Journal of Environmental Studies and Sciences
https://doi.org/10.1007/s13412-023-00852-7

RESEARCH BRIEF

An examination of race/ethnicity, gender, and employer affiliations on university natural resource program advisory boards

Lucia Hadella[1] · Claire Rapp[2] · Ivan Arismendi[3] · Michael Paul Nelson[2]

Accepted: 6 August 2023

Abstract

Many university natural resource (NR) programs in the U.S. have external partners and stakeholders who serve on advisory boards. These boards can influence programs in multiple ways by guiding curriculum, program initiatives, strategic planning, and more. Here, we examine the demographics of NR program external advisory board members in 2017 (nine boards, 167 members) and 2022 (12 boards, 194 members), including perceived gender and race/ethnicity and employer affiliation. Our results reveal advisory boards are dominated by white men, with little improvement in gender diversity from 2017 to 2022. However, there has been an increase in people of color during the same period. The three most common employee affiliations of board members are NR businesses and consulting, government, and NGOs. We find gender is not evenly distributed across employer affiliations; more women are in government and NGOs than NR businesses and consulting. Because advisory board membership is often up to program leadership, external advisory boards may be "low hanging fruit" for improving the diversity of natural resource programs and departments. We recommend department leadership critically examine whether their boards represent the full range of partners and constituents with whom they wish to collaborate.

Keywords Diversity, equity, and inclusion (DEI) · Natural resource education · Forestry education · Undergraduate education

Introduction

Discussions concerning diversity, equity, and inclusion (DEI) for traditional university natural resources (NR) programs in the US, such as NR management, forestry, fisheries, and wildlife, have amplified in recent years as these fields face scrutiny for continuing to be dominated by white men. Educators and other professionals (Penaluna et al. 2017; Gould et al. 2018; Balcarczyk et al. 2016; Arismendi and Penaluna 2016; Sharik et al. 2015; Taylor 2015, 2018) have focused on the low levels of diversity in natural resources educational programs and natural resources professional fields. Within institutions of higher education, DEI initiatives are emerging at multiple levels, with the creation of DEI-centered appointments across administrative levels, from president's offices to individual colleges/departments. These initiatives are often focused on recruiting and retaining students and faculty from historically under-represented backgrounds, although some studies have highlighted different forms of diversity in (or lacking in) natural resource programs (Cruz et al. 2022; Dokes et al. 2020; Rouleau et al. 2017).

Our work here expands on the literature on DEI in NR programs by looking to key external partners who serve on advisory boards to NR programs in higher education. An advisory board is a committee of individuals, often selected by the leadership of a program to serve as a liaison between the college and external entities, such as industries, private businesses, government agencies, or other universities.

✉ Claire Rapp
claire.rapp@oregonstate.edu

Lucia Hadella
hadella.1@osu.edu

Ivan Arismendi
ivan.arismendi@oregonstate.edu

Michael Paul Nelson
mpnelson@oregonstate.edu

[1] The Ohio State University School of Environment and Natural Resources, Columbus, OH, USA

[2] Oregon State University Department of Forest Ecosystems and Society, Corvallis, OR, USA

[3] Oregon State University Department of Fisheries and Wildlife, Corvallis, OR, USA

Published online: 15 August 2023

It is important to assess external partners for three main reasons. First, external partners can contribute to the "public face" of NR through participation in professional events, speakers' series, career fairs, and class visits, among other interactions that put them before prospective and current students. The organizations these individuals represent, along with each individual's physical body, offer an image of the field and its players to students who are still striving to understand how they themselves will exist as professionals within the field and whether or not they truly belong. Second, external partners influence the trajectory of NR programs in various ways, including the kinds of initiatives that are funded, adjustments to curriculum, and the opportunities students have for future employment. Employers in NR professions, for example, can play a significant role, both directly and indirectly, in influencing the foci of NR curricula (Sample et al. 2015). The recommendations, priorities, and views of external partners are shaped by their lived experiences and can in turn affect NR program decision-making. Third, for the most part programs have direct control over who serves on their advisory boards, selecting members based on a variety of factors including professional affiliation, alumni status, or level of expertise. Because members are often selected by programs, external advisory board composition can be an important way to increase the diversity of voices that influence an NR program.

