DISSERTATION

A MIXED METHODS APPROACH TO UNDERSTANDING ENGAGEMENT AND INCLUSION OF MINORITIZED GROUPS IN THE SOCIETY OF AMERICAN FORESTERS

Submitted by

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ABSTRACT

A MIXED METHODS APPROACH TO UNDERSTANDING ENGAGEMENT AND INCLUSION OF MINORITIZED GROUPS IN THE SOCIETY OF AMERICAN FORESTERS

People of color, women, and other groups are minoritized in forestry and natural resource professions (Kern et al., 2015; Kuhns et al., 2004; Otero & Brown, 1996; Sharik et al., 2015). Numerous sources share the concern that natural resources fields must begin to reflect the larger demographic makeup of the U.S., or minoritized groups will continue to miss opportunities to influence and lead natural resources decisions (Finney, 2014; Westphal et al., 2022). We need to understand better how current professionals feel engaged and included if we are to bring more people together to understand, enjoy, use, and tend to our forests and natural places. We also need to appreciate how different people connect to the environment and environmental professions.

This transformative mixed methods study blends qualitative and quantitative methods to enhance understanding of engagement and inclusion (E&I) of minoritized groups and other members of the Society of American Foresters (SAF). The study took an innovative approach, utilizing environmental justice as a research frame (Schlosberg, 2004; 2007; Schlosberg & Coles, 2016). The survey was sent to all SAF members in 2021 and utilized established engagement and inclusion measures, including perceptions of culture, respect, organizational commitment, sense of belonging, and stereotype threat vulnerability. Additionally, the study asked questions about the pathway of participants to forestry and natural resources as a focus of study and career.

Statistically significant differences were found when comparing groups on these E&I measures. Women had significant differences compared to men, with women having lower perceptions of culture, varied perceptions of respect, lower sense of belonging, lower organizational commitment, and greater perceptions of stereotype threat. Members of color had some significant differences compared to White members, with lower perceptions of SAF culture at the national level; and greater perceptions of stereotype threat and specific career barriers. LGBQ+ members had significant differences compared to non-LGBQ+, including lower culture perception and lower sense of belonging. Age group comparisons also showed significant differences and contributed to predictive associations. Additional statistically significant interactions and predictive associations were also found. Respondents shared their pathways to forestry and NR as a focus of study and career, including information about exposure to nature-based activities as a youth and perceptions of career barriers.

Several open-ended questions provided rich qualitative data. These data were analyzed using content analysis and an environmental justice frame. Patterns arose that help explain and enhance our statistical findings and further contribute to established literature. Responding SAF members mentioned fundamental environmental justice (EJ) principles including recognition of philosophies, promotion of capabilities, and participation and inclusion. Some members also commented on the ripple effect that SAF E&I problems could have on various human stakeholders, the natural resource itself, and our world (Schlosberg, 2004; 2007; Schlosberg & Coles, 2016; Schlosberg, 2013). Participants expressed concern for impacts on their fellow SAF members and concern for SAF's sustainability as an organization if diversity, equity, and inclusion (DEI) issues were not addressed better.

This research helps convey the urgency and need to keep environmental justice and DEI at the forefront of SAF's evolving strategy and vision. SAF members in this study ask the organization to be a leader in DEI.

ACKNOWLEDGEMENTS

It has indeed been a very long doctoral journey for me. It involved a move east and then back again to Colorado. It has involved multiple jobs and thus many different work colleagues, friends, SAF peers, and family members who have helped with this research along the way. We had our second son during the journey as well. My immediate family, Chris, Liam, Brooks, and cat Nemo will be very glad for mom to be nearing the finish of the massive and seemingly never-ending project of a doctoral dissertation.

I have thanks and appreciation for many supporters. To my own Mom who taught me that we can and should take on hard things, to always help and serve others, and to keep on learning for your whole life through. To my Dad, who always encouraged that "yes girls can do that too" and helped nurture my spark for adventure. Thanks to Nancy Weaver, a Girls Scout Leader who helped us stay interested and engaged in nature, exploration, and service into our teen years. And extra thanks to the backyard 'crick,' the mulberry and maple trees to climb, and the cousins who liked to get dirty.

I am very appreciative to many SAF and forestry colleagues who have been by my side before and during this journey. Some helped to craft the survey and informed the process or tested instruments. Many shared stories and experiences that affirmed this research needed to be done. Additionally, colleagues in a sister organization, Society for Range Management also shaped and strengthened this research.

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Finally, thanks to those who participated in this survey and contributed their valuable perspectives and experiences. Please know that we see and hear you! We want to keep this conversation going. Together, we will continue to work for inclusion and equity in SAF and our profession.

DEDICATION

To Liam and Brooks:

May you always notice the moon and want to gather leaves, seeds, and rocks.

To my SAF colleagues:

Thank you for the support; all your stories and contributions truly matter!

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OPERATIONAL DEFINITIONS

Barriers- any negative influence that may inhibit recruitment, retention, and inclusion in career/educational/professional activities (modified from Haynes, 2015)

Environmental Justice (EJ)- is "where people can interact with confidence that the environment is safe, nurturing, and productive. Environmental justice is served when people can realize their highest potential" (Bryant, 1995, p. 6). EJ acknowledges a growing plurality of (in)justice experiences and a broadening discourse (Holifield et al., 2009; Schlosberg, 2013). The EJ movement calls for the right for all people to participate as equal members in the discussions, processes, and decision-making about their environment (Hunold & Young, 1998).

Equity- being fair or just, the situation in which everyone is treated fairly and equally (Cambridge Dictionary, n.d.). Putnam-Walkerly & Russel (2016) noted that equity **"**is about each of us getting what we need to survive or succeed—access to opportunity, networks, resources, and supports—based on where we are and where we want to go" (para. 10).

Exclusion- The opposite of inclusion, thus not feeling welcomed, valued, celebrated, honored, and affirmed. Whether one feels valued in a relationship with another person (Leary, 2010), exclusion may be associated with disrespect or negative behavior (Leary, 2001).

Inclusion- The degree to which diverse individuals can participate fully in the decision-making process within an organization or group. An inclusive environment could be described as welcoming, valuing, celebrating, honoring, and affirming all expressions of diversity and identity (Pope et al., 2014). Inclusion encompasses the social processes that affect access to resources and information, a sense of belonging and security, and social encouragement from others (Hope et al., 1999; Person et al., 2015; Schein, 1992).

Intersectionality and Simultaneity- Terms that both argue and account for the multiple ways (simultaneous intersections) that individuals experience themselves as raced, gendered, classed, and sexualized (Collins, 1990; Zinn & Dill, 1996). Both intersectionality and simultaneity look at "race, gender, ethnicity, class, nationality, and sexuality as simultaneous processes of identity, institutional, and social practice" (Holvino, 2008, p. 19).

Minoritized- A term that helps to convey the fluidity of the concept of minority because the minority status labels are established by those in power positions (Mansfield, 2015). In the case of natural resources, and especially forestry, women and people of color are both considered minoritized groups.

Sense of Belonging- A feeling of fitting in, the "extent to which students feel personally accepted, respected, included by others in the school social environment" (Goodenow, 1993, p. 80). This type of belonging could also be considered in other social settings, such as a profession or a professional group (Person et al., 2015).

Social Justice- is a goal to reach full and equitable participation of people from all social identity groups in society that is mutually shaped to meet their needs (Bell, 2007a)

Stereotype Threat- Steele and Aronson note "being at risk of confirming, as self-characteristic, a negative stereotype about one's group" (1995, p. 797).

CHAPTER 1: INTRODUCTION

Entry and advancement of minoritized groups in natural resources (NR) professions are consistently and historically acknowledged as lagging behind other professions (Kern et al., 2015; Kuhns et al., 2004; Otero & Brown, 1996). Natural resource professions are a nontraditional career path for minoritized groups, including women and people of color (Finney, 2014; Hendricks, 2006; Luzzo & McWhirter, 2001; Outley, 2008; Sharik et al., 2015; Taylor, 2016). This issue has far-reaching implications, including connections to natural resources policy and management and severe negative effects in the realms of social and environmental justice.

Research on diversity and inclusion in forestry and natural resources is somewhat limited. Few quantitative examples look specifically at minoritized perspectives and experiences beyond individual academic institutions (Haynes, 2015; Taylor, 2007). There is some existing literature regarding the recruitment and retention of women and other minoritized groups in the natural resource professions (Jones & Solomon, 2019).

A mixed methods study that spans multiple institutions and organizations focused on forestry had not surfaced in this literature search and review. The researcher saw opportunities to use established tools, such as stereotype threat, engagement, and inclusion factors, along with critical theories and perspectives to quantitatively survey forestry and natural resources professionals and gather baseline and comparison data (Coutinho-Sledge, 2015; Lent et al., 1994; Person et al., 2015; Spencer, 1993; Swanson et al., 1996; Woodcock et al., 2012). There is a major need for additional qualitative work to better capture and share minoritized stories in forestry and natural resources (NR) professions (Balcarczyk et al., 2015).

Statement of the Research Problem

There have been longstanding challenges in recruiting, retaining, and including women and people of color in forestry and the natural resources (NR) profession (Bal & Sharik, 2019a; Bal & Sharik, 2019b; Brown & Sinclair, 2020; Innovative Learning Concepts, 2016; Kuhns et al., 2004; Kern et al., 2015; Otero & Brown, 1996; Sharik, 2008; Sharik et al., 2010, 2015). This imbalanced representation is an issue across NR disciplines and is an even more extreme imbalance in the forestry profession. The low representation of women and people of color is historic and has improved little relative to the U.S. population demographics (Brown & Sinclair, 2020; Finney, 2014; Hendricks, 2006; James, 1991; Lewis, 2005; Limerick, 2000; Payne & Theoe, 1971; Schelhas, 2002; Taylor, 2016; Westphal et al., 2022).

This issue has far-reaching policy implications. When minoritized groups are not included, they are left without any decision-making power. Using an environmental justice frame, it is well documented that minoritized groups, including Indigenous peoples, people of color, people in poverty or lower-level socioeconomic status, and women, suffer greater environmental and societal injustices under current policy and management (Gilio-Whitaker, 2019; Schelhas, 2002; Schlosberg, 2007; Schlosberg, 2013; Taylor, 2002; Taylor, 2007). Many historical and cultural factors contribute to our challenges in welcoming, including, and retaining diverse people to enjoy and work in NR (Finney, 2014; Limerick, 2000; Taylor, 2016). If forestry and NR professionals are to serve all people inclusively and equitably, it is crucial that our professional demographics more clearly represent all people. NR policy and practice will inevitably be biased toward the people working in the profession and those who feel welcomed to experience natural resources, toward those whose voices are loudest and most prominent.

The exclusionary culture present in both the professional and recreational sides of NR is well recognized in both academic and popular press. In recent years, the tolerance of sexual

harassment in both the National Park Service and the USDA Forest Service has been exposed (Brown & Sinclair, 2020; Gilpin, 2016; James, 1991; Lewis, 2005; Thomas & Mohai, 1995). Racism and other forms of discrimination are also well documented (Brown & Sinclair, 2020; Finney, 2014; Shakur, 2017; Taylor, 2008; Taylor, 2016). The following quotes represent some recent exclusionary narratives told in the natural resource professions and related natural settings.

Gilpin wrote about tolerance of sexual harassment in the National Park Service in a 2016 *Atlantic* article. She describes the factors that contributed: "a murky internal process for reporting and investigating complaints; a longstanding culture of machismo that dates to the agency's foundation; and a history of retaliation against those who speak out" (Gilpin, 2016, para. 7). The culture of sexual harassment in the United States Forest Service (USFS) has also been featured for several years. One female firefighter, Abby Bolt, shared with PBS News Hour in 2018 (Baldwin et al., 2018):

> There are so many women out there that are so afraid. You know, I have talked to them. And I have said, you need to speak up. And I'll hear, like, "I'm so close to retirement Abby, I can't, " or "I have come this far," or "I have to support my family, and I can't do that (Baldwin et al., 2018, transcript section 51).

Melody Mobley (2020) was the first African American woman forester in the USFS. She shares her perspective and the harsh reality of her career in her article: *A Black Woman Who Tried To Survive In the Dark, White Forest*. She shares, "Townspeople in Skykomish treated me as an "other" they made it clear they thought the Forest Service was no place for someone like me. *What is this African American woman [they used harsher language than that] doing here?*" (Mobley, 2020, para. 15).

In a 2017 *Outside* magazine article, Shakur shared his own experience as a Black traveler seeking recreation and an escape to natural places. Shakur shared:

> History has already shown us that racism is verbal, physical, and psychological, and it affects black people on a generational level. We internalize it and learn to stay silent, for our own safety, when confronted with it. In Montana, I had no reason to believe I'd be protected when I fought back against racist behavior, so there could be no refuge or hope for me in this outdoor space I'd romanticized—only glimpses of it…
> My experience is proof that until this happens, nature will be a refuge only for some (Shakur, 2017, para 20-21.)

These quotes demonstrate that NR organizations and the surrounding environments have yet to achieve an inclusive work culture and seem to point more to exclusion and harassment. It is also clear that experiences with harassment and discrimination are happening now and in the past. Understanding people's experiences with both exclusion and inclusion may help us better recognize how to improve the culture in natural resources professions and places.

In addition to the social impacts of workforces that lack diversity, equity, and inclusion, there are also negative impacts on the natural environment. Human behavior and culture are major driving forces that threaten our biodiversity, ecosystems, climate stability, and food supplies (Bacon & Graeme, 2016). A UN document, Global Biodiversity Outlook 3, highlighted trends including an overall decline of biodiversity worldwide at an increasing rate and issues such as the swelling non-native and invasive species dispersal. However, one of the few recent positive trends was the growth in protected area designations (Secretariat of the Convention on Biological Diversity, 2010).

In our current Anthropocene age, humans have the dominant influence on the environment and climate (Bacon & Graeme, 2016). The accumulation of negative environmental impacts takes a negative toll on human health, infrastructure, and the economy. In 2019, Ocasio-Cortez and others proposed a Green New Deal in the House of Representatives, which outlined many of the projected impacts of climate change on society. The Green New Deal also emphasized how "systemic injustices" have a more negative impact on many minoritized

communities, referred to as "frontline and vulnerable" (House Resolution 109, 2019, p. 4). It matters that we have the best team of people guiding environmental decision-making, policy, and management. This requires a diverse, equitable, and inclusive team.

The Society of American Foresters (SAF) was started in 1900 by Gifford Pinchot. The SAF is the largest professional forestry organization in the United States. The mission of SAF is

> …to advance sustainable management of forest resources through science, education, and technology; to enhance the competency of its members; to establish professional excellence; and to use our knowledge, skills, and conservation ethic to ensure the continued health, integrity, and use of forests to benefit society in perpetuity. (SAF, 2020)

Like many environmental or NR organizations, SAF has a long-standing imbalance in the representation of women among its members compared to the US population (Cubbage & Menashes, 2017). In January 2019, SAF reported 10,850 members. Of 8,377 members that reported gender, 11% (941) reported as female (the only gender category choice options were female and male) (T. Baker, Personal Communication, February 7, 2019). Compare this to 50.8% of the U.S. population reporting as female (US Census, 2019) as well as 40.8% of NR students, 18% of undergraduate forestry students (Sharik et al., 2015), and 30-40% of tenure track NR faculty at SAF and National Association of University Forest Resource Programs (NAUFRP) institutions (Kern et al., 2015). In sum, women are a minoritized group in forestry, NR, and SAF.

SAF is also very low in the representation of minoritized racial and ethnic groups compared to the US population. Only 4.6% of the 9,843 SAF members reporting ethnicity identified as a non-White or Hispanic. Specifically, the following demographic percentages of the 455 members who self-reported their minority or racial/ethnic group were identified as 0.6% African American, 1.3% Asian, 0.5% Native American, 1.2% Hispanic, and 1.0% Multi-Racial

(T. Baker, Personal Communication, February 7, 2019). Compare these numbers to the USA Census data, 18.5% Hispanic or Latino/a, 13.4% African American, 5.9% Asian, 1.3% American Indian or Alaskan Native; 0.2% Native Hawaiian or Other Pacific Islander, and 2.8% reported two or more races. Overall, USA Census data shows that about 39.9% reported as part of a minoritized racial or ethnic group (US Census, 2019). Sharik et al. (2015) reported 5.3% Hispanic, 2.3% African American, 3.0% Asian, and 1.0% American Indian in NR undergraduate programs. Recruitment and retention of people of color are lacking in forestry, NR, and SAF.

The NR professions must bring more people together to understand, enjoy, use, and tend to our forests and natural places; they also need to understand better and celebrate how different people connect to the environment and environmental professions. Forestry, in particular, seems to be a profession that is under considerable threat in that it is well behind even other NR professions in recruitment, retention, and inclusion of both women and people of color (Bal & Sharik, 2019a; Bal & Sharik, 2019b; Rouleau et al., 2017; Sharik, 2008; Sharik et al., 2015; Sharik & Frisk, 2011; Sharik & Lilieholm, 2010, Baker, 2019; Kern et al. 2015; Wolter et al., 2011). SAF must better recruit, retain, and include diverse talent if the organization is going to sustain viable membership numbers (Cubbage, F., Town Hall at SAF National Convention, 2017). We also owe it to minoritized members and groups to do better and fully include everyone in SAF, the profession, and most importantly, natural resource stewardship decisions.

Purpose of the Study

The purpose of this study was to incorporate a mixed methodology to understand better the experiences of minoritized professionals and the current inclusion climate in natural resources and forestry disciplines. This study sought to use both quantitative and qualitative approaches to add depth and breadth to the literature regarding barriers, supports, and

experiences of minoritized groups in the natural resource professions. This study focused on one professional organization, the Society of American Foresters. This aimed to compare responses from minoritized groups to those of majority groups to increase the overall understanding of different experiences with engagement and inclusion among SAF members. The researcher hoped to challenge the dominant ideology and further impact change in the SAF and ultimately across forestry and other NR disciplines.

This research involved crafting and disseminating a survey to the Society of American Foresters (SAF) to collect baseline data related to engagement and inclusion factors, stereotype threats and barriers. The survey included quantitative and qualitative components, using a transformative mixed methods design (Creswell & Plano Clark, 2011). More details on all study components are explained further in the methods section of this dissertation. The study's guiding research questions follow.

Research Questions and Hypotheses

Overarching Mixed Methods Question

How do qualitative methods help explain and enhance quantitative findings, and deepen overall understanding, related to measures of engagement and inclusion of minoritized groups and other members of the Society of American Foresters?

Quantitative Questions

1) Are there differences in reported engagement and inclusion measures, including perceptions of culture, respect, commitment, sense of belonging, and stereotype threat vulnerability between men, women, and other minoritized gender categories among the SAF membership?

Null Hypothesis: There is no difference in reported engagement and inclusion measures, including perceptions of culture, respect, commitment, sense of belonging, and stereotype threat vulnerability between men, women, and other minoritized gender categories among the SAF.

2) Are there differences between racial/ethnic identifications among SAF membership regarding reported engagement and inclusion measures, including perceptions of culture, respect, commitment, sense of belonging, and stereotype vulnerability?

   Null Hypothesis: There is no difference in perceptions of culture, respect, sense of belonging, or stereotype threat vulnerability for minoritized racial/ethnic identifications compared to White and non-Latinx categories.

3) Is there an interaction between gender and race/ethnicity on measures of engagement and inclusion, including perceptions of culture, respect, commitment, sense of belonging, and stereotype threat vulnerability within SAF membership?

   Null Hypothesis: There is no interaction among minoritized factors, such as gender and race/ethnicity, on perceptions of culture, respect, sense of belonging, and stereotype threat vulnerability.

4) Are there associations between the variables collected that will predict measures of engagement and inclusion, including perceptions of culture, respect, commitment, sense of belonging, and stereotype threat vulnerability among SAF members?

   Null Hypothesis: Associations from various combinations of the independent variables: age, employment type, length of time as a SAF member, discipline, gender, and race/ethnicity will not predict various engagement and inclusion measures.

Qualitative Questions

1) In what ways do environmental justice principles emerge in the qualitative data, specifically are there mentions of recognition of different ways and philosophies; of participation and inclusion in membership and decision-making; promotion of capabilities through supports and injustices; or impacts on minoritized groups?

2) What are participants' comments on the potential impact of the current engagement and inclusion situation in SAF? Do they see specific impacts on people? The profession? The forests, natural resources, environment, and Earth?

Significance of the Study

Natural resources professions and society at large are at a pivotal moment where both social justice and, ultimately environmental justice call for immediate action. There have already been human impacts on the planet that we may not be able to recover from (Convention on Biological Diversity, 2010; House Resolution 109, 2019). Minoritized groups have experienced negative social impacts that cannot be undone (Finney, 2014; Taylor, 2016). This study offered an opportunity to explore issues around diversity and inclusion in a specific NR professional society. The SAF is a group that spans forestry and related NR disciplines. SAF membership also reaches across the U.S. (and even beyond). SAF student members include institutions from across the country, including Land-Grant universities, community colleges, private institutions, and Historically Black Colleges and Universities (HBCUs). SAF membership also includes local, state, and federal government sectors across many different agencies, private industry, and non-profits.

This study expanded our understanding of social constructs that may inhibit recruitment, retention, and inclusion in forestry and natural resources professions. The findings provided a baseline for the current climate and culture of SAF, a longstanding NR organization. Over the years, SAF has done some basic work related to becoming more diverse and inclusive, including establishing a diversity and inclusion policy, forming committees/working groups, and holding initial focus group discussions about diversity, equity, and inclusion (DEI) in the organization. This study informs these efforts by gathering a broad range of data and perspectives. This study has also been replicated in a similar organization, the Society of Range Management. The researcher plans to make comparisons between groups, and there may be future replication opportunities.

The study offers greater insights into engagement and inclusion trends in forestry and closely related professions, even beyond SAF membership. The transformative mixed methods approach combined with an environmental justice lens demonstrates the value of incorporating the practice and theory of social science. Ultimately, this study could contribute to policy and practice across environmental professions and stakeholders.

Researcher's Perspective and Theoretical Framework

Moon and Blackman (2014) guide natural scientists seeking to understand and craft quality social science research, building off other seminal work (Creswell, 2009; Lincoln & Guba, 2000; Moon et al., 2016). Moon and Blackman (2014) provide one approach to summarize ontology, epistemology, and philosophical perspectives and provide relevant examples in the natural sciences. This guidance was helpful to me in shaping and articulating my worldview for this research. Ontology helps the researcher acknowledge *how certain they can be* about what they are studying; “Who decides the legitimacy of what is real?” (Moon & Blackman, 2014, p.

1170). My ontology is **relativism.** I believe that multiple realities exist and are subjective. Epistemology shapes how we create knowledge and connects directly to our methods. My epistemology is **subjectivism**. Meaning *exists within the subject* (people), *and the subject imposes meaning*. These viewpoints help lead me to my philosophical/theoretical perspective: the selection of **critical theories** which *emancipate or liberate* and are used to change situations. Critical theories address power dynamics, offering critiques of norms, and should evolve over time (Moon & Blackman, 2014). Additionally, I am a **pragmatist** as I will use multiple approaches (including theories and methods). Pragmatists will use all tools needed to understand the research problem(s) best.

I believe that multiple views are needed for this work. The story cannot be told without some qualitative research to center the voices of minoritized and disadvantaged groups in NR and forestry. At the same time, quantitative data are needed to help us understand all SAF members' perspectives and make informed comparisons between groups. I choose to maintain a critical approach or frame for this work to challenge and disrupt existing power systems (Crotty, 1998; Evely et al., 2008; Moon & Blackman, 2014). Bhavnani et al. (2014) share that "critical" research recognizes that the creation of knowledge should be "grounded within an understanding of social structures (social inequalities), power relationships (power inequalities), and the agency of human beings (an engagement with the fact that human beings actively think about their worlds)" (p. 166). Critical approaches may be associated with feminist, anti-racist, Indigenous, and other perspectives helping to center the voices of minoritized peoples.

I considered and explored several critical frames and theories for this research, including critical race theory (CRT) (Bell, 1992; Delgado, 1995; Delgado & Stefancic, 2001), feminist theories, and intersectionality (Collins, 1990; Davis, 2006; hooks, 1981; hooks, 2000; Zinn &

Dill, 1996) critical Whiteness studies (Harris, 1993; Lipsitz, 1995; Matias, 2016), ecofeminism (Glazebrook, 2002; Warren, 1990), and environmental justice (EJ) (Buckingham & Kulcur, 2009; Holifield et al., 2009; Hunold & Young, 1998; Schlosberg, 2013; Taylor, 2002). I appreciate and value elements of all these research frames but settled on environmental justice for a few key reasons. As a pragmatist, an EJ frame allows me to honor components of multiple frameworks which best align with my worldview. EJ is a theory and an activist movement regularly linked to practice in real-world problems.

The original premise of EJ, which remains foundational, is to call attention to distribution issues, specifically, who benefits and loses regarding the environment and whose "backyard" receives negative impacts, such as water contamination from resource extraction or the location of industrial sites and landfills (Cutter, 1995; Wenz, 1988). More recently, EJ acknowledges a growing plurality of (in)justice experiences and a broadening discourse (Holifield et al., 2009; Schlosberg, 2013). The EJ movement calls for the right of all people to participate as equal members in the discussions, processes, and decision-making about their environment (Hunold & Young, 1998; Schlosberg, 2007). Hamilton notes that land-use decisions are filled with biases around race and class, "they reflect the distribution of power in society" (1993, p. 69). Cannavo summarizes some key messages from Schlosberg's recent (2007) EJ text well:

> Schlosberg argues that justice is not only—and not even *primarily*—about securing a fair distribution of goods. Treating others justly also involves recognizing their membership in the moral and political community, promoting the capabilities needed for their functioning and flourishing, and ensuring their inclusion in political decision-making (Cannavo, 2008, par. 4).

Elements of this frame help us seek to understand the perspectives of inclusion and belonging of minoritized groups within SAF and natural resources. SAF is an example of a moral community, a network that holds an ethical connection through our profession and code (Spohn, 1996).

Minoritized groups may have different needs to *function and flourish* within that community. (Schlosberg, 2007). Minoritized groups are often left out of political decision-making related to NR. Indeed, some SAF members also serve as current and future land-use decision-makers across many geographies and scales.

The EJ movement acknowledges multiple forms of oppression. Though the movement was founded on racial injustices, there is also room to acknowledge injustices related to ethnicity, class, and gender, as well as other minoritized groups (Holifield et al., 2009; Buckingham & Kulcur, 2009; Schlosberg, 2007; Taylor, 2002). Suppose our land-use managers are not from diverse backgrounds and well-trained on diversity, equity, and inclusion topics. In that case, they are unlikely to see and overcome personal biases and systemic exclusion factors. To achieve greater environmental justice, we need a depth and breadth of NR professionals prepared to offer equitable access to information and decision-making (Taylor, 2007). Issues with exclusion and discrimination are well documented in the forestry and NR professions. EJ provides a framework to help critically examine these issues and leaves room to uncover additional exclusion points.

There is another emerging component of EJ to note. More recently, some theorists have also used an EJ frame to recognize that not only do human groups suffer at the hands of inequity and injustice, but these power imbalances can negatively impact the Earth and our natural resources. Human oppression and the Earth's oppressions are interwoven (Schlosberg, 2013). Please note, that I am a forester and believe in the stewardship and sustainable use of our Earth and her natural resources, including sustainable resource extraction. However, I also believe that when this is not done *well* and when voices are excluded, the Earth and our natural resources indeed suffer negative impacts. There is also certainly a degree of subjectivity in *what is right* in

natural resource stewardship and management; the right thing often depends on who was, or was not, asked and included. Resource stewards must try to strike a balance and ensure that everyone can genuinely weigh in on environmental decisions.

