption by varying the number of fewer trips that visitors might take and by considering only visitors who strongly agreed with the statement.

We estimated the loss in overall consumer surplus from fewer wide-ranging wildlife by multiplying the reduction in visitation by the consumer surplus estimate from our travel cost model. We calculated the loss in park revenue by multiplying the number of unpaid visits (equal to the proportion of visitors in our sample who paid the seven-day entrance fee times the number of fewer park entries) by the entrance fee amount ($35). This loss in park revenue (i.e., what visitors *actually pay* for the experience of wildlife viewing) is distinct from the loss in consumer surplus (i.e., the additional amount visitors are *willing to pay* for the experience of wildlife viewing).

2.3 | Gauging support for conservation fundraising options

In the survey, we also asked respondents to indicate the degree to which they oppose or support three options for raising money to conserve wide-ranging wildlife in and around the parks: (1) a mandatory wildlife conservation fee that would be collected from all park visitors at park entrances, (2) establishment of a wildlife conservation fund to collect voluntary donations from park visitors at park entrances, and (3) a wildlife conservation tax or fee on goods or services sold within the parks. These options were based on policy proposals and conversations with conservation organizations and National Park Service staff.

We used logistic regressions to test whether respondents' support for the three fundraising options was associated with household income or politics, controlling for other demographic characteristics. We corrected for multiple comparisons using the Benjamini-Hochberg method, and we provide adjusted p-values.

3 | RESULTS

3.1 | Summary statistics

We intercepted 2513 individuals in and around Yellowstone and Grand Teton National Parks. Of those, 1111 consented to participate in our survey (a response rate of 44%), but only 991 provided sufficient data to include in our analysis. We summarize sample demographic and park visitation characteristics in Table S2. We checked for non-response bias in our sample by comparing non-participants' observable characteristics and responses to two brief follow-up questions (Table S3). We further assessed the representativeness of the sample by comparing respondent demographics to those from a Visitor Use Survey conducted in Grand Teton National Park during the same time period (Table S4). The samples are similar across most characteristics. Based on these results, we assume that our survey participants are representative of visitors to the two parks.

3.2 | Travel cost method analysis

Results from a baseline travel cost model that includes covariates for visitor characteristics (Table S5; Model 2) indicate a consumer surplus of $451 per visitor trip and $98 per visitor day to Yellowstone and Grand Teton National Parks. Multiplying this value by park visitation, we estimate a total consumer surplus of $753 million annually from visits to Yellowstone and Grand Teton National Parks.

Viewing wildlife is a primary reason for trips to the parks among 77% of respondents (Table S6). We conservatively attribute $117 million in consumer surplus solely

to wildlife viewing in an average year for the 15.5% of visitors for whom wildlife viewing is *the* primary driver of visitation. An additional $464 million in consumer surplus can be attributed to visitation from those 61.6% of visitors listing wildlife viewing as one of several equally important reasons for their trip, for a total of $581 million in recreational value attributable to wildlife viewing (Table S6).[1]

Incorporating preferences for seeing the top five most popular animals into our travel cost model (Table S5; Model 4), we find that the interaction term for species preference and trip cost is only statistically significant for visitors who most want to see grizzly bears. These visitors have a more price-inelastic demand for visitation to the parks. From this model, we estimate a consumer surplus of $139 per day for visitors who most want to see a grizzly bear, compared to $91 per day for those who want to see other animals. These differences also exist when aggregating across visitors who most want to see large carnivores (grizzly bears or wolves) (Table S5; Model 5). We estimate a consumer surplus of $116 per day for visitors who most want to see large carnivores, compared to $81 per day for those who most want to see other types of animals.

Forty-eight percent of respondents agreed that they would take fewer trips to Yellowstone and Grand Teton National Parks if there were fewer wide-ranging wildlife around to view (Figure 1). Based on the responses to this question, we estimate that 749,000 visitors would take fewer trips to the parks if there were fewer wide-ranging wildlife to view. Extrapolating out, this could result in 3.4 million fewer visits to Yellowstone and Grand Teton National Parks over 3 years, or 1.1 million fewer visits annually. This would be a 16% decrease in annual visitation to the two parks and a loss in consumer surplus of $335 million over 3 years. Accounting for the proportion of visitors paying the 7-day entrance fee (18%), the average number of people per car (2.7), and the average number of times visitors enter the park on different days during a trip (2), we estimate that fewer wide-ranging wildlife could reduce revenue to the two parks by $3.9 million over 3 years. Visitation would decline considerably more if we assumed greater reductions in trips, but less steeply if we assumed trip behavior would change only for those who strongly agree with the contingent behavior statement (Figure 2).