Given the flexibility programs have to determine the membership of their boards and increasing calls for racial justice in light of the 2020 Black Lives Matter movement, we are interested in examining not only the current state of advisory boards, but whether these boards have become more diverse in recent years. Gender and racial/ethnic diversity vary within the subdisciplines and subpopulations of NR management. At the undergraduate level, traditional resource-oriented undergraduate majors tend to be more white and male than interdisciplinary majors such as environmental science and conservation (Sharik et al. 2015). A "leaky pipeline" effect also exacerbates demographic imbalances through career stages in NR management (Arismendi and Penaluna 2016). Advisory board members come from a variety of positions, including government, private industry, NGOs, academia, and more. As seen in the case of academia, we hypothesized that the racial/ethnic and gender composition of advisory boards would be dominated by white men. However, we wanted to examine if advisory boards have become more diverse over the last several years amid increased pressure to address systemic inequities and significant social and institutional disruption due to COVID-19. To that end, we are interested in assessing racial/ethnic and gender diversity in NR program external advisory boards in 2017 and 2022. We are also interested in what employer affiliations are included on these advisory boards and whether diversity varies across the interests represented on advisory boards and over time. Although calls for greater diversity in NR management have been occurring for decades, these years may be particularly insightful to examine, as they represent the state of NR program advisory boards before and after the 2020 Black Lives Matter movement and the COVID-19 pandemic.

Methods

We collected data in two waves. We defined the 2017 subsample as programs at universities in the US that fit into all three of the following categories: (1) they were members of the National Association of University Forest Resources Programs (NAUFRP); they were at Land Grant Institutions (including 1890 schools); and they were listed in the Times Higher Education World University Rankings for 2016–2017. To be included in Times Higher Education rankings, universities must produce at least 150 publications each year and 1000 publications over a 5-year period, teach undergraduates, and must not have 80% or more of their research in a single subject. We selected these criteria to capture some of the most prominent and influential natural resource programs in the US, although we acknowledge these criteria do not capture every prominent program. We address the limitations of these criteria further in the discussion. After applying the filter, we had 28 eligible universities (see Supplementary Table 1). We resampled these 28 universities in 2022.

In both 2017 and 2022, we conducted a website search for all eligible universities and searched for information on the composition of advisory boards. When we could not find information on advisory boards online, we sent inquiry emails to relevant departments and colleges. We collected information on board members' names, employer, gender, and race/ethnicity. When information was not available from advisory board webpages or lists provided from departments, we searched Google using "board member name + employer affiliation + state of the university." This often yielded "Meet Our Team" pages from the employer's website, interviews, and features in local newspapers, as well as publicly available LinkedIn pages. We measured race/ethnicity dichotomously, categorizing board members as either white or person of color. We acknowledge the limitations of this approach and address it in more detail in the "Discussion" section. We measured gender dichotomously, categorizing board members as either women or men. We categorized employers into groups adapted from previous work on forestry programs (Sample et al. 2015). A detailed protocol on how we sampled universities and what information we collected is included in the Supplementary Materials. We summarize the demographics of advisory boards in

2017 and 2022 and analyze differences across groups using chi-square analyses in R version 4.1.1