It is crucial to recognize that certain people, often poor/lower class communities, Indigenous communities, and communities of color, tend to live where a greater share of environmental ills take place, and they have historically been afforded less power in the decision-making about their environment (Finney, 2014; Gilio-Whitaker, 2019; Holifield et al., 2009; Stein, 2004; Taylor, 2002). It is, therefore, even more crucial that more diverse people are recruited, included, and retained in the forestry and natural resources professions. Otherwise, there is a risk of these professions not persisting, not addressing environmental injustice causing it to spread and increase, and not sustainably managing natural resources in the long run.

Additionally, Social Cognitive Career Theory (SCCT) provided important insights and contributions to this study. SCCT proposes that perceived and objective environmental factors sway career development. Opportunities, resources, and barriers presented by the environment may be subject to personal interpretation (Lent et al., 2000). Several previous studies use SCCT and modifications to study minoritized groups (Balcarczyk et al., 2015; Cadaret et al., 2017; Flores & O'Brien, 2002; Haynes, 2015; Haynes et al., 2015; Haynes & Jacobson, 2015; Luzzo & McWhirter, 2001; Rivera et al., 2007; Tang et al., 1999). Components of SCCT informed this research approach and methodology, specifically in adding some constructs, such as barriers and self-efficacy.

Situating Myself: Lived Experiences That Shape This Research

My lived experiences and observations have shaped my passion and commitment to research on *inclusion in the natural resource profession*. I am a White woman in the natural

resources profession who has worked in traditional and non-traditional 'forestry' positions. I have worked for and with the government, universities, non-profits, and private industry. I have lived in three different states and worked at four different universities, including three land-grant institutions, one of which is also a Historically Black College/University (HBCU). I spent four years living and working in Appalachian (southeast) Ohio, a region of the United States known for its history of oppression, poverty, and environmental injustice (Kozlowski & Perkins, 2016). My time in southeast Ohio helps me to remember that environmental injustices do not only impact communities of color. As Kozlowski and Perkins state:

> It is possible for whites in Appalachia to be privileged in a relative sense of the term, yet also be marginalized based on their lower class standing by more privileged groups in society that profit from, and consume, products extracted and produced in the region. (2016, p. 1291)

As a forester, feminist, and *mother scholar* (Lapayese, 2012; Matias, 2016), I deeply and genuinely care about people, the Earth, and how people connect to the Earth and her resources. I am, at my core, both a learner and an educator. My love for people and education has fueled my passion and energy in this doctoral journey. I have personally felt some of the microaggressions (Sue et al., 2007; Sue et al., 2009), as well as macroaggressions and barriers that other women studying and working in forestry might encounter. Over the last 15 plus years, I have worked professionally with thousands of different natural resources (NR) students across various NR disciplines. I have worked with hundreds of various natural resources professionals and other stakeholders. Some specific lived experiences tipped me toward inclusion in the natural resource profession as my dissertation focus.

In my early 30s, I felt bombarded by a great deal of sexism and sexual harassment occurring in the natural resource professions, including my place of work. The self-awareness of

my inadequacies in supporting minoritized students/professionals and navigating difficult conversations with both students and co-workers motivated me to learn more. In 2014-2015, I participated in an inclusivity training at Colorado State University, which involved 23 hours of in-class training, additional scholarly readings, and a fall semester implementation project. In training I also suddenly became more aware of my own Whiteness. I had thought about racism and how it impacted our students, but I had never acknowledged my Whiteness and how that impacted my lens and my package of privileges. I decided that I needed to take a more complex look at how race played a role in natural resources students' experiences and my own experiences.

On top of this Inclusive Excellence training at CSU, I have been fortunate to have three years of doctoral coursework to help me further reflect and dig deep into thinking about my own privileges, biases, and positionality. I am especially thankful for Dr. Susan Muñoz, as her courses helped me elevate my understanding of power, privilege, and social justice.

Over the last several years, I have also taken a role in activism and raising awareness about the importance of social justice, diversity, and inclusion. I have participated in this work at the local, state, and national levels. I have co-facilitated and led sessions of varying depth regarding diversity and inclusion. I have focused on the natural resource profession and the SAF, though I have done some of this work beyond that audience. I have and will continue to seek additional training and professional development in this area. Our learning should never be considered as done!

I have been an active and devoted member of the SAF for over 20 years, contributing at local, state, and national levels. Since its inception, I have served as an officer and leader in the SAF Diversity and Inclusion Working Group. SAF supported and partially funded this research

project through the Mollie Beattie Visiting Scholar in Forest Policy Program. Mollie Beattie was the first woman to head the US Fish and Wildlife Service (1993 to 1996). “Educated in philosophy and forestry, she inspired, mentored, and dared her friends, colleagues, and young people to be more and do more than they thought possible” (Society of American Foresters, Mollie Beattie Visiting Scholar in Forest Policy Program, 2020, par. 1).

I have some insider perspective as a woman who has worked and studied in various capacities in the forestry and NR professions, which tend to have a heavy majority of men. I also must acknowledge positioning as an outsider as a White female working on diversity and inclusion, with particular attention to race, ethnicity, and gender. I also recognize that White women sometimes take up much of the space in inclusion discussions, and I will work to keep people of color, and other minoritized groups, at the forefront of my research.

A critical step in diversity, equity, and inclusion (DEI) efforts is doing our own self-work. Part of that work is recognizing our own past and what has shaped our families. My heritage, like many, is a blend. My family heritage includes French Canadian, German, and other northern European descendants. While completing this dissertation, I discovered that I also have some Indigenous roots in my own family. About eight generations back, I have Odawa heritage. I am still working on learning more about these roots and making efforts to help my children understand this and the other parts of their heritage better. I proceed very cautiously; I was certainly not connected to an Indigenous culture growing up. I will find ways to celebrate and honor this part of my heritage with great respect. I had also wondered why this past was not more apparent when I was a child. An Indigenous colleague of mine noted that perhaps my parents and grandparents knew less about it because for many generations, this was something people did not want to reveal or share; perhaps even there was some intentional erasure or fear to

discussing this past. That same colleague also told me that if it is true, that *blood is in you*. Perhaps this journey and project is one way I can honor this piece of my heritage and history. Environmental justice is at its core, a very old and originally and currently an Indigenous idea. Those ideas were formerly (and still are) dismissed by many. I hope I may continue to find ways to honor and celebrate Indigenous peoples and their ways of knowing and others whose voices have been silenced historically. Our environmental challenges certainly require additional perspectives and approaches, from past histories, in the present moments, and while looking to the future.

Delimitations

- This work is focused on a specific population. The quantitative and qualitative work will focus on membership in one natural resource professional organization, the SAF.
- The number of established constructs included in the survey instrument will be limited to the following engagement and inclusion factors: culture, respect, organizational commitment, sense of belonging, and stereotype threat vulnerability. Though other constructs have been considered, the hope was that a shorter survey would encourage a greater response rate.
- Content analysis was performed systematically through an EJ lens by the lead researcher.

Assumptions and Limitations

- It will be assumed that participants answer honestly and to the best of their abilities in the survey and qualitative portions.
- SAF membership is predominately White and men, so data on women and members of color will be limited within this population. Homogeneity of the population may limit the statistical power of some comparisons.

- This research analyzes race and ethnicity in larger groupings. This is not to say that an African American's experiences are the same as a Native American; since there are so few people of color in SAF, we likely must group all non-White races to meet statistical requirements.
- Overall transferability and generalizability of this study may be limited. SAF is a specific organization focusing on forestry and closely related natural resources disciplines.
- Specific segments of the population being sampled may be more likely to complete a web-based survey than others (Dillman, Smyth, & Christian, 2014).
- Due to the nature of survey questions asked (and potentially survey length), some SAF members may not be willing to participate.

CHAPTER 2 LITERATURE REVIEW

Introduction: Diversification of the NR Profession Matters to Society

The U.S. population is not currently mirrored by the natural resources workforce and is projected to grow more and more diverse. By 2060 the United States is predicted to consist of 43.6% Non-Hispanic White; 14.3% Black or African American; 9.3% Asian; 1.3% American Indian and Alaskan Native; 0.3% Pacific Islanders; 6.2% with two or more races; and 28.6% of Hispanic origin (Colby & Ortman, 2015). Natural resources and environmental fields must begin to reflect the more extensive demographic makeup of the U.S., or minoritized groups will continue to be absent from essential positions of influence and leadership (Chapa & De La Rosa, 2006; Westphal et al., 2022). A wide variety of perspectives in making decisions about natural resources matters. Our natural resources are broadly public, and all people must have a seat at the table for decisions regarding access, use, management, and conservation.

The concept of environmental justice (EJ) is an additional argument as to why diversifying the NR profession matters. EJ calls attention to who benefits and loses regarding the environment and whose "backyard" receives unwanted environmental impacts, such as water contamination from manufacturing or the location of a landfill (Cutter, 1995; Wenz, 1988). Similarly, there can be injustices in the site of beneficial environmental impacts, such as the location of a park or a bike path. Certain communities are more likely to benefit from these positive impacts. EJ calls for an equal sharing of risks (Lavelle, 1994) and benefits and seeks remediation to correct prior and current injustices (Bullard, 1994). Environmental risks and benefits will be more likely to be evenly shared if there is a greater breadth of professionals making NR management decisions (Taylor, 2007).

Schlosberg (2007) writes about the expansion of the environmental movement and the broadening of what environmental justice means and encompasses. Schlosberg argues that environment and nature create the conditions needed for social justice. Thus, environmental justice and social justice are linked and pluralistic concepts (Schlosberg, 2013). Schlosberg highlights Bryant's definition of environmental justice: "where people can interact with confidence that the environment is safe, nurturing, and productive. Environmental justice is served when people can realize their highest potential" (Bryant, 1995, p. 6).

Often people of color and women are minoritized (often referred to as underrepresented or marginalized) regarding their access and involvement with decisions regarding NR and the NR profession (Chapa & De La Rosa, 2006; Taylor, 2007). Minoritized is a preferred term used in this study, which helps to convey the fluidity of the concept of minority and acknowledges that minority status labels are established by those in power positions (Mansfield, 2015).

There are many barriers to entry into and inhibitors along the career progression in NR fields for minoritized ethnic, racial, or gender groups. These barriers have been categorized as financial, institutional, social and familial, and discrimination (Balcarczyk et al., 2015). Historical context, systemic injustice, and oppression are vital and overarching institutional barriers as people of color and women were excluded from decision-making and careers in NR for a long time. Often, they still are excluded (Finney, 2014; Jones & Solomon, 2019; Taylor, 2016). Other institutional barriers that have been cited include a lack of knowledge about NR professions, a lack of competitive hiring practices, a lack of structural diversity within agencies and universities, various systemic educational challenges, and psychological dimensions (Balcarczyk et al., 2015; Haynes & Jacobson, 2015; Haynes et al., 2015). Social and familial barriers might include proximity to family, lack of support from family and family pressure

towards other career choices, lack of support from peers or outsiders, and lack of understanding and awareness of career possibilities in natural resources (Balcarczyk et al., 2015; Haynes, 2015; Haynes & Jacobson, 2015; Hurtado et al., 1998; Kuhns et al., 2002). Please note that many of these barriers pulled from the current literature focus on what minoritized groups or individuals might lack. Recent work on the language used in discussing "diversity" in forestry and NR often puts the onus on the minoritized rather than the majority groups in power (Brown, 2020). Using a critical lens, such as EJ, will help recognize the role that power plays in creating and sustaining barriers.

Haynes and Jacobson (2015) compared career barrier perceptions between liberal arts (LA) and NR students through 38 interviews at one institution. Career barriers that LA majors saw to choosing an NR major or profession were outsider perceptions, school difficulty, low self-efficacy, length of school studies, and lack of opportunities. For NR majors, the top responses were school difficulty, family pressure, negative outsider perceptions, school expense, and life stresses (Haynes & Jacobson, 2015). It is essential to consider how the NR profession can help empower prospective and current students/professionals to overcome these barriers.

There are also challenges with broadly recruiting and retaining minoritized groups in Science, Technology, Engineering, and Mathematics (STEM). Underrepresentation in the sciences and STEM is not just a problem in the United States. This societal issue is also noted in other countries, including Australia, Canada, Norway, and the United Kingdom (Follo, 2002; Phipps, 2007; Syed & Chemers, 2011). There have been efforts underway in a variety of disciplines to improve the recruitment and retention of minoritized groups (Barlow & Villarejo, 2004; Rochin & Mello, 2007; Sharik et al., 2015; Sharik & Lilieholm, 2010). It is crucial to better understand the experiences of minoritized students and professionals across disciplines to

gain a more complete view of this societal problem (Syed & Chemers, 2011). Like many social justice issues in our world, it is important to recognize better how social systems in place along the pipeline, education, professional organizations, and the workforce may impede women and people of color from entering and thriving in forestry and the NR professions. If we are better able to understand minoritized experiences with barriers and supports and the systems that back them, we might be able to establish best practices to make the profession both more welcoming and inclusive. We also might be poised better to serve the variety of stakeholders that rely on our natural resources.

Historical Roots of Oppression and Connections to Natural Resources

In a 2002 literature review, Schelhas described the effects and impacts of past and present racial discrimination and ethnocentrism in the natural resource field. Let us acknowledge and remember the tragic oppression and genocide of our history through which people of color were left powerless: the Trail of Tears, the Indian Removal Act; unfair land-grant deals, such as Las Trampas, that left Hispanos landless; African slaves working land they could not claim for their own; Chinese laborers building the American railroad but not paid or recognized for their work (Finney, 2014). Multiple authors have analyzed the impact of power and privilege on our communal connections with nature and natural resources (Gilio-Whitaker, 2019; Limerick, 2000; Finney, 2014; Schelhas, 2002; Taylor, 2016). Limerick and Finney caution and remind us that the experiences are not all the same, and power and privilege impact those experiences. The master narrative of American conservation emanates from a privileged White male lens. Limerick specifically contends that "broadening the environmental movement to include the great diversity of the national population requires a full reckoning with this history" (2000, p. 184). Schelhas (2002) pointed out multipart connections among culture and values, NR uses,

society, and ecosystems; and emphasized the necessity for responsiveness to improving people diversity as essential to natural resource stewardship and policy.

Women and Minoritized Groups in STEM

Many natural resources disciplines are categorized within life and physical sciences, which could also be classified within STEM fields (Beede et al., 2011; Rochin & Mello, 2007). Natural resources disciplines would include but not be limited to, forestry, natural resources management, wood science, wildlife and fisheries, watershed science, range science, soils, geology, environmental management, and watershed science (Sharik et al. 2015). NR also connects to and could include ecology, environmental sciences, and geography. Some NR disciplines also connect to the social sciences, such as recreation, human dimensions of NR, human ecology, environmental anthropology, rural sociology, natural resource economics, and policy.

There is continued underrepresentation of Indigenous peoples (including Native Americans), African Americans, Latinx, and women among the ranks of students completing bachelor's degrees across the sciences (Gandara & Maxwell-Jolly, 1999; Treisman, 1992). These trends continue into graduate training and worsen, with even lower proportions of minoritized groups and women completing doctoral degrees. This lack of diverse racial and ethnic groups and shortage of women in the STEM areas has been acknowledged as a societal problem that seems resistant to any immediate fixes (Gandara & Maxwell-Jolly, 1999; Treisman, 1992; Syed & Chemers, 2011). Women earn over 50% of all college degrees and make up just under half of the United States workforce, yet they only make up about 24% of the total STEM workforce (Beede et al., 2011). The multiple years of the COVID-19 pandemic have, in many cases, strained women more than men, as women often focus on family caregiving, with negative

impacts on their careers (Power, 2020; Wenham et al., 2020). COVID-19 has also had disproportionate negative impacts on communities of color (Fortuna et al., 2020). Without solid representation from women and minoritized groups in STEM, we lack critical perspectives that would help us to solve problems better and create a more socially and environmentally just world (Buckingham & Kulcur, 2009; Coutinho-Sledge, 2015; Gilio-Whitaker, 2019; Holifield et al., 2009; Stein, 2004).

History of Women & Racially Minoritized Groups in the Natural Resources Profession

The entrance and progression of minoritized groups in NR professions are consistently and historically acknowledged as trailing behind other disciplines (Brown, 1996; Kern et al., 2015; Otero & Brown, 1996; Westphal et al., 2022). Articles regarding women and people of color in forestry have become more frequent over the last 30-40 years (Brown & Harris, 1993; Coutinho-Sledge, 2015; James, 1991), yet women and minoritized peoples were involved in NR management and leadership well before that. The first woman field officer in the Forest Service was Miss Hallie Daggett, hired on the Klamath National Forest in 1913. Two of the three applicants (both men) were determined as not fit to serve, and Miss Daggett managed to get the job (James, 1991).

In 1971, Payne and Theoe named the deficiency of African American recruitment by forestry schools and the existing biases of current professionals as potential barriers to entering forestry and natural resources as a career. These problems are still at the forefront today, and research shows that, by many measures, little progress has been made (Balcarczyk et al., 2015; Coutinho-Sledge, 2015; Finney, 2014; Haynes, 2015; Sharik et al., 2015; Sharik, 2020; Taylor, 2016;). Chesney (1981) studied the roles of minoritized groups in natural resources professions and barriers to the profession over 30 years ago. They noted that minoritized voices were/are

needed in the forestry and natural resources professions so that all cultural views might be included in policy and decision-making. Chesney documented barriers to the profession for minoritized groups to include opposition to change by natural resources professionals, racial discrimination, the potential urban orientation of minority groups, and low attentiveness regarding the recruitment of minoritized groups (1981). In 2002, the United States Forest Service had 1,300 African American staff out of 44,000 total staff (about 3%) (Hendricks, 2006, p. 4). Many of the barriers that Chesney noted still exist today.

Minoritized racial and ethnic groups were not the only targets of systemic exclusion. Historically, forestry and many natural resources disciplines have excluded women, both White women and women of color (Kuhns et al., 2002). In 1990, Teeter reported that 59% of female Society of American Foresters (SAF) members in the southeastern United States expressed that: women were not entering forestry because it was viewed as a profession for men. At the time, 65% of SAF women felt that gender discrimination happened on the job, and 71% felt that women did not have equal opportunities compared to men in the profession (Teeter, 1990). In 1981, 27.8% of the USFS staff were women, by 2001 that increased to 38.5%. There was an additional imbalance in that a higher percentage of the female employees were in administrative support positions, thus non-forestry/NR and non-leadership (Kuhns et al., 2002; Thomas & Mohai, 1995; USDA Forest Service, 2002). Cripe's (1991) study on women in the National Park Service (NPS) found that women earned a lower wage than men, were more likely to be in secretarial and support positions and had fewer years on the job as compared to men. As recent reports expose, women in NR still face exclusionary practices, unequal pay, sexual harassment, and discrimination (Coutinho-Sledge, 2015; Gilpin, 2016; Kern et al., 2015; Mobley, 2020).

Westphal et al. (2022) noted in their recent study, an increase of all combined Black, Indigenous, and people of color (BIPOC) employees at GS13-15 leadership levels in the Forest Service to 19%; and BIPOC employees making up about 17% of overall Forest Service (FS) staff. Women made up 34% of the overall FS workforce. Trends from 1995 to 2017 indicated little change in non-White race/ethnic groups combined; a decrease in Black employees; a decrease in women at lower grade positions, and in the National Forest System Deputy Area (Westphal et al., 2022).

SAF membership was about 10% female and 2.3% minority in 1995 (as cited in Kuhns et al., 2002). In 2017 racial and ethnic representation was 2.9% (Cubbage & Menashes, 2017). In 2019, of reporting SAF members, about 11% were women, and about 4.6% were from racial or ethnic minority groups. (T. Baker, Personal Communication, February 7, 2019). The most recent data from SAF have 5.16% of 8,436 reporting members indicating they identify with a minoritized race or ethnicity (non-White or non-Hispanic) (E. Buhl, Personal Communication, August 2021). Though we have seen some slight increases in members of color, there is more work to do. It also appears that the percentage of women in SAF has changed very little in recent history. Additionally, there are about 2,000 members or more who do not report on gender, race, and ethnicity in any given year, so total percentages are not known. SAF membership must be cultivated much like a forest, welcoming to a diversity of people (and trees) and varied in age class. Currently, SAF membership is not healthy or sustainable.

Recognition of Indigenous History and Knowledge Contributions

Scholars and land stewards increasingly recognize that Indigenous perspectives can and should be included to enhance forestry and natural resources management for present and future generations (Bussey et al., 2016; Emery et al., 2014; Hummel & Lake, 2015; Trosper, 2007).

Indigenous knowledge and philosophy call for "respect and responsibility for the land and associated living ecosystems" (Verma et al., 2016, p. 649). Kimmerer shares that traditional ecological knowledge (TEK) "is born of long intimacy and attentiveness to a homeland and can arise wherever people are materially and spiritually integrated with their landscape" (2002, p. 433). Case studies across the U.S. show that TEK leads to more productive and locally appropriate natural resource management (Emery et al., 2014; Hummel & Lake, 2015; Trosper, 2007).

Historically, "Native Americans and whites had differing views of the land, and this led to many conflicts and disenfranchisement of Indigenous peoples. Indians viewed themselves as custodians and stewards of the Earth, not as masters with dominion over it (Taylor, 2016, p. 11)." European settlement in the now United States imposed control and conflict upon Native Americans. These Indigenous people were removed and forced off their homelands. Policies since have often continued to control land, water, and minerals on Indigenous lands. Verma et al. (2016) and others cite numerous examples of environmental issues and injustices toward Indigenous people; these include climate change impacts in the Arctic (Martello, 2008); loss of fisheries and habitat (Dupris et al., 2006); the need for regulation of gas and mineral extraction and a host of other impacts (Gilio-Whitaker, 2019). There is a solid argument for the benefits of combining TEK and western science (Bussey et al., 2016; Deloria, 1995; Harkin & Lewis, 2007; Verma et al., 2016). Providing greater power and centering the voices of Indigenous people also helps address oppression and make strides towards healing some of the many negative impacts they have felt under colonialism (Gilio-Whitaker, 2019). The forestry and natural resources professions must work hard to acknowledge colonization; and then better include, engage, and follow the leadership of Indigenous peoples in land-use and stewardship decisions.

Environmental injustices are both historical and current (Cutter, 1995; Duran, 2021; Schlosberg & Coles, 2016; Wenz, 1988). It is also evident that systemic oppression and discrimination currently take place and regularly impact many minoritized groups (Brangham, 2018; Gilpin, 2016; Mobley, 2020; Shakur, 2017). Thus, it is important to understand the experiences of minoritized groups and causes of injustices and better understand the culture and climate within the natural resource communities, which seems to contribute to shortfalls regarding diversity, inclusion, and equity.

Pipeline of Students Entering Natural Resources Careers

There is a global concern about the state of forest education (UBC Faculty of Forestry, Sharik, & Saracina, 2021). In U.S. studies, the pipeline of students choosing NR majors is flat in several categories: forestry, NR recreation, range science and management, wood science, and watershed science/management. There have been significant increases, since 2005, in three categories: environmental science and studies, fisheries and wildlife, and NR conservation and management. The pool that feeds the profession is smaller than it once was and is spread across more academic major options. Undergraduate enrollment in natural resources-related programs was 13% lower in 2010 than in the 1980s (Sharik & Lilieholm, 2010), even though overall collegiate enrollment had increased by about 8.5 million students in that same time (Wolter et al., 2011). Along with these, longer-term enrollment decreases, entry of racially minoritized groups into NR professions has been trailing behind entry into many other professional disciplines (Kuhns et al., 2004; Sharik et al., 2015). These trends can vary based on scale, geography, and comparison timeframe.

In 1976, about 4% of the student population earning agricultural (AG) and natural resources degrees were from minoritized (non-White) groups (Durning, 1981). In 2006,

minoritized students earning AG and NR degrees accounted for 11% of graduates (Food and Agricultural Education Information System, 2009 as cited in Haynes, 2015); in 2019, it was 10% (Sharik & Bal, 2019). Racially and ethnically diverse participants in Quimby et al.'s (2007) study perceived more barriers in environmental sciences as compared to Whites. Adams and Moreno found that minoritized group respondents in their study were more likely ($p \leq 0.05$) to have become interested in natural resources as a career at a later life stage than the majority group respondents (1998).

Kuhn et al. (2002) found that women who enter urban forestry degree programs leave at a higher rate than men. Interestingly, these researchers used Food and Agriculture Education Information System (FAEIS) data and found that female urban forestry enrollments in 1999 had risen. Yet, the number of graduates remained about 10% lower than initial enrollment (Kuhn et al., 2002). Influence and support, from family and teachers, in psychological mediations and positive affirmations may help support women in science (Diprete & Buchmann, 2006; Miyake et al., 2010). Perhaps lack of youth exposure and normative social constructs discourage, or do not encourage, women to pursue forestry and other NR disciplines. Through a previous survey of students in the Society of American Foresters (administered in 2014), Rouleau et al. (2017) found that women were significantly more hesitant than men to enroll in forestry and related natural resource (FRNR) degree programs.

Sharik and colleagues have studied enrollment trends in forestry and natural resources disciplines for decades. In this ongoing work, Sharik shares some of the latest data: among 15 major disciplines recognized by the US Census Bureau, agriculture (AG) and NR have the second-lowest percentage of females with bachelor's degrees in the workforce at 30%; number one is engineering. In looking at ten recognized subdisciplines of AG and NR, forestry has the

lowest percentage of females at 17 percent. Yet about 55 percent of all undergraduates in the US are women. In looking at race and ethnicity, among the same 15 recognized US Census Bureau disciplines, the AG and NR category has the lowest percentage of minorities with bachelor's degrees in the workforce, at 10%. Amongst the ten AG and NR subdisciplines, forestry has the lowest percentage of minorities in the workforce at seven percent. Approximately one-third of all undergraduates in the US across all disciplines are from minoritized racial and ethnic groups. (Sharik & Bal, SAF Convention, 2019; Wilent, 2020).

Other overall trends from Sharik's research show that we are seeing improvements in undergraduate enrollments of women in natural resources. Still, we do not see the same with regards to forestry specifically (again, forestry is at 17% female). Current enrollment trend data shows *underrepresented minorities* enrolled in undergraduate natural resources at about 16 percent. Sharik recently said,

> Historically, the discrimination against minorities with respect to access, to land and resources, is absolutely fundamental to the equation. That's one way to look at it. The other part I think about is: Why is forestry so low with respect to both gender and race/ethnicity compared to the other natural resource disciplines? The greatest diversity is in the interdisciplinary programs—natural resources conservation and management, environmental science and studies. Forestry is hugely lower than the others—it's at the very bottom with respect to women enrolled, and in the lower third with respect to race and ethnicity. In wildlife programs, well over 50 percent of undergraduates are women, but its share of minorities is as low as in forestry programs. In other words, they have a lot of women in wildlife but they're all white women (Wilent, 2020).

Sharik also shared his personal perspective on why enrollments of minority groups in forestry are so low. Sharik pointed to several potential factors. One is that students may not see forestry as a major that will enhance their community or heritage. A key factor may also be that forestry has a longer history than these other environmental disciplines. Forestry has a longer negative legacy. The physical work of forestry might be too reminiscent of the work of slavery.

The forests and trees have been the place of lynching throughout history (Finney, 2014; Wilent, 2020). Sharik also expressed that forestry is perceived as "anti-conservation" and seen as "macho, rough-hewn, exploitive, and that this is a white male thing" (Sharik in Wilent, 2020, para. 10).

Interestingly, Sharik also shared that when looking by race and ethnicity categories, women have the lowest percentage in the White/Caucasian category, while the other racial and ethnic groups tend to have higher percentages of women. Thus, if you recruit more women overall, you are also likely to get more ethnic and racial diversity and visa-versa (Wilent, 2020).

Sharik (2020) and others point out that many people care about this issue and have been working on it for a long time, yet in many ways, little progress has been made. Progress on diversity, equity, and inclusion (DEI) can also be difficult to measure. The SAF is an example of an organization where more information is needed on the current organizational climate concerning DEI.