We estimate that the parks could charge a $5 conservation fee and reduce park visitation by only 1%, while also raising $2.7 million annually for conservation (Table 1). The parks would have to charge a fee of at least $76 to reduce visitation by the same amount as might occur if there were fewer wide-ranging wildlife to view (Figure 2). If we only assume that those who strongly agree with the contingent behavior statement will reduce their trips, the equivalent visitation-reducing fee is $33 (Figure S1). However, if visitors take two fewer trips over 3 years, the corresponding fee would have to be $176 to match the visitation reduction from those who agree or $69 to match the visitation reduction from just those who strongly agree (Figure S1).

3.3 | Gauging support for conservation fundraising options

Most visitors supported the three proposed options to raise money for wide-ranging wildlife conservation (Figure 3). Support for fundraising from park visitors through a mandatory fee or voluntary fund does not depend on visitors' household income (Table S7). There is a statistically significant positive relationship between income and support for a wildlife conservation tax or fee on goods and services sold within the parks (odds ratio (OR) = 1.0041, $p_{\text{adjusted}} < .05$), as well as for supporting all three fundraising options (OR = 1.0034, $p_{\text{adjusted}} < .05$). Politically moderate and conservative visitors are less likely to support a wildlife tax or fee on goods and services sold within the parks, compared to visitors who identify as liberal ($p_{\text{adjusted}} < .001$ for both political categories).

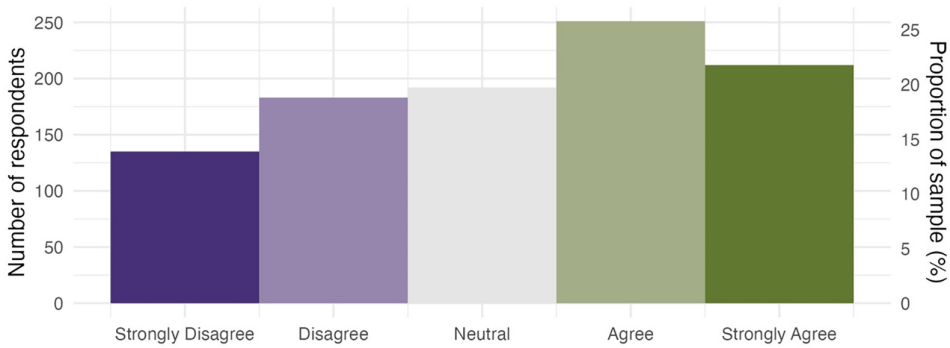

FIGURE 1 Summary of visitors' responses to a contingent behavior question ("I would take fewer trips to the parks if there were fewer wide-ranging wildlife to view") on a survey administered to Yellowstone and Grand Teton National Park visitors in July and August 2022.