Results

The data collected are available in the Environmental Data Initiative Repository (Rapp et al. 2022). In 2017, we collected data for 167 board members across nine universities. We found eight advisory boards online and reached out to the remaining 19 universities. One institution provided a member list via email, and three universities confirmed they did not have an advisory board. In 2022, we collected data for 194 board members across 12 universities. We found 10 advisory boards online and reached out to the remaining 18 universities. Two institutions provided a member list via email, and nine universities confirmed they did not have an advisory board. For the 18 universities in 2017 and 16 universities in 2022, we did not receive a response from them; we do not know if they did not have an advisory board or if they did and did not share data. Thus, we do not know the total number of advisory boards present among the 28 universities or how much of the total advisory board member population we captured. Advisory boards ranged in size from 3 to 30 members. Pooling both years, the median size was 16 members. Demographics for both years are summarized in Table 1. Both years, white men are over-represented when compared to general population demographics in the US and the demographics of undergraduate students at NAUFRP programs (Sharik et al. 2015). Women of color are especially under-represented (Fig. 1). In 2017, no members could be identified as women of color while in 2022, 4% of board members could be identified as women of color. While the percent of advisory boards identified as women has qualitatively increased since 2017, this change was not statistically significant. In comparison, the percent of people of color has increased since 2017 when including the full 2022 sample ($\chi^2 = 5.7519$, p-value = 0.016) and when only looking at the eight universities included in both 2017 and 2022 ($\chi^2 = 5.7519$, p-value = 0.017).

There was considerable variation in diversity across advisory boards in 2022. Advisory boards range from 55–94% men; no advisory board has equal representation of men and women. Six advisory boards have no people of color, while the most diverse advisory board is 59% white. Advisory board members come from a variety of employer types,

Table 1 Percentage summary of demographics of advisory board members (2017 $n = 167$; 2022 $n = 192$). Percentages are calculated as percent of subsample without missing data

	Women (%)		People of color (%)	
	2017	2022	2017	2022
Full sample	19	26	3	11
Government employees	36	32	3	4
NGO employees	23	24	0	9
NR businesses and consulting employees	12	11	0	2

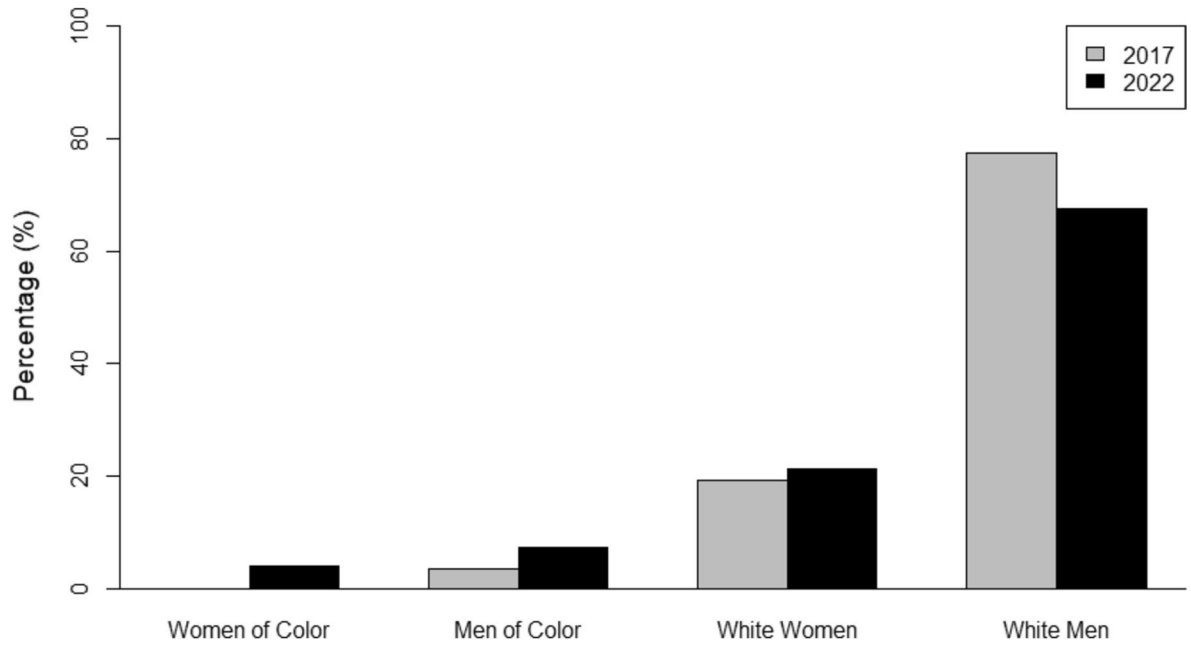

Fig. 1 Intersection of race/ethnicity and gender in 2017 ($n = 146$) and in 2022 ($n = 179$)

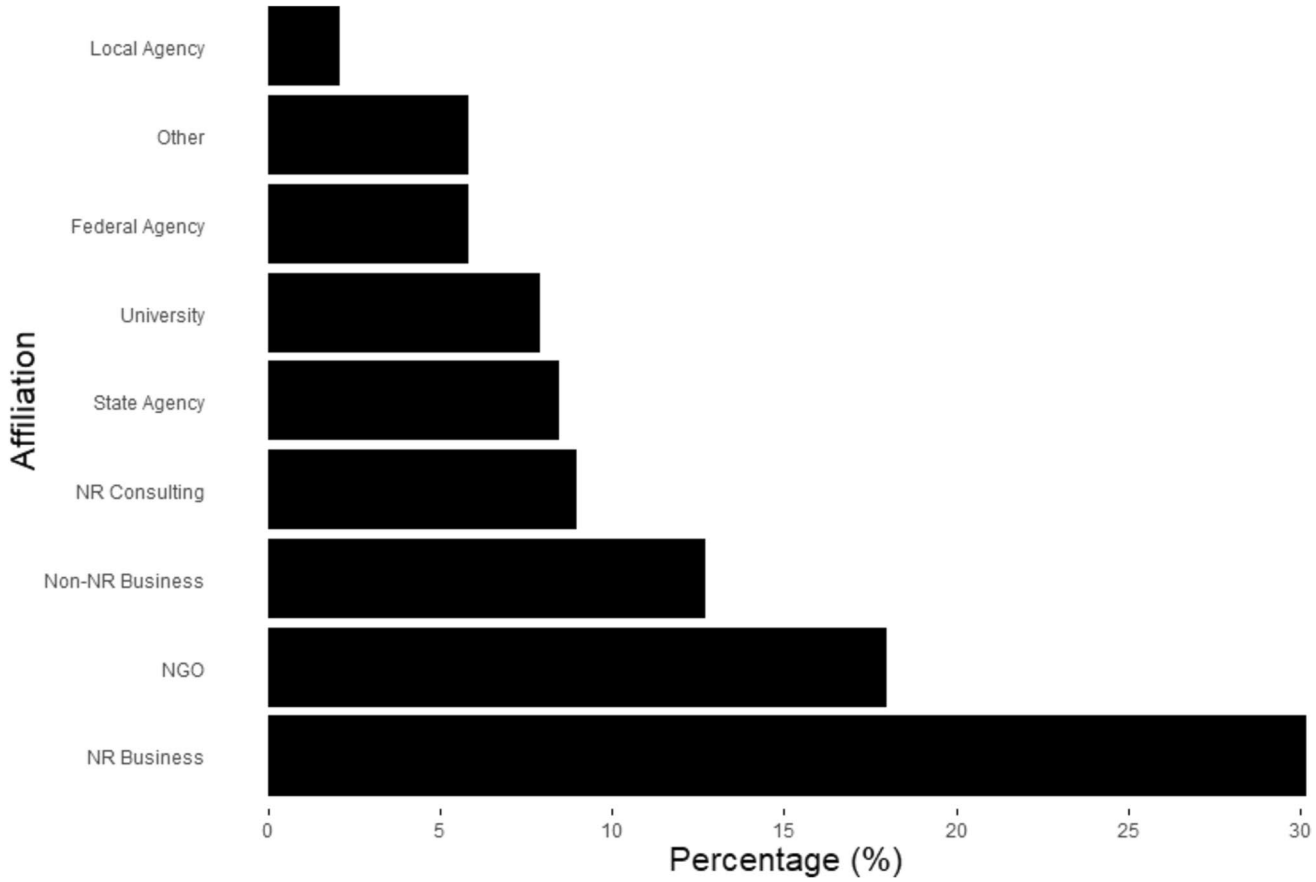

Fig. 2 Employer affiliations ($n = 139$) in the 2022 sample

with the largest three categories being government, NGOs, and natural resource business and consulting (Fig. 2). Examining only the three largest employer categories, gender is not evenly distributed across these categories ($\chi^2 = 7.0071$, p-value = 0.03); more women are in government and NGOs than in natural resource businesses and consulting.

Discussion

Our results highlight another way in which NR programs at universities tend to be disproportionately white, male, and white male. Despite the greater salience of and emphasis on DEI in natural resource management, very little has changed regarding NR advisory boards between 2017 and 2022. Although we see some positive change over time, progress is slow and uneven and NR programs vary considerably in how diverse their advisory boards are with respect to race/ethnicity and gender. Advisory boards represent connections between universities and organizations, or "friends," outside of academia. Even as NR aspires to dispel its reputation as a set of extraction-focused fields mainly attracting white men, our data suggests that some truth of this reputation still lingers; and it persists, at least in part, in an area where program administrators have a notable amount of control. Advisory boards are typically unelected, unpaid, and chosen by the program leadership. The composition of the board is not subjected to the hurdles associated with hiring new faculty or revising curriculum, so we can assume that the advisory board is one influential body that could be more readily modified than other aspects of the academy. While this perhaps makes the lack of change more concerning, it also means program leadership can, and should, choose to diversify their advisory boards. This is not to say that changing advisory boards is costless or that it is necessarily easy for all institutions that have them. However, more diverse and inclusive boards can be a priority even if it is difficult.

To be clear, we are not calling for NR programs to break ties with trusted partners, many of whom likely employ their graduates and support programs in various other ways. Maintaining these connections to external partners from industries, agencies, and others seems important. However, there seem to be few reasons why new members could not be added to advisory boards, in addition to the existing members, in order to better represent a diversity of interests and backgrounds. Indeed, adding advisory board members may

be an important way for programs to cultivate aspirational or future partners, stakeholders, and constituents. There is considerable variation in how advisory board membership functions, including how long members serve, rate of turnover, and which pools advisory board members are drawn from (e.g., whether advisory board members need to be alumni). However, this only reiterates the potential importance of cultivating new members rather than breaking ties with trusted partners, who may continue to serve long or repeated terms on advisory boards.

We acknowledge some limitations to our approach. We used a series of inclusion criteria for universities. We were interested in prominent or influential programs due to their outsized influence on natural resource professions. Thus, our results may not be representative of all NR program advisory boards. Additionally, the Times Ranked filter disadvantages small programs that do not emphasize research and primarily teach and includes only 1890 universities in the period 2016–2017. Further, categorizing race/ethnicity into a binary of people of color and white people is problematic. Methodologically, visually assessing board members can lead to erasure, especially for white-passing people of color. As well, measuring race as a binary homogenizes all people of color and creates a false monolith. Second, although we were able to gather information on board members' employers, it was not always clear to what extent board members were acting as independent individuals or as liaisons or representatives of their organizations. To better understand how employer affiliation affects board member decision-making, we recommend additional research. This research may take different approaches, such as qualitative work with board members or administrators who interact with boards, or content analysis of the documents and products created by advisory boards. Despite these limitations, we believe there are important takeaways from this work.

Recommendations and conclusion

We recommend that NR programs make it a priority to conduct a critical examination of advisory boards and who they select as representatives of these external partners. We believe such an examination is a crucial component in the larger effort to examine and re-envision commitments to DEI in NR programs. Many programs likely have access to data that will be useful in supporting their efforts to better understand and reassess their external partnerships. This data may include alumni association membership, donor lists, and membership of any advisory boards, councils, or committees that contain partners external to the program. It may also include employer connections as indicated through first destination job reports, student internships, and recruitment contacts (such as a list of employer participants in job fairs).

We recommend that programs adopt a high level of transparency regarding the purpose of their advisory boards, as well as their past and current membership. We propose, as a best practice, that programs create and maintain a webpage with the mission statement and goals for the advisory board, as well as a current member directory and an archive for past members. Although the layout of websites cannot address systemic issues, mindful presentation is important for inclusion (Bal and Sharik 2019). This level of transparency provides the NR community and interested public with information about the external advisors who help inform the program's formal leadership, similar to a directory identifying the formal leadership of the program, and creates a degree of accountability in relation to the advisory board.