Youth Exposure to Outdoors and Natural Resources

Childhood exposure and experiences with nature and the outdoors are essential to establishing an interest in the environment (Chawla, 1999; Laird et al., 2014; Louv, 2005;). Haynes' (2015) life-cycle analysis found that interest in the environment or predispositions toward nature was acquired through various learning modes, such as interactions with significant persons or modeling behaviors (Haynes et al., 2015). It appears that overall, racially/ethnically diverse groups and majority-group NR professionals tend to be exposed to NR in different ways as a youth (Adams & Moreno, 1998; Haynes & Jacobson, 2015). Minoritized group respondents gave higher importance scores than the majority groups to organized school trips, volunteering with environmental programs, TV programs about nature, youth NR programs, and job

availability in NR. Whereas, for the majority group, higher scores ($p < 0.05$) went to family travel, rural family living, camping, hunting, hiking/backpacking, canoeing/boating, and reading nature stories (Adams & Moreno, 1998). It is important to note here that minoritized groups are connecting to the environment in different ways. Yet often, our profession keeps doing the same old outreach to the same groups that are already scouting, hunting, fishing, and camping. We should also be targeting and intentionally focusing more on schools and audiences we are currently missing, such as urban, low-income, and others with low access to NR education and outdoor recreation.

Pedagogy for STEM and Environmental Education

Environmental education is essential to youth exposure and the NR career pipeline. Skibins et al. (2010) provide a meta-analysis looking at best practices in interpretation and environmental education (EE) across 70 peer-reviewed articles. Standard best practices Skibins et al. (2010) found included resource or place-based messaging (53%), active engagement of the audience (51%), thematic development, and affective messaging (each 49%). Many NR professionals lack adequate training in best practices for EE. Programs such as Project Learning Tree (PLT) offer numerous training, curriculum, and other resources to help teachers and NR professionals deliver quality EE. A recent report by the Food and Agriculture Organization of the United Nations highlights an urgent need for action and reform of forest education in North America, addressing all ages from pre-kindergarten through adult. The report provides high-level recommendations, including increased partnerships to better fund the engagement of students in forest-related activities (Sharik & Saracina, 2021). Sharik et al. (2020) also examined *education as a driver of change* in the forest sector and describe outcomes and expectations for natural resource-related education; they suggest interdisciplinary approaches, virtual and STEM

connections, an increase in gender and racial diversity, learning-centered approaches, and field-based education targeting youth.

Studies point to the importance of incorporating and celebrating students' contributions and lived experiences in the classroom as well as in less formal learning settings (Ballantyne et al., 2007; Calabrese Barton et al., 2020; Birmingham et al., 2018). Pedagogical approaches exist in education and STEM fields that could help better inform overall efforts in environmental education. Calabrese Barton et al. offer recommendations for high-leverage practices with a focus on justice-oriented teaching that restructures power and emphasizes community connections in the context of engineering education (2020). The authors specifically highlight the importance of *recognition* of local community insights to shape the learning environment, recognition and legitimization of community concerns, and acknowledgment of students' experiences with injustices; this also offers similarities and connections to the EJ principle of *recognition*. Calabrese Barton et al. also observed *refraction*, described as the teachers' ability to re-orient classroom interactions and discourse and how this contributed to *social transformation*, providing positive shifts in power and engagement (2020). It seems both formal and informal environmental educators should seek ways to better facilitate recognition, refraction, and social transformation to help to better engage with youth. Perhaps tools like PLT could support these justice-oriented practices.

Workforce Recruitment and Retention

Many natural resources careers are in the government sector. Careers with the government may be less appealing to young adults because of complicated hiring processes, relocation requirements, and lower salaries (Renewable Natural Resources Foundation, 2003). Rouleau et al. found that forestry and related natural resource students cite concerns with earning

potential and avoidance of contentious political issues as reasons for hesitancy to enroll in these programs (2017). Overall, the natural resource agency workplace culture has not adapted to meet the shifting recruitment pool (Taylor, 2008).

Taylor's 2008 study found that approximately one-fourth of 29 government environmental/NR agencies and more than one-third of 129 mainstream environmental/NR organizations had not hired any minorities in natural resources positions in the three years preceding the study. Taylor (2008) also found that 35% of the most known natural resource organizations and 19% of government agencies reported that they had no minorities in the natural resources staff at the time of the study.

Kern et al. (2015) noted that "past research had established that more diverse scientific communities foster innovation and problem solving more effectively than communities with a narrow range of knowledge, skills, and experience" (p. 1). However, Kern et al. cited that gender diversity among scientists in natural-resource fields is particularly low (Blickenstaff, 2005; Kern et al., 2015; Taylor, 2008). Researchers compared scientist gender and rank data from the USDA Forest Service Research and Development (FSR&D) (a hierarchical system) to that of faculty gender and tenure status from universities (loosely coupled systems). Women had greater representation in FSR&D, but the proportion of women declined with advancement in both institutions. Researchers anticipated momentum in FSR&D, projecting that the representation of women in senior scientist positions would increase. This study suggests that "the organizational structure affects the diversity of the scientific workforce" (Kern et al., 2015, p. 1) and that the loosely coupled system is less favorable. Though higher education researches and teaches about change, universities are struggling as much as, or according to Kern et al. even more, than a large federal agency to retain and promote women in science (2015).

Studies have shown that cultural diversity in the workforce increases innovation and solutions to environmental problems (Karsten, 2003; Organization for Tropical Studies, 2007; Tadmor et al., 2012). Increasing diversity in the organization offers different and new experiences, knowledge, and perspectives (Environmental Careers Organization, 2005). Multicultural experience enhances team creativity (Tadmor et al., 2012). Globalization and the increasing complexity of environmental problems require professionals that can adapt and thrive in diverse cultural settings (Karsten, 2003). Additionally, a more culturally diverse workforce would better represent the variety of stakeholders that natural resource organizations serve and thus result in improved NR stewardship decisions that better meet multiple uses and demands (Kuhns et al., 2002; Schelhas, 2002). Diversity and equity are also crucial to agency recruitment, as these are criteria that prospective entry-level employees will likely seek in the workplace (Taylor, 2007).

Barriers and Supports to Entering a Natural Resources Career

Supports and barriers along the career pathway can aid in forming the process and experiences that lead to interest and the decision to pursue and remain in a natural resources career (Balcarczyk et al., 2015; Lent et al., 1994; Lent & Brown, 2006). Barriers and supports form the real and perceived structure of possibility for planning, entering, and succeeding in career paths (Lent et al. 1994).

Barriers

Balcarczyk et al. (2015) and others have cited several prior studies in outlining the various barriers to a natural resources-oriented career: lack of natural resource careers information (Adams & Moreno, 1998; Bowman & Shepard, 1985; Haynes, 2015; Kuhns et al., 2004; Maughan et al., 2001; Outley, 2008); discrimination (Chesney, 1981; Kern et al., 2015;

Washington & Rodney, 1986); the lack of role models (Organization for Tropical Studies, 2007); the lack of support from family and friends (Outley, 2008); limited funding opportunities (organization for Tropical Studies, 2007); and overall negative perceptions of natural resources careers (Chesney, 1981; Follo, 2002; Leatherberry & Wellman, 1988; Outley, 2008). Following up on Balcarczyk's and others' work by adding a critical research frame would expand the understanding of barriers to NR careers. Balcarczyk's work and qualitative approach begin to pave the way for a paradigm shift; though they did not mention a 'critical' frame specifically, they did raise minoritized voices.

Balcarczyk et al. (2015) interviewed 22 culturally diverse recent hires in the U.S. Fish and Wildlife Service (USFWS). Participants experienced a variety of barriers that fell under four thematic categories: financial, institutional, familial and social, and discrimination. Overall, recent hires from underrepresented groups (ethnic and racial minorities, as well as females) perceived more barriers in their early career path than White males (Balcarczyk et al., 2015).

Haynes et al. (2015) identified 55 journal articles that presented variables that may impact minority recruitment into NR. They then developed a proposed revision to Social Cognitive Career Theory (SCCT) in their Framework for Career Influences. They present key SCCT components as personal influences, contextual influences; self-efficacy; and outcome expectations. In this work, contextual factors included: social factors (such as discrimination, mentorship, and family support); structural factors (such as institutional diversity, STEM education, and financial barriers/compensation); experiential factors (such as recruitment, outdoor exposure, exposure to NR career fields) (Haynes et al., 2015). Haynes also pointed out that retention in a college major was not well addressed in the literature. Haynes et al. (2015) did

not include some of the key research on minority recruitment specific to forestry in their life cycle analysis.

Haynes (2015) also implemented qualitative interviews and focus groups and found that barriers for both NR and liberal arts (LA) groups were outsider perceptions and school difficulty. Some conservation and NR (CNR) students dealt with pressure from family members to seek more traditional careers (not NR). Focus groups with minority CNR students exposed some key influences such as outdoor recreation, contact with nature-related media, and witnessing environmental degradation. Perceptions of discrimination, financial burdens, and lack of confidence were other vital barriers that arose (Haynes & Jacobson, 2015).

Kern et al. (2020) surveyed in 2009-2010 to examine relationships between demographic characteristics, experiences of discrimination or harassment, and perceptions of career success and satisfaction in US Forest Service research scientists ($N = 100$). Women in the study were more likely to report experiences with discrimination or harassment based on gender than men. In the study, 49% of women reported gender discrimination compared with 22% of men ($p = 0.02$). The number of years as a research scientist and the respondent's scientific discipline were not significantly associated with reported discrimination experiences. Experiences of discrimination were more likely to come from Forest Service employees and generally had a temporary impact on relationships and attitudes in the work environment. Respondents overall reported satisfaction with their careers, particularly as their years as scientists increased. However, respondents who experienced discrimination reported lower career satisfaction (Kern et al., 2020). This study suggests that the Forest Service, which employs high numbers of forestry and natural resources professionals, has likely "not attained full integration and inclusion" (Kern et al., 2020).

Supports

Balcarczyk et al.'s (2015) literature review also outlined supports that contributed to the selection of a natural resources-oriented career pathway. Supports included: parental and familial support (Washington & Rodney, 1986; Wildman & Torres, 2001); financial incentives and support (Outley, 2008; Wildman & Torres, 2001); and availability of job opportunities (Conroy, 2000; Esters, 2007). Balcarczyk et al. claimed that these past studies lacked the theoretical basis to expand hypothesis testing and understanding (2015).

Following their literature review, Balcarczyk et al. categorized supports from the USFWS under four themes: financial, instrumental assistance, familial and social, and role models/mentors. Participants emphasized the importance of instrumental assistance over some other categories of support. Family support was the most frequently discussed social support (Balcarczyk et al., 2015). Many of the previously discussed barriers and supports, to entering a natural resources career, likely contribute to parallel obstacles and supports to entry and the study of natural resources at the college level. Barriers and supports appear to change and compound differently for students from underrepresented racial, ethnic, and gender groups (Balcarczyk et al., 2015; Sharik et al., 2015).

In a separate component of her multi-part dissertation, Haynes looked at participation in minority-focused internship programs (2015). The internship participants showed significant increases in knowledge about and interest in CNR careers and had more positive perceptions, outcome expectations, and higher self-efficacy than those not participating in internships. Quality internships likely provide a central support mechanism in helping to retain minoritized NR students (Haynes, 2015).

Connecting a Critical Frame to DEI Barriers and the NR Profession

In *Feminized Forestry: The Promises and pitfalls of change in a masculine organization*, Coutinho-Sledge (2015) shared that the historical attempts to grow the number of women in the forestry profession have been largely unsuccessful. Coutinho-Sledge poses that the gendering of forestry as the masculine has led to some negative outcomes, such as discrimination and resulting legal actions, poor public perceptions, and perhaps connections to less favorable environmental impacts. Changing the gender composition of forestry has thus far failed in many ways. The profession still struggles to recruit and retain women, has yet to diminish inequality between women and men, and most importantly has failed to change the overall organizational cultures that exclude minoritized groups (Brown & Harris, 1993; Carroll et al., 1996; James, 1991; Lewis, 2005; Westphal et al., 2022). Using the case of community-based forestry, Coutinho-Sledge argues that "when we begin to consider not only women but also normatively feminine values as agents of change, our understanding of the profession of forestry may be rejuvenated (2015, p. 375)." Coutinho-Sledge is breaking new ground with this critical and feminist lens on forestry. More of this type of approach is needed if we are to conceive innovative approaches to tackle the longstanding exclusionary culture in forestry and NR.

In 2016, Dockry and others interviewed several SAF members. They shared their oral histories, focusing on the thematic areas of *changes in the profession*, *experiences with diversity and inclusion*, and the *future of forestry as a profession* (2017). These oral histories emphasized the experiences of women, and racially and ethnically minoritized SAF members. The interviews are publically available and were recently being analyzed for qualitative themes (Dockry et al., 2017). Qualitative inquiry and analysis add valuable insights to our knowledge of professional experiences in forestry and NR.

Recent work from Brown (2020) reviews existing literature using Critical Discourse Analysis. Specifically, Brown focused on the discourse of demographic diversity in NR literature. She cites a lack of consideration for power structures as a key issue and shares that few scholars have challenged these power imbalances. Brown (2020) recommends practical applications of critical analyses "to shift the responsibility of diversity work back onto dominant groups" (p. 53), offers guidelines for inclusive and respectful language, and suggests that future research should address the *systemic and structural* issues that ultimately contribute to inequities and inequalities in NR.

Members of the Society for Range Management (SRM) contributed multiple papers taking some more critical views on gender gaps in range science and NR (Coppock et al., 2013). Radel & Coppock looked at the gender gap in rangeland professions and used a feminist political ecology approach to ask research questions and explore sources for gender gaps (2013). They shared that gender gaps result in adverse well-being outcomes for women, communities, and food-production systems (Radel & Coppock, 2013). Van Riper wrote about women as collaborative leaders in rangelands, providing examples of women as leaders and activists in rangelands management. The author draws upon connections between gender and leadership style and makes a case for how feminine leadership styles, such as cooperation, nurturing, and team empowerment, are major assets to rangeland work (Van Riper, 2013). Lastly, Ganguli and Launchbaugh discuss the history of women in SRM and call for greater recognition of women's contributions in multiple ways, including leadership in SRM, advancement in academia, and award recognitions (2013). More syntheses and sharing of critical questions and approaches such as these are greatly needed in forestry and the NR field broadly.

Environmental Justice both Movement and Theory

Environmental justice can be used as a theoretical lens in research, but first, it is and was a movement with very practical applications. The basis of EJ (which remains foundational) was to call attention to distribution issues, specifically negative environmental impacts on humans, initially centered on Black communities (Cutter, 1995; Wenz, 1988). EJ acknowledges a growing plurality of components and connects to many disciplines (Holifield et al., 2009; Schlosberg, 2013). The EJ movement calls for the right for all people to participate as equal members in the discussions, processes, and decision-making about their environment (Hunold & Young, 1998; Schlosberg, 2007).

Though the movement was founded in response to racial injustices, it has expanded to include other minoritized groups, including ethnicity, class, and gender (Buckingham & Kulcur, 2009; Holifield et al., 2009; Schlosberg, 2007; Taylor, 2002). Certain minoritized groups, including poor/lower class communities, Indigenous communities, and communities of color, are more likely to experience a greater share of environmental ills. They have also been afforded less voice in the decision-making about their environment, both historically and currently (Agyeman et al., 2016; Finney, 2014; Holifield et al., 2009; Gilio-Whitaker, 2019; Stein, 2004; Taylor, 2002).

Schlosberg (2004, 2007) and others offer expansions of EJ that also include membership inclusion, recognition, and capabilities. Specifically, *participation and inclusion* in membership and decision making; *recognition of different ways of knowing*, *philosophies, and contributions*; promoting *capabilities* (equity and support) so that members might thrive; as well as acknowledging *impacts to the resources* and environment, and mentions of distribution imbalances (Agyeman et al., 2016; Schlosberg, 2004; 2007; Schlosberg & Coles, 2016).

There are recently some applications of EJ in natural resources management research and even forestry. EJ work is not commonly found in SAF's primary peer-reviewed journal, the Journal of Forestry (JOF). When searching "environmental justice" in the JOF of SAF, the researcher found 18 results (as of April 2022). Articles that included the term "environmental justice" in the JOF included multiple papers on tribal and Indigenous forestry work, such as socioecological benefits of restoration of black oak ecosystems for tribes (Long et al., 2017) and calls to listen to neglected American Indian perspectives (Bengston, 2004); and working across cultures to protect Indigenous cultural resources (Alexander et al., 2017). Other EJ mentions in the JOF search included an urban forestry study looking at green space and green infrastructure in cities and proximity to more privileged communities (Pregitzer et al., 2021) and a survey of homelessness and nonrecreational camping (Baur & Cervney, 2019). Additional articles were found with philosophical considerations of EJ, ethics, and forestry education (Bembry & Woener, 1994; Gharis et al., 2017; Salazar, 1996).

Outside of the JOF lies recent work on EJ and wildland fire smoke impacts in the forest science and fire science research arena, exploring differential smoke exposure and susceptibility (Duran, 2021). The Duran thesis highlights EJ in this work. There is additional research on wildland smoke and human impacts, but it does not emphasize EJ or social justice. (Rice et al., 2021; Starns et al., 2020). Environmental justice research can be more readily found when looking at disciplines that blend social science and environmental science, such as human dimensions of natural resources, geography, or sociology.

Some EJ work discusses community-level EJ and how EJ connects to everyday life and the need for just sustainabilities (Agyeman et al., 2016). This includes the power and politics of material and resource flows related to food and energy; EJ connections to where we "live, work,

play, and more recently, eat" (Agyeman et al. 2016, p. 332); and EJ in urban policy and planning (Agyeman, 2013). Lastly, there is another emerging component of EJ to note. Some theorists have also used an EJ frame to recognize that not only do human groups suffer at the hands of inequity and injustice, but the Earth and our natural resources can also be negatively impacted by these power imbalances. Injustices upon humans, nature, and the Earth are interwoven (Schlosberg, 2013).

McInturff et al. (2021) draw from EJ theories to look at conservation paradigms that work at landscape scales and justice issues of both wildlife and humans, specifically with reintroductions and managing large carnivores. McInturff and colleagues used EJ as a framework for large carnivore reintroductions and recoveries (LCRR). This includes considerations of multispecies justice, participatory justice, distributive justice, and recognition justice in LCCR (2021).

He et al. (2021) used an EJ lens to analyze success stories in community forestry in China. He et al. also used a mixed methodology. Villagers in the case study demonstrated that a contributor to success in forest management was better alignment with justice norms and practices at a local level. This study considered distributive, procedural, and recognition aspects of justice. He and colleagues suggest that EJ should be considered in future community forestry work and as a tool for local institutions (2021).

A recent paper by Das (2021) suggests future directions for EJ research. The article highlights opportunities for the third generation of EJ, which calls for expanding the scope of 'critical EJ' (Schlosberg, 2007). Das sees the role of 'the state' and local decision-making authorities as a gap in EJ work. Additionally, Das calls for use of diverse notions of justice such as recognition, participation, and distribution, or a lack thereof (Das, 2021). Methodologically,

Das discusses using case studies and incorporating content analysis. Das suggests that comparative studies across multiple case studies would also fill an EJ gap. In sum, various authors call for the continued expansion of EJ theory and its application in research.

Social Cognitive Career Theory (SCCT) Contributing to the Conceptual Frame

In addition to the critical lens and environmental justice, SCCT also informed this study. Primarily SCCT helped to point at factors and potential constructs that might impact pathways and the ability to remain and thrive in forestry and NR. Lent et al. describe Social Cognitive Career Theory as an "effort to understand the processes through which people form interests, make choices, and achieve success at varied levels in both educational and occupational pursuits" (Lent et al., 2000, p. 36; Lent et al., 1994). SCCT focuses on cognitive-person variables: self-efficacy, outcome expectations, goals, and how these variables interact with other facets of the person or their environment. These different aspects include variables such as gender, ethnicity, social support, and barriers (Brown & Lent, 1996). SCCT stems from Bandura's social cognitive theory (1986) and has been utilized to study career and educational barrier effects (Albert & Luzzo, 1999; Cadaret, 2017; Forbes-Ingram, 2017; Haynes, 2015; Swanson et al., 1996; Swanson & Woitke, 1997).

SCCT posits that perceived and objective environmental factors sway career development. Opportunities, resources, and barriers presented by the environment may be subject to personal interpretation (Lent et al., 2000). Lent et al. further posited that person, environment, and behavioral variables affect one another through compounded interconnections (1994). Lent et al. proposed that the perception of negative environmental factors (barriers) makes people less likely to translate career interest to goals and actions. Perceived support or

favorable environmental factors may help translate career interest to goals and actions. Contextual factors may influence the choice process, both directly and indirectly (2000).

The construct of career barriers originally arose from the study of women's career development (Swanson et al., 1996; Swanson & Woitke, 1997). Swanson and Woitke (1997) defined barriers as "events or conditions, either within the person or in their environment, that make career progress difficult" (p. 434). Swanson et al. (1996) suggest two main issues with inquiry around barriers:

> "(a)The barriers construct has lacked a firm theoretical framework into which research findings could be incorporated and from which subsequent research hypotheses could be derived, and (b) most of the empirical research has been conducted with measures that have been idiosyncratic to the investigator's particular studies" (Swanson et al., 1996, p. 220).

In 1996, Swanson et al. shared the Career Barriers Inventory (CBI). The research acknowledged that the number and type of perceived barriers could be a limiting factor in career choice and achievement. The construct of barriers has been recognized as a key explanatory variable in career choice research (Swanson & Tokar, 1991a, 1991b). SCCT has previously been used to study the NR profession (Balcarczyk et al., 2015; Haynes, 2015).

SCCT Research on Minoritized Groups

There is empirical evidence of differences in perception of barriers and career path navigation amongst different ethnicities and cultures. One example is that cultures and groups that tend to hold collectivist values, such as women, Asian Americans, Mexican Americans; and individuals from remote communities like rural Appalachia, share the importance of family support in their career and educational decision making (Ali & Saunders, 2006; Balcarczyk et al.,

2015; Flores & O'Brien, 2004; Lent et al., 2000; Tang et al., 1999; Wetterson et al., 2005). For collectivists, the desires of others may be prioritized over the career preferences of the individual.

Tang et al. (1999) used a survey, correlation analysis, and path analysis (SEM) to examine factors influencing career choice. Through path analysis, in a sample of Asian American college students, they found that two contextual variables, family involvement (0.30, significant) and acculturation (-0.27, significant) along with self-efficacy (0.57, significant), had a more substantial direct influence on an index of career choice than personal interests (0.00, not significant). Tang et al.'s correlation matrix showed that acculturation had a negative association with career choice (-0.21, $p <= 0.01$) and a negative association with interest (-0.38, $p < 0.01$) (1999). This may indicate that among Asian American College students, individuals with higher acculturation have more interest in less typical occupations. Overall, this study supports that acculturation and family background, along with self-efficacy, play an important role in Asian Americans' career aspirations; this may be true of other collectivist cultures. In individualistic cultures, career choice behavior may be swayed more by environmental and personal factors (Lent et al., 2000). In Black college students, perception of barriers has also shown to be a moderator and has explained stop-out of career goal achievement (Slaney, 1980; Slaney & Brown, 1983).

In a study focusing on Latinas, Rivera et al. (2007) were puzzled by research findings that showed no relationship between perceived barriers and self-efficacy (0.02, not significant) or between barriers and consideration for male-dominated careers (-0.04, not significant). Another perplexing finding was that role-model influence did not seem to influence male-dominated (0.09, not significant) or female-dominated (0.13, not significant) career self-efficacy as

expected. One possible reason could be that participants were not exposed to role models in a wide range of careers, which was not investigated in this study (Rivera et al., 2007). It did seem that Latinas who perceived barriers were more likely to seek female-dominated occupations (0.19, $p < 0.05$ correlation matrix; 0.17, $p < 0.05$ path analysis). Rivera et al. suggested that future research should look further at coping efficacy. In their 2007 study, acculturation to the Anglo culture was not related to self-efficacy and had no effect for consideration for male-dominated careers; however, acculturation was related to higher levels of self-efficacy for female-dominated careers (0.22, $p < 0.05$) (Rivera et al., 2007), like findings in a previous study (Flores & O'Brien, 2002). This research points to the importance of cultural context and the interplay this may have with other variables related to barriers and career choice.

Luzzo and McWhirter (2001) found that ethnic minorities perceived more career-related ($F(1, 282) = 21.54$, $p < 0.001$, effect size (*eta*) = 0.90, through MANOVA) and educational barriers ($F(1, 282) = 6.58$, $p = 0.01$, *eta* = 0.50) and reported lower coping-efficacy for perceived career-related barriers ($F(1, 281) = 7.04$, $p = 0.008$, *eta* = 0.50 as compared to European American (White) undergraduate students. They also found that women anticipated more career barriers than men ($F(1,282)=4.66$, $p = 0.03$, *eta* = 0.41) (Luzzo & McWhirter, 2001). All effect sizes listed here indicate substantial relationships (larger than typical) by eta measures (Vaske, 2019). Building off the studies mentioned above, it seems that blending components of SCCT with critical frames will provide new and perhaps deeper ways of understanding the barriers and experiences that minoritized NR students and professionals face. These critical approaches will keep the research focused on challenging and disrupting current systems and help give voice to people of color and women.

Forbes-Ingram (2017) evaluated STEM mentorship programs and their efficacy in addressing the lack of women's persistence in STEM. This study utilized a mixed methods approach to look at relationships among career and psychosocial variables and coping efficacy, self-efficacy, stereotype threat, and sense of belonging. There were no statistically significant differences to effectively show any relationship among career and psychosocial variables and self-efficacy, stereotype threat, and sense of belonging. Mentorship participants did share higher levels of support, self-efficacy, and coping-efficacy, suggesting an overall feeling of support from the mentorship program (though not significantly). Participants showed higher self-efficacy suggesting a greater likelihood to persist in STEM. Significant positive moderate correlations between self-efficacy and sense of belonging were found ($r = 0.599$, $p < 0.01$). There were also significant positive moderate correlations between coping efficacy and self-efficacy ($r = 0.469$, $p < 0.05$), coping efficacy and sense of belonging ($r = 0.695$, $p < 0.05$), and career and psychosocial support ($r = 0.561$, $p < 0.01$) (Forbes-Ingram, 2017). This study focuses on women and demonstrates how the blending of qualitative and quantitative methods might be utilized to investigate the problems with recruitment, retention, and inclusion in the forestry and natural resources profession. Though Forbes-Ingram does not share an intention toward critical analysis, her study indeed focused on raising the voices of and supporting women more in STEM.

Lent et al. (2000) built on Swanson et al.'s (1996) critique of barriers research by suggesting topics for modification and enhancement. Lent et al. (2000) presented further consideration of intrapersonal versus environmental impediments, barriers as task-specific and situational variables, locating barriers along a temporal dimension, barrier perceptions and the phenomenological construction, the influence of coping efficacy, confusion between the concepts of outcome expectations and career barriers, lack of literature on career supports, and

the prevalence and impact of career barriers including consideration of the likelihood that specific barriers will occur. This research suggests that it may be helpful to consider a situational focus, such as centering on forestry and SAF. Qualitative work would also help address some of the suggestions above.

SCCT Applications in the Natural Resources from Haynes

In a 2015 dissertation and subsequent publications, Haynes et al. (2015) shared three crucial ways in which they saw SCCT as limited in its utility for minority retention and recruitment to natural resources careers. Haynes et al. (2015) pointed out: that SCCT does not recognize the importance of early exposure to the outdoors as an essential element in igniting environmental interests (Matsuba & Pratt, 2013; Tanner, 1980; Wilensky, 2002); SCCT did not specifically address the marginalization of minorities or the lack of access to affirming nature-related opportunities (Floyd, 1999; Floyd & Johnson, 2002; Parker & McDonough, 1999)*;* SCCT proposes personal and contextual variables as *exogenous* in that these variables influence, self-efficacy and outcome expectations, but that this influence is not considered as a two-way relationship (Haynes et al., 2015; Lent et al., 2000).