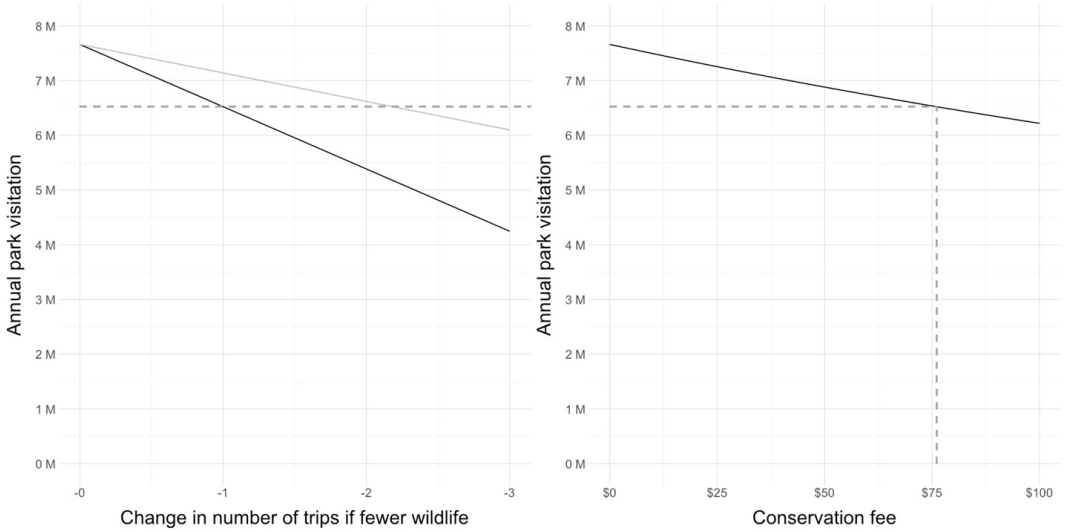

FIGURE 2 Predicted effects on annual visitation to Yellowstone and Grand Teton National Parks based on a survey administered to visitors to those parks in July and August 2022. Predictions cover the following: (1) reductions in trips from there being fewer wide-ranging wildlife (left plot), and (2) reductions in trips from there being increased visitor costs due to the establishment of a visitor fee that fundraises for wide-ranging wildlife conservation (right plot). In the left plot, the dark line attributes reductions in trips to people who both agreed and strongly agreed that they would take fewer trips to the parks if there were fewer wide-ranging wildlife to view. The lighter line attributes reductions in trips only to people who strongly agreed. The dotted line represents the break-even where the reduction in park visitation from fewer wildlife is equal to that from an increase in the price of visiting due to a conservation fee.

TABLE 1 Impacts of conservation fees of various increasing amounts on loss in park visitation, loss in park revenue, and gains in conservation funding, as grounded in results from a survey administered to Yellowstone and Grand Teton National Park visitors in July and August 2022.

Fee amount	Trip cost increase	Loss in park visitation[a]	Loss in park revenue	Conservation revenue
$0	-	-	-	-
$1	0.1%	−16,945 (−0.2%)	$0.0 million	$0.5 million
$5	0.7%	−84,132 (−1.1%)	$0.1 million	$2.7 million
$10	1.3%	−166,799 (−2.2%)	$0.2 million	$5.3 million
$20	2.6%	−327,891 (−4.4%)	$0.4 million	$10.4 million
$35	4.5%	−559,453 (−7.6%)	$0.7 million	$17.6 million
$50	6.4%	−779,711 (−10.7%)	$1.0 million	$24.4 million
$100	12.4%	−1,442,086 (−20.8%)	$1.8 million	$44.1 million
$76	9.6%	−1,137,906 (−16.0%)	$1.4 million	$35.2 million

Note: The bottom row represents the conservation fee value at which the predicted loss in park visitation is equal to that from visitors taking fewer trips due to fewer wildlife.

[a]Reduction in visits (percent reduction). Loss in visitation, loss in revenue, and conservation funding raised are presented as annual values. Average annual park visitation is 7.66 million, and the baseline average trip cost is $754.

4 | DISCUSSION

Most visitors to protected areas do not pay for cross-boundary wildlife conservation, yet they may obtain considerable benefits from wildlife that range beyond protected area boundaries. We administered a survey to Yellowstone and Grand Teton National Park visitors, two globally important protected areas that provide critical habitat for large-bodied mammals. We found that the presence of wide-ranging wildlife influences people's visitation decisions, for example in terms of the number of trips people expect to take to the parks.

Large carnivores, particularly grizzly bears, are especially important to visitors to Yellowstone and Grand