While the lack of significant progress on diversifying advisory boards is concerning, they are excellent groups to target for improvement. Advisory board membership is largely under the control of program leadership, and advisory boards have meaningful influence on the current practices and future trajectories of NR programs. By turning a critical eye towards advisory boards, NR programs have a unique and relatively easy opportunity to bring greater diversity, transparency, and goal clarity to their partnerships with external stakeholders.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s13412-023-00852-7.

Acknowledgements Data were provided by the H.J. Andrews Experimental Forest and Long-Term Ecological Research (LTER) program, administered cooperatively by Oregon State University, the USDA Forest Service Pacific Northwest Research Station, and the Willamette National Forest.

Funding This material is based upon work supported by the National Science Foundation under the grant LTER8 DEB-2025755.

Declarations

Competing interests The authors declare no competing interests.

References

Arismendi I, Penaluna BE (2016) Examining diversity inequities in fisheries science: a call to action. In: BioScience. Oxford University Press. https://doi.org/10.1093/biosci/biw041

Bal TL, Sharik TL (2019) Web content analysis of university forestry and related natural resources landing webpages in the United States in relation to student and faculty diversity. J For 117(4):379–397. https://doi.org/10.1093/jofore/fvz024

Balcarczyk KL, Smaldone D, Selin S, Douglas J, Maumbe K, Pierskalla C (2016) Barriers and supports to pursuing a natural resource degree. Nat Sci Educ 45(1):1–8. https://doi.org/10.4195/nse2015.11.0028

Cruz S, Batavia C, Arismendi I, Spalding A, Nelson MP (2022) Diversity beyond demographics: environmental worldviews of forestry

and natural resource undergraduate students. Ecol Evol 12(8). https://doi.org/10.1002/ece3.9203

Dokes TJ, Roloff GJ, Millenbah KF, Wolter BHK, Montgomery RA (2020) Natural resource undergraduate students in the new millennium. Wildl Soc Bull. https://doi.org/10.1002/wsb.1128

Gould RK, Phukan I, Mendoza ME, Ardoin NM, Panikkar B (2018) Seizing opportunities to diversify conservation. Conserv Lett 11(4). https://doi.org/10.1111/conl.12431

Penaluna BE, Arismendi I, Moffitt CM, Penney ZL (2017) Nine proposed action areas to enhance diversity and inclusion in the American Fisheries Society. Fisheries 42(8):399–402. https://doi.org/10.1080/03632415.2017.1345549

Rapp C, Nelson MP, Hadella LC (2022) Gender and ethnic diversity of members of US university natural resource program external advisory board members, 2017-2022 ver 2. Environ Data Initiat. https://doi.org/10.6073/pasta/03c9519fe0dbd918ddd9329127a8fa4d

Rouleau M, Sharik TL, Whitens S, Wellstead A (2017) Enrollment decision-making in U.S. forestry and related natural resource degree programs. Nat Sci Educ 46(1):1–9. https://doi.org/10.4195/nse2017.05.0007

Sample V, Alaric RP, Bixler MH, McDonough SH, Bullard, and Mary M. Snieckus. (2015) The promise and performance of forestry education in the United States: results of a survey of forestry employers, graduates, and educators. J For 113(6):528–537. https://doi.org/10.5849/jof.14-122

Sharik TL, Lilieholm RJ, Lindquist W, Richardson WW (2015) Undergraduate enrollment in natural resource programs in the United States: trends, drivers, and implications for the future of natural resource professions. J For 113(6):538–551. https://doi.org/10.5849/jof.14-146

Taylor DE (2015) Gender and racial diversity in environmental organizations: uneven accomplishments and cause for concern. Environ Justice 8(5):165–180. https://doi.org/10.1089/env.2015.0018

Taylor DE (2018) Racial and ethnic differences in the students' readiness, identity, perceptions of institutional diversity, and desire to join the environmental workforce. J Environ Stud Sci 8(2):152–168. https://doi.org/10.1007/s13412-017-0447-4