

The future of wildlife conservation funding: What options do U.S. college students support?

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Funding information

U.S. Fish and Wildlife Service Multistate Conservation, Grant/Award Numbers: F19AP00094, F18AP00171

Abstract

Insufficient funding is a major impediment to conservation efforts around the world. In the United States, a decline in hunting participation threatens sustainability of the “user-pay, public benefit” model that has supported wildlife conservation for nearly 100 years, forcing wildlife management agencies to contemplate alternative funding strategies. We investigated support for potential funding options among diverse college students, a rapidly expanding and politically active voting bloc with a potentially powerful influence on the future of conservation. From 2018 to 2020, we surveyed 17,203 undergraduate students at public universities across 22 states. Students preferred innovative approaches to conservation funding, with 72% supporting funding derived from industry sources (e.g., natural resource extraction companies), 63% supporting state sources (e.g., general sales tax), and 43% supporting conventional user-based sources such as license fees and excise taxes associated with outdoor recreation activities (e.g., hunting). Findings emphasize the need to broaden the base of support for conservation funding and highlight the importance of considering the preferences and perspectives of young adults and other diverse beneficiaries of wildlife conservation.

KEYWORDS

angling, college students, conservation policy, funding, hunting, public support, wildlife management

1 | INTRODUCTION

Inadequate wildlife conservation funding is a threat to global biodiversity (Echols, Front, & Cummins, 2019; Waldron et al., 2013) exacerbated by modernization and socio-demographic changes that alter conservation priorities and challenge the efficacy of conventional funding mechanisms (Manfredo, Teel, Berl, Bruskotter, & Kitayama, 2020). Cultural shifts in conservation values are particularly conspicuous in the United States (Manfredo, Teel, Berl, Bruskotter, & Kitayama, 2020), where a unique “user-pay, public benefits” approach fueled by contributions from hunters and anglers has effectively supported conservation efforts for nearly 100 years (USDOI, 2020). Since the 1930s, excise taxes generated from hunting (Pittman-Robertson Act of 1937) and fishing equipment sales (Dingell-Johnson Act of

1950), combined with the Federal Duck Stamp and hunting and fishing license purchases, generate billions of dollars annually to support wildlife management and habitat conservation efforts. Overall, these funding sources comprise approximately 60–80% of revenue for state fish and wildlife agencies in the U.S. (AFWA & AZGFD, 2017; USDOI, 2020). These efforts have solidified hunting and fishing as pillars of the North American Model of conservation (Mahoney & Jackson, Mahoney & Jackson III, 2013).

The sustainability of this funding model is threatened by the decline of hunting participation in the United States (Duda, Beppler, Austen, & Organ, 2021). Since the 1980s, the U.S. hunting population has dropped by approximately 2 million participants (USFWS, 2020), and the number of active hunters has declined by approximately 30% (USFWS, 2018). The decline is particularly

sharp among young adults born after 1980 (Enck, Decker, & Brown, 2000; Winkler & Warnke, 2013). Waning participation has been attributed to factors including urbanization, structural shifts in demographics (e.g., aging, increasing racial/ethnic diversity), land ownership changes that impact hunting access, negative media coverage, and competing demands for time and money (Larson, Stedman, Decker, Siemer, & Baumer, 2014; Peterson, Hansen, Peterson, & Peterson, 2011; Poudyal, Cho, & Bowker, 2008). Financial impacts associated with the decline of hunting have been partially offset by a recent surge in shooting sports participation and associated excise tax revenue (Duda et al., 2021). In 2015, nearly 80% of all taxable firearm and ammunition sales in the U.S. were for nonhunting purposes (Southwick Associates, 2019). Some studies also suggest the disproportionate contributions of hunters and anglers to wildlife conservation may be overestimated when assessments consider financial contributions to environmental NGOs (nongovernmental organizations) and public tax dollars supporting federal land management (Peterson & Nelson, 2017; Smith & Molde, 2015). Nevertheless, most experts agree that, in the absence of viable funding alternatives, diminishing numbers of hunters will ultimately affect wildlife agencies' capacity to achieve management goals and engage in critical conservation activities (Duda et al., 2021; Larson et al., 2014).

In addition to declines in hunting participation, social and cultural shifts such as rising urbanization and increasing education levels are reshaping American's wildlife value orientations and the broader conservation landscape (Manfredo, Teel, Berl, Bruskotter, & Kitayama, 2020; Manfredo, Teel, Don Carlos, et al., 2020). The American public is increasingly embracing mutualistic value orientations that view humans and wildlife as equals and emphasize harmonious coexistence (Manfredo, Teel, Don Carlos, et al., 2020). Mutualistic values may strengthen support for wildlife conservation, but they often conflict with utilitarian values that prioritize humans over wildlife and conservation funding systems that revolve around hunting and fishing (Manfredo, Teel, Don Carlos, et al., 2020; Serfass, Brooks, & Bruskotter, 2018). Due to declines in utilitarian values and activities (e.g., hunting) and concurrent increases in mutualistic values and activities (e.g., wildlife watching, USFWS, 2020), stakeholders and leaders are increasingly calling for wildlife agencies and other conservation organizations to identify and engage with broader and more diverse constituencies (AFWA & WMI, 2019; Echols et al., 2019; Martin et al., 2016).

As social change progresses, wildlife agencies are asking an urgent question: from where will future conservation funding come? In 2016, the Association of Fish and Wildlife Agencies (AFWA) convened a Blue Ribbon Panel of government, nongovernmental, and industry

experts to investigate potential answers. The Panel's report highlighted one possible approach modeled after the Land and Water Conservation Fund (LWCF): funding conservation by utilizing existing revenue from the development of energy and mineral resources on federal lands (AFWA, 2016). Other conservation funding options include general sales taxes, transfer taxes, lottery funds, vehicle license plate sales, nonconsumptive recreation user fees, and outdoor equipment sales taxes (McKinney, Ris, Rorer, & Williams, 2005; Outdoor Industry Association, 2017). A recent national study found moderate to strong support for most of these potential funding options (Kellert et al., 2017). Some of these strategies have already been implemented successfully, yielding high levels of approval in certain U.S. states (Dalrymple et al., 2012). However, many state legislatures and wildlife agencies may be reluctant to explore or accept changes to conventional funding mechanisms, often due to political and cultural constraints (AFWA & WMI, 2019; Jacobson, Decker, & Carpenter, 2007).

Although systemic change to conservation funding mechanisms has been slow, additional input from a diversifying constituent base could expedite this process (Echols et al., 2019). More than any other population segment, young adults are poised to challenge the conservation status quo. This age cohort, widely dubbed "post-millennials" or Gen Z, is more culturally diverse than previous generations (Fry & Parker, 2018), better educated (Taylor & The Pew Research Center, 2015), and more likely to embrace mutualistic wildlife value orientations (Manfredo, Teel, Berl, et al., 2020). Although young adults have historically voted at lower rates than other age groups (Leighley & Nagler, 2013), they are quickly becoming the largest generation in the U.S. electorate (surpassing Baby Boomers) and have emerged as an increasingly influential block of voters and future decision makers (Taylor & The Pew Research Center, 2015; Thomas, Gismondi, Gautam, & Brinkler, 2019). Gen Zers are politically active, environmentally conscious, and eager to catalyze social change (Rue, 2018; Su, Tsai, Chen, & Lv, 2019). These assets and attributes are even more pronounced among the 40% of young adults, or nearly 20 million students, who choose to attend college in the U.S. (NCES, 2019). Levels of civic engagement are particularly high among contemporary college students (Ballard, Ni, & Brocato, 2020). For instance, the voting rate of undergraduate students has more than doubled in the past decade (Thomas et al., 2019). When students engage with policy issues during their college years, it can lead to more habitual and sustained political participation later in life (Plutzer, 2002). In short, current college students represent a diverse demographic group who may ultimately chart the

course of conservation in the coming decades. Yet, despite their critical influence on the future of wildlife conservation, it is not yet clear what funding options college students would support or what socio-demographic factors might influence those preferences. Our study sought to answer these questions.

2 | METHODS

2.1 | Data collection

From 2018 to 2020, we conducted a web-based survey of undergraduate students at 22 public universities across the U.S. (Figure S1 and Table S1). At each institution, we worked with administrators to send a questionnaire link via Qualtrics to a random sample of undergraduate students (typically 5000, but the sample frame ranged from 3000 to 16,000; Table S2). Only students who were randomly selected to receive the survey invitation were eligible to participate. In two cases where a university-wide random sample was not possible, we worked with colleges within the university to obtain a diverse sample of participants across a variety of majors. We included two email contacts at approximately weekly intervals, followed by a shorter survey of nonrespondents (featuring a subset of identical items) to check for nonresponse bias. The survey process involving human subjects was approved by the North Carolina State University Institutional Review Board (Protocol #12676).

2.2 | Survey instrument

Most items in our questionnaire focused on beliefs and behaviors related to hunting and fishing, but some also asked about attitudes toward conservation funding. For a full list of survey items used in this analysis, see supplemental Figure S2. To explore support for different funding options, we asked, “Would you oppose or support the following potential strategies to help fund wildlife conservation in the future?” We listed nine potential funding sources for rating on a scale from (−2) strongly oppose to (+2) strongly support. Potential funding sources were drawn from a list of current and prospective conservation funding mechanisms utilized across the U.S. (McKinney et al., 2005; Outdoor Industry Association, 2017), including sources (e.g., charges on oil and gas development, public taxes, hunting and fishing license and equipment fees) that have been the focus of previous national surveys (Kellert et al., 2017; Manfredo et al., 2018).

We also investigated potential socio-demographic correlates of support for conservation funding, including gender identity, race and ethnicity, college major, and population size of the area where a participant grew up (rural to urban, Table 1). These factors help to shape social and cultural identities, which are typically strong correlates of beliefs and attitudes related to wildlife conservation (van Eeden et al., 2020). For example, education and urbanization have been linked to mutualistic wildlife value orientations (Manfredo, Teel, Don Carlos, et al., 2020), and particularly strong support for conservation funding has been reported by young adults and higher-income adults (Dalrymple et al., 2012; Kellert et al., 2017), as well as Hispanics and urban residents (Kellert et al., 2017). Because urban–rural conflicts in support for conservation often manifest as cultural and political differences across U.S. regions (Manfredo, Teel, Sullivan, & Dietsch, 2017), we also recorded the geographic location of each university: Northeast (NE), Southeast (SE), Midwest (MW), and West (W). Additionally, due to established links between recreation activities and pro-conservation behavior (Larson, Cooper, Stedman, Decker, & Gagnon, 2018), we measured respondents' participation in six outdoor recreation activities during the past 12 months (hunting, fishing, birding, camping, hiking, wildlife watching) with an index that summed scores and ranged from 0 (no participation) to 6 (high participation).

2.3 | Analysis

Prior to analysis, we removed responses from individuals who were not undergraduate students within the 18–34 year age range and individuals who skipped relevant questions. This resulted in removal of 13% of all questionnaires that were started. We used principal components analysis (PCA) with an orthogonal rotation to reduce multiple funding options into larger categories, and Cronbach's alpha to assess measurement reliability of these categories (Vaske, 2019). To adjust for potential sampling bias, we followed suggestions from Vaske (2019) to conduct poststratification weighting based on enrollment and student demographic data (NCES, 2019). Normalized multiplicative weights were developed for each case (respondent) based on school enrollment, gender identity, and race and ethnicity (Table S2).

We examined weighted mean estimates and frequencies to describe response patterns. We then fit binary logistic regression models to investigate the relative influence of socio-demographic factors on support for conservation funding alternatives (scale $M > 1.0 = 1$ or

TABLE 1 Unweighted and weighted demographic attribute frequencies within college student sample across 22 U.S. states ($n = 17,203$)

Variable	Unweighted categories ^a	Weighted categories ^b
Gender	56.6% female	53.3% female or not listed
	42.7% male	46.7% male
	0.7% not listed	
Race/ethnicity	75.2% White	64.8% White
	9.1% Hispanic/Latino	12.7% Hispanic/Latino
	3.0% Black/African American	4.1% Black/African American
	8.6% Asian	12.6% Asian
	1.2% American Indian	1.7% American Indian
	2.6% other/multiracial	3.6% other/multiracial
Childhood location	23.2% large city (250 k+)	24.8% large city (250 k+)
	27.9% medium city (50–250 k)	28.5% medium city (50–250 k)
	26.5% small city (10–50 k)	25.0% small city (10–50 k)
	17.7% small town or rural area	16.9% small town or rural area
	4.7% other	4.9% other
U.S. region	13.3% NE	16.1% NE
	31.6% SE	33.6% SE
	33.0% MW	26.9% MW
	22.1% W	23.4% W
College major	20.0% Ag & Natural Resources	20.0% Ag & Natural Resources
	20.2% Science & Math	22.1% Science & Math
	21.6% Engineering & Technology	22.1% Engineering & Technology
	13.0% Business & Economics	13.2% Business & Economics
	18.5% Social Science & Humanities	18.2% Social Science & Humanities
	4.3% arts	4.5% arts/other
	0.3% other	
Outdoor Rec score ^c	$M = 2.85, SD = 1.74$	$M = 2.70, SD = 1.80$
	25.4% one activity or less	29.5% one activity or less
	20.4% five activities or more	19.2% five activities or more

^aUnweighted categories display response options that appeared on the survey instrument.

^bWeighted categories display demographic breakdown after applying normalized weights that account for gender, race, and university. In many cases, categorical variables were re-coded into larger categories to simplify analysis and interpretation.

^cOutdoor Rec score represents the sum of annual participation in six nature-based recreation activities (hunting, fishing, birding, camping, hiking, and wildlife watching). A score of six means a person participated in all six activities during past year. Zero means they participated in zero activities. Both means (M), standard deviation (SD), and binary groupings are presented for this variable.

support, $M \leq 1.0 = 0$ or neutral or oppose) and ran three separate models for each funding category. We assessed model fit using χ^2 goodness-of-fit tests and Nagelkerke pseudo- R^2 . We assessed the significance of specific demographic variables in the models using parameter coefficients and odds ratios (OR). To examine the sensitivity of our analysis, we tested both weighted and unweighted models and found no significant differences. We therefore reported unweighted results.

3 | RESULTS

3.1 | Sample description

Our response rate was 14.2% (ranging from 6.1% to 31.5% among universities). Though low, this number is comparable to response rates recorded in other recent conservation social science research (Stedman, Connelly, Heberlein, Decker, & Allred, 2019). Overall, the survey

yielded a total sample size of 17,203 across all institutions (see Table S2). After weighting, the sample included 65% of respondents identifying themselves as white, 47% as male, 47% from rural hometowns or cities smaller than 50,000 residents, and 17% majoring in subjects related to agriculture or natural resources (Table 1). These ratios align relatively well with the national averages of students at public universities across the country (U.S. Census Bureau, 2018).

To check nonresponse bias, we also collected 6,585 shorter questionnaires from students who did not respond to the initial invitations. We found only minor differences between the demographic attributes of full questionnaire respondents and nonrespondents; the latter group was slightly more likely to be male (+3.6%) and less likely to be natural resource majors (-6.7%). However, all effect sizes were small (Cramer's $V < 0.10$), enabling us to conclude that response bias related to demographic attributes was minimal.

3.2 | Support for future conservation funding strategies

A majority of respondents strongly or very strongly supported eight of the nine potential future conservation funding options presented in the questionnaire (Figure 1). We observed the strongest support for resource extraction companies contributing revenue to conservation, followed by a staple of the current system: license fees from fishing and hunting. Students reported moderate support for state-based funding mechanisms such as lottery proceeds, dedicated sales tax, and state and local conservation bonds, and weakest support for

taxes/fees associated with outdoor recreation activities not linked to fishing and hunting (Figure 1).

PCA demonstrated three key categories of funding options (Table S3): industry-supported sources that included natural resource extraction companies or outdoor recreation outfitters contributing revenue to conservation (72% support, $M = 1.09$); state funding sources that included general sales taxes, lottery proceeds, or state and local bonds (63% support, $M = 0.96$); and user-based sources such as licenses and excise taxes on hunting, fishing, and other outdoor recreation activities (43% support, $M = 0.65$; Figure 2).

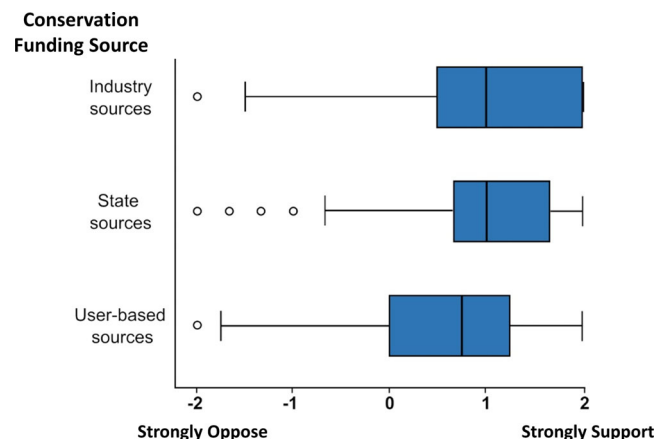


FIGURE 2 College students' support for three different categories of wildlife conservation funding across 22 U.S. states: industry funding sources (two items), state funding sources (three items), and user-based sources such as licenses and excise taxes (four items). Boxplot depicts weighted means for items in each funding category (adjusted $n = 14,957$)

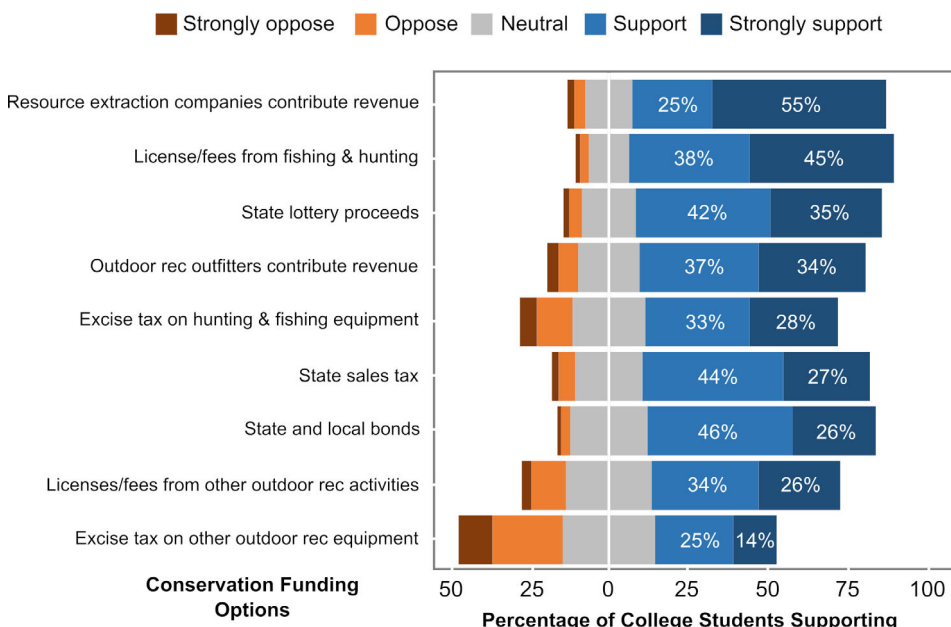


FIGURE 1 Support for different wildlife conservation funding options among college students across 22 U.S. states ($n = 17,203$). * Note: Figure 1 should be used for the graphical table of contents

TABLE 2 Parameter estimates (B) and odds ratios (OR) in logistic regression models showing demographic correlates of support for different categories of wildlife conservation funding strategies (industry funding sources, state funding sources, and user-based sources such as licenses and excise taxes) among college students across 22 U.S. states

Unweighted ratio of population supporting funding option	Industry sources ^a		State sources ^b		User-based sources ^c	
	B	OR	B	OR	B	OR
Gender (male)	−0.305	0.737***	0.120	1.128**	−0.296	0.744***
Race (Hispanic) ^d	0.087	1.091	−0.024	0.976	0.112	1.119
Race (Black) ^d	−0.012	0.988	−0.284	0.753**	0.035	1.035
Race (Asian) ^d	−0.311	0.733***	−0.199	0.819**	−0.111	0.895
Race (Amer. Indian) ^d	0.115	1.121	0.031	1.031	−0.001	0.999
Race (other) ^d	−0.226	0.798*	−0.108	0.897	−0.044	0.957
Childhood (Mod. City) ^e	−0.040	0.961	−0.044	0.957	−0.055	0.947
Childhood (Small City) ^e	−0.001	0.999	−0.028	0.973	−0.091	0.913
Childhood (rural) ^e	0.037	1.038	−0.033	0.968	−0.240	0.787***
Childhood (other) ^e	−0.160	0.852	−0.135	0.874	−0.011	0.989
Region (southeast) ^f	0.133	1.142*	−0.025	0.975	0.043	1.044
Region (Midwest) ^f	0.002	1.002	−0.156	0.856**	0.055	1.056
Region (west) ^f	−0.205	0.815**	−0.122	0.885*	−0.189	0.827**
Major (Science & Math) ^g	−0.331	0.718***	−0.417	0.659***	−0.412	0.662***
Major (Engineer. & Tech) ^g	−0.410	0.663***	−0.517	0.596***	−0.514	0.598***
Major (Business & Econ) ^g	−0.664	0.515***	−0.694	0.499***	−0.526	0.591***
Major (social science) ^g	−0.225	0.842	−0.376	0.687***	−0.317	0.729***
Major (other) ^g	−0.172	0.638***	−0.366	0.693***	−0.449	0.638***
Outdoor rec score	0.123	1.131***	0.144	1.155***	0.050	1.052***

Note: *, **, *** denote statistically significant Odds Ratio (OR) at $\alpha = 0.05$, 0.01, and 0.001, respectively.

^aIndustry sources include natural resource extraction and outdoor recreation product companies contributing revenue to conservation; Model Fit (Industry):

$\chi^2(19) = 456.74$, $p < .001$; Nagelkerke $R^2 = 0.043$ ($n = 15,198$).

^bState sources include sales taxes, lottery proceeds, and state and local bonds; Model Fit (State): $\chi^2(19) = 450.55$, $p < .001$; Nagelkerke $R^2 = 0.040$ ($n = 15,208$).

^cUser-based sources include license/fees and special excises taxes associated with hunting, fishing, or other types of outdoor recreation; Model Fit (Users):

$\chi^2(19) = 303.81$, $p < .001$; Nagelkerke $R^2 = 0.027$ ($n = 15,209$).

^dReference category for race/ethnicity = White.

^eReference category for childhood location = Large City.

^fReference category for region = Northeast (NE).

^gReference category for major = Agriculture & Natural Resources.

The logistic regression modeling showed that demographic differences in funding support were minimal (Table 2). Although response frequencies varied, each demographic subgroup reported the same ranked prioritization of the three categories of funding sources (Table S4). Agriculture and natural resource majors and outdoor enthusiasts were most likely to support all funding options (Table 2). Male students were most likely to oppose industry- and user-based funding mechanisms, but were more likely to support state sources. Asian students were less likely to support industry and state sources, and Black students were less likely to support state sources (Table 2). Students from rural backgrounds

were less likely to support user-based funding sources than students from urban backgrounds. Responses also varied to some degree across U.S. regions, with students at universities in the West most likely to oppose all conservation funding options (Table 2). However, fit statistics for all models (Nagelkerke $R^2 < 0.043$) suggested none of the demographic characteristics we tested were powerful predictors of support for conservation funding, and overall levels of support were similar across categories (Table S4). Regardless of demographic backgrounds, a majority of college students supported multiple conservation funding options, particularly those that rely on industry- and state-based sources of revenue.

4 | DISCUSSION

Results suggest that contemporary college students, the civic and political leaders of the future, are willing to support a diverse portfolio of conservation funding strategies. Results also reify concerns regarding the sustainability of conservation funding approaches that rely heavily on hunters and anglers and exclude other groups (AFWA, 2016; AFWA & WMI, 2019; Duda et al., 2021; Serfass et al., 2018). Our findings could help practitioners and policy makers develop an innovative and broader suite of conservation funding options that are likely to appeal to current and future generations.

According to college students, the most acceptable funding option was requiring natural resource (e.g., oil, coal, natural gas) extraction companies to contribute revenue toward conservation. This strategy, a key recommendation of the Blue Ribbon Panel (AFWA, 2016) and a potential funding source specified in the original version of the Recovering America's Wildlife Act (2019), appears to be one that most young adults in college would strongly support. National surveys of older adults reveal similar approval of funding based on fines for environmental polluting or charges levied on oil and gas production (Kellert et al., 2017). Although these approaches have been criticized because they might establish links between natural resource degradation and conservation, the longstanding effectiveness of programs such as LWCF demonstrate their potential value (Echols et al., 2019). If an industry-based funding model were extended to include revenue generated from other companies, such as nonconsumptive outdoor recreation outfitters, it appears that college students would also support it.

Dedicated state funding for conservation was also acceptable to a majority of college students. Examples of these innovative strategies, which range from state sales taxes to lottery proceeds, already exist in multiple U.S. states (McKinney et al., 2005; Outdoor Industry Association, 2017) and often earn public support (Dalrymple et al., 2012; Kellert et al., 2017). However, support for state sales taxes, in particular, is more uncertain for older adult populations (Dalrymple et al., 2012; Kellert et al., 2017). Often due to political and structural constraints, state legislatures and wildlife agencies have been slow to alter the status quo and embrace new strategies (Jacobson et al., 2007). Our results suggest the strong preferences of young adults could help to catalyze cultural shifts that open novel avenues for state-based conservation funding sources.

We observed weaker support for more conventional, user-based conservation funding models—the same approaches that form the foundation of the current funding model in the U.S. Although many students

approved of funding derived from hunting and fishing license sales, they were less likely to embrace excise taxes and expressed stronger resistance to licenses and taxes levied on alternative outdoor recreation activities. Opposition to a “backpack tax” has permeated the outdoor recreation industry since the demise of the Teaming with Wildlife Act (2008), which sought to extend excise taxes to nonconsumptive recreation products (Outdoor Industry Association, 2017). Like previous research (Naderi & Van Steenburg, 2018), our study suggests that although many college students want more funding for conservation, they may be less inclined to support pro-environmental causes when they perceive tangible financial costs to themselves or their lifestyles. College students' relative lack of support for user-pay approaches contrasts with previous studies of older adults who often favor user-pay models (Dalrymple et al., 2012). Roots of this difference are unclear and may stem from generational wealth gaps or differences in how equitable access to environmental amenities is valued. Irrespective of the mechanisms involved, these differences underscore the need to develop innovative conservation funding strategies that young adults would support. Without the backing of Gen Zers, the precarious plight of conservation funding may be in further jeopardy (Duda et al., 2021).

Socio-demographic differences in funding support were minor, suggesting that prominent polarization dividing American society (Wilson, Parker, & Feinberg, 2020) and influencing support for environmental protection (McCright, Xiao, & Dunlap, 2014) may be less intense when it comes to wildlife conservation. For example, we found comparable levels of funding support across the rural to urban gradient, partially assuaging concerns that an “extinction of experience” linked to urbanization might negatively impact environmental concern and pro-environmental behavior (Gaston & Soga, 2020). We also discovered strong links between outdoor recreation and funding support, showing that regular exposure to nature and natural landscapes fosters positive conservation outcomes among both rural and urban students (Larson et al., 2018). Differences in support based on race and ethnicity were minimal, reinforcing research showing that environmentalism is not an inherently white phenomenon (Lazri & Konisky, 2019). Findings ultimately suggest that consensus about conservation funding exists across diverse populations of young adults, offering common ground for productive engagement that has been observed in other conservation contexts (Sandbrook, Fisher, Holmes, Luque-Lora, & Keane, 2019).

Despite substantial support for conservation funding throughout our comprehensive sample of U.S. college students, a few notable demographic differences

emerged. For instance, certain subgroups of students, such as males from rural backgrounds, were particularly averse to user-based funding sources such as excise taxes. This could stem from sociocultural and political forces that were not measured directly here (Manfredo, Teel, Don Carlos, et al., 2020). For example, Manfredo et al. (2017) describe how efforts to adopt more inclusive conservation governance models have fueled intense backlash and distrust among traditional stakeholder groups (e.g., hunters). Cultural differences might also explain regional disparities we observed in support for conservation, emphasizing the need to account for local context when developing socially acceptable conservation funding strategies.

Future research could address several limitations of this study. Our sample did not represent students at all types of institutions (e.g., private schools, smaller public schools) or young adults not attending college, though our sample demographics mirror those of U.S. college students and younger subsets of the American electorate in many ways (U.S. Census Bureau, 2018). Moreover, studies could incorporate a wider variety of conservation funding options, including strategies that affect wildlife conservation outcomes beyond the state level and explicitly consider both game and nongame species (Dalrymple et al., 2012). Future research could also explore young adults' support for innovative conservation funding options at a global scale, helping to assist other countries facing destabilized funding models to protect critical habitat and limit biodiversity declines around the world (Waldron et al., 2013). Current college students constitute a demographically diverse and politically influential segment of the public that will help to lead future conservation policy in the U.S. and abroad (Plutzer, 2002; Taylor & The Pew Research Group, 2015). Expanding antiquated approaches to conservation funding and decision-making requires engagement with younger audiences (Anderson & Loomis, 2006; Martin et al., 2016). Documenting and responding to the perspectives and preferences of diverse college students, all of whom represent beneficiaries in wildlife management (Decker et al., 2019), is a key step in that process.

5 | CONCLUSION

Findings suggest that most college students across the U.S. are in support of changes to conventional wildlife conservation funding mechanisms. Although hunting and fishing-related revenue will surely remain a major source of conservation funding in the U.S., this study highlights the importance of diversifying the base of support for conservation to enhance financial sustainability (Jacobson, Organ, Decker, Batcheller, & Carpenter, 2010).

New legislation that aims to expand conservation funding options (e.g., RAWA, 2020) could help to accomplish this goal and will likely appeal to young adults. The imminent conservation funding crisis may be daunting (Duda et al., 2021; Echols et al., 2019), but our research illuminates unique opportunities to adapt traditional tactics and create contemporary, inclusive solutions rooted in multi-stakeholder engagement (involving different types of recreationists) and inter-sector collaborations (involving industry, government, NGOs, and the public). Younger generations across the U.S. appear poised and eager to support innovative funding alternatives for wildlife conservation if state agencies and policy makers choose to pursue these strategies.

ACKNOWLEDGMENTS

This research was funded by the U.S. Fish and Wildlife Service's Multistate Conservation Grant Program (grant #F18AP00171 and #F19AP00094), which is jointly managed by the Association of Fish and Wildlife Agencies and the Service's Wildlife and Sport Fish Restoration Program. The authors would like to thank all of the collaborators at universities and state agencies around the United States who assisted with questionnaire design, implementation, data management, and analysis (see Table S1 for full list of collaborators), as well as all of the students who took the time to participate in our survey.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

AUTHOR CONTRIBUTIONS

Lincoln R. Larson, M. Nils Peterson, and Kangjae Jerry Lee, were the principal investigators of the study and oversaw conceptualization of the study, funding acquisition, and research design. All authors worked to collect data within their respective institutions/states. Richard von Furstenberg, Victoria R. Vayer, and Daniel Y. Choi assisted the principal investigators with data integration and analysis, including development of tables and figures. Lincoln R. Larson led the writing of the original draft, with contributions from many other research team members. All authors reviewed and edited the article and approved the submitted version.

ETHICS STATEMENT

Our study protocol was approved by the North Carolina State University Institutional Review Board (Protocol #12676) prior to data collection.

DATA AVAILABILITY STATEMENT

Data used in this study are publicly available at <https://doi.org/10.5061/dryad.dz08kprx8>.

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SUPPORTING INFORMATION

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

How to cite this article: Larson, L. R., Peterson, M. N., Furstenberg, R. V., Vayer, V. R., Lee, K. J., Choi, D. Y., Stevenson, K., Ahlers, A. A., Anhalt-Depies, C., Bethke, T., T. Bruskotter, J., Chizinski, C. J., Clark, B., Dayer, A. A., Dunning, K. H., Ghasemi, B., Gigliotti, L., Graefe, A., Irwin, K., ... Woosnam, K. M. (2021). The future of wildlife conservation funding: What options do U.S. college students support? *Conservation Science and Practice*, e505. <https://doi.org/10.1111/csp2.505>