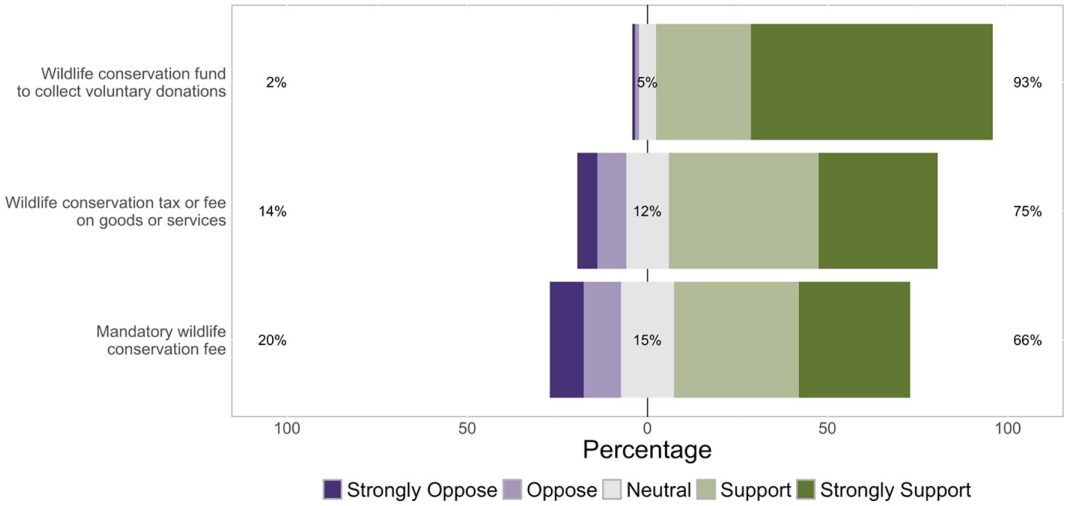

FIGURE 3 Respondents' views on three fundraising options that could support wide-ranging wildlife conservation, based on a survey administered to Yellowstone and Grand Teton National Park visitors in July and August 2022.

Teton National Parks. Visitors who most want to see large carnivores are willing to pay more to visit the parks (by about 50%), and they are more likely to continue visiting as prices increase. This result aligns with public support for maintaining or restoring populations of large carnivores in parts of the American West (Hiroyasu et al., 2019; Nesbitt et al., 2023). It also indicates the presence of potential spatial mismatches between those who bear the ecosystem service benefits and costs of large carnivores and their ungulate prey. While protected area visitors may obtain benefits from safe viewings of wide-ranging wildlife, local property owners may bear economic damages from those same species. As detailed by Chester et al. (2022) in their discussion of the spatial subsidies approach, a potential solution would be the establishment of a compensation system that accounts for the imbalances across space. In our application, this could entail asking protected area visitors to contribute to cross-boundary wildlife conservation through one of the fundraising options described herein.

Declines in wide-ranging wildlife populations could have considerable negative impacts on visitation to the national parks we studied, in turn affecting park revenue and overall social welfare. Remarkably, nearly half of park visitors agreed that they would visit these parks less often if there were fewer wide-ranging wildlife to view. A reduction in wide-ranging wildlife is a highly plausible future scenario given the threats facing such wildlife beyond park boundaries (Kauffman et al., 2021; Middleton et al., 2020). Asking visitors to pay towards conserving wide-ranging wildlife (which would increase trip costs and thus decrease expected demand for visits) appears to affect park visitation less than if there were fewer wide-ranging wildlife for visitors to view (which would decrease trip quality and thus also decrease demand).

Our results further show that park visitor-based fundraising to support cross-boundary, landscape-scale conservation has broad support from visitors themselves. Visitors to Yellowstone and Grand Teton National Parks support charging a mandatory conservation fee and collecting voluntary donations at park entrances irrespective of their income and political orientation. Taxes or fees on goods and services are less favorable among lower-income and politically moderate and conservative visitors. A mandatory wildlife conservation fee may thus be less politically contentious in this case than a tax. A fee is also more likely to generate meaningful funding than voluntary donations, as visitors would be required to contribute and could not free ride on the contributions of others (Jack et al., 2008). We show that a relatively small fee could raise substantial conservation funding while having a negligible impact on visitation.

It is crucial to note that the impacts of a fee are likely to be greater on low-income visitors, for whom any price increase represents a larger share of their household income. While a small fee (e.g., $5) would increase trip costs by less than 1% on average, it would be a greater share for some visitors, especially those who live locally. The predicted 1% decline in visitation may not be spread evenly across visitors of different backgrounds. This is in line with previous research showing low-income visitors are more responsive to fee increases than high-income visitors (More & Stevens, 2000). Policymakers considering fee increases must also consider public perceptions of fairness, which are complex and often associated with concerns about equity and access (Zou et al., 2024).

Additional insights could be gathered through extensions of this research. For example, estimating specific conservation benefits from the additional revenues collected from visitors. While beyond the scope of the current study, this exercise would provide a more complete understanding of a potential policy change in terms of how it would be expected to affect social welfare. It is also important to underscore the hypothetical nature of the contingent behavior question. Future research might test how asking visitors to contribute toward conservation affects observed visitation, particularly among low-income and historically marginalized groups. Also of note, the relationship between fee prices and visitation may not necessarily be linear. Visitors are likely to think differently about marginal increases in different categories of trip costs, using different mental accounts from which they are willing to spend money (Thaler, 1990). For example, a $35 increase in lodging costs, which may represent only 5%–10% of the overall lodging budget, may be perceived differently than a $35 fee in addition to the park entrance cost (a 100% increase). Finally, additional research might directly estimate *how much* visitors are willing to pay to prevent the loss of wide-ranging wildlife.

Practically, we acknowledge park managers' other considerations when deciding whether to levy conservation costs on visitors. Charging fees for wildlife conservation—especially when the money can be redistributed outside park boundaries—may displace fundraising opportunities for essential but less appreciated activities, such as paving roads and cleaning bathrooms. It is also worth noting that in some countries, including the United States, laws mandate that entrance fee revenue be used within parks to enhance the visitor experience.[2] However, as we demonstrated for Yellowstone and Grand Teton National Parks, the visitor experience is contingent on conservation efforts beyond park boundaries. Decision makers may need to re-examine such policies to better match the transboundary nature of protected area resources and the growing threats they face, such as habitat loss and climate change.

While we surveyed visitors to protected areas in a high-income country, the tension between visitors who value wildlife and locals who incur costs beyond park boundaries is characteristic of many protected areas globally (Adams & Hutton, 2007; Maxwell et al., 2020). In protected areas in the Global South, which harbor most of the world's biodiversity, wildlife viewing is often the primary reason for tourists' visits, and visitors may spend thousands of dollars and travel thousands of miles for their trips (Buckley et al., 2012). It is possible that our key result—that the potential loss in visitation from fewer wildlife can overshadow that from increased costs imposed on visitors to conserve wildlife—may be stronger in areas where conservation efforts are even more critical and underfunded (McCarthy et al., 2012).

In our study of visitors to Yellowstone and Grand Teton National Parks, we found that asking visitors to pay towards wildlife conservation would likely have a lesser effect on visitation than failing to fund wildlife conservation. This suggests a potential win-win for decision makers working towards landscape-scale conservation. Protected area visitors can be a source of much-needed revenue while largely continuing to enjoy the wildlife benefits associated with protected area visitation. A similar dynamic is true for many hunters, whose behavior depends on conservation and who are often willing to contribute towards conservation success (Fischer et al., 2015; Gascoigne et al., 2021). Policies that channel funding from conservation beneficiaries towards local communities who bear conservation costs can help avoid inequities and promote sustainable conservation.

Across the globe, wildlife range outside protected area boundaries into habitat that is increasingly at risk. This wildlife also attracts millions of visitors to protected areas. Here, we find that asking visitors to fund conservation: (1) has support from visitors themselves, (2) may have small effects on visitation, and (3) can provide meaningful funding to help maintain the quality of visitors' experiences and the wildlife on which those experiences depend.

AUTHOR CONTRIBUTIONS

Hilary Byerly Flint: Conceptualization; methodology; investigation; data curation; formal analysis; funding acquisition; project administration; resources; software; supervision; visualization; writing – original draft; writing – review & editing. **Aaron J. Enriquez**: Conceptualization; methodology; formal analysis; software; writing – review & editing. **Drew Bennett**: Conceptualization; methodology; resources; writing – review & editing. **Leslie Richardson**: Formal analysis; writing – review & editing. **Arthur Middleton**: Conceptualization; methodology; funding acquisition; supervision; writing – review & editing.

ACKNOWLEDGMENTS

Funding for this project was provided by the BAND Foundation and Greater Yellowstone Coalition, with administrative support from the Northern Rockies Conservation Cooperative, and the University of Wyoming via the UW-NPS Small Grant Program. HBF was supported by a USDA AFRI Fellowship. The survey described in this information product was organized and implemented by the University of Wyoming Haub School of Environment and Natural Resources and was not

conducted on behalf of the U.S. Geological Survey. We thank Avi Bauer for collecting data; Patty Champ, Colleen Donovan, and Carolyn Wagner for helpful comments on the questionnaire; Grace Carr, the MacMillan Private Lands Group, and the Middleton Lab for refining and pilot testing the survey; the Buffalo Bill Center for the West for supporting data collection; and Bailey Kirkland for his feedback on a draft of the manuscript. The funding sources had no role in study design; in the collection, analysis, and interpretation of data; in the writing of the report; or in the decision to submit the article for publication. Views and conclusions in this article are those of the authors and do not necessarily reflect the opinions or policies of the National Park Service.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Data are available upon request.

ETHICS STATEMENT

The University of Wyoming IRB determined that this research does not qualify as human subjects research under the federal regulations.

ORCID

Hilary Byerly Flint https://orcid.org/0000-0002-7445-2099
Aaron J. Enriquez https://orcid.org/0000-0002-0305-4333
Drew E. Bennett https://orcid.org/0000-0001-7589-641X
Arthur D. Middleton https://orcid.org/0000-0003-3887-0434

ENDNOTES

[1] This assumes that the importance of wildlife viewing to park visitation does not vary much throughout the year, which is consistent with the results of past visitor surveys at Yellowstone National Park (Duffield et al., 2006; Kulesza et al. 2012a, 2012b).

[2] The Federal Lands Recreation Enhancement Act (FLREA) allows the National Park Service to collect and retain recreation fees and requires that fee revenue is used to enhance visitor experience. Refer to https://www.nps.gov/aboutus/fees-at-work.htm for more information.

REFERENCES

Adams, W. M., & Hutton, J. (2007). People, parks and poverty: Political ecology and biodiversity conservation. *Conservation and Society*, *5*, 147–183.

Balmford, A., Beresford, J., Green, J., Naidoo, R., Walpole, M., & Manica, A. (2009). A global perspective on trends in nature-based tourism. *PLoS Biology*, *7*, e1000144.

Balmford, A., Green, J. M. H., Anderson, M., Beresford, J., Huang, C., Naidoo, R., Walpole, M., & Manica, A. (2015). Walk on the wild side: Estimating the global magnitude of visits to protected areas. *PLoS Biology*, *13*, e1002074.

Bhattarai, B. R., Morgan, D., & Wright, W. (2021). Equitable sharing of benefits from tiger conservation: Beneficiaries' willingness to pay to offset the costs of tiger conservation. *Journal of Environmental Management*, *284*, 112018.

Buckley, R. C., Castley, J. G., Pegas, F. d. V., Mossaz, A. C., & Steven, R. (2012). A population accounting approach to assess tourism contributions to conservation of IUCN-Redlisted mammal species. *PLoS One*, *7*(9), e44134. https://doi.org/10.1371/journal.pone.0044134

Chester, C. C., Lien, A. M., Sundberg, J., Diffendorfer, J. E., Gonzalez-Duarte, C., Mattsson, B. J., Medellín, R. A., Semmens, D. J., Thogmartin, W. E., Derbridge, J. J., & López-Hoffman, L. (2022). Using ecosystem services to identify inequitable outcomes in migratory species conservation. *Conservation Letters*, *15*, e12920.

Cross, P. C., Cole, E. K., Dobson, A. P., Edwards, W. H., Hamlin, K. L., Luikart, G., Middleton, A. D., Scurlock, B. M., & White, P. J. (2010). Probable causes of increasing brucellosis in free-ranging elk of the Greater Yellowstone Ecosystem. *Ecological Applications*, *20*, 278–288.

Dickman, A. J., Macdonald, E. A., & Macdonald, D. W. (2011). A review of financial instruments to pay for predator conservation and encourage human–carnivore coexistence. *Proceedings of the National Academy of Sciences of the United States of America*, *108*, 13937–13944.

Duffield, J., Neher, C., & Patterson, D. (2006). *Wolves and people in Yellowstone: Impacts on the regional economy*. University of Montana.

Enriquez, A. J., & Finnoff, D. C. (2021). Managing mortality of multi-use megafauna. *Journal of Environmental Economics and Management*, *107*, 102441. https://doi.org/10.1016/j.jeem.2021.102441

Fischer, A., Weldesemaet, Y. T., Czajkowski, M., Tadie, D., & Hanley, N. (2015). Trophy hunters' willingness to pay for wildlife conservation and community benefits. *Conservation Biology*, *29*, 1111–1121.

Gascoigne, W., Hill, R., Haefele, M., Loomis, J., & Hyberg, S. (2021). Economics of the conservation reserve program and the wildlife it supports: A case study of upland birds in South Dakota. *Journal of Outdoor Recreation and Tourism*, *35*, 100385.

Hilty, J., Worboys, G. L., Keeley, A., Woodley, S., Lausche, B. J., Locke, H., Carr, M., Pulsford, I., Pittock, J., White, J. W., Theobald, D. M., Levine, J., Reuling, M., Watson, J. E. M., Ament, R., & Tabor, G. M. (2020). *Guidelines for conserving connectivity through ecological networks and corridors (No. 30). Best practice protected area guidelines*. IUCN, International Union for Conservation of Nature.

Hiroyasu, E. H. T., Miljanich, C. P., & Anderson, S. E. (2019). Drivers of support: The case of species reintroductions with an ill-informed public. *Human Dimensions of Wildlife*, *24*(5), 401–417. https://doi.org/10.1080/10871209.2019.1622055

Irby, L. R., Zidack, W. E., Johnson, J. B., & Saltiel, J. (1996). Economic damage to forage crops by native ungulates as perceived

by farmers and ranchers in Montana. *Journal of Range Management*, *49*, 375–380.

Jack, B. K., Kousky, C., & Sims, K. R. E. (2008). Designing payments for ecosystem services: Lessons from previous experience with incentive-based mechanisms. *Proceedings of the National Academy of Sciences of the United States of America*, *105*, 9465–9470.

Johnston, R. J., Boyle, K. J., Adamowicz, W., Bennett, J., Brouwer, R., Cameron, T. A., Hanemann, W. M., Hanley, N., Ryan, M., Scarpa, R., & Tourangeau, R. (2017). Contemporary guidance for stated preference studies. *Journal of the Association of Environmental and Resource Economists*, *4*(2), 319–405.

Joppa, L. N., & Pfaff, A. (2009). High and far: Biases in the location of protected areas. *PLoS One*, *4*, e8273.

Kauffman, M. J., Cagnacci, F., Chamaillé-Jammes, S., Hebblewhite, M., Hopcraft, J. G. C., Merkle, J. A., Mueller, T., Mysterud, A., Peters, W., Roettger, C., Steingisser, A., Meacham, J. E., Abera, K., Adamczewski, J., Aikens, E. O., Bartlam-Brooks, H., Bennitt, E., Berger, J., Boyd, C., … Zuther, S. (2021). Mapping out a future for ungulate migrations. *Science*, *372*, 566–569.

Koshmrl, M. (2021). Black, grizzly bears exploit human sloppiness all over Jackson hole. *Jackson Hole News&Guide*.

Kulesza, C., Gramann, J., Le, Y., & Hollenhorst, S. (2012). *Yellowstone National Park visitor study: Summer 2011* (Natural Resource Report No. NPS/NRSS/EQD/NRR-2012/539). National Park Service.

Kulesza, C., Le, Y., & Hollenhorst, S. (2012). *Yellowstone National Park visitor study: Winter 2012* (Natural Resource Report No. NPS/NRSS/EQD/NRR-2012/611). National Park Service.

Loomis, J. B., & Caughlan, L. (2004). *Economic analysis of alternative bison and elk management practices on the National Elk Refuge and Grand Teton National Park: A comparison of visitor and household responses* (Open File Report No. 2004-1305). U. S. Geological Survey.

Maxwell, S. L., Cazalis, V., Dudley, N., Hoffmann, M., Rodrigues, A. S. L., Stolton, S., Visconti, P., Woodley, S., Kingston, N., Lewis, E., Maron, M., Strassburg, B. B. N., Wenger, A., Jonas, H. D., Venter, O., & Watson, J. E. M. (2020). Area-based conservation in the twenty-first century. *Nature*, *586*, 217–227.

McCarthy, D. P., Donald, P. F., Scharlemann, J. P. W., Buchanan, G. M., Balmford, A., Green, J. M. H., Bennun, L. A., Burgess, N. D., Fishpool, L. D. C., Garnett, S. T., Leonard, D. L., Maloney, R. F., Morling, P., Schaefer, H. M., Symes, A., Wiedenfeld, D. A., & Butchart, S. H. M. (2012). Financial costs of meeting global biodiversity conservation targets: Current spending and unmet needs. *Science*, *338*, 946–949.

McKinney, M., Scarlett, L., & Kemmis, D. (2010). *Large landscape conservation: A strategic framework for policy and action* (Policy Focus Report). Lincoln Institute of Land Policy.

Middleton, A. D., Sawyer, H., Merkle, J. A., Kauffman, M. J., Cole, E. K., Dewey, S. R., Gude, J. A., Gustine, D. D., McWhirter, D. E., Proffitt, K. M., & White, P. (2020). Conserving transboundary wildlife migrations: Recent insights from the Greater Yellowstone ecosystem. *Frontiers in Ecology and the Environment*, *18*, 83–91.

Middleton, A. D., Stoellinger, T., Karandikar, H., Leonard, B., Doremus, H., & Kremen, C. (2021). Harnessing visitors' enthusiasm for national parks to fund cooperative large-landscape conservation. *Conservation Science and Practice*, *3*, e335.

Middleton, A., Stoellinger, T., Bennett, D. E., Brammer, T., Gigliotti, L., Flint, H. B., Maher, S., & Leonard, B. (2022). The role of private lands in conserving Yellowston'e wildlife in the twenty-first century. *Wyoming Law Review*, *68*, 237–301.

Montana Legislature. (2021). House Joint Resolution NO. 3.

More, T., & Stevens, T. (2000). Do user fees exclude low-income people from resource-based recreation? *Journal of Leisure Research*, *32*, 341–357.

National Park Service. (2010). Grand Teton National Park visitor study: Summer 2008 (No. 206).

National Park Service. (2019). Yellowstone National Park summer 2018 visitor use surveys.

Neher, C., Duffield, J., & Patterson, D. (2013). Valuation of national park system visitation: The efficient use of count data models, meta-analysis, and secondary visitor survey data. *Environmental Management*, *52*, 683–698.

Nesbitt, H. K., Metcalf, A. L., Metcalf, E. C., Costello, C. M., Roberts, L. L., Lewis, M. S., & Gude, J. A. (2023). Human dimensions of grizzly bear conservation: The social factors underlying satisfaction and coexistence beliefs in Montana, USA. *Conservation Science and Practice*, *5*, e12885.

Newmark, W. D. (1987). A land-bridge Island perspective on mammalian extinctions in western north American parks. *Nature*, *325*, 430–432.

Nyhus, P. J. (2016). Human–wildlife conflict and coexistence. *Annual Review of Environment and Resources*, *41*(1), 143–171. https://doi.org/10.1146/annurev-environ-110615-085634

Richardson, L., & Enriquez, A. J. (2024). Valuing wildlife sightings at the species-wide and individual animal levels: An approach and application to bear viewing in Yellowstone National Park. *Human Dimensions of Wildlife*, *30*, 201–219.

Richardson, L., Rosen, T., Gunther, K., & Schwartz, C. (2014). The economics of roadside bear viewing. *Journal of Environmental Management*, *140*, 102–110.

Schutgens, M. G., Hanson, J. H., Baral, N., & Ale, S. B. (2019). Visitors' willingness to pay for snow leopard conservation in the Annapurna Conservation Area, Nepal. *Oryx*, *53*, 633–642.

Thaler, R. H. (1990). Anomalies: Saving, fungibility, and mental accounts. *Journal of Economic Perspectives*, *4*, 193–205.

van Manen, F. T., Haroldson, M. A., & Karabensh, B. A. (2024). *Yellowstone grizzly bear investigations 2023*. U.S. Geological Survey.

Walls, M. (2022). Economics of the US National Park System: Values, funding, and resource management challenges. *Annual Review of Resource Economics*, *14*(1), 579–596. https://doi.org/10.1146/annurev-resource-111920-021401

Ward, M., Saura, S., Williams, B., Ramírez-Delgado, J. P., Arafeh-Dalmau, N., Allan, J. R., Venter, O., Dubois, G., & Watson, J. E. M. (2020). Just ten percent of the global terrestrial protected area network is structurally connected via intact land. *Nature Communications*, *11*, 4563.

White, P. J., Gunther, K. A., & van Manen, F. T. (Eds.). (2017). *Yellowstone grizzly bears: Ecology and conservation of an icon of wildness*. Yellowstone Forever, Yellowstone National Park, and USGS Northern Rocky Mountain Science Center.

Williams, D. R., Rondinini, C., & Tilman, D. (2022). Global protected areas seem insufficient to safeguard half of the world's

mammals from human-induced extinction. *Proceedings of the National Academy of Sciences of the United States of America*, *119*, e2200118119.

Woodroffe, R., & Ginsberg, J. R. (1998). Edge effects and the extinction of populations inside protected areas. *Science*, *280*, 2126–2128.

Worboys, G., Francis, W. L., & Lockwood, M. (2010). *Connectivity conservation management: A global guide (with particular reference to mountain connectivity conservation)*. Earthscan.

Wyoming Legislature. (2018). HJ0005 - Yellowstone and Grand Teton wildlife conservation fees.

Zou, S., Moran, C., Pitas, N. A., & Stewart, W. (2024). The role of moral philosophy in shaping visitors' fairness perceptions of recreation fees: A case study of Indiana Dunes National Park in the U.S. *Environmental Science & Policy*, *154*, 103682. https://doi.org/10.1016/j.envsci.2024.103682

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Byerly Flint, H., Enriquez, A. J., Bennett, D. E., Richardson, L., & Middleton, A. D. (2025). Tradeoffs and win-wins between large landscape conservation and wildlife viewing in protected areas. *Conservation Science and Practice*, e70051. https://doi.org/10.1111/csp2.70051