Haynes et al. ultimately proposed a modified Framework for Career Influences based on Lent's SCCT, which instead proposed both personal and contextual influences which are salient for minoritized students as *endogenous* variables, which both influence and are influenced by self-efficacy and outcome expectations, in a two-way interaction (Haynes et al., 2015). The modified framework combines existing theories on career choice and minoritized involvement in natural resources. Haynes' framework helps focus attention on factors that are key to career influences in NR. Further research on this framework is likely needed.

Utilizing this theoretical framework, one component of Haynes' multipart study was a survey of students' perceptions of conservation and natural resource careers (CNR). The survey had a 39% response rate, with 478 students responding. The study included students across disciplines from two sizeable general education classes at the University of Florida, including some CNR students. Haynes set up questions and data collection well to make some valuable comparisons, using independent sample *t*-tests to determine if there were gender differences in mean responses. Haynes used one-way ANOVA to examine differences in mean responses for any demographic characteristics with more than two categories. Haynes used regression to determine which demographic characteristics predicted responses on a specific index best (Field, 2009). Haynes (2015) ran reliability statistics, Cronbach's alpha, and item total correlations (ITC). Items with a Cronbach's alpha below 0.70 and items with an ITC less than 0.3 were removed. Kruskal Wallis and Mann Whitney *U* tests were used for ranked data item comparisons, such as the Rokeach Values (Rokeach, 1973).

This study found neutral to slightly positive perceptions of CNR careers and that academic classification (freshman, sophomore, junior, and senior) was a significant predictor of positive CNR perceptions; though the variance explained was minimal ($F = 4.25$, $p < 0.05$, $R^2 = 0.01$). Haynes (2015) suggested that respondents may lack awareness of CNR careers or the survey tool could not distinguish slight perception differences.

No significant differences were found with self-efficacy across race, ethnicity, or gender (values not reported), though other studies have found such differences (Byars-Winston & Fouad, 2008; Hardin & Longhurst, 2016). Women, as well as juniors and seniors, had more negative outcome expectations for their careers. Specifically, females reported that they felt less likely than males to both have control over career decisions ($t(412)=2.56$, $p < 0.05$) and to have a

career that allows them to live a lifestyle of their choosing ($t(412) = 3.20$, $p < 0.01$) (Haynes, 2015). Additional research is needed to explore this question further as results vary in the literature. Haynes points out that previous studies have found lack of confidence to be a career/academic barrier reported by minoritized groups (McWhirter, 1997; Quimby et al., 2007). Gender has also been a factor in past studies, where males reported higher self-efficacy than females (Allaire-Duquette et al., 2022; Bandura, 2006).

Hayne's study (2015) found some contextual and experiential factor associations with demographics. Regression analysis of race, ethnicity, and gender found that Hispanic ethnicity and gender were significant predictors of responses to the perception of discrimination in students' career fields ($F = 4.58$, $p < 0.01$, $R^2 = 0.03$). Females placed significantly higher opinions on family than males placed ($t(414) = -3.811$, $p < 0.01$). Financial factors varied significantly by race, Hispanic ethnicity, and gender. Minoritized racial and ethnic groups reported more financial support from loans ($F = 3.10$, $p < 0.01$) and scholarships ($F = 2.44$, $p < 0.05$) than did White students in the study. Minoritized racial and ethnic groups also reported financial issues as more of a potential barrier to finishing their degree ($F = 3.31$, $p < 0.01$) than White respondents. Females reported greater support from part-time work (($t(413) = -2.94$, $p < 0.02$), and scholarships ($t(411) = -2.95$, $p < 0.01$) than males (Haynes, 2015).

In looking at experiential factors, White students shared greater exposure to nature than minoritized racial and ethnic groups (across four survey items, all had a $p <$ or $= 0.01$). Students whose primary career choice was CNR also had significantly greater exposure to nature than other students (analysis looked at four different survey items across disciplines, and all had a $p < 0.01$) (Haynes, 2015).

In terms of personal factors, minoritized racial groups reported that their race ($F = 3.85$, $p < 0.01$) and others' perceptions of their race ($F = 6.07$, $p < 0.01$), were a greater barrier to attaining their career goals than White respondents reported. Females also shared that their gender ($t(414)=8.07$, $p < 0.01$) and others' perceptions of their gender ($t(414)=9.27$, $p < 0.01$) were more of a barrier to attaining their career goals than was found for males (Haynes, 2015).

It did not appear that top values varied much across different demographic categories. The only significant racial/ethnic differences found with Kruskal Wallis tests were that accomplishment ($X^2 = 7.058$, $p = 0.01$) and security ($X^2 = 4.38$, $p = 0.04$) ranked significantly higher for Hispanics than non-Hispanic groups. There also were some gender differences, some of which were significant. Women ranked happiness significantly higher than men ($X^2 = 6.64$, $p = 0.01$) (though both ranked it highly). Males ranked accomplishment third, and it was not in the females' top three ($X^2 = 4.93$, $p = 0.03$). There were few significant differences, in the top values, related to race and ethnicity (Haynes, 2015). In summary, Haynes' research verified the lack of representation for minoritized groups in outdoor recreation, likely related to exposure to CNR careers. Due to many confounding factors and complexities, further research was recommended. Haynes notes, "the successful diversification of the CNR field requires agencies to understand the concerns of varied groups in order to best encourage and support them throughout their journey along the academic to career pipeline (2015, p. 127)." In sum, multiple studies offer insights into the application of SCCT and its components as tools for understanding career pipelines and pathways.

Organizational Climate and Culture

Societal systems institutionalize some barriers and supports, such as universities, agencies, and professional organizations. The climate and culture of a particular organization

will set the stage for its ability to be diverse, equitable, and inclusive. Drawing on others' work, Schneider et al. (2013) define organizational climate as– "*shared perceptions of and the meaning attached to the policies, practices, and procedures employees experience and the behaviors they observe getting rewarded that are supported and expected (Ostroff et al., 2003; Schneider & Reichers, 1983; Schneider et al., 2011; Schneider et al., 2013) (Schneider et al., 2013, p. 362)."*

Schneider et al. (2013) also discuss diversity climate and outline findings from a few fundamental studies. Organizations supportive of diversity demonstrated significantly smaller performance gaps between racial/ethnic groups (McKay et al., 2008). Racial diversity was more closely linked to diversity climate within less diverse organizational units (Pugh et al., 2008), and in a positive diversity climate, racial/ethnic diversity was positively related to organizational performance (Gonzalez & DeNisi, 2009). Finally, unit-level sales improvements were more positive when managers and staff reported a supportive diversity climate (McKay et al., 2009).

Organizational culture is a construct that can be considered both similar and different to climate (Schneider et al., 2011; Zohar & Hoffman, 2012). Schneider et al. (2013) define organizational culture as "shared basic assumptions, values, and beliefs that characterize a setting and are taught to newcomers as the proper way to think and feel, communicated by the myths and stories people tell about how the organization came to be the way it is as it solved problems associated with external adaptation and internal integration (Schein, 2010; Trice & Beyer, 1993; Zohar & Hofmann, 2012) (Scneider et al., 2013, p. 362*)*." Initially, climate was more often studied through surveys, and culture was studied through qualitative methods, but over time this trend has shifted.

Inclusion is a crucial component to a healthy organizational climate and culture. Inclusion can be explained as the degree to which diverse individuals can participate fully in the

decision-making process within an organization or group. While a truly “inclusive” group is necessarily diverse, a “diverse” group may or may not be “inclusive” (Oregon Metro, 2016). Inclusion encompasses the social processes that affect access to resources and information, a sense of belonging and security, and social encouragement from others (Hope et al., 1999; Person et al., 2015; Schein, 1992). An inclusive environment could be described as welcoming, valuing, celebrating, honoring, and affirming all expressions of diversity and identity (Pope et al., 2015).

Creating and sustaining a climate and culture to promote DEI is a significant challenge for most natural resource organizations. Many NR and forestry professionals have put forth a call for change. Some research efforts have focused on key organizations and groups, including the USFS (Kern et al., 2015; Kern et al., 2020), Cooperative Extension (Hassel, 2004; Schauber, 2001), and environmental organizations (Taylor, 2007), among others. Proposed changes related to DEI in the NR profession have included but are not limited to: diversifying the ranks of NR educators and students; creating a more inclusive profession and associated organizations; a call to celebrate different perspectives and ways of thinking; addressing issues with harassment and discrimination; better incorporating social sciences into NR curriculum; openness to a greater variety of disciplines; a call for more diverse representation at all levels, including leadership; improved and increased training related to DEI; greater accountability at all levels; and improvements to how (and who) we promote forestry and NR (Coutinho-Sledge, 2015; Kern et al., 2015; Kern et al., 2020; Rouleau, 2017; Sharik & Bal, 2019a; Sharik & Bal, 2019b; Taylor, 2007; Wilent, 2020).

Change

It is apparent that organizational change is necessary for SAF and many other NR organizations. Burnes (1996) described organizational change as the comprehension of adjustments within organizations at the most general level, amongst individuals, groups, and the organizational collective. Van de Ven and Poole (1995) describe change as the surveillance of differences in one or multiple dimensions of an organization over time. A goal would be to achieve multicultural change in SAF, which would require adjustments toward an inclusive and multicultural philosophy across all levels of the organization: individual, group, and the larger institution. Specifically, multicultural change is the process of moving towards being a multicultural organization (Pope et al., 2014). Grieger (1996) defines the multicultural organization as follows:

> A multicultural organization (a) is inclusive in composition of staff and constituencies served; (b) is diversity-positive in its commitment, vision, mission, values, processes, structure, policies, service delivery, and allocation of resources; (c) is permeated by a philosophy of social justice with decisions informed by consideration of ensuring fairness, ending oppression, and guaranteeing equal access to resources and opportunities for all groups; (d) regards diversity as an asset and values the contributions of all members; € values and rewards multicultural competencies, including diversity-positive attitudes, knowledge about salient aspects of diverse groups, and skills in interacting with and serving diverse groups effectively, sensitively, and respectfully; and (f) is fluid and responsive in adapting to ongoing diversity-related change. (Greiger, 1996, pp. 563-564)

SAF is a long way from becoming a multicultural organization. However, working in this direction will help SAF create a more diverse, equitable, and inclusive culture. Organizational commitment to learning and establishing a learning culture will be vital to making these adjustments. A study on a public land management agency suggests that areas of focus should be building a learning culture and enhancing accountability. Salk and Schneider (2009) suggest integrating learning activities into position descriptions, meetings centered on organizational

processes and lessons learned, and forums that support and encourage open dialogue. For SAF to best strategize how to change and better promote a culture that embraces DEI well, they needed to understand the organization's current climate and culture better.

Relevant Constructs: Self-Efficacy, Stereotype Threat, Sense of Belonging, and Others

Multiple constructs come up in the literature and require further exploration and consideration in a survey focused on better understanding overall inclusion within the SAF. Appendix A shows the reliability, sometimes the validity, and other measure details for these constructs. Self-efficacy, a key component of SCCT, can impact other variables, including outcome expectations (Lent et al., 1994). Self-efficacy is "an individual's belief in their capacity to execute behaviors necessary to produce specific performance attainments" (Forbes-Ingram, 2017, p. 16). There is a phenomenological component of SCCT that is subject to individual perception. Therefore, Lent et al. (1994, 2000) proposed looking at career barriers amid other impacts, including coping efficacy, dispositional affect, and outcome expectations. Coping efficacy is an individual's belief about their ability to traverse career hurdles. Coping efficacy may influence an individual's barrier perceptions (Bandura, 1986, 1997; Forbes-Ingram, 2017; Hackett & Byars, 1996; Lent et al., 1994). Scales used to measure these constructs include the Coping with Barriers Scale (CWB; Luzzo & McWhirter, 2001; McWhirter, 1996;) and the self-efficacy for Academic Milestones Scale (AM-S; Lent et al., 1986).

Stereotype Threat

Stereotype threat is "being at risk of confirming, as self-characteristic, a negative stereotype about one's group" (Steele & Aronson, 1995, p. 797). Stereotype threats can "beset the members of any group about whom negative stereotypes exist (Steele & Aronson, 1995, p. 797)." These stereotypes or labels can create a target and vulnerability. People can be

stereotyped by any identity factor, including race, ethnicity, and gender. Identity intersections can also be stereotyped, such as labels associated with a *White man* or *Black woman,* as examples.

Woodcock et al., Hernandez, Estrada, and Schultz found stereotype threat associated with scientific disidentification for minoritized ethnicities, which was linked to a decline in the interest in seeking a scientific career (2012). Woodcock et al. modified Spencer's Stereotype Vulnerability Scale, which looked at the impact of stereotype threat on women's mathematics performance, to look at stereotype judgments based on ethnicity (SVS, Spencer, 1993; SVS-4, Woodcock et al., 2012). Woodcock et al. developed a multigroup baseline model and found that the effect of stereotype threat on scientific identity varied by race/ethnicity. The direct effect was negative and significant for Hispanic/Latino(a)s (β= -0.25, b= -0.15, SE= 0.05, p=0.001) but nonsignificant for African Americans (β= -0.03, b = -0.02, SE=0.06, p=0.73) (2012). More on this study is included in the methods section.

Later, Cadaret et al. (2017) looked at stereotype threat as a barrier to women entering engineering. Cadaret et al. used stereotype vulnerability and stigma consciousness as 'proxies' for stereotype threat. They presented correlation coefficients and p-values for the research hypotheses. Hypothesis one, which stated that academic self-efficacy is negatively related to stereotype vulnerability and stigma consciousness, was supported for stigma consciousness (r = -0.24, $p < 0.001$) but not for stereotype threat (r = -0.11, p = 0.11). Cadaret et al. also examined and found some group differences regarding educational and supportive programming using *t*-tests. For example, students in a learning community reported significantly higher GPAs (Cadaret et al., 2017).

Sense of Belonging

Goodenow (1993) describes a *sense of belonging* as the "extent to which students feel personally accepted, respected, included by others in the school social environment" (p. 80). This type of belonging could also be considered in other social settings, such as belonging in a profession or a professional group, including NR, forestry, or the Society of American Foresters. Goodenow evaluated a sense of belonging through the Psychological Sense of School Membership (PSSM) scale (Goodenow, 1993). Goodenow's construct had 18 items and looked at how strongly participants feel they belong to the wider school or academic community, using a five-point Likert-scale from not at all true (1) to completely true (5). This test has yielded reliability results of 0.88 (Goodenow, 1993). Goodenow established some construct validity through contrasted group validation by assessing various construct predictions backed by the literature (1993). PSSM seemed to have informed many other later studies on sense of belonging.

Forbes-Ingram (2017) used a modified version of the PSSM and similar belonging scales to look at sense of belonging for women in a STEM mentorship program (discussed previously in this literature review). Forbes-Ingram's also looked at sense of belonging qualitatively. For the mentorship program being studied, there were three sub-codes found within the theme "influences on sense of belonging": host events to bond; assistance in adjusting to college life; and individual support (Forbes-Ingram, 2017).

Goodenow's PSSM is also cited as helping to inform the Math Sense of Belonging Scale (MSBS) (Good et al., 2012). MSBS is a 28-item construct, development and validation of this scale led to five key factors: Membership; Acceptance; Trust; Affect; and Desire to Fade. MSBS items use an 8-point Likert scale, strongly disagree (1) to strongly agree (8). Two separate study's demonstrated Cronbach's alpha of 0.875 and 0.884, respectively. Good et al. found a

significant interaction with time and gender, in that for Time 2 (of 3), males' sense of belonging to math was significantly greater than females' ($F(1,332) = 4.44$, $p < 0.04$) (2012). They also found that a reduction in women's sense of belonging to math over time predicted lower intentions to pursue math in the future (even when controlling for other variables) ($\beta = 0.27$, $t(1004) = 2.41$, $p=0.02$) (Good et al., 2012).

Johnson et al. utilized an Overall Sense of Belonging (OSB) scale from the National Study of Living-Learning Programs. OSB used a 5-item construct with a Likert scale, strongly disagree (1) top strongly agree (5). Face validity was established by working with two survey development experts and 15 administrators, and the survey was pilot tested twice. Cronbach's alpha for internal consistency and reliability of sense of belonging measure was 0.898. In this study, ANOVA results showed differences in sense of belonging by race/ethnicity group ($F(4, 2541) = 9.582$, $p < 0.001$), and Tukey's post hoc test showed that White/Caucasian students expressed a greater sense of belonging than, African American, Asian Pacific American, and Hispanic/Latino students (each separately) (Johnson et al., 2007).

Culture, Respect, and Discrimination

Culture, respect, and perception of discriminatory attitudes were all components considered to help shape an organizational climate. Examples of these constructs were found in Colorado State University's Employee Climate Survey (2018). Rawls (1971) discusses respect as a human 'right to be treated in a way that fosters positive regard (Miller, 2001, p. 530)'. Respect is cited as vital to individual and collective identity, career success, and maintaining relationships and a connection to humanity (Baxter et al., 2001; Hendrick & Hendrick, 2006; Markus, 2004). The most common forms of daily injustice include some form of disrespect (Lupfer et al., 2000; Messick et al., 1985; Mikula et al., 1990).

A potential construct set that was considered was the Diversity Engagement Survey (DES) (Person et al., 2015). This survey tool measured several diversity and engagement factors in academic medicine. The DES arose from many years of studying diversity, inclusion, and engagement paired with applied diversity management. Multiple diversity survey tools were utilized in previous studies before this tool which combined engagement and inclusion was developed. The DES factors were:

1. **Common Purpose**: individual experiences a connection to the mission, vision, and values of the organization;
2. **Trust**: individual has confidence that the policies, practices, and procedures of the organization will allow them to bring their best and full self to work;
3. **Appreciation of Individual Attributes:** individual is valued and can successfully navigate the organizational structure in their expressed group identity;
4. **Sense of Belonging:** individual experiences their social group identity being connected and accepted in the organization;
5. **Access to Opportunity:** individual is able to find and utilize support for their professional development and advancement;
6. **Equitable Reward and Recognition:** individual perceives the organization as having equitable compensation practices and non-financial incentives;
7. **Cultural Competence:** individual believes the institution has the capacity to make creative use of its diverse workforce in a way that meets business goals and enhances performance; and,
8. **Respect:** individual experiences a culture of civility and positive regard for diverse perspectives and ways of knowing. (Person et al., 2015, p. 4)

Persons et al. thought these factors to contribute most to productivity and employee retention. Internal consistency (reliability), construct validity, and criterion validity were also measured (Person et al., 2015). Though this construct set was strong, it was not feasible for the SAF study due to issues with potential modifications, permissions, and overall costs to use this instrument.

Backlash

Diversity work in organizational settings continues to be controversial. Backlash refers to a resistance to diversity efforts and affirmative action policies (Kravitz & Klineberg, 2000;

Mobley & Payne, 1992; Solomon, 1991). Evidence of resistance or backlash from White people against policies (such as affirmative action) and other diversity initiatives is well documented, and seemed most prominent from White men (Kravitz & Klineberg, 2000; Mobley & Payne, 1992; Solomon, 1991). Backlash to gender equality initiatives is also an issue (Flood et al., 2018; Williamson, 2020).

Kidder et al. (2004) used a scenario study and survey to detect backlash reactions. They modified two existing scales and developed two new scales to detect backlash. They measured emotional reactions (Watson et al., 1988), attitudinal response, fairness perceptions, and organizational commitment. They measured cognitive, attitudinal response (alpha=0.80) and fairness perceptions (alpha= 0.87) through a scale they developed. They used three organizational commitment items from O'Reilly and Chatman (1986) with an alpha of 0.82. They used gender and orientation toward ethnic groups as independent variables, utilizing the Other Group Orientation subscale from Phinney's (1992) Multi-group Ethnic Identity Measure, with an alpha of 0.77 (Kidder et al. 2004).

Kidder et al. (2004) found that using pro-business justifications (rather than affirmative action reasoning) generally garnered more favorable support for diversity-related recruitment and retention initiatives. However, a pro-business spin may not be enough to prevent backlash. If individuals do not truly value diversity and related initiatives, they may experience discomfort, and this could manifest as backlash (Kidder et al., 2004). This is supported by cognitive dissonance theory (Festinger, 1957). Thus, Kidder et al. (2004) highlight the critical importance of assessing participants' attitudes before implementing initiatives, as this helps design programming and strategy (Roberson et al., 2003). Accountability is also highlighted in this study (Kidder et al., 2004); though this may look different in an organization like SAF, there are

ways we can hold members accountable to DEI-related policies. Kidder suggested that DEI can be incorporated in the evaluation of hired or elected leaders and board members. Additionally, that DEI should be considered a vital skillset; this could help to legitimize DEI in the organization.

Overall Gaps

A more comprehensive study was needed with a focus on barriers and the overall climate that might inhibit recruitment, retention, engagement, and inclusion within the forestry and the broader natural resources profession. There are valuable studies that present key barriers and themes, such as previous work from Balcarczyk et al. (2015), Haynes (2015), and Taylor (2007). Yet, more research is needed to understand how barriers to entry and retention/persistence may vary amongst different natural resources disciplines and groups. Analysis of professional climate factors and feelings of inclusion (and belonging) in an organization within forestry and NR adds to the existing literature. Data comparisons between groups, such as comparisons by gender and race/ethnicity were noticeable gaps. There are also few studies to date that have taken a mixed methods approach or used critical inquiry to gain further insights into issues with climate and inclusion in NR and forestry. Using an EJ frame to perform a critical analysis would be an innovative approach.

Prior studies analyzed called for additional research to incorporate racial bias and stereotype influence (Cadaret et al., 2017) and exploration of collective effects of race/ethnicity and gender on barriers, experiences, and career pathways in NR (Balcarczyk, 2015; Coutinho-Sledge, 2015; Haynes et al., 2015; Haynes & Jacobson, 2015; Kern et al., 2015; Rouleau et al., 2017; Sharik et al., 2015). Other gaps included the need for additional qualitative data to better capture stories of minoritized individuals in both forestry and NR (Dockry et al., 2017).

Established tools, such as measures of engagement and inclusion, stereotype threat, barriers, backlash, and self-efficacy, along with selected theoretical frames like EJ, offered approaches to analyze this problem in new ways. A broader quantitative look at forestry and NR professionals will help offer greater generalizability and better shed light on the forestry piece of this puzzle. There also seems to be a need for additional qualitative work to capture a depth and breadth of minoritized stories in both forestry and NR better. Therefore, the literature reviewed documents a clear need for a mixed methods study that utilized critical approaches to understand engagement and inclusion in a far-reaching NR organization, such as SAF.

CHAPTER 3: RESEARCH METHODS

Research Approach and Rationale

Research method planning considered representation and size of the sample, with attention to both reliability and validity in qualitative and quantitative approaches. A mixed methods approach using environmental justice (EJ) as a critical frame helped prioritize and recognize minoritized voices while also increasing our understanding of what all members need to feel included and thrive. This study sought to understand better perspectives, experiences, and between-group comparisons; to show differences in power dynamics and senses of inclusion and exclusion. The overarching research question for this multipart study is:

How do qualitative methods help explain and enhance quantitative findings and deepen overall understanding related to measures of engagement and inclusion of minoritized groups and other members of the Society of American Foresters?

Rationale for Mixed Methods

Moving the needle on diversity and inclusion in NR is crucial to the profession's future and to the forests and natural resources we all depend on. Pairing qualitative and quantitative methods and data will make the research more powerful and publishable in this field.

Like the broad lens of the EJ movement, a mixed methods approach will allow for multiple views (Creswell & Plano-Clark, 2011) and, therefore, a potential for richer perspectives. Greene (2007) conceptualized mixed methods as a way of looking at the social world "…that actively invites us to participate in dialogue about multiple ways of seeing and hearing, multiple ways of making sense of the social world, and multiple standpoints on what is important to be valued and cherished" (p. 20). I value the opportunity to use and honor multiple 'paradigms'

through mixed methods research (Creswell & Plano-Clark, 2011). Archibeque-Engle (2015a, b) provides a mixed methods dissertation focused on the intersections of Latinas/os, agriculture, and higher education and used a critical frame. I modeled some of the structural elements of this study on Archibeque-Engle's dissertation (2015a; 2015b).

Specifically, a transformative mixed methods approach was selected for this study. Transformative mixed methods address social justice issues and power imbalances; call for change and empowerment; remain attentive to minoritized groups in the design, implementation, and analysis; and seek to unearth inequities. Transformative approaches also ask that the research not further marginalize or tax already minoritized groups in the research process. A transformative design fits this work well as it also utilizes a critical theoretical framework, which in this case was EJ (Creswell & Plano Clark, 2011).

Participant Population

The Society of American Foresters (SAF) population included 8,633 SAF members with emails on file at the time of this study. The literature review provides key demographic information on SAF membership. The SAF website describes membership as:

> All **forestry and natural resource management** (students and graduates) are eligible for membership with SAF. Our members represent the entire spectrum of the forestry profession - nonprofit organizations, forest products industry, public lands, universities, and independent contractors. SAF is the collective voice and community for consultants, researchers, managers, field foresters, business owners, specialists, technicians, and more. (https://www.eforester.org/Main/Membership/Membership.aspx?hkey=8f9e89a6-4104-46a9-9422-dbeedbedca5d, paragraph 1, 2019).

Forestry: SAF defines the word *Forestry* as the science, art, and business of creating, managing, and conserving forests and associated resources in a sustainable manner to meet desired goals, needs, and values.

Natural Resources Management: SAF defines *Natural Resources Management* as being within the broad field of forestry. The broad field of forestry consists of those biological, quantitative, managerial, and social sciences that are applied to forest management and conservation; it includes specialized fields such as agroforestry, urban forestry, industrial forestry, and international forestry.

SAF definition of forestry and the broad field of forestry was adopted in 1998, per the publication Dictionary of Forestry. (https://www.eforester.org/Main/Contact_Management/Broad_Field_of_Forestry.aspx, 2019, paragraph 2 & 3).

The SAF is a national organization that includes forestry and related natural resources disciplines. There are also some international SAF members and SAF is engaged in global initiatives. SAF comprises students from a variety of institutions and members from a wide variety of employment sectors. This study will help us to better understand social constructs within the largest and most prominent organization for forestry professionals; and what might most impact recruitment, retention, and inclusion. It will also help to better understand the climate and culture of SAF as an organization. The researcher has an insider perspective at multiple levels in this organization, which helped craft a survey on the controversial topics of engagement, diversity, and inclusion.

This study has been replicated by the researcher in the Society for Range Management at that organization's request. Further replicating this work may offer greater insights into larger trends in forestry and closely related professions.

Data Collection and Sampling Procedures

The SAF membership was surveyed to measure baseline data regarding engagement and inclusion measures, including perceptions of culture, respect, commitment, sense of belonging, and stereotype threat vulnerability. Data were analyzed for how the constructs above compare across independent variable (IV) groups, including gender, race, ethnicity, and potentially age or career level. The survey sought to assess the overall inclusion climate of the SAF by asking questions specific to D&I efforts within SAF. Additionally, the tool asked questions to better understand barriers and pathways to natural resources careers.

The survey was administered electronically via email as a census to all SAF members (both professional and student) with an email on file (N = 8,366 were successfully emailed at the time of the survey). It was made clear to the participants that the survey was voluntary, and responses would be kept anonymous and confidential. No response was tied to an email or individual, but results were analyzed collectively. Open-ended question answers were sometimes reported as quotes, but anonymously.

One drawback to an anonymous link is that it can make it challenging to check for non-response bias. The highest priority was to gather reliable and valid information. Due to the nature of this survey topic, respondents might have been more likely to respond and share their true thoughts to an anonymous survey that was not tied to their membership log-in or email; this is

also what SAF leadership saw as the best approach (SAF Leadership, Personal Communications, November 2021).

Despite this survey anonymity, some opportunities were still available for nonresponse bias checks. Nonresponse bias checks look for differences between those who answered and those who did not to help ensure that those who participated are representative of the population being studied. Prior research has suggested that showing the absence of response bias may be more important than a high response rate (Babbie, 2003; Dillman et al., 2014; Vaske, 2019). Notably, some prior studies have demonstrated little difference among multiple contacts (such as first and final), maintaining that perhaps seeking high response rates and multiple contacts and modes may not be necessary to avoid nonresponse errors (Becker & Iliff, 1983; Dolsen & Machlis, 1991; Hammitt & McDonald, 1982; Vaske, 2019). One nonresponse bias check was to look at the demographics of those who responded as compared to SAF membership. The demographics of respondents to the SAF Engagement and Inclusion Survey compared similarly to the known demographics of the overall SAF population, as will be shown in race/ethnicity, years as a member, and employer sector data. Non-response bias was also checked using independent sample *t*-tests to compare early responders (day 1, May 25th) to late responders (responded on July 1st or after) on several factors, specifically culture, organizational commitment, and sense of belonging. These tests indicated no significant differences thus there was no indication of non-response bias by this method (Dillman et al., 2014; Vaske, 2019). In an analysis of forest products industry survey studies, 55.3% of studies that did nonresponse bias checks used an early vs. late respondent comparison procedure (Armstrong & Overton, 1977; Bumgardner et al., 2017).

The Tailored Design Method (TDM) was utilized (Dillman et al., 2014). The survey was developed in Qualtrics and administered using a standard link. The link was shared with individual SAF members via their unique email addresses. SAF members could also have seen and accessed the survey link through social media posts, via Facebook and LinkedIn. Though some SAF members may be less likely to respond online, most are accustomed to receiving important SAF communications in this manner. Most (93%) adults in the US use the Internet, and about 75% are believed to have access in their own homes (Pew Research Center, 2021). SAF indicated that at the time of the study, 698 members did not have an email on file (Danielle Watson, SAF Staff, personal communication, October 9, 2020). Researchers offered these members alternate methods of response if they were interested in participating via a posting in the Forestry Source (June 2021 issue), a form of print media they received by mail. None of these members took us up on this opportunity. It is difficult to say how many saw the posting in the Forestry Source.

The length of time to take the survey was estimated at 20 minutes total, though this varies by participant. The survey was broken into two components; the first was estimated to take about 12 minutes and the second about 8 minutes. These time estimates seemed reasonable according to pilot participants. The Tailored Design Method (TDM) calls for researchers to decrease the personal costs of participation. One key consideration of TDM is the length of survey time (Dillman et al., 2014; Monroe & Adams, 2012). Survey respondents also had the opportunity to start the survey and return at a later day or time within the data collection period; this flexibility also likely helped the response rate.

A letter to members requesting participation was crafted, adhering to IRB protocols, and addressing critical recommendations from TDM. The letter connected to current SAF messaging,

offering consistency (Dillman et al., 2014; Groves et al., 1992). The letter aimed to establish trust and build on already established trust with SAF, helping to assure the study's legitimacy, methods, confidentiality, and utility. The letter also emphasized that this survey was sponsored and supported by SAF leadership and approved by researchers and IRB at Colorado State University. See the current draft letter in Appendix B and the consent information (Appendix C) found when participants clicked the survey link.

People are more likely to participate in the survey if it comes from an authoritative source, such as a university (Dillman et al., 2014; Groves et al., 1992). For this study, we could showcase Colorado State University's support, and the CEO of SAF co-signed the letter. The researcher also had many established relationships within SAF; leveraging these relationships and the networks they connected helped build trust in the study and likely increased participation.

The primary incentive for members to participate was the opportunity to give back to and improve SAF. The researcher and SAF also offered to share published results from this study with all participants. The study did not provide any other incentives to participants, as the SAF staff preferred; they believed we would get a good response without any material incentives.

Several approaches were used to help ensure the survey tool's quality, validity, and reliability. Relevant constructs researched elsewhere, with established reliability and validity, were selected when designing this survey. These constructs were explained in detail in the next section; all construct details are also in Appendix A.

Committee members and other content experts provided input in the survey development. The researcher consulted people diverse in age, race/ethnicity, and gender to review the survey.

Cognitive interviews were conducted with two SAF members to check question comprehension and determine if questions could be answered accurately (Willis, 2004).

A small test (pre-test/pilot) was also administered to ensure the survey language is well understood and to identify and address any other potential issues before sending the survey out to SAF membership (Dillman, 2014). This test survey went out to selected NR professionals who were once SAF members but had dropped their membership. Communication for the pilot is included (Appendix K). Pilot participation was anonymous, just within a much smaller pool of participants.

The SAF survey was administered in May, June, and July of 2021. The initial launch date was Tuesday, May 25, 2021. Researchers worked with SAF to send all mass communications centrally from SAF since the organization was already a trusted sender to their inboxes. Correspondence with SAF members included: an initial email invitation and three mass reminders over about seven weeks. Additionally, there were multiple posts on SAF social media via LinkedIn and Facebook. The survey was also shared via state/regional networks and media, as well as through networks like the House of Society Delegates (HSD, a group of SAF leaders) and SAF Working Groups. Appendix D provides information on the timeline for initial communication and subsequent reminders. Examples of each communication are given in Appendices G, H, and I. Recommendations in TMD were followed, with close attention to the timing of emails and how the response rate varies with each reminder. The study and survey were also promoted in an article in the monthly SAF news media, The Forestry Source, which most members receive electronically and through regular mail as a hard copy (Appendix J). The Forestry Source outreach helped notify the ~700 members who did not maintain an email on file with SAF (Appendix M).

Survey design, question development, and wording followed TDM recommendations. For example, questions perceived by the researcher as the simplest and most comfortable were positioned at the beginning of the survey, and the more personal questions towards the end, including demographics. Testing checked for visual appeal on various web browsers and devices, including mobile phones (Dillman et al., 2014). The entire survey text exported from Qualtrics is included in Appendix O, and the IRB protocol approval email is also included (Appendix P).

Selected Constructs with Details on Reliability and Validity

Reliability refers to the instrument's consistency and whether there is evidence of consistent results. Validity refers to evidence that the survey tool is measuring what it is intended to measure; thus, we can draw valuable inferences (Creswell, 2014; Gliner et al., 2017; Morgan et al., 2013).

One approach to ensure reliability and validity is finding and using constructs already tested for both. Permission was granted to use the established constructs in this survey. Constructs considered were described below; additional key details are shared in Appendix A. These constructs have been effectively utilized in other studies, most report reliability statistics, and some report validity.

Culture and Respect

Culture and respect are constructs considered to help shape the overall organizational climate. Examples of these constructs were initially found in Colorado State University's Employee Climate Survey (CSU Climate Survey, 2018, https://diversity.colostate.edu/data/employee-climate-survey/). Rawls (1971) described respect as a human 'right to be treated in a way that fosters positive regard (Miller, 2001, p. 530)'. Respect is cited as vital to individual and collective identity, career success, and maintaining relationships

and a connection to humanity (Baxter et al., 2001; Hendrick & Hendrick, 2006; Markus, 2004;). The most common forms of daily injustice include some form of disrespect (Lupfer et al., 2000; Messick et al., 1985; Mikula et al., 1990). Schneider et al. (2013) define organizational culture as "shared basic assumptions, values, and beliefs that characterize a setting and are taught to newcomers as the proper way to think and feel, communicated by the myths and stories people tell about how the organization came to be the way it is as it solved problems associated with external adaptation and internal integration (Schein, 2010; Trice & Beyer, 1993; Zohar & Hofmann, 2012)" (Schneider et al., 2013, p. 362*)*. The constructs for culture and respect from the 2018 CSU Climate Survey were used in the SAF Engagement and Inclusion survey. Previous analysis found a Cronbach's alpha of 0.92 for culture within the unit and 0.89 for unit diversity focus; CSU's sense of belonging construct had an alpha of 0.82. All respect items were analyzed as separate items as they were considered too distinct to combine into one factor.

Stereotype Threat and Barriers

Stereotype threat is "being at risk of confirming, as self-characteristic, a negative stereotype about one's group" (Steele & Aronson, 1995, p. 797). Stereotype threats can "beset the members of any group about whom negative stereotypes exist" (Steele & Aronson, 1995, p. 797). These stereotypes or labels can create a target and vulnerability. Identity labels associated with gender, race, ethnicity, sexuality, and ability (among others) can be stereotyped. Woodcock et al. (2012) found stereotype threat to be associated with scientific disidentification, which was linked to a decline in the interest in seeking a scientific career. This effect was evident for Hispanic/Latinx students ($p = 0.001$) but was not as clear for African American students in this study. However, this may have been impacted by the institutional context as many in this study were at predominately Black and mixed-race institutions (Woodcock et al., 2012). Woodcock et

al. modified Spencer's Stereotype Vulnerability Scale, which looked at the impact of stereotype threat on women's mathematics performance, to instead look at stereotype judgments based on ethnicity (SVS; Spencer, 1993; SVS-4, Woodcock et al., 2012). Woodcock et al. (2012) also developed a shortened scale with just 4-items (SVS-4). Later, Cadaret et al. (2017) looked at stereotype threat as a barrier to women entering engineering. Spencer found a coefficient alpha of 0.67 (1993); Woodcock et al. reported a coefficient alpha of 0.85 in a large sample of racially/ethnically underrepresented college students with the revised 4-item version (2012); Cadaret found a coefficient alpha of 0.91 (Cadaret et al., 2017). Cadaret et al. (2017) used stereotype vulnerability (8-item) and stigma consciousness as 'proxies' for stereotype threat and found that stigma consciousness (but not stereotype threat) was supported as having a negative relationship with self-efficacy. Only stereotype threat (SVS-4) was used for the present study, as the stigma consciousness scale did not fit the overall survey population well since the proposed survey includes both majority and minority members (Woodcock et al., 2012).

For a barriers construct, this study proposed a modification of the Coping with Barriers Scale to better meet specific populations and purposes within SAF. The Coping with Barriers Scale (CWB) (Luzzo & McWhirter, 2001; McWhirter, 1996) originally had 28 items with subscales: Career Related Barriers (7 items) and Education-Related Barriers (21), (such as "money problems" or "not being prepared enough") Cadaret et al. used only the educational barriers. CWB used a Likert-type scale (1, *not at all confident* to 5, *highly confident*) to measure efficacy for coping with barriers to career or educational goals. Total scores were summed and divided by the number of items; lower scores indicate less perceived ability to overcome barriers (less coping efficacy). Validity and reliability were supported in multiple studies (Luzzo & McWhirter, 2001); convergent validity and discriminant validity (Lopez & Ann-Yi, 2006; Tate et

al., 2015; Thompson, 2013); test-retest reliability was moderately stable with a coefficient of 0.48 (Luzzo & McWhirter, 2001); Cronbach's alpha was 0.91 (Cadaret et al., 2017. The CWB was used to inform the barriers construct in the SAF Inclusion Survey. In this case, the researcher measured the experience with and level of the barrier rather than confidence to overcome. Since this survey included students and professionals from different points in their careers this adjustment seemed more appropriate. The scale was modified to indicate *not experienced, (experienced but…) not at all a barrier, slight barrier, moderate barrier, major barrier*. Some new barrier items have also been added to this modified construct.

Backlash and Organizational Commitment

Goodenow (1993) described sense of belonging as the "extent to which students feel personally accepted, respected, included by others in the school social environment" (p. 80). The concept of sense of belonging and acceptance applies to environments beyond schooling and education. Johnson et al. utilized an Overall Sense of Belonging (OSB) scale from the National Study of Living-Learning Programs. Researchers modified Johnson et al.'s OSB construct, which had 5-items (Johnson et al., 2007). Sense of belonging was also an item in the CSU Climate Study (2018) and considered as a separate component of culture. The CSU Climate Study made comparisons between groups for sense of belonging, with comparisons across organizational levels, including department, college, and university (2018).

This study also sought to detect backlash, should it be present (Kidder et al., 2004). For the SAF Inclusion Survey, subconstructs from Kidder et al.'s backlash tool were used. Kidder et al. measured backlash through four proposed sub-constructs, emotional reactions (4 items) (Watson et al., 1988), attitudinal response (3 items), fairness perceptions (4 items), and organizational commitment (3 items) (Kidder et al., 2004; O'Reilly & Chatman, 1986). Attitude

toward the program had a Cronbach's alpha of 0.80. Fairness had an alpha of 0.87. Organizational commitment had an alpha of 0.82. Organizational commitment was used in the SAF Inclusion survey to potentially distinguish respondents who might be openly against diversity and inclusion initiatives (Kidder et al., 2004; O'Reilly & Chatman, 1986).

Data Analysis

Once collected, survey data were cleaned and analyzed using both Qualtrics and SPSS (Leech et al., 2015). Descriptive statistics were analyzed first to understand best who did (and therefore who did not) answer the survey. The researcher compared respondent demographics to those of the overall SAF membership. Initial descriptive checks looked for skewness and general patterns in the data. Fortunately, response numbers were high enough from members of color, women, and the LGBQ+ (lesbian, gay, bisexual, queer, plus) community to compare with the majority groups, White members, men, and non-LGBQ+ members. Additionally, some questions specific to awareness of SAF D&I initiatives, career barriers, and pathways helped the researcher to describe and understand the respondents better.

Key independent variables (IVs) were race and ethnicity, gender, and age. Key dependent variables (DV) included engagement and inclusion measures: perceptions of culture, respect, commitment, sense of belonging, and stereotype vulnerability. All DVs use a 5-point Likert scale. Most are part of constructs with multiple items, which will be averaged (combined). We treated most DVs as normal scale measurements, as they had five ordered levels at equal interval spacing and approximated normal distribution (Morgan et al., 2013). Variables were checked for skewness to choose the appropriate statistical analyses.

Both difference inferential statistics (inferences about differences between groups) and associational inferential statistics (inferences about relationships between variables) were used.

First, researchers looked at means and descriptive statistics of engagement and inclusion factors. Then difference inferential statistics, primarily *t*-test and ANOVA were used to compare groups (such as gender, race, or age). Using chi-square and regression analyses, the researchers also looked at associations between various DVs. Statistical analysis was also triangulated with the literature and themes from the several open-ended survey questions.

Pilot Study

Committee members and other content experts have shaped and provided input in the survey development. Several SAF members and a few key SAF staff helped revise the survey in the fall of 2020 and the spring of 2021. These included people from various professional forestry backgrounds, representing different racial and ethnic groups, and both men and women. A temporary diversity, equity, inclusion-focused committee meeting monthly in 2020 also looked at the survey and provided input. With these various colleagues, we discussed the survey's length, the clarity of the questions, and wording adjustments to specific questions. In general, people seemed to agree that though this survey was longer than some guidelines recommend, the length of 20-25 minutes total was appropriate for this research problem and audience focus. SAF has experienced decent survey response rates and quality in the past and has used lengthy surveys of 20-30 minutes. The suggestion was made to break the survey into two parts, so if members were not willing to give 20 minutes, they could just do part one (around 12 minutes) and stop there.

Cognitive interviews were conducted to test the IRB-approved survey. These cognitive interviews were conducted 1:1 with two different SAF members to check question comprehension and determine if questions could be answered accurately (Willis, 2004). Both participants were White women, active SAF members, and had some prior experience with

survey research in natural resources populations. Cognitive interviews can be important in determining necessary changes and often offer considerations that pilot-testing cannot (Dillman & Redline, 2004). In this case, both individuals first took the survey as they would online via the link. Then they noted suggested adjustments with access to click back through if needed. We then scheduled a virtual meeting to talk through feedback. They were also explicitly prompted to note the length of time it took them to take part I and II of the survey; --to share any comments, suggestions, or points of confusion regarding this tool; and to share any feedback about the introductory letter and consent form. Overall, both cognitive interview participants thought the survey length was acceptable, and the questions and flow were good. Some specific comments from each follow.

The first cognitive interview participant shared the following: it took her about 15 minutes for part I and 10 minutes for part II. She suggested rewording the question on SAF engagement levels to break activities/events apart from media. Suggested attention to students versus professionals in the audience. Similarly, for the questions regarding organizational culture, she suggested "Thinking about your *experience* with SAF" rather than "Thinking about SAF leadership, programs, and events" as participants might have different perspectives on each, whereas overall "experience" is a more holistic question. She also suggested some expanded introductory language for part II of the survey, which was incorporated. The first participant also recommended reframing some of our items to have a negative orientation to check for response consistency; however the PI and Co-PI decided not to take this approach since the vast majority of these were established constructs that have been checked for reliability and validity (CSU Climate 2018; Johnson et al., 2007; Kidder et al., 2004; Luzzo & McWhirter, 2001; McWhirter, 1996; O'Reilly, C.A., 1986; Spencer, 1993; Woodcock et al., 2012).

The second cognitive interview participant said the survey time estimates seemed fine. She echoed, considering some engagement adjustments. She also encouraged maintaining statements related to the SAF code of ethics, seeing that as a specific need. Lastly, she suggested perhaps asking about involvement in other organizations however researchers were very hesitant to ask any more questions, so we tabled that suggestion for this survey effort.

Next, a pilot was administered to ensure the survey language was well understood and to identify and address any other potential issues before the survey was sent out to SAF members (Dillman, 2014). This pilot test survey went to selected NR professionals who were not current but instead past SAF members. Communication for the pilot is included (Appendix M and N). Pilot participation was anonymous, just within a smaller pool of participants. The pilot test went to 25 participants, and the test went smoothly. There were no indications of issues taking the survey. Eleven pilot participants completed the survey; a few others started but did not proceed very far. From those who participated, results came in clearly. Survey time estimates seemed reasonably accurate. One pilot participant said, "Overall, the tool was great! It made sense and flowed well. I am not a current SAF member but answered some of the questions as if I were a current SAF member." One pilot participant suggested shortening, even if slightly. Though the researchers acknowledge it is a long survey, we provided the opportunity to stop at the end of part I, and to skip questions, to help encourage participation.

Methods: Qualitative Analysis

This mixed methods study followed a transformative design approach, employing a lens of environmental justice (as previously defined). The literature review and the researcher's personal lived experience saw injustices in SAF and forestry professions. The researcher sought to understand engagement and inclusion in the SAF to address social justice challenges and call

for change. This research was able to build off established theoretical frameworks and prior research studies, to inform this qualitative analysis with the intent of not further taxing minoritized groups (Creswell & Plano-Clark, 2011).

The researcher used a deductive approach, beginning with some established theories, and an inductive approach, pulling together varied research findings and searching for patterns that might help explain quantitative results (Vaske, 2019). Deductive and inductive methods were performed through a modified content analysis of multiple open-ended survey questions. Content analysis is a "technique for making inferences by objectively and systematically identifying specified characteristics of messages" (Holsti, 1969, p. 14; Stemler, 2000). Content analysis fits the audience of SAF members and NR professionals well, as it raises members' voices and allows us to incorporate the frequency of mentions. Numbers seem to resonate with SAF members and helped convey our message.

Like previous natural resources work (Balcarczyk et al., 2015; Bal & Sharik, 2019; Takala et al., 2019), the researcher performed content analysis scanning through responses for both established (*a priori*) and inductive (*emergent*) codes (Stemler, 2000). Initial established code categories were based on elements of environmental justice theory and previous literature review (He et al., 2021; Holifield et al., 2009; Schlosberg, 2004; 2007; 2013; Schlosberg & Coles, 2016). Prior studies' findings and the current studies' statistical results informed the content analysis and coding process. There were also code categories that emerged throughout the qualitative analysis. Some preliminary findings were shared with SAF members and natural resources professionals, with opportunities for comments and questions through presentations in 2021 and 2022. The lead PI, the doctoral advisor, served as a peer debriefer on all analyses and findings, and the doctoral committee members have also contributed to this research process.

Future publications hope to work formally with co-author(s) to further review and check for agreement on coding patterns (Balcarczyk et al., 2015; Stemler, 2000).

Multiple open-ended survey questions were analyzed separately and then also looked at collectively to help address these qualitative research questions:

1) In what ways do environmental justice principles emerge in the qualitative data, specifically are there mentions of recognition of different ways and philosophies; of participation and inclusion in membership and decision making; of promotion of capabilities through supports, and injustices; or impacts on minoritized groups?
2) What are participants' comments on the potential impact of the current engagement and inclusion situation in SAF? Do they see specific impacts on people? The profession? The forests, natural resources, environment, and Earth?

The positionality of the researcher is extremely important in qualitative analysis (Chase, 2005). The qualitative researcher is responsible to ensure an ethical research design and practice, especially toward the treatment of participants (Savin-Baden & Major, 2013). This research also values experiential knowledge and transdisciplinary perspectives (McCoy & Rodricks, 2015; Sol´orzano & Yosso, 2002).

The EJ movement informed my epistemological perspective and methodological approach in constructing the code themes and stories. Using EJ principles, the researcher coded for the following, using work highlighted by Schlosberg and others: *participation and inclusion* in membership and decision making; *recognition of different ways of knowing*, *philosophies, and contributions*; promoting *capabilities* (equity and support) so that members might thrive; as well as *impacts to the resources* and environment, and mentions of distribution imbalances (Agyeman

et al., 2016; Schlosberg, 2004; 2007; Schlosberg & Coles, 2016). The EJ frame also helped focus attention on injustices related to race, ethnicity, gender, and other minoritized groups.

Additionally, the researcher investigated what barriers participants encounter and what they would need to function, thrive, and engage as full members of the SAF community. This research sought to understand how respondents do and do not feel included as members, leaders, and decision-makers in SAF, as well as in the broader NR community (Cannavo, 2008; Holifield et al., 2009; Hunold & Young, 1998; Schlosberg, 2007).

The data were organized, analyzed, coded, and stored in NVivo. Code names and descriptions were developed throughout the process to help ensure reliable understanding and designation of codes and code groupings. The lead researcher completed the qualitative analysis, though peer experts and committee members informed the research process. All identifiers were removed before open-ended response data were shared with others. Data were stored on a computer and secured in a Colorado State University drive system without identifiers.

Trustworthiness: Validity and Reliability

Validity and reliability are also important concepts in qualitative work, to check for accuracy of findings and consistency of methods approach, respectively (Creswell, 2014; Creswell & Miller, 2000; Gibbs, 2007). Evidence of validity can be provided through the establishment of trustworthiness and credibility (Creswell & Miller, 2000). Validity strategies that have been incorporated include *triangulation*; illumination of *bias*; *prolonged time* in the field; and *peer debriefing* (Creswell, 2014, p. 201-203).

1. *Triangulation* is seeking patterns in data from multiple sources, such as between the quantitative and qualitative data in this study, information from the literature, comparisons with other studies, and peer debriefing.

2. *Illumination of bias* involves my self-reflection and open, honest interpretations as the researcher. The researcher shares her positionality (gender, race, experiences) and how that might have shaped these research interpretations.
3. *Prolonged time in the field* connects to the researcher's experience as a long-time active member of the SAF who has served as a leader in the Diversity and Inclusion Working Group (D&I WG); and as a professional who has worked in many facets of 'forestry.' The researcher has personal experience with SAF participants on various scales in multiple locations; this lends credibility to the research findings.
4. *Peer debriefing* includes checking in with peers throughout the research process. Some modified peer debriefing has occurred through preliminary data presentations with professionals in forestry and related disciplines and check-ins with the lead PI. Feedback from the three doctoral committee members was also incorporated.

CHAPTER 4: RESULTS FROM THE SAF ENGAGEMENT AND INCLUSION SURVEY

This chapter reports the quantitative and qualitative findings from the Society of American Foresters (SAF) engagement and inclusion (E&I) survey, beginning with quantitative results including response rate, error checks, demographics, and analysis of E&I measures. Engagement and inclusion are interdependent notions, and prior research links the two concepts (Downey et al., 2014; Hoffer, 2020; Sladowski et al., 2013). In this research, both engagement and inclusion are seen as intertwined. Quantitative research questions looked for differences in reported engagement and inclusion measures, including perceptions of culture, respect, commitment, sense of belonging, and stereotype vulnerability between gender groups and racial/ethnic identifications. Next, the researcher analyzed the quantitative data for interactions between gender and race/ethnicity on E&I measures and associations that might predict E&I measures. The quantitative analysis follows, first focusing on E&I in SAF. Then the researcher shares results related to respondents' pathways that led them to forestry and NR careers and SAF.

Response Rate

1257 SAF members responded to the SAF E&I Survey and provided some data. Some did not complete all survey questions, which was not a participation requirement. At the time of the survey (May-July 2021), 8,366 SAF members had an email on file with SAF. The overall response rate was 15%, based on the 8,366 members that were emailed. It is important to note that the open rate of emails in SAF varied. In looking at the open rate for survey emails sent, the highest open rate was 42.5%. The response rate among opened emails would be higher (about 35%). In any case, these 1257 members gave their responses and their insights. The survey

offered all SAF members with an email on file a chance to participate. Social science survey response rates can vary widely and tend to be lower with internet surveys (Bumgardner et al., 2017; Dillman et al., 2009; Dillman et al., 2014; Manfreda et al., 2008). Additionally, 22 people who were not current SAF members responded to the survey. This provided some information about 'non-members' and was analyzed separately as requested by SAF. The results reported here focused on current SAF members only.

Error Precautions and Checks

Several methods and measures were taken to minimize total survey error in this study, as suggested by Vaske (2019) and others, while also maintaining attention to participant constraints of cost and time (Dillman et al., 2014). Specific methods and analyses were used to help minimize and check for discrepancies between the whole SAF population and the study sample (coverage error) (Vaske, 2019). Qualtrics allows the researcher to flag and double-check any potential duplicate responses. Results show that data was collected from different population sectors by various demographic checks, such as gender, race and ethnicity, employment sector, age, and geographic location.

Precautions to mitigate measurement errors were also taken (Vaske, 2019). The researcher utilized established constructs as much as possible. Questions and items in this study were often used in other studies and had established reliability and validity. Overall, the researcher consulted the literature, had previous knowledge of the population, sought expert advice, and pre-tested the instrument to reduce measurement error (Vaske, 2019). Additionally, our research methods did not force a response to any questions (beyond consent to participate). Prior studies support that leaving the opportunity to skip questions offers higher quality data and meets IRB recommendations (CSU IRB, 2022).

Nonresponse bias (or error) is also important to analyze. One nonresponse bias check option is to look at the demographics of those who respond compared to other known data on SAF membership. First, the survey sample was a similar match to some key demographics known about the population; see racial and ethnic and employment sector comparisons below. Non-response bias was also checked using independent sample *t*-tests to compare early responders (day 1, May 25th) to late responders (responded on July 1st or after) on several factors (culture, sense of belonging, and organizational commitment) these tests indicated no significant differences; thus there was no indication of non-response bias by this method (Dillman et al., 2014; Vaske, 2019).

Lastly, error and sampling size recommendations indicate that our sample size for the most recent SAF survey was adequate. Our population size was between 8,000 and 10,000 members. Using sample size collections for that population size and conservatively considering a potential *50/50 split* on the topics of engagement and inclusion, Dillman et al. (2014), Vaske (2019), and others suggest that between 942 and 965 responses should provide 95% confidence with plus or minus 3% sampling error (Dillman et al., 2014; Salant & Dillman, 1994; Vaske, 2019, p. 197). There was some variation in response by question, and questions near the end of the survey had a lower response. Sample size (*N*) will be reported by question. Even on lower-level response (N) questions, the sample size would be well within the suggested bounds for plus or minus 5% sampling error (Dillman et al., 2014; Vaske, 2019). First, the researcher summarizes basic descriptive and demographic statistics, to offer important context of the sample group of SAF.

SAF Demographics

Understanding the demographic make-up of our sample was crucial in best addressing the initial research questions, interpreting the data set, and helping the researchers to pose additional questions and analyses. Demographics of those members who responded include: 23% indicated being a leader in SAF, which could have been at the national, state, or local level ($N = 1116$); 62.72% indicated they had served as a leader in SAF in the past (at any level) ($N = 1116$); 9.6% (107 members) were current or past SAF Board members ($N = 1112$); 32.6% (364) were SAF Certified Foresters ($N = 1117$). Only 3.1% (35) indicated that they had been a SAF diversity scholar or ambassador in the past ($N = 1113$), and 3.9% (44) had been a mentor to a diversity scholar/ambassador in the past ($N = 1117$). The SAF Diversity Scholar/Ambassador program has been going on for at least 20 years. The number of scholars varies annually, but undergraduate and graduate students of diverse backgrounds apply and are selected. They are matched with a mentor and supported with networking and other support at SAF's National Convention. This response of 35 past scholars might indicate that retention from this program into SAF membership was lower than hoped. It would be helpful to look at this aspect further.

Figure 1 shows the spread of respondents by years of SAF membership ($N = 1121$). Over half of the respondents have been in the organization for more than 30 years. About 17% have been in the organization for ten years or less. This figure highlights that our sample included many long-term members and also insights across membership length categories.

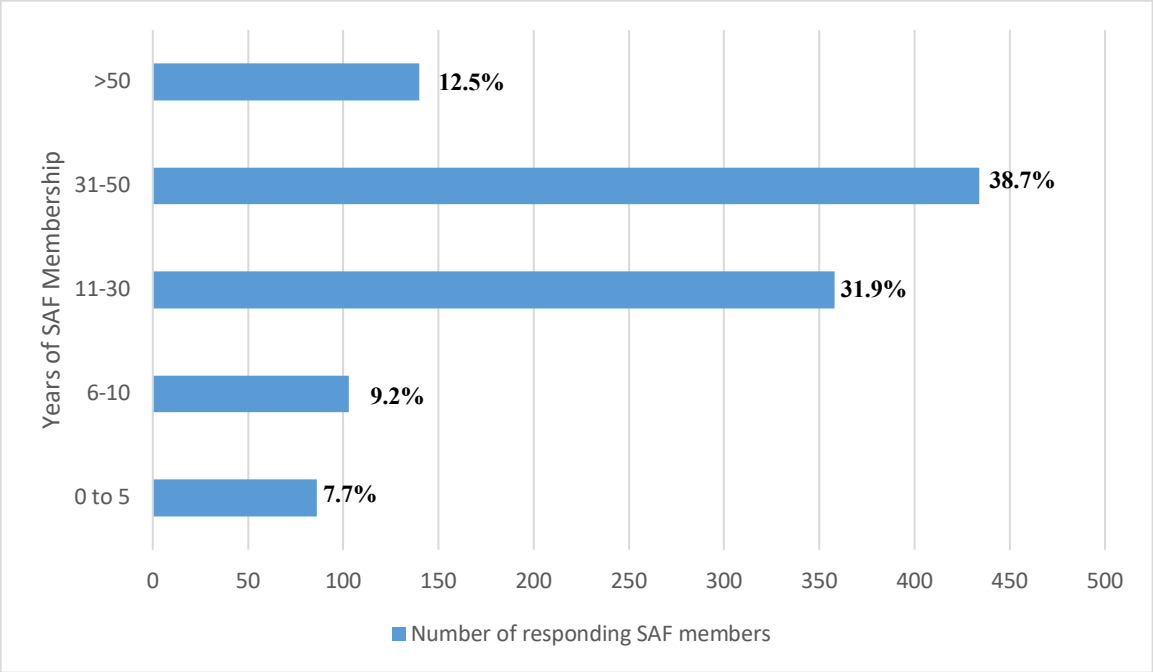

Figure 1

Years as a member of SAF

Figure 2 shows respondent groupings by age category; 62.7% of those who responded were age 55 years of age or older; SAF is an aging organization. Only 1% responded were age 24 or younger, and just 7.7% were in the 25-to-34-year category ($N = 1112$). These data very closely match SAF's records on member age, though the categories were not the same, so we could not make an exact comparison. SAF National office estimates that 62.7% of members were age 50 or older, about 14% in their 40s; about 12.8% in their 30s; and about 10% as 29 years of age or younger. SAF has far more seasoned members than newer members. Recruitment and retention of students and early-career professionals appeared to be lacking.

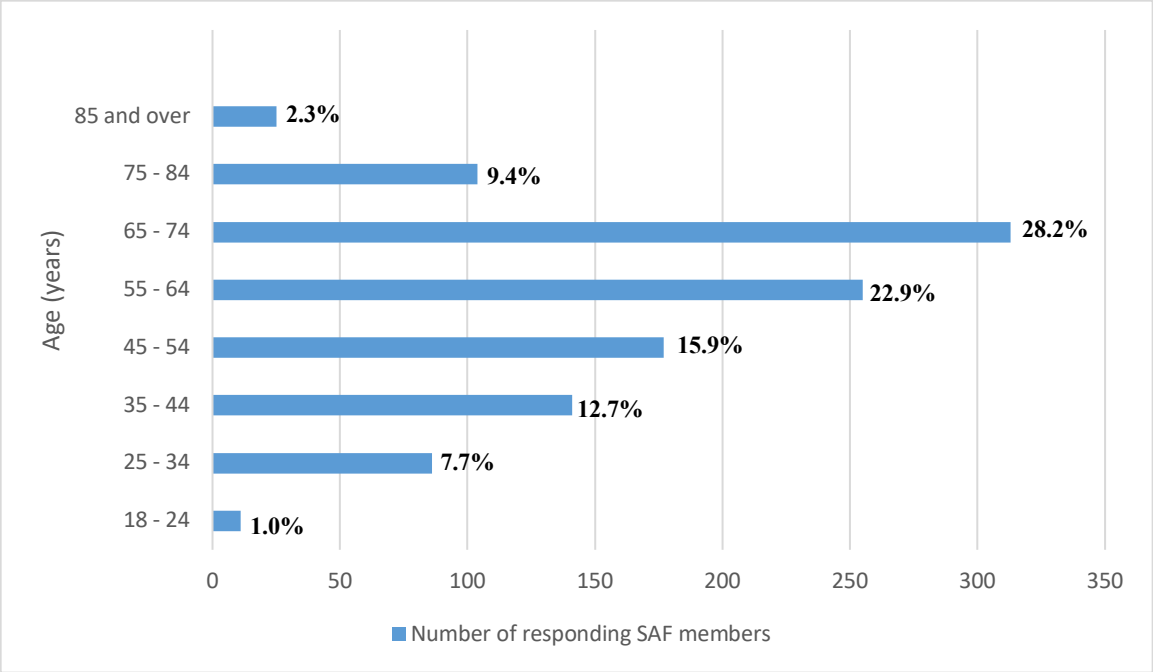

Figure 2

Responding SAF Members by Age Category

Participants also reported on their career status or level. They were able to select more than one category in this question as they might fit more than one category. The percentages by category were as follows: 12.5% undergraduate students (2% associates programs and 10.5% bachelor's programs); 6.9% graduate students (about 5% master's and 2% doctoral); 9.7% considered themselves early-career (been working roughly less than 10 years); 21.2% mid-career (been working roughly 10-25 years); 35.1% late-career professional (been working for over 25 years); 29.6% retired professional; 4.5% shared other categories or information (N = 1110 unique respondents). Again, student and early career categories show lower percentages, as compared to mid-career, and especially as compared to late-career and retired.

Of 54 students who shared information about their study institution, 85% (46) described their school as a predominately White institution (PWI), only 1.9% (1 student) described their

school as a Tribal College or University, 13% (7) said they were not sure. Zero respondents to this question indicated that they attended a Historically Black College or University (HBCU), a Hispanic-Serving Institution, or other minority-serving institution. In short, participation from students at minority-serving institutions was very low.

Figure 3 shows SAF employment sector data reported by respondents. For this question, respondents could only select one answer. The highest category was retired professionals at 26.5%, followed by state and local government (15%), private industry (15.1%) self-employed/consultants (13.2%), college/university/higher education institution (12.2%), federal government (9.7%), non-profit or non-government organization (5%), other (3.2%) (N = 1114). Comparing this to recent employment data that the national SAF had on file for 8,467 members, SAF had similar percentages: retired professionals at 20.8%, followed by state and local government (15%), private industry (19.3%), self-employed/consultants (18.4%), college/university/higher education institution (11.6%), federal government (8.9%), non-profit or non-government organization (2.9%). SAF National also had a student category at 6.5%. The current study gathered information on students in a separate question, but some students may have selected 'other' categories, particularly if they were not currently employed. Some respondents could feasibly have changed sectors or retired since SAF last polled this data. The spread across these sectors indicated that the survey went across our membership and gathered data from varied experiences. A concerning trend to continue to note is the high proportion of retired SAF members.

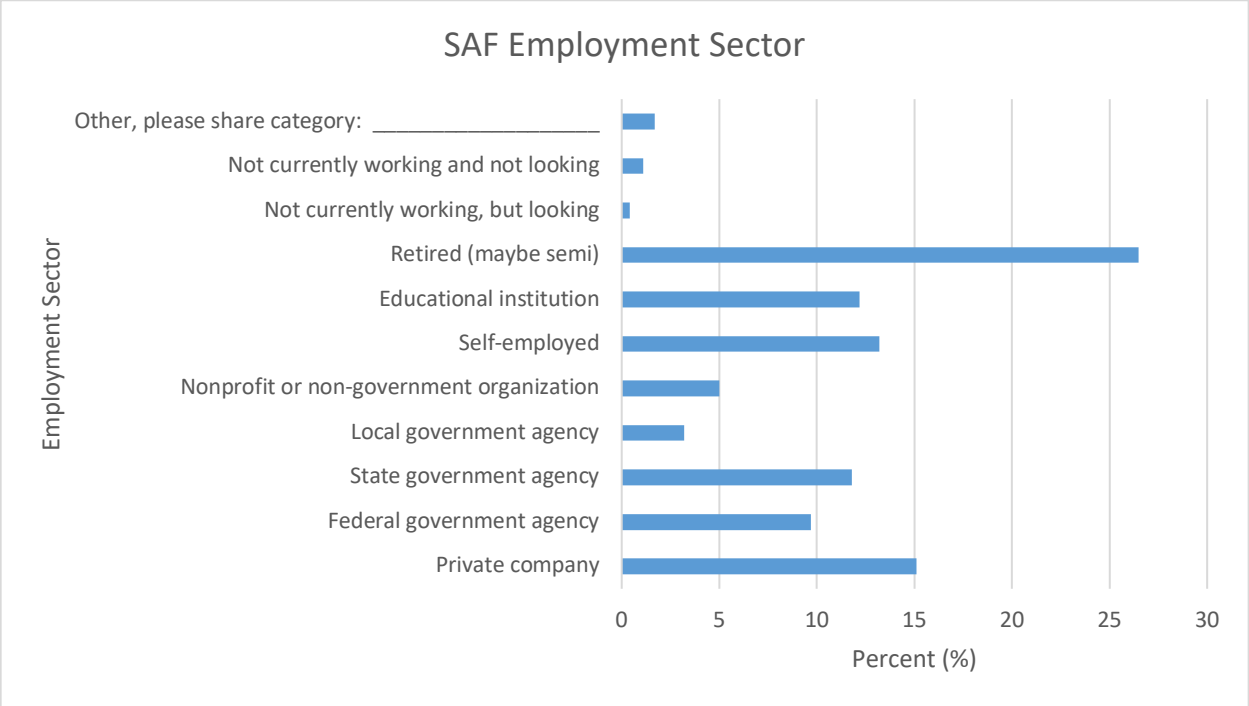

Figure 3

Responding SAF Members by Employment Sector

Table 1 shows the race and ethnicity breakdown for responding members, with comparisons by percent to data SAF National currently has on file. Native Hawaiian or Pacific Islander (0%); Hispanic/Latinx (0.55%); American Indian or Native American or Alaskan Native (0.55%); Mixed, indicating two or more racial and ethnic categories (2%); Black or African American (0.6%); and Asian (0.55%) would all be included as 'minoritized' racial and ethnic categories (members of color) for this survey effort (N = 1089). The survey's percentages by race and ethnicity were similar to SAF's national data, though this study's percentages were just slightly lower in some categories. SAF collects and reports this data through annual membership

renewals (SAF provided these numbers in August 2021). SAF's representation of racial and ethnic diversity in this study was very low, mimicking what was known of the population.

Table 1

Race and Ethnicity of Respondents for SAF Engagement and Inclusion Survey

Race and Ethnicity	Number responded	Percent (%) of respondents	Compare to SAF National Records 2021 (%)
White	977	90.0	94.8
Native Hawaiian or Pacific Islander	0	0	0.09
Hispanic/Latinx	6	0.55	1.14
American Indian or Native American or Alaskan Native	6	0.55	0.66
Mixed (2 or more racial/ethnic categories)	22	2.0	1.19
Black or African American	7	0.6	0.76
Asian	6	0.55	1.32
Other	65	6.0	--
Total	N = 1089	N = 1089	N = 8436
Total Minoritized	47	4.3	5.2

The 'other' race and ethnicity category presented some complications in the analysis. Hispanic/Latinx is an ethnicity and not a race, however Hispanic/Latinx individuals are racialized in our society. One individual may identify as both White racially, and of Hispanic/Latinx ethnically. It is important that respondents have the option to select multiple categories, as well as add information through the 'other' option. The researchers would guess that some unknown 'other' respondents in this study could likely be categorized as White. Some who selected 'other' gave us additional information (they may have indicated White, Caucasian, or indicated a European American category that would be classified as White), which the researcher then recoded as 'White.' The remaining 65 who selected other included: two respondents who shared they were not sure, or they did not identify with these categories; five

did not give enough information to code to a category; 16 indicated that they preferred not to give this information; five left the text blank, and importantly 37 objected to the question. Standard text entries from respondents in objection included comments such as *human*; *American*; *I do not think this should matter or is not appropriate*. It was central to mention these responses as they were members who pushed back on the very concepts and salience of race and ethnicity.

The gender breakdown for survey respondents was as follows: 76.8% men, 19.4% women, 0.4% non-binary/non-conforming; 2.8% said they preferred not to disclose, 0.6% said the gender they most closely align with was not listed and then were able to specify with a text response (total $N = 1105$). Initially, 12 members selected that their gender was not listed, but the researcher was able to recode five as men because in the text entry, they shared that they were men; all twelve who selected this option appeared to be in opposition to a gender question. Responses included entries such as: "I have a Y-chromosome; ergo, I am a male;" "should not be a factor in decision making;" "I am a man and this is a stupid question;" and "irrelevant;" among others. Once again, some respondents push back on gender identity and believe this to be irrelevant information.

The survey included additional key demographic questions; 2.8% of respondents indicated being a member of the LGBQ+ community (Lesbian, Gay, Bisexual, Queer, and Questioning) ($N = 1086$). The researchers intentionally did not include trans (T) in the LGBQ+ question. However, some trans community members may have still selected 'yes' as part of the LGBQ+ community. We attempted to capture trans and transitioning community members in the gender question instead, this was discussed more in chapter five. Additionally, five percent indicated being a person with a disability (or disabilities); 15.3% indicated they were a veteran or

currently serving (*N* = 1034). In sum, there were multiple minoritized communities in the SAF survey sample beyond gender, race, and ethnicity.

The survey also asked some basic geographic questions. Respondents were asked to indicate the type of setting their youth was mostly spent in; based on self-description, respondents shared: 9.0% urban, 31.1% suburban, 35.5% rural, 22.2% a mix, and 2.0% other (which included added details and some with a military background). Additionally, respondents from countries beyond the U.S. participated: one from Australia, four from Canada, one from Ecuador, one from New Zealand, and 1096 United States of America (*N* = 1103). Respondents contributed from nearly all 50 states (but not Delaware).

Quantitative Analysis of Engagement and Inclusion Measures

Quantitative analysis follows with a focus on the first two research questions.

1) Is there a difference in reported engagement and inclusion measures, including perceptions of culture, respect, commitment, sense of belonging, and stereotype threat vulnerability between men, women, and other minoritized gender categories among the SAF membership?
2) Is there a difference between racial/ethnic identifications among SAF membership with regards to reported engagement and inclusion measures, including perceptions of culture, respect, commitment, sense of belonging, and stereotype threat vulnerability?

Engagement

Engaging members of an institution is a foundation of inclusion (Person et al., 2015). Respondents reported on their perceptions of SAF engagement. On a 5-point scale: 1-not engaged, 2-rarely engaged (maybe once every few years), 3-sometimes engaged (about once per year), often engaged (a few times per year), 5-very often/regularly engaged in offerings.

Respondents shared the following regarding their level of engagement: SAF events & programs, either virtual or in-person, at the local chapter level (note this was smaller than state or regional SAF level) (mean = 3.1, *SD* = 1.38, *N* = 1197); SAF events & programs, either virtual or in-person, at the state/regional level (mean = 3.1, *SD* = 1.36, *N* = 1240); SAF events & programs, either virtual or in-person, at the national level (mean = 2.42, *SD* = 1.27, *N* = 1232); SAF media (online, social, or print) at the state/regional level (mean = 3.35, *SD* = 1.36, *N* = 1209); SAF media (online, social, or print) at the national level (mean = 3.49, *SD* = 1.37, *N* = 1226); SAF Student Chapters, forestry clubs, or other related natural resources student groups (could be as a student or as a supporting professional) (mean = 1.96, *SD* = 1.26, *N* = 1076). Important to note that for all the above statements there were members who felt unengaged or rarely engaged.

There was room for improvement with member engagement in a variety of ways. Most mean levels were between the sometimes and often levels. Local and state level engagement with events and programs was higher than national. Engagement with media, including online and print, was higher at the national level than at local and state levels. Regarding SAF events & programs, either virtual or in-person, at the national level, the mean fell between *rarely and sometimes engaged*. The lowest engagement level was with SAF student chapters, forestry clubs, and other related natural resources student groups (whether as a student or as a supporting professional), with the mean below the 2-level, indicating *not engaged to rarely engaged*. Additionally, participants shared about overall COVID pandemic changes in their SAF engagement; 33.6% felt it had decreased due to COVID, 59.1% thought it had remained roughly the same, and 7.3% felt it had increased (*N* = 1233).

Throughout this analysis, an emerging trend points to challenges in recruiting and retaining student and prospective student members. When asked if they felt they had been more

engaged as a student than as a professional (21.6% agreed, and 57.2% disagreed $N = 966$). This 21.6% may be connected to a student-drop off that also showed up in the survey when we asked about reasons members had taken a break in the past. Many SAF members drop their membership when they transition from undergraduate studies. Most participants (72.6%) reported not engaging with student chapters.

Over the last 10 years, 58.7% of participants had attended at least one SAF National Convention (mean = 1.82, $SE = .068$, $N = 1257$). About 26% of respondents had attended three or more National Conventions in the last decade. Additionally, SAF must consider that 40% plus did not attend a convention in the last decade, so engagement for these members needs to happen in other ways. In sum, SAF members engaged in various ways and levels; there was room for improvement, particularly with students.

Engagement Comparisons Between Groups

Now with a baseline for overall engagement, the researcher made statistical comparisons between minoritized racial and ethnic groups (members of color) as compared to White majority members. Due to available respondents, all members of color were combined into one group. Native Hawaiian or Pacific Islander; Hispanic/Latinx; American Indian or Native American or Alaskan Native; Mixed (indicating two or more racial and ethnic categories); Black or African American; and Asian would all be included as 'minoritized' racial and ethnic categories for these comparisons. This was not to say that each racial and ethnic category would have the same perceptions or experiences. Still, the number in each group would not be large enough for more nuanced comparisons without violating IRB requirements for anonymity. Previous literature supports this combination as an approach when looking at people of color as compared to White

when statistical power is too low to look at all groups separately (CSU, 2018; Westphal et al., 2022).

In looking at some engagement comparisons between White members and members of color, a few distinct differences emerged. A crosstabulation and Pearson chi-square analysis showed that White members have higher engagement with SAF media (online, social, or print) than members of color (online, social, or print) at the national level (X^2= 11.929, *df*=4, *N* =998, *p* = .018, *Phi* = .109). Following this finding, an independent sample *t*-test showed a significant difference and medium effect, with White members having a higher mean engagement with SAF media (3.59) than members of color (2.96, *p* = .002, Cohen's *d* = .472). Effect size indicates the level of practical significance and meaningful difference (Morgan et al., 2013; Vaske, 2019). This addresses one of our research questions, there was a difference in some, but not all, engagement measures between majority and minoritized racial and ethnic groups in SAF.

Crosstabulation and Pearson chi-square analysis showed women had statistically significantly higher engagement levels than men, SAF events and programs virtual or in person, at the national level (x^2 = 15.877, *df* =4, *N* = 1040, *p* = .003, Cramer's *V* = .124); as well as between gender and overall COVID pandemic changes on SAF engagement (x^2 = 9.621, *df* = 2, *N* = 1045, *p* = 0.008, Cramer's *V* = .096); and also between gender and feeling that the respondent had personally been more engaged as a student than they are currently as a professional (x^2 = 15.297, *df* = 4, *N* = 821, *p* = .004, Cramer's *V* = .137). All significant crosstab comparisons for gender and engagement had small effect sizes.

Following up with *t*-tests, the researcher found some significant differences between groups. Women had significantly higher mean attendance (2.42) of SAF National Conventions over the recent decade, as compared to men (1.88, *p* =.005), with a small effect size (Cohen's *d* =

.215). Women also had significantly higher mean agreement (2.69) with the statement *I feel that I was more engaged as a student member than I am currently as a professional*, as compared to men (2.41) (p = .007), with a small effect size (Cohen's d = .244). This addresses a component of another research question, there was a difference in some engagement measures between men and women in SAF.

Regarding SAF engagement, student members were asked the following: *thinking about your experiences with an SAF student chapter (or affiliated student forestry/natural resources club), please indicate the extent to which you agree or disagree with the following statements about your student organization's culture*. Students were asked about their agreement on a 5-point scale (1 – strongly disagree to 5 – strongly disagree). Statements included: demonstrates understanding of the value of diversity (mean = 3.6, SD = 0.95, N = 30); promotes an organizational environment where all members feel included (mean = 3.57, SD = 1.05, N = 30); treats all members equitably (mean = 3.8, SD = 0.87, N = 30); provides me with opportunities for professional development (mean = 3.8, SD = 0.95, N = 30); promotes respect for cultural differences (mean = 3.57, SD = 0.92, N = 30); I feel a sense of belonging to my SAF student chapter or affiliated student club (mean = 3.13, SD = 1.38, N = 30). Most responses fell between *neither agree or disagree* (level 3) and *agree* (level 4). Every mean was below the agree level (4). The lowest mean engagement level was 3.13 for *feeling a sense of belonging to my SAF chapter or affiliated student club*. This data point to a pattern; there is room for improvement related to inclusion and belonging at the student level of SAF.

Statements on SAF as an Organization: Overall Perceptions and Beliefs

As part of the overall assessment of climate and culture, SAF members were asked to share their perceptions and level of agreement on several statements regarding DEI and related

practices and policies in the organization. First, the research provides the results by looking at all respondents together. Then the researchers did some additional analysis to see how the numbers change if filtered through demographics, such as race and ethnicity or gender. It was and is crucial to remember that minoritized groups do not have the statistical power in such comparisons. Since SAF is a White majority organization, by a considerable measure, it was/is necessary to consider different lenses and approaches to raise minoritized groups' voices. This is true for other minoritized groups in SAF and is essential to keep in mind throughout the analysis and discussion.

Table 2 shows a list of statements that were presented to participants regarding diversity and inclusion broadly at SAF. Across all responding members, there was some agreement that SAF is an 'inclusive' organization, but it is necessary to note that some members do not agree or indicated that they *neither disagree or agree*, as was the case with each of these statements. Perceptions of the personal meaning of words like inclusive and diverse vary. There was majority agreement regarding awareness of SAF's D&I related policies and the SAF code of ethics, but in some cases the agreement was just slightly over 50%. One of our highest levels of agreement (66%) was that *SAF should be a leader in diversity, equity, and inclusion for the forestry and natural resources professions* (N = 1114).

Table 2

DEI statements about SAF: Perceptions from respondents

Question	% Agree	% Disagree	Mean	*SD*	*N* =
SAF is a diverse organization	36.1%	34.9%	3.00	1.06	1112
SAF is an inclusive organization	60.9%	12.2%	3.59	0.90	1111
SAF recognizes member accomplishments in an equitable manner	58.3%	9.3%	3.59	0.86	1114
I am aware of SAF's policy/commitment to Diversity & Inclusion	72.1%	10.6%	3.80	0.90	1116
I am aware of SAF's anti-harassment policy	65.8%	12.8%	3.69	0.95	1114
SAF could do a better job recruiting and retaining a more diverse membership	47.2%	15.7%	3.45	1.04	1115
It is important for SAF to become a more diverse organization that better reflects society at large (in the US)	53.9%	20.8%	3.47	1.20	1113
It is important for SAF to improve its "culture" within the organization to sustain its membership	54.0%	16.9%	3.52	1.07	1116
The diversity and inclusion policy and programs at SAF are good initiatives	58.3%	9.8%	3.58	0.95	1113
I have previously had some diversity, equity, and inclusion training	76.1%	11.9%	3.90	1.02	1114
I feel that I would benefit from either initial or additional diversity, equity, and inclusion training	30.9%	38.2%	2.85	1.15	1110
I feel that my co-workers and peers would benefit from additional diversity, equity, and inclusion training	38.5%	29.1%	3.10	1.19	1112
I feel that my SAF community peers would benefit from additional diversity, equity, and inclusion training	40.7%	27.2%	3.15	1.19	1110
SAF should collect current member demographic data	45.2%	23.4%	3.21	1.16	1108
SAF should change current member demographic categories to better capture a wider and more inclusive range of information	30.3%	26.6%	3.00	1.10	1110
I have personally interacted with diverse racial and ethnic groups in SAF	47.2%	28.7%	3.23	1.11	1110
I personally read, write, and reflect on topics such as: diversity, equity, and inclusion	47.8%	28.8%	3.22	1.15	1112
I believe SAF leadership will hold members accountable when diversity & inclusion policies are violated	51.9%	12.0%	3.47	0.94	1112
I feel that SAF should be a leader in diversity, equity, and inclusion for the forestry and natural resources professions	66.3%	13.6%	3.71	1.13	1114
I am aware of the process in place to deal with SAF Code of Ethics violations	55.9%	22.0%	3.45	1.03	1112
I believe that the SAF Code of Ethics holds members accountable	44.3%	14.5%	3.36	0.90	1108

Table 2 above demonstrates that the membership was somewhat divided on multiple items. The percentage that neither agreed nor disagreed was not shown in the table. Most do not consider SAF 'diverse,' and a slight majority consider it 'inclusive.' The statements with lower than 50% agreement provided some key takeaway points. It is helpful that many could acknowledge that SAF lacks some diversity. There were statements where a lack of agreement presented some challenges moving forward. The agreement level was low supporting personal D&I training needs. Respondents also seemed to believe that their co-workers and SAF peers would benefit more from D&I training than they personally would, though still, in these cases, it was less than 50% agreement. Another statement to highlight was that members disagreed that the SAF Code of Ethics holds members accountable, an area of attention for SAF leadership and staff. In sum, perceptions about DEI in SAF vary, as do opinions about related DEI best practices and policies; this all connects to overall engagement and inclusion.

SAF as an Organization: Perceptions and Beliefs from Minoritized Groups

Different highlights emerge when looking at some of the SAF organization-related statements through the lens of members of color or women. Table 3 below shows just a few statements and the percent agreement and disagreement by each component of the SAF community.

In the case of gender identity, Table 3 shows the first three statements which ask if the respondent sees SAF as *diverse*, *inclusive*, and *equitable in accomplishment recognition*; in all three cases, the minoritized gender group, women, was in lower percent agreement than the majority group men. Along that same thread, when women were asked if they thought SAF could do better recruiting and retaining a more diverse membership and if they thought SAF should be a leader for the profession in DEI work, women had a higher percent agreement than

men in both cases. The patterns were not quite as clear when comparing members of color and White members. Interestingly, the minoritized group, members of color, had a higher percent agreement that SAF is a diverse and inclusive organization compared to White members; this warrants further research and discussion. Overall, this data continued to show differences across E&I measures between majority and minoritized groups in SAF.

Table 3

Perceptions and Beliefs: Comparisons with Minoritized Groups

	All Respondents		Gender Comparison				Race & Ethnicity Comparison			
			Women		Men		Members of Color		White Members	
	% Agree	% Disagree	% Agree	% Disagree	% Agree	% Disagree	% Agree	% Disagree	% Agree	% Disagree
SAF is a diverse organization	36.1	34.9	23.7	53.5	37.6	31.4	40.4	34	34.3	36.9
SAF is an inclusive organization	60.9	12.2	41.2	24.1	65	9.2	66	23.4	60.1	11.7
SAF recognizes member accomplishments in an equitable manner	58.3	9.3	42.7	14.1	62.5	7.6	44.7	21.3	59.9	7.8
SAF could do a better job recruiting and retaining a more diverse Membership	47.2	15.7	69.1	4.7	43.4	16.3	53.1	23.4	49.5	12.8
I feel that SAF should be a leader in diversity, equity, and inclusion for the forestry and natural resources professions	66.3	13.6	81.2	2.8	64.7	14.6	70.2	12.8	69.5	11.7

SAF's Culture

Organizational/societal culture can be described as "shared basic assumptions, values, and beliefs that characterize a setting and are taught to newcomers as the proper way to think and feel, communicated by the myths and stories people tell about how the organization came to be

the way it is as it solved problems associated with external adaptation and internal integration (Schein, 2010; Trice & Beyer, 1993; Zohar & Hofmann, 2012)) *(Scneider et al., 2013, p. 362).* Culture as a construct, in this study, included the following items: promotes an organizational environment where all members feel included; treats all members equitably; is open and transparent in communication; and values members' input in major organizational decisions. These constructs were borrowed and modified slightly with permission from Colorado State University's Campus Climate survey (2018). The culture grouping from the CSU Climate survey had 5-items (in this study, we excluded 1 item: I feel valued as a member) because we did not ask this at the state and national levels. The mean for National SAF Culture with "I feel valued as a member" was 3.65, and without it was 3.62.

The researcher used an already established and reliable 4-item construct but permitted one missing value; if one item was missing, we averaged across three items in SPSS. SAF is a national society with many smaller chapters across the country and beyond. There are undoubtedly various cultures within SAF. In this case, we asked about the culture at two levels, national and state/regional.

The mean of the culture construct was 3.67 (N = 1139) at the state/regional level; 3.63 (N = 1139) at the national SAF organization level (somewhat favorable perceptions of SAF culture, on a 1- 5 scale. Thus, respondents averaged on the 'agreement' side of the Likert scale but were still between the middle level of uncertainty (3) and agree (4). The Cronbach's alpha reliability coefficient was 0.87 for the state level and 0.86 for the national level. This was like alpha levels seen in other studies; in the CSU Climate study, the culture construct had an alpha of 0.92, all indicating instrument consistency. Mean culture perceptions for all respondents at the national and state/regional levels were relatively similar.

The word cloud below (Figure 4) was created in Qualtrics and shows some of the most common words that emerged in the question where respondents were asked to share words or phrases to describe SAF's culture (*N* = 909). The word cloud shows a range of perspectives. In this cloud, more prominent font words would have appeared the most in responses. Some of the larger font words that would likely align with more positive and inclusive perceptions of SAF culture include professional, welcome, inclusive, open, change, science supportive, and friendly. More prominent font words that might align with negative or exclusive perceptions include traditional, White, old, conservative, dominate, and liberal. Some words could have positive and negative connotations, depending on the perspective, such as academic. More qualitative approaches and deeper qualitative analysis will follow later.

Figure 4

Word Cloud: Words or Phrases to Describe SAF's Culture

Culture Comparisons between Groups

Comparisons were made between groups to look for differences in perceptions of SAF culture. The first of these comparisons was looking at gender. In this case, women would be considered the minoritized group. Comparisons outside the gender binary were not possible due to low responses in other categories. Still, future research in this area is suggested as people who do not identify as men or women would be in minoritized categories that require further research. At the state/regional level, the culture mean for men was 3.75 ($N = 844$) and for women was 3.44 ($N = 212$). An independent sample t-test showed that men reported higher perceptions than women of SAF culture at the state/regional level $t(1054) = 5.557$, ($p < 0.001$), which was statistically significant. The difference between the two means was 0.31 on a 5-point scale. The effect size using Cohen's d was a point estimate of 0.427 which is medium in the behavioral sciences (Cohen, 1988; Vaske, 2019). The take-away, which addressed a research question, was that the minoritized group, women, have a lower perception of SAF culture than the majority group, men, at the state/regional level.

At the national level, the mean for men was 3.69 ($N = 835$), and the mean for women was 3.50 ($N = 212$). An independent sample t-test showed that men reported higher perceptions than women of SAF culture at the national level $t(1045) = 3.380$, ($p = 0.001$), which was statistically significant. The difference between the two means was 0.19 on a 5-point scale. The effect size using Cohen's d was point estimate 0.266, which is a typical size for behavioral sciences effects. Once again, the minoritized group, women, have a lower perception of SAF culture than the majority group, men, at the national level. These data further contribute to research questions, demonstrating gender differences in culture perceptions in SAF.

In looking at SAF culture at the state/regional level, the culture mean for minoritized racial & ethnic groups (members of color) was 3.50 ($N = 47$) and for the White majority was 3.70 ($N = 957$). White members provided higher perceptions of SAF culture at the state/regional level, but an independent sample *t*-test showed this difference was not statistically significant (p= 0.063). The difference between the two means was 0.20 on a 5-point scale. The effect size using Cohen's d was a point estimate of 0.280, which is small for effects in the behavioral sciences.

For SAF culture at the national level, the culture mean for minoritized racial & ethnic groups was 3.41 ($N = 47$), and the mean for the White majority was 3.67 ($N = 948$). An independent sample *t*-test (t (1005) = 2.362) showed that White members provided higher perceptions of SAF culture at the national level; this difference was statistically significant (p = 0.018). The difference between the two means was 0.26 on a 5-point scale. The effect size using Cohen's d was a point estimate of 0.353, which is a small relationship for the behavioral sciences (Cohen, 1988; Vaske, 2019). In answer to the research question, there were differences in culture, an engagement and inclusion measure, between minoritized racial and ethnic groups as compared to the White majority in SAF.

There were also differences in perceptions of culture when comparing the LGBQ+ (Lesbian, Gay, Bisexual, Queer, Questioning) community to those outside this community. Looking at the state/regional level, the culture mean for LGBQ+ members was 3.21 ($N = 30$), and for non-LGBQ+ members, it was 3.69 ($N = 1049$). An independent sample *t*-test showed that LGBQ+ community members had lower perceptions of SAF culture than non-LGBQ+ at the state/regional level $t(1077) = 3.488$, ($p = 0.001$), which was statistically significant. The difference between the two means was 0.48 on a 5-point scale. The effect size using Cohen's d was a point estimate of 0.646, which is a medium-to-large size.

At the national SAF level, the mean culture level for LGBQ+ was 3.24 ($N = 29$), and for non-LGBQ+ members, it was 3.65 ($N = 1041$). An independent sample t-test showed that the LGBQ+ community indicated lower perceptions of SAF culture than non-LGBQ at the state/regional level $t(1068) = 2.926$, ($p = .004$), which was statistically significant. The difference between the two means was 0.48 on a 5-point scale. The effect size using Cohen's d was point estimate 0.551, which is a medium size for effects in the behavioral sciences. These findings point to a minoritized group that warrants additional attention and was outside the focus of this study's original quantitative research questions. Table 4 below summarizes some of the means as a comparison between minoritized and majority groups and indicates significance where found. In each of these comparisons, there was evidence to suggest that the minoritized groups, women, members of color, and the LGBQ+ community have lower perceptions of SAF culture.

Table 4

SAF Culture Perceptions: Comparisons Between Groups

	Mean Culture									
	All Participants	Women	Men	Mean Comparison	MOC	White	Mean Comparison	LGBQ+	non-LGBQ+	Mean Comparison
State Level	3.67	3.44	3.75	$p < .001$***	3.5	3.7	$p = 0.061$	3.21	3.69	$p = 0.001$**
National Level	3.63	3.50	3.69	$p = .001$**	3.41	3.67	$p = 0.018$*	3.24	3.65	$p = .004$**
Mean Comparison	$p = 0.014$									

Note: p *<.05; **<.01; ***<.001

Respect

Respect is key to individual and collective identity, career success, in maintaining relationships and connections (Baxter et al., 2001; Hendrick & Hendrick, 2006; Markus, 2004). Daily injustices often come in some form of disrespect (Lupfer et al., 2000; Messick et al., 1985; Mikula et al., 1990).

Respect items were modified from previous research and used a 5-point Likert scale to measure agreement level (CSU Climate Survey, 2018). Respondents were asked, thinking about your experience with SAF, please indicate the extent to which you agree or disagree with the following statements about respect: my local chapter is treated with respect by my regional/state SAF chapter (mean = 3.88, *SE* = 0.26, *N* = 981); my regional/state chapter is treated with respect by national SAF (mean = 3.78, *SE* = 0.25, *N* = 1064), the people I interact with in SAF at the local chapter level treat each other with respect (mean = 4.18, *SE* = 0.26, *N* = 998); the people I interact with in SAF at the regional/state level treat each other with respect (mean = 4.17, *SE* = .025, *N* = 1056), the people I interact with in SAF at the National level treat each other with respect (mean = 4.00, *SE* = 0.27, *N* = 979); there is respect for spiritual differences in my SAF community (mean = 3.46, *SE* = 0.28, *N* = 1007); there is respect for the full range of perspectives from conservative to liberal, in my SAF community (mean = 3.38, *SE* = 0.032, *N* = 1092); I feel valued as an SAF member (mean = 3.76, *SE* = 0.03, *N* = 1116). Table 5 below also shows the overall percentage of agreement and disagreement with each statement and then shows some differences in percent agreement when looking at minoritized groups. Perceptions of respect for the full range of perspectives, from conservative to liberal, and respect for spiritual differences had the lowest overall mean respect levels. Mean levels were at 'agree' or higher for perceptions of person-to-person respect at all levels, though it was higher at the local and state level than at the National level overall.

There were differences in percent agreement when filtering by minoritized groups. In general, women tended to have lower percent agreement with every respect statement, with one exception, women had a higher agreement with *the people I interact with in SAF at the national level treat each other with respect*. Women generally had a lower agreement with respect

statements than members of color overall (regardless of their gender), but this was not true with every statement. Members of color had stronger agreement than overall members with the local chapter's being treated with respect, person-to-person respect at the local chapter level, and feeling valued as a SAF member. Members of color had less agreement on all other statements as compared to the all-respondent agreement levels. Members of color also had higher *disagreement* percentages on statements regarding respect for the full range of perspectives, from conservative to liberal, and respect for spiritual differences. There was room for improvement with respect in most of these areas, there were also areas where women and members of color have different agreement levels compared to all respondents with regards to respect in SAF.

Table 5

SAF Respect Statements: Some Group Comparisons

SAF Respect Statements: Percent Agreement and Disagreement Comparisons

	All Respondents		Women		Members of Color	
Question	**% Agree**	**% Disagree**	**% Agree**	**% Disagree**	**% Agree**	**% Disagree**
My local chapter is treated with respect by my regional/state SAF chapter	64.6	1.9	61.4	0.6	68.4	5.3
My regional/state chapter is treated with respect by SAF National	60.3	2.5	57.4	0.5	58.6	7.3
The people I interact with in SAF at the local chapter level treat each other with respect	80.7	2.8	76.8	3.4	84.2	2.6
The people I interact with in SAF at the regional/state level treat each other with respect	80.3	2.2	76.7	3.5	78.1	4.8
The people I interact with in SAF at the National level treat each other with respect	70.2	2.5	73.3	2.6	67.4	4.6
There is respect for spiritual differences in my SAF community	39.5	6.8	29.1	8.7	35.7	16.6
There is respect for the full range of perspectives, from conservative to liberal, in my SAF community	44.8	18.1	38.3	24.9	37.0	21.7
I feel valued as an SAF member	64.9	10.2	61.3	11.6	71.1	8.8

There were also some statistically significant differences between groups when comparing self-identified women to men. Using an independent sample *t*-test, women had lower mean agreement with the following statements as compared to men in SAF: *the people I interact*

with in SAF at the local chapter level treat each other with respect ($t(916)= 2.618$, $p = .009$, Cohen's $d = .115$); *the people I interact with in SAF at the regional/state level treat each other with respect* ($t(972)= 2.470$, $p = .014$, Cohen's $d = .099$); *there is respect for spiritual differences in my SAF community* ($t(929)= 3.105$, $p = .002$, Cohen's $d = .255$); *there is respect for the full range of perspectives, from conservative to liberal, in my SAF community* ($t(1008)= 3.099$, $p = .002$, Cohen's $d = .244$), *I feel valued as an SAF member* ($t(1023)=2.027$, $p = .043$, Cohen's $d = .158$). Effect sizes varied but were generally small, indicating minimal strength of relationships on most significant respect statements. Addressing another component of our research questions, there were differences between women and men regarding respect in SAF. Differences in respect items were not statistically significant when comparing SAF members of color and White members.

Sense of Belonging

Goodenow described sense of belonging as the "extent to which students feel personally accepted, respected, included by others in the school social environment" (1993, p. 80). This type of belonging could also be considered in other social settings, such as belonging in a profession or a professional group, including NR, forestry, or the Society of American Foresters.

Researchers modified Johnson et al.'s (2007) Overall Sense of Belonging Construct (which had 5-items). With slight modifications, the SAF survey sense of belonging construct included the following items: *I feel a sense of belonging to SAF; I feel I am part of the SAF community; I feel comfortable in SAF; SAF is supportive of me personally; SAF is supportive of me professionally*. Johnson et al.'s last item was "My *college* is supportive of me," in the current study, the researchers split this out into the personal and professional detail as we thought the distinction would be helpful with SAF; ultimately the researcher dropped the 'personally' item

for the construct. Though it was still valuable to have the two items ‘personally’ (mean = 3.29, *SE*= .028, *N* = 1190) and ‘professionally’ (mean = 3.68, *SE* = .027, *N* = 1188) for additional detail and comparison. The item “I would choose the same *college* over again” was also dropped as that item was not relevant since SAF members already annually choose to be a member and renew/pay every year to remain a member.

In the SAF study, researchers used the modified 4-item construct and required that each respondent have data for at least three of the four items to be included. Overall, the SAF sense of belonging mean was 3.74 (*SE* = .023, *N* = 1190), falling between uncertainty and agreement. Cronbach's alpha for sense of belonging was 0.88 (the study by Johnson et al. (2007) had an alpha of 0.898). In comparing the White majority (mean = 3.81, *N* = 957) to racially/ethnically minoritized (mean = 3.63, *N* = 47), the minoritized group was lower, but the difference was not statistically significant ($p = 0.126$; Cohen’s $d = 0.229$), it is possible that higher sample sizes would indicate some significance as there were only 47 members of color for this comparison, further research in this area would be helpful.

Gender comparisons showed that the mean sense of belonging for men in SAF (3.83, *N* = 830) was higher than for women (3.66, *N* = 213), and an independent sample *t*-test showed this difference was significant $t(1055)=2.810$, ($p = 0.004$). The difference between the two means was .172 on a 5-point scale. The effect size using Cohen’s d was a point estimate of 0.218, which is a small effect. Connecting back to the research questions, there were differences between gender groups on the E&I measure and sense of belonging.

Sense of belonging comparisons between the LGBQ+ SAF members (mean = 3.39, *SE* = 0.125, *N* = 30) and members outside the LGBQ+ community (mean = 3.79, *SE* = .025, *N* = 1050) showed significant differences. An independent sample *t*-test showed that LGBQ+ community

members reported a lower sense of belonging than non-LGBQ+; this difference was significant ($t(1078)= 2.693$, $p = 0.007$). The difference between the two means was .397 on a 5-point scale. The effect size using Cohen's *d* was a point estimate of 0.499, which is a medium effect. In the sense of belonging comparisons, the LGBQ+ community had a notable difference compared to members who were not LGBQ+. The LGBQ+ community was not an original focus of this study's research questions, but this finding points to the LGBQ+ community differing from those outside this community on E&I measures in SAF.

Stereotype Threat

Note of 1103 members still working through the survey at the end of part one, 78.2% (862) agreed to participate in part two, which focused on experiences and pathways into forestry and natural resources. One crucial component of this section addressed vulnerability to stereotype threat. Stereotype threat is "being at risk of confirming, as self-characteristic, a negative stereotype about one's group" (Steele & Aronson, 1995, p. 797). Stereotype threats can "beset the members of any group about whom negative stereotypes exist" (Steele & Aronson, 1995, p. 797).

Researchers used an established 4-item construct to examine stereotype threat (Cadaret et al., 2017; Spencer, 1993; Woodcock et al., 2012). First, gender stereotype threat perceptions were assessed. The 4-items asked/stated, *within the SAF community, because of your gender*: *some people believe that you have less ability*; *if you are not better than average people assume you are limited*; *if you do poorly on a professional task people will assume that is because of your gender*; *people of your gender face unfair evaluations because of their gender*. Respondents indicated their experience with stereotype threat within the SAF community on a Likert scale, 1- never to 5- almost always.

In the SAF study, when looking across the responses for all 4-items, we had respondents at all ranges of the Likert scale, from 1 to 5. The mean stereotype threat level for men was 1.18 (SE = .017, N = 585) and mean stereotype threat level for women in SAF was 2.70 (SE = .098, N = 146). An independent sample t-test showed that women perceived a greater stereotype threat within the SAF community than men (see Figure 5 below). This difference was significant $t(729)=-25.40$, ($p < 0.001$). The difference between the two means was 1.52 on a 5-point scale. The effect size using Cohen's d was a point estimate of 2.35, which is a very large effect size (Cohen, 1988; Vaske, 2019).

The researcher notes, that stereotype threat showed skewness (was not distributed normally), thus nonparametric comparisons were also run using the Mann-Whitney U test. Mann-Whitney U compared the mean ranks for men and women on *stereotype threat by gender*; the two groups differed significantly and had a large effect size ($p < .001$, $r = 0.618$), with men's mean rank at 310.06 and women's at 590.13. Cronbach's alpha reliability coefficient was 0.93 (in a study by Woodcock et al. (2012), the alpha was 0.85). The considerable effect size indicates practical significance; this relationship difference would likely be found beyond this sample. Stereotype threat has been shown to impede academic and career progression (Beasley & Fischer, 2012; Liu et al., 2021; Spencer et al., 1999). It is important first to acknowledge that experience with stereotype threat was present in the SAF survey sample, indicating it is an issue in SAF and that women experience stereotype threat to a greater degree than men. The interventions to help mitigate stereotype threat will be discussed in chapter five (Liu et al., 2021; Shnabel et al., 2013).

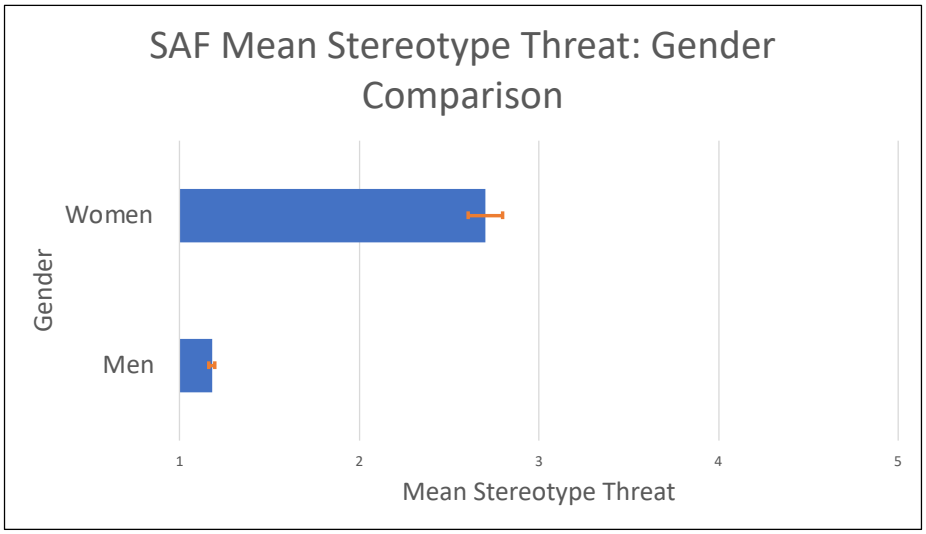

Figure 5

SAF Mean Stereotype Threat: Gender Comparison

Next, researchers looked at stereotype threat perceptions as related to race and ethnicity, using the same 4-item construct but modifying it for race & ethnicity, which Woodcock et al. had previously done (Cadaret, 2017; Spencer, 1993; Spencer et al., 1999; Woodcock et al., 2012). Cronbach's alpha reliability coefficient was 0.93 (similar to what we found in gender stereotype threat and prior work by Woodcock et al., 2012). Once again, the minoritized racial and ethnic groups were compared to the White majority. The mean stereotype threat level for White members in SAF was 1.12 (SE = .016, N = 664) and the mean stereotype threat level for those racially/ethnically minoritized was 2.17 (SE = 0.274, N = 26) (see Figure 6 below). An independent sample t-test showed that racially and ethnically minoritized groups perceived greater stereotype threat within the SAF community than Whites. This difference was significant $t(688)=11.12$, ($p < 0.001$). The difference between the two means was 1.05 on a 5-point scale. The effect size using Cohen's d was a point estimate of 2.22, which is very large (F = 165.7) (Cohen, 1988; Morgen et al., 2013; Vaske, 2019). Again, due to skewness measures, the Mann-

Whitney *U* test was also run to compare the mean ranks for White members and members of color on *stereotype threat by race and ethnicity*; the two groups differed significantly and, in this case, had a medium effect size (p <.001, r = 0.242), with White members' the mean rank was 345.09 and for members of color it was 504.48. Both stereotype comparisons address components of our research questions; there were differences in stereotype threat between women and men, as well as between members of color and White members in SAF.

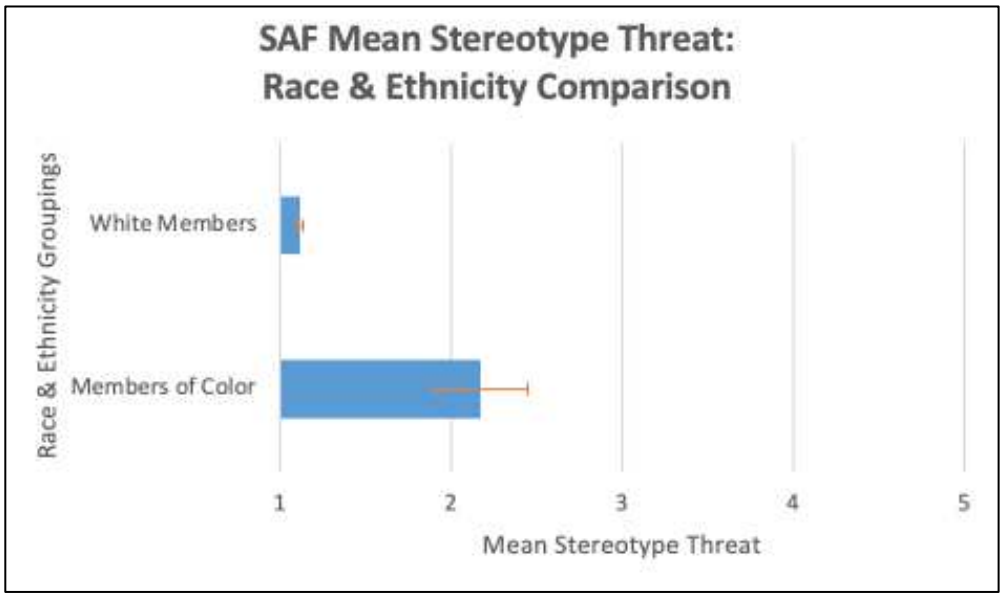

Figure 6

SAF Mean Stereotype Threat: Race & Ethnicity Comparison

There were 407 members who responded regarding additional identity factors where they had personally experienced vulnerability to stereotypes within the SAF community (note that many skipped over this question, it may not have resonated with all respondents). These respondents shared: age (46.9%), professional discipline of study or practice (32.7%), political affiliation/perspective (32.2%), geographic location (26.8%), career level (24.8%),

religious/spiritual affiliation (10.8%), veteran status (6.9%), sexual orientation (5.7%), ability/disability (3.9%), and other identity factors (11.3%). In other words, there were other identity factors by which members feel minoritized in SAF.

The researcher looked at these percentages closer through a critical lens. For example, 18 members who indicated as members of the LGBQ+ community answered this question; of those respondents 12 shared feeling stereotype vulnerability toward sexual orientation: 12 of 18 community members (66.7%). Twenty-one respondents to this question indicated having a disability or disabilities, and of those, nine indicated vulnerability to stereotypes of ability/disability (42.9%). Some of those who selected 'other' shared in the text that they had felt stereotyped by none of the above identity areas (N = 14). The remaining respondents who selected 'other' shared a range of comments, including education, employment type, from an urban area, being a White man, gender, new to the area, or from another country. These various responses indicate that there were/are many ways in which SAF members may not feel fully included.

Organizational Commitment

Organizational commitment was another established construct that was measured in SAF and again used a 5-point Likert scale of agreement (Kidder et al., 2004; O'Reilly & Chatman, 1986). The construct was an average of the following items: *I am proud to tell others that I am a SAF member* (mean = 4.07, SE =.023, N=1194); *I would talk up SAF to my colleagues and friends as a great organization to participate in* (mean =3.68, SE = .027, N = 1191); and *I feel a sense of ownership for SAF* (mean= 3.59, SE = .028, N = 1195). The average overall organizational commitment for all members was 3.78 (SE =.023, N = 1190). Cronbach's alpha in SAF analysis was .853. Organizational commitment fell between the neutral and agree levels.

Independent sample *t*-tests comparisons between groups. Women have lower mean organizational commitment (3.70, 0.053, $N = 214$) than men (3.84, $SE =$. 027, $N = 842$), this difference was statistically significant ($p = .014$) with a small effect size (Cohen's $d = .188$). LGBQ+ community member organizational commitment (mean = 3.57, $SE = 0.126$, $N = 30$) compared to non-LGBQ+ members (mean = 3.81, $SE = .024$, $N = 1049$), this difference was not statistically significant. Members of color's mean organizational commitment (3.70, $SE = .120$, $N = 47$) was less than that of White members (mean = 3.83, $SE = .025$, $N = 958$), but that difference was not statistically different. Regarding another component of our research questions, there were statistical differences between men and women in organizational commitment to SAF; however, the differences for other minoritized groups were not significant.

The researchers also looked at differences between age groups for organizational commitment, which was outsides the scope of the original difference research questions. The researchers grouped SAF members into three age categories trying to have somewhat similar size (N) in each group. The data were originally collected by decade, like US Census reporting. The three groupings for comparisons were: age 44 and under (mean org. comm.= 3.59, SE= .052, N = 237), age 45 to 64 (mean = 3.71, $SE = .038$, $N = 431$), and age 65 plus (mean = 3.99, $SE = .035$, $N = 437$). Independent sample *t*-test showed that the age 65 plus group had significantly higher organizational commitment as compared to both younger groups; age 44 and under ($t(672)$= 6.489, $p <.001$) with a medium effect size (Cohen's $d = .523$) and the age 45 to 64 group ($t(866)$=5.362, $p <.001$) with a small effect size (Cohen's $d = .364$). Comparing the two younger groups did not show a significant difference. Significant differences in organizational commitment, an E&I measure, were found between age groups in SAF.

Overall, Many Differences Between Groups

Regarding our first two research questions, we can reject the null hypothesis in both cases. There were differences in reported E&I measures including engagement, perceptions of culture, respect, commitment, sense of belonging, and stereotype vulnerability between men and women. In looking at engagement statements alone, fewer differences were found between groups compared to other constructs. Still, engagement and inclusion are looked at as intertwined concepts in this study. There were also statistically significant differences between racial/ethnic identifications among SAF membership regarding some reported engagement and inclusion measures, including perceptions of culture, respect, and stereotype vulnerability. Additionally, there were differences between groups regarding respect and sense of belonging (though not always to a statistically significant degree). Important significant differences emerged between LGBQ+ SAF members and non-LGBQ+, and between age groupings.

Interactions and Associations that Predict

The next part of the quantitative analysis sought to address these research questions:

Is there an interaction between gender and race/ethnicity on measures of engagement and inclusion, including perceptions of culture, respect, commitment, sense of belonging, and stereotype vulnerability within SAF membership?

a. Null Hypothesis (e): There is no interaction among minoritized factors, such as gender and race/ethnicity, on perceptions of culture, respect, and sense of belonging.

Are there associations between the variables collected that will predict measures of engagement and inclusion, including perceptions of culture, respect, commitment, sense of belonging, and stereotype vulnerability among SAF members?

b. Null Hypothesis (f): Associations from various combinations of the independent variables: age, employment type, length of time as a SAF member, discipline, gender, and race/ethnicity will not predict various engagement and inclusion measures.

Some interactions were first checked using factorial analysis of variance (ANOVA). First, the researchers looked for interactions with the independent variables gender and race/ethnicity. Both IVs were recoded into a binary, for gender as men and women, for race/ethnicity as member of color (MOC) or White member. The following were significant interactions that were found, addressing our research question.

An ANOVA indicated a statistically significant interaction *between gender and race/ethnicity on stereotype threat by race or ethnicity* (DV), $F(1, 685) = 34.26$, $p < .001$, with a partial Eta squared of .048, which is a small to medium effect size. There was a greater influence on stereotype threat perception from being in a minoritized race and ethnicity for women than for men in SAF (see the profile plot below, Figure 7). The same interaction check-on stereotype threat by gender was not statistically significant.

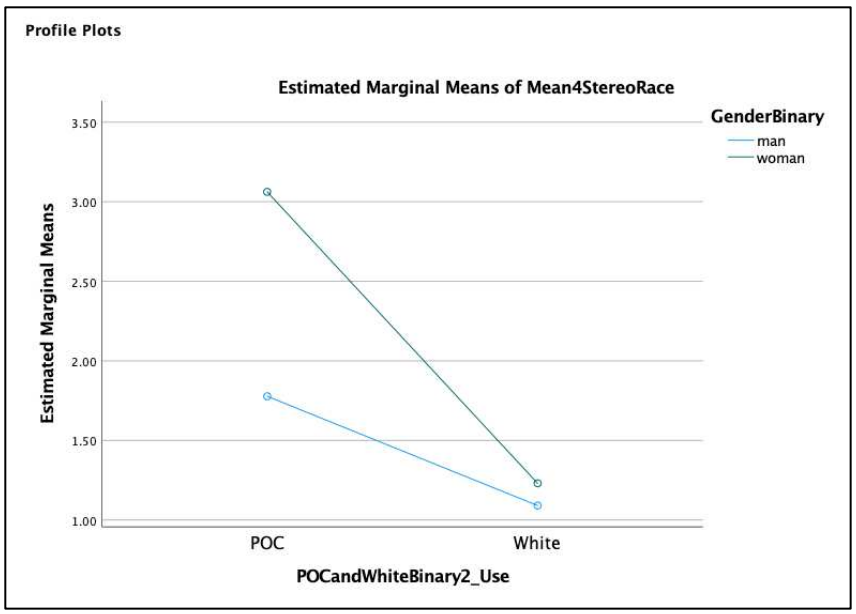

Figure 7

SAF Means for Ethnic/Racial Stereotype Threat with Race/Ethnicity & Gender

There was a statistically significant interaction between *minoritized racial/ethnic groups and age, again on stereotype threat by race/ethnicity* (DV), $F(2, 695) = 3.67$, $p = .026$, with a partial Eta squared of 0.10, which is a small effect size. There was a more prominent influence on stereotype threat from being in a minoritized race and ethnicity for members aged 64 and under compared to those 65 or older (Figure 8 below).

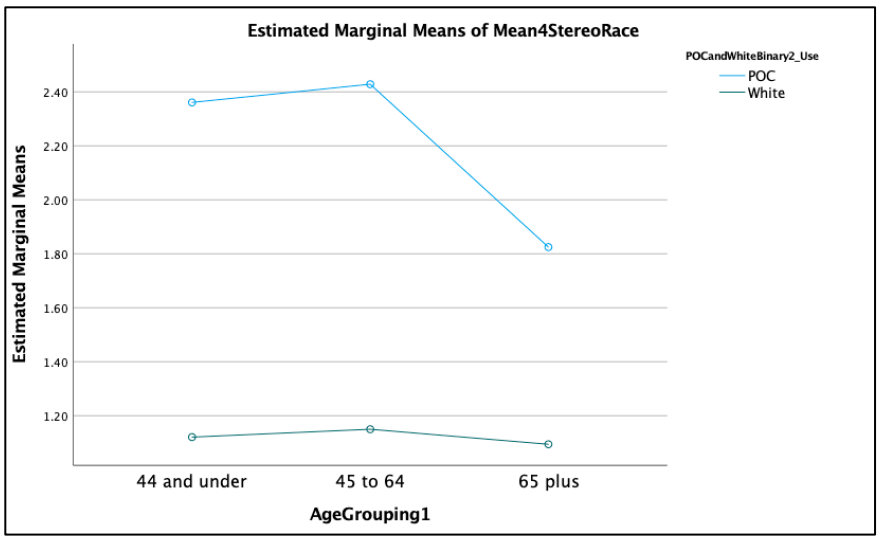

Figure 8

SAF Means for Ethnic/Racial Stereotype Threat with Race/Ethnicity & Age

There was also a statistically significant interaction between *gender and age on stereotype threat by gender*, $F(2, 725) = 8.97$, $p < .001$, with a partial Eta, squared of .024, a small effect size. There seems to be a greater impact of gender on perceptions of gender stereotype threat for women under age 65 than women over 65 in SAF (Figure 9 below).

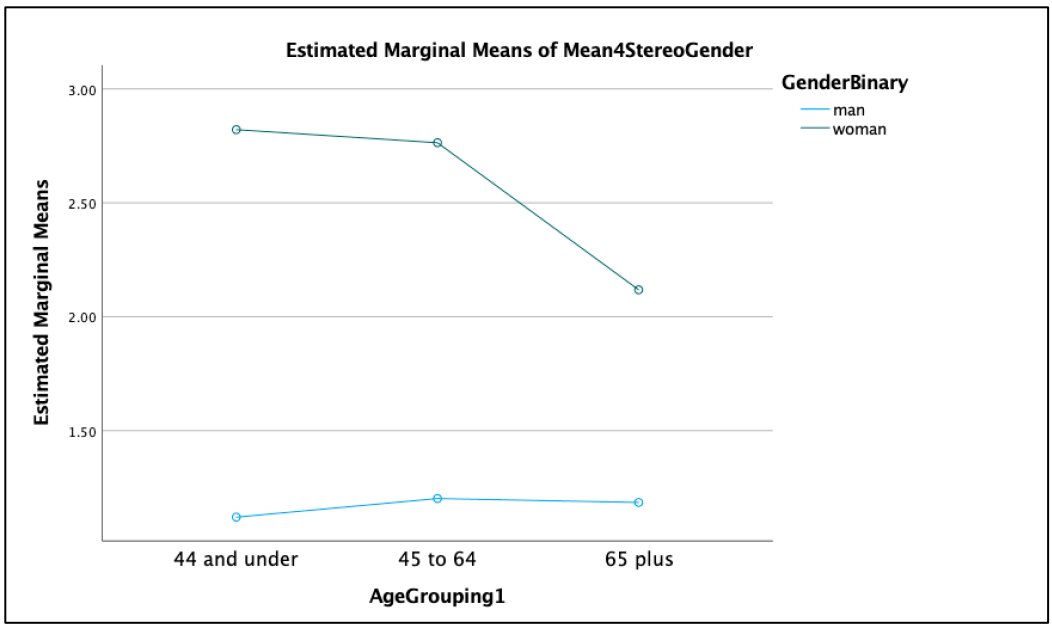

Figure 9

SAF Means for Gender Stereotype Threat with Gender & Age

Next, researchers looked at interactions with three IVs, gender, race/ethnicity, and age groupings. There was a significant interaction between *gender, race/ethnicity, and age on stereotype threat vulnerability by race/ethnicity*, $F(2, 677) = 4.28$, $p = .014$, with a partial Eta squared of .012, which is a small effect size. The 45 to 64 age category seemed to have the greatest combined effects with gender and race/ethnicity on racial/ethnic stereotype threat (see Figure 10 below). In sum, there were multiple significant interactions between IVs on E&I DVs. Regarding our research questions about interactions. The null hypothesis was partially rejected. There were interactions among minoritized factors, including gender and race/ethnicity, on perceptions of racial/ethnic and gender stereotype threat. However, significant interactions were not found between race/ethnicity and gender on culture, respect, sense of belonging, and organizational commitment.

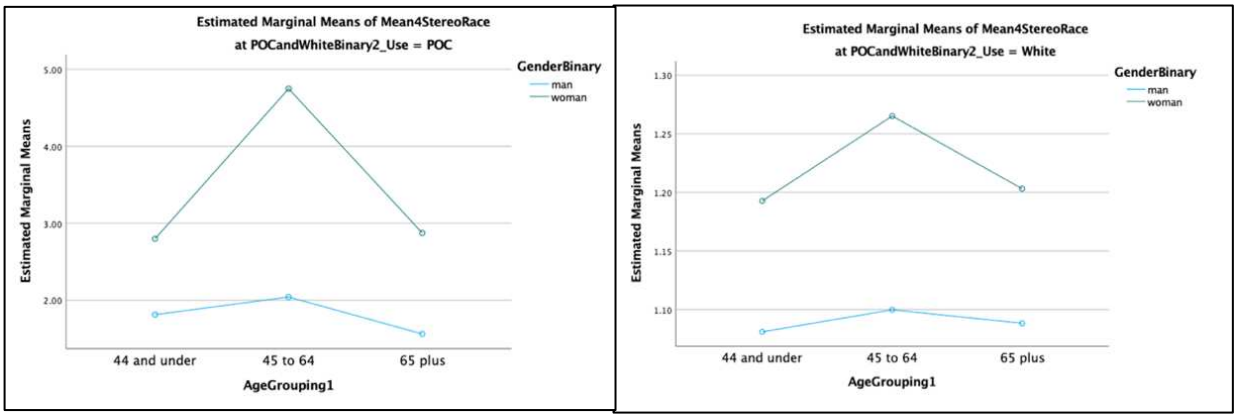

Figure 10

SAF Means for Ethnic/Racial Stereotype Threat with Race/Ethnicity, Gender, & Age

Next, the researcher looked at regression to see if some combination of IVs in the research question might predict specific DVs. Several different regression analyses indicated a combination of IVs in this study predicting some of our E&I DVs.

Using the IVs of race and ethnicity and gender, on the DV of *gender stereotype threat* showed a multiple correlation coefficient (R), using all the predictors simultaneously, of .708 (R^2 = .502) and the adjusted R^2 of .50 (SE = 0.633), meaning that 50% of the variance in gender stereotype threat can be predicted by race/ethnicity and gender combined. This prediction was significant (p <.001). Both race/ethnicity and gender IVs were also significantly correlated with gender stereotype threat (p <= .005). Eigenvalues and condition indices suggest potential collinearity issues, which could be analyzed further in future research. The researcher also notes that when age groupings (44 and under; 45-64; and 65+) were added as an additional IV, it had little impact on the model and little impact from adding discipline categories. Adding the

employment category provided an adjusted R^2 of 0.512, which also seems like little additional impact.

Linear regression showed that the combination race/ethnicity and gender predicted the DV of *racial/ethnic stereotype threat* (R = .426, R^2 = .182, and adjusted R^2 = .179, SE = .459); meaning that 17.9% of the variance in racial/ethnic stereotype threat can be predicted by race/ethnicity and gender combined. This prediction was significant (p <.001, N = 701). Both IVs race/ethnicity and gender were also significantly correlated with *racial/ethnic stereotype threat* (p <.001). Eigenvalues and condition indices suggest potential collinearity issues. Adding more IVs seemed to have little additional impact on this model.

The IVs of race/ethnicity, gender, and age grouping combined, showed some significant predictions on the *SAF culture construct at the state/regional level*. Adding the IVs of discipline (forestry or not) and past service as a SAF leader added further to the model. The combination of race/ethnicity, gender, age grouping combined, discipline (forestry or not), and service as SAF leader showed this combination of variables predicted the DV, SAF culture construct at the state/regional level (p <.001, R = .26, R^2 = .068, and adjusted R^2 = .063). These IVs predicted 6.3% of the variance in the SAF culture construct at the state/regional level. All these IVs were also significantly correlated with the SAF culture construct at the state/regional level (p <= .023). There were similar findings for the SAF culture construct at the national level, though the R and adjusted R^2 values were lower (adjusted R^2 = .024, p <.001). Eigenvalues and condition indices suggest potential collinearity issues.

The IV combination of gender, employment category lumped (government; private/self; education/non-profit; retired), age grouping, and past service as an SAF leader together showed some prediction of *organizational commitment* (p <.001, R = .387, R^2 = .150, and adjusted R^2 =

.146, *SE* = .724). This IV combination predicted 14.6% of the variance in SAF organizational commitment. The IVs were significantly correlated with organizational commitment (p <=.035). Eigenvalues and condition indices suggest potential collinearity issues. Adding the IVs of race/ethnicity and discipline did not seem to contribute greatly to this predictive model.

The IV combination of gender, employment category lumped, age grouping, past service as an SAF leader, and race/ethnicity together showed some prediction of SAF *sense of belonging* (p <.001, R = .358, R^2 = .128, and adjusted R^2 = .124, *SE* = .732). This IV combination predicted 12.4% of the variance in sense of belonging to SAF. These IVs were significantly correlated with sense of belonging (p <= .003), except for race/ethnicity (p = .063). Eigenvalues and condition indices suggest potential collinearity issues. Adding the IV of discipline did not seem to contribute greatly to this predictive model. The researcher also notes that the IV, *years as a SAF member*, was included in many initial regression tests; it seemed to offer strong collinearity and contribute similarly (though less so) to the age category IV.

The IV combination of gender, discipline, and past service as a SAF leader showed some prediction of multiple *respect* items. Respect was not one construct that averaged across items but a list of individual statements related to respect in SAF. As one example, gender, discipline, and past service as an SAF leader showed some prediction of person-to-person respect in SAF at the regional/state level (p <.001, R = .246, R^2 = .060, and adjusted R^2 = .058, *SE* = .777). Meaning 6% of the variance in person-to-person respect at the regional/state level was predicted by this IV combination. The IVs were significantly correlated with respect (p <=.006). Eigenvalues and condition indices suggest potential collinearity issues. Adding the IVs of race/ethnicity and lumped employment category did not seem to contribute greatly to this predictive model.

The null hypothesis was rejected for the research question about associations between the variables collected that would predict. Multiple combinations of the independent variables: age, employment type, length of time as a SAF member, discipline, gender, and race/ethnicity showed statistically significant predictions of multiple E&I measures. Next, the researcher digs deeper to find potential explanations of our quantitative findings through qualitative analysis.

Qualitative Analysis: Research Findings

Through transformative mixed methods approaches the researcher aimed to craft open-ended questions and follow-up qualitative work that would help us more fully understand the respondents' experiences, including inequities and power imbalances. Using a modified content analysis through an environmental justice lens, the researcher sought to answer the following qualitative research questions.

1) In what ways do environmental justice principles appear in the qualitative data, specifically are there mentions of *recognition of different ways knowing and philosophies*, of *participation and inclusion* in membership and decision making, of *promotion of capabilities* through supports, and *injustices or impacts on minoritized groups*?
2) What are participants' comments on the potential impact of the current engagement and inclusion situation in SAF? Do they see specific impacts on people? The organization? The profession? The forests, natural resources, environment, or Earth?
3) What other patterns and ideas appear in the open-ended responses?

DEI Commitment Holds Varied Meaning for SAF Members

A key open-ended question asked respondents to share what a commitment to DEI meant to them ($N = 922$). All responses were coded and organized into categories. Categories sometimes fit into similar groupings. The categories were separated into two large groupings: 1) ideas about and to assist DEI efforts (Table 6) and 2) concerns with DEI or being against DEI efforts (Table 7). The researcher used EJ principles to help organize specific references within comments into categories. Many respondent comments and imbedded references connected to multiple categories when analyzing this question. For example, if one comment specifically discussed the overall *inclusion* of members, *respect*, and *being kind* to others, then excerpts of this comment (in the form of references) would have been connected to each of those categories in NVivo. Sometimes, one excerpt (or portion) from a comment was complex and connected to multiple categories. The content analysis included sharing the number of times respondents referenced the specific coded categories. Using crosstabs in NVivo the researcher could also show the breakdown by some key demographics.

Table 6

SAF members' shared meaning and ideas on a commitment to DEI

	Ideas about DEI	**Total Ref.**	Men	Women	Non-binary	Not Disclosed	MOC	White
Participation	Inclusion and participation (broadly)	171	126	44	0	1	5	160
	Address bias & discrimination	42	30	12	0	0	3	39
	Discipline inclusion	11	7	4	0	0	0	11
Capabilities	Equity, capabilities & supports	141	105	33	1	2	8	129
	Youth, education, outreach	23	15	6	2	0	3	19
Recognition	Recognition of philosophy	87	54	32	0	1	7	78
	Recognition of diverse efforts, awards	10	5	5	0	0	0	10
Leadership and Accountability	DEI Leadership, accountability, change	71	42	27	1	0	4	63
	Business sense, for the future	21	18	2	0	1	1	20
	Ethics	3	2	1	0	0	0	3
	Outreach, training, individual action DEI	29	16	12	1	0	0	27
	Stakeholder, resource, & world	45	32	11	1	1	1	42
Additional Frequent References	Respect & dignity	100	73	24	0	3	3	88
	Equal or treat the same	82	74	4	0	3	2	66
	Welcoming	76	54	21	0	1	1	69
	Represent diversity	66	47	19	0	0	1	63
	Kindness & professionalism	45	40	4	0	1	4	38
	Recruitment	25	17	7	1	0	1	24
	Support DEI efforts (generally)	43	35	5	0	2	2	37
	Support, but do not over-do	31	27	3	0	1	1	29
	Specific DEI issue mentioned	20	14	5	0	1	2	13
	Retired, no power	2	2	0	0	0	0	2
	Religious comment	7	6	0	0	1	0	6
Other	Other (variety that did not fit categories)	27	21	5	0	0	2	20
	Not Sure	5	3	1	0	0	0	4

Table 7

SAF members' shared concerns with or some resistance to DEI

Concerns with DEI or Against DEI	Total Ref.	Men	Women	Non-binary	Not Disclosed	MOC	White
Focus on qualifications, character, merit	40	33	2	1	1	1	31
Mention politics or freedom	18	10	1	0	5	1	9
Forestry dilution	14	12	0	0	0	1	7
Concern with 'reverse racism'	14	11	0	0	1	0	12
Other fears & concerns with DEI	13	12	1	0	0	0	11
Contradiction examples, both for and not for DEI	12	11	1	0	0	0	11
Conditional, include some but not all	11	9	1	0	0	0	11
All are welcome, but identity factors not key	7	6	1	0	0	0	6
Concerns with 'equity' term	7	7	0	0	0	1	6
Anti-DEI	87	70	2	0	10	6	58
Mentioned dropping membership (due to DEI efforts)	10	6	0	0	2	0	6

There were three categories connected to the EJ principle of *participation* in membership and decision making. Overall, *inclusion and participation* as a broad idea was one of the most frequently referenced categories (171 refs.). Comments connected to *inclusion and participation* using words such as include, inclusive, and participation, with potential elaborations about groups of people and ways to include. Other mentions in this category were about the voices heard and creating a safe environment. Example quotes in this category include: "Not just opening the door to a broader group of people but actively working to build an environment that feels safe" and "individuals and differences are truly valued, and welcome in decision making, without having to re-prove loyalty or basic competencies." *Inclusion and participation were* referenced frequently by women and were also one of the higher references from members of color.

Another category under the *participation* umbrella was to *address bias and discrimination* (42 refs.). This included specific mentions of addressing biases, prejudice,

judgments, racism, harassment, and discrimination. Speaking up, avoiding 'silence,' and accountability for wrongdoings were also mentioned. One White SAF member said: "not making it the job of black and brown people to educate white people about racism." Another member shared, "And continue not allowing sexist/racist/other discriminatory jokes in a public SAF forum - SAF leadership's reaction to such an incident a few years ago earned my respect." Men, women, members of color, and White members all referenced the need to *address bias and discrimination*.

Finally, participation also encompassed *discipline inclusion* (11 refs.). This category was connected to comments that declared the need to broaden what is 'forestry,' reaching all natural resources professionals. One member shared, "Also means that membership in SAF includes those practicing forestry at all levels (i.e., technicians) and those technicians have the same voting rights and privileges as a member with a 4 year degree." Another member shared DEI "is also about where one works, how closely one is really a 'forester' and the diversity of the type of work we do." Some shared feelings that SAF has left behind: forest products, dirt forestry, private forestry, and technicians. Researchers also saw connections from this question and category to findings from the reasons for a SAF membership break and reasons for SAF hesitancy.

Another EJ principle that was addressed in the comments was *capabilities*. There were 141 references to *equity, capabilities, and supports* from SAF respondents. The highest reference count from members of color was for this category. Many women referenced *equity, capabilities, and supports*, which was also referenced by a SAF member indicating gender non-binary. Comments tied to this category mentioned equity, supports, fairness, actively reaching out, encouraging others, and removing barriers. Supports sometimes included specific mentions of

mentorship, hiring, job opportunities, and scholarships. One member said, “Complex: I believe SAF demographics reflect private forest land ownership demographics, reflecting institutionalized and historic economic inequities.” This quote also pointed to some environmental distribution issues. Additionally, a member of color shared this powerful quote:

> I hardly see anyone else who looks like me. Even knowing that I'm not the only person of color passionate about the environment I still struggle to find role models and to see myself within the environmental community. It is because of that my commitment to diversity, equity, and inclusions means that I'm motivated every day to build community wherever and however I can. To achieve the environmental community's goal - provide for the greatest good, for the greatest number, for the long run - I HAVE to be a cause in the matter by connecting and empowering all those around me, and act as the role model/mentor to others that I so desperately want for myself.

Under the broad umbrella of *capabilities*, another category was *youth, education, and outreach* (23 references total, including by 6 women, by 2 respondents indicating non-binary gender, and by 3 members of color). Members shared the need to reach youth audiences and mentioned diverse audiences as a focus area. One member of color said,

> Groups within the organization dedicated to outreach in urban, suburban, rural areas where kids are not exposed to natural resources on a regular basis. Educating young people about forestry/natural resources. And just generally being out in the open representing SAF.

Recognition of different ways of knowing, philosophies, and efforts was another EJ principle that appeared in many comments. There were two types of recognition that came up. *Recognition of philosophy* (87 refs.) mentioned the importance of being open-minded to ideas and perspectives and recognizing new and different approaches to resource management and forestry. *Recognition of philosophy* was among the highest mentions from members of color (7 refs.) and was also frequently mentioned by women (32 refs.). R*ecognition of diverse efforts and*

awards also came up in comments (10 refs.). One member of color said the following, which captured some of both recognition categories:

> To break away from the "group-think" mindset, which tends to leave out those who feel too intimidated to speak up or out. Not to posture, but truly reach out and recognize the achievements and contributions made by underrepresented groups or individuals--seeing them as the great foresters that make up our society.

Another member shared, "Yet we rarely speak to the most important aspect of diversity, which I feel is the diversity of thoughts (some would say opinions) that is necessary for a mature, fully-functioning professional society to exist." One woman added, "actively seeking an understanding and respect for truths beyond my own and to make changes either within myself or my organization to reflect a respect for opinions, beliefs, experiences of others." Regarding the recognition of diverse efforts and awards, one comment was, "Seeing visible change, more women & diverse ethnicity represented as members, receiving awards, leadership positions."

Another important large umbrella category was *leadership and accountability.* There were 71 references broadly to *DEI leadership, accountability, and change*. This category included detail on specific actions they would like to see from SAF National, calling for leaders to promote DEI and lead by example, for members and leaders to hold each other accountable, and for SAF to be open to change. There were comments in this category from members who were men, women, non-binary, White, and people of color. One member shared, "It means walking the walk, not just talking. Policy is not enough, leaders and members must model the behaviors."

Other important categories that were organized under *leadership and accountability* included: *stakeholder, resource, planet*; DEI *outreach, training, individual action*; *business sense, for the future*; and *ethics*.

The *stakeholder, resources, and world* category (45 refs.) bonds strongly to EJ. Comments organized under this category specifically mentioned the connection of DEI to stakeholders, natural resources, and the world. The researcher kept the people and resource components together in this category because, for many of the comments, these factors were expressed in an interacting manner. These members see DEI work as necessary to best serve the people and the resources and acknowledge the ripple effect of DEI. One quote that connected to two categories: *equity*, *capabilities, supports* and *stakeholder, resources, and world,* as well as to the EJ principle of fairness in distribution was: "…and advocating for fair and just treatment of landowners who have been marginalized = black landowners, tribal landowners." Other members shared "recognizing how social and ecologic and economic issues are all interconnected," and "Managing natural resources for the best benefit of all societies [sic] demographics. For example, expanding forests in an effort to mitigate climate change."

There were also references (29) to *DEI outreach, training, and individual action*. These comments called for DEI training and outreach about DEI and its connections to SAF and forestry. A few members also shared about their own efforts toward DEI education and action, including self-reflection. One member of color shared,

> Understanding that more internal trainings does not actually address the issues of DEI. Creation of safe spaces is important, but it is CRITICAL that individuals be prepared with the tools to address hostility in the workplace, and that the bystanders step up to support them.

There were references (21) to *business sense and for the future*. These comments indicated that DEI was good business for SAF and a necessity for the sustainability and prosperity of the organization. Additionally, a few respondents referenced *ethics* (3); they felt DEI was just the right thing to do.

Many other categories were developed for additional frequent references, as shown in Table 6. These categories were likely to overlap with others, but the researcher wanted to capture the frequency of some keywords and ideas. *Respect and dignity* (100 refs.) *were* simply a reference count for the word 'respect' and occasional use of dignity in a similar context. Respect was a word used by many and seems to be language that resonated with members. Even some who had concerns with the DEI movement seemed to rally behind respect. *Equal or treat the same* (82 refs.) was also frequently mentioned. Some respondents felt that equal treatment was the key, that we need to keep it the same for all; some of these members also indicated being against the broader DEI umbrella. Others thought that equal treatment was an essential component of overall DEI. Some respondents who emphasized equality also had an issue with the word 'equity.' Relatively few women referenced equal or treat the same (4 refs.); two members of color referenced it.

Other frequently referenced categories were *welcoming* (76 refs.), including comments that used the word welcoming or may have emphasized welcoming all, and welcoming difference as the most important. *Represent diversity* (66 refs.) connected to comments that discussed representation across differences and showcasing diