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Including Rural America in academic conservation science

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1 Introduction

Academia, including academic conservation science, is making historic strides on diversity, equity, inclusion, and justice (DEIJ). In recent years, there have been powerful calls for promoting diversity and inclusivity in conservation science (e.g. Schell et al., 2020; Rudd et al., 2021). These calls have been accompanied by concrete signs of progress through reimagined postures and decolonial actions (Trisos et al., 2021): decolonizing the mind (e.g. through frameworks for ethical community research partnerships; Wilmer et al., 2021), knowing histories (e.g. recognizing Indigenous attachments to lands; Huntington, 2021), increasing access to scientific resources (e.g. by publishing open access; Veríssimo et al., 2020), amplifying diverse expertise (e.g. through prioritizing DEIJ in faculty hires; Cronin et al., 2021), and working in diverse teams (e.g. by including social science in conservation; Bennett et al., 2016). These and other efforts have helped generate momentum for an increasingly expanded view of DEIJ in conservation. In the U.S. context, rural attitudes and values—broadly speaking—have received relatively little research attention in the conservation literature, presenting an opportunity for more intentional inclusion of rural communities in conservation (Bonnie et al., 2020). In this paper, we propose that more fully including rural U.S. constituents and engaging with rural values can improve conservation outcomes while also adding new dimensions to ongoing DEIJ efforts in academic conservation science.

What is — and who are — considered "rural"? Characterizing rurality is elusive (Bennett et al., 2019). Defining rurality in the United States might include definitions based on "metro" or "non-metro" counties (U.S. Department of Agriculture, 2013), as well as factors spanning economic status, demographics, social networks, and acquaintanceship

factors (Donnermeyer et al., 2015). In this paper, our intention is not to isolate a particular definition of rurality, but to broadly consider the people in non-metropolitan areas (U.S. Department of Agriculture, 2013) in the United States who have been, in many cases, disenfranchised from the science and process of conservation decision-making (e.g. Meltz, 1994; Gilio-Whitaker, 2019; Russell et al., 2021).

Why is rurality important to consider in conservation DEIJ discussions? A major reason is that rural communities in the United States have long experienced social and environmental injustices (e.g. Johnson, 1998; Merchant, 2003). For Black and Indigenous communities in the United States, rural experiences in fields, reservations, wilderness, or other rural areas have been linked to murders, brutality, cultural genocide, forced removal from homelands, reduced access to natural resources, rights and legal violations, slavery, and a number of other injustices (Gates, 2011; Madley, 2017; Gilio-Whitaker, 2019; Bray, 2020). For rural communities of color, historical legacies of racial injustice are compounded by injustices tied to rurality more generally, such as poverty and isolation (Davis et al., 2020a). In considering issues of justice, then, it is important to remember that distinct Rural Americas descend from distinct rural histories.

Additionally, rural communities in the U.S. experience disparities in health, education, and income (Hartley, 2004; Gabe et al., 2007; Burdick-Will and Logan, 2017). For example, many students in Rural America experience limited funding, limited access to technology, histories of racial segregation, and barriers to opportunity and cultural resources (Davis et al., 2020b). Rural students are less likely than non-rural students to attend college, four-year institutions, selective schools, and universities that confer graduate degrees (Koricich et al., 2018). An important antidote to these injustices is representation, e.g. Black school teachers in rural areas helping guide Black students (Davis et al., 2020a). In conservation, increased rural representation and inclusion could also help ease tensions between rural constituents and conservation entities in the United States that have existed for decades (Yung et al., 2003; Robbins, 2006; Messick et al., 2021).

While there have been many conservation victories and fruitful collaborations between conservation and local stakeholders in the U.S. West (e.g. Western Landowners Alliance, 2023; USDA, 2023), the West has also been a famous arena of decades-old contestations of values between them. For example, for some private landowners in the Western U.S., the Endangered Species Act of 1973 became a mechanism limiting agency over their own lands (Meltz, 1994), and a salient symbol of federal government overreach. Differing values have led to strain over environmental issues between rural, place-based ranchers and conservation advocates (Yung et al., 2003), e.g. as seen recently in controversy over a public ballot on the reintroduction of wolves to Colorado (Niemiec et al., 2022). In coalition-building that has been attempted in the U.S. West, some coalitions have bridged differences in environmental values, while others—strikingly—have not, despite highly similar views on environmental policy (Robbins, 2006).

In addition to arguments based on justice, rural inclusion in academic conservation science also provides fresh values and perspectives. For example, Indigenous land stewardship is deeply tied to rural areas and is critical for equitable energy transitions (Eisenberg and Warner, 2021) and wildlife management (Hessami et al., 2021). Inclusion of rural values also offers potential for reframing intractable policy conversations. For example, Diamond et al. (2021) reported that 78% of rural midwestern respondents found a climate policy argument convincing when it was framed in terms of benefits to farmer livelihoods. Inclusion of rural values also offers new opportunities for diverse conservation teams. Diverse teams are important for creativity, both generally (Paulus et al., 2017) and in conservation specifically (Gould et al., 2017).

A more intentional inclusion of rural U.S. communities in academic conservation science can help, alongside other values, promote justice for excluded rural communities and diversify perspectives in conservation (McInturff et al., 2021). Toward this goal, we highlight three pathways for rural inclusivity in academic conservation science: (i) emphasizing knowledge co-production through partnerships that resonate with rural lifestyles and values; (ii) proactively recruiting and training rural students in conservation science degree programs; and (iii) reshaping academic advancement criteria to incentivize rural engagement.

2 Emphasizing knowledge co-production and partnerships that resonate with rural lifestyles and values

As has been shown again and again, trust-building between scientists and local communities is facilitated by genuine academic-community partnerships (e.g. Adams et al., 2014; Volski et al., 2021). Face-to-face engagement allows an irreplaceable cultural cache to be built between researchers and stakeholders, and helps researchers develop a more intimate knowledge of the socio-cultural realities of a study context or constituency (Roux et al., 2006; Mishra et al., 2017). For example, the Western Landowners Alliance provides structure and facilitates networks for ecologically and economically sustainable conservation solutions across the U.S. West; the alliance hosts in-person and virtual events that bring together landowners, government representatives, and university scientists (Western Landowners Alliance, 2023). At present, much of the bridging work between conservation and rural partners is carried out very capably by NGOs, government agencies, extension professionals, and individual academics. Existing workshops, Tribal partnerships, demonstrations, stakeholder meetings, capacity building, and many other forms of outreach by these entities are critical and should not be replaced. However, there is a powerful opportunity for academics to more fully complement these efforts by working with locals to collaboratively identify, research, and implement locally-relevant conservation solutions (Figure 1). Indeed, Bonnie et al. (2020) found that, for a pool of rural voter respondents, university scientists and biologists were among the most trusted sources of information on conservation and environmental issues.

Collaborations between academics and local communities provide opportunities for researchers to learn about the priorities

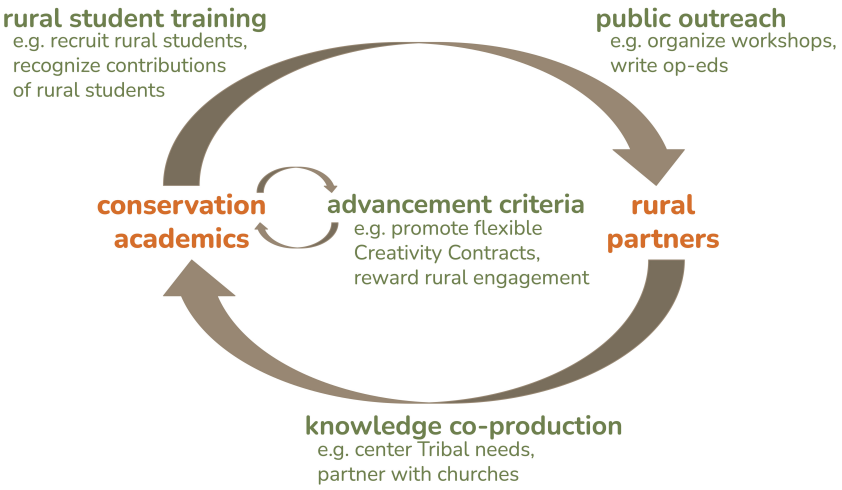

FIGURE 1
Potential pathways for greater inclusion of Rural America in academic conservation science: emphasizing knowledge co-production and partnerships that resonate with rural lifestyles and values, recruiting and training rural students in conservation science degree programs, and reshaping academic advancement criteria to promote rural engagement (e.g. public outreach).

of rural communities while supporting local initiatives and leadership (Smith et al., 2009; Rodrigues and Shepherd, 2022). Rural stakeholders are important partners who tend to bear disproportionate burdens on the front lines of environmental issues, such as climate change-related natural disasters (Lal et al., 2011) and large carnivore reintroductions (McInturff et al., 2021). Rural community members are also critically important stewards of U.S. landscapes, as Tribal representatives, farmers, ranchers, hunters, and conservation managers. Over time, academic-rural partnerships may extend beyond pragmatic partnerships to reform the value orientations, skills, and knowledge sets of all parties. Moreover, environmental policy ideas that incorporate local values and livelihoods can find support among rural stakeholders (Diamond et al., 2021). Other possible avenues for renewed academic-public partnerships could include building trust with religious communities, something for which religious scientists are well-positioned (Hanes, 2014). As part of this effort, thoughtful alignment of climate communication with religious language and values can help foster a bipartisan agenda (Wardekker et al., 2009).

3 Recruiting and training rural students in conservation science degree programs

Recruiting rural students is a promising pathway for strengthened relationships between rural and university communities (Figure 1). Rural students are not as likely as non-rural students to attend college, selective schools, and universities that confer graduate degrees (Koricich et al., 2018). More intentional recruitment of rural students could broaden conservation engagement at the undergraduate, graduate, and faculty levels. In so doing, rural students could gain access to opportunities and resources in academic conservation that may not otherwise be accessible to them (Davis et al., 2020a).

Greater inclusion of rural students in graduate and undergraduate conservation programs could offer several benefits for advancing conservation. First, rural students could help create new links between conservation and local issues in rural communities, e.g., agricultural interests. Moreover, rural students could be new messengers for climate policies in their communities, situating climate science within socio-culturally contextualized ethics that can help inspire lasting support for conservation issues (Van Houtan, 2006). Rural voters often have sophisticated environmental views, but may disagree with some environmental policies due to low trust of the federal government (Bonnie et al., 2020) or an absence of place-based values relevant to their lives and livelihoods (Yung et al., 2003; O'Neill et al., 2007). Additionally, academic engagement with rural stakeholders, which could be facilitated or accelerated with greater inclusion of rural students, can help undergraduate and graduate students confront assumptions and expand ways of knowing in the scientific process, e.g. by working with rural Indigenous communities (Mulrennan et al., 2012). Rural students, then, could be a critical link between academic and rural communities, helping build trust, increasing attention to local issues, embodying rural values, and communicating conservation science in locally relevant ways.

4 Reshaping academic advancement criteria to promote rural engagement

Another major step forward for academic-rural ties would be a reorientation of the incentive structures and norms of academia to more fully include and value public engagement (Alperin et al., 2019). To help the academic conservation science community be more available for creative forms of public engagement, the value of

service could be grounded in tangible structures and incentives, especially through greater weight in academic advancement review processes (Figure 1).

A new faculty model in service of these goals will see increased effectiveness when it reframes the standards of scholarship and advancement. For example, Creativity Contracts are an approach to help encourage faculty pursuit of a wider variety of academic activities through custom-designed, malleable roles (Boyer, 1990). One study showed that 75% of governing boards, 70% of Deans, 67% of provosts, 71% of full-time non-tenure track faculty, and 50% of tenure-track faculty found this idea attractive (Kezar et al., 2015). Through Creativity Contracts, participation at a rural stakeholder workshop could carry similar weight as a presentation at an academic conference. Outreach efforts, rather than being devalued, could hold weight in evaluation and advancement (Schell et al., 2020). To help bring about this change, increased institutional support could help align the importance of outreach with tangible practice (Doberneck, 2016; Rose et al., 2020). Indeed, some universities—including some land-grant institutions—have strayed from earlier roles as reliable partners for local stakeholders such as farmers and union workers (Jamieson, 2020). While this important work continues through extension offices, NGOs, government agencies, and individual academics, academia as a whole could more fully embrace its public outreach imperative (Kezar, 2018).

What can outreach by conservation academics to rural publics look like, and why is it important? A few ideas, some of which we have implemented ourselves, include workshops, public lectures and town halls, novel conference structures, op-eds in newspapers, podcasts, museum exhibits, collaborations with religious groups, participation on local or regional boards, and art shows. Experiential engagement and demonstration of conservation actions has been shown to help achieve conservation project outcomes, according to rural and urban respondents (Stern et al., 2017). Moreover, rural engagement by academics specifically is integral to pursuing ethical research in rural areas on topics that may intersect with rural cultures, identities, and values (e.g. Adams et al., 2014). Academic-rural engagement also helps include stakeholder perspectives and needs in research design (e.g. Volski et al., 2021), fulfilling responsibilities of universities to local stakeholders. Furthermore, academic-rural partnerships could help reconceptualize and reframe discussions about conservation in the literature through inclusion of Indigenous thinking (e.g. Hessami et al., 2021; Martinez et al., 2023) and other rural values (e.g. Bonnie et al., 2020; Diamond et al., 2021). Additionally, there is a growing track record of projects by academics and rural communities, illustrating the effectiveness of these partnerships for social-ecological sustainability (e.g. Mulrennan et al., 2012; Volski et al., 2021). These types of collaborations could also include partnerships with government agencies, NGOs, or others (e.g. Western Landowners Alliance, 2023). For example, academics studying threatened species could partner on field studies with stakeholders enrolled in the Partners for Fish and Wildlife program, through which the U.S. Fish & Wildlife Service helps a range of landholders to restore wildlife habitat (U.S. Fish & Wildlife Service, 2023). Despite these numerous benefits, language on public engagement can vary widely in academic advancement policies (Doberneck, 2016).

At present, the conventions of our discipline can be self-defeating and pull us away from the very constituents we seek to serve, learn from, and engage. As criteria by which academic careers are judged, advancement standards serve a powerful role in reflecting priorities and values in conservation science.

5 Discussion

As part of the movement for advancing diversity, equity, inclusion and justice, academic conservation science is seeking to increase accessibility for underrepresented groups. However, DEIJ efforts in academia have, by and large, not prioritized rurality, despite evidence of barriers to rural individuals in STEM (O'Neal and Perkins, 2021; Morgan et al., 2022). Alongside concerns about rural representation, ongoing conservation challenges—including 30x30, state and federal climate policy, and renewable energy—need fresh approaches and ideas from constituents of different backgrounds and geographies. As part of a 'boundary science' (Cook et al., 2013), conservation academics could leverage these new perspectives to help promote conservation science and decision-making that benefits Rural America. We suggest that greater inclusivity of Rural America in academic conservation science would advance justice goals, broaden perspectives, and support pragmatic opportunities for conservation.

As conservation scientists in academia, we have a powerful opportunity to build bridges between rural communities and academia in the United States. Most of the U.S. public wants action on the environment (Pew Research Center, 2016), including climate change (Pew Research Center, 2020), and rural communities are important stakeholders in conservation solutions. However, some rural constituents feel a sense of exclusion from environmental decision making, showing that we can do more to build solutions that emphasize shared values (Bonnie et al., 2020; Diamond et al., 2021). Through co-producing knowledge, training rural students in conservation science programs, and increasing the flexibility of academic advancement standards, conservation academics can help promote justice and inclusion for rural communities and enrich conservation partnerships.

Author contributions

DK, MC, CW, LW, and JB contributed to early discussions that helped shape the paper. All authors contributed ideas and insights that strengthened the paper. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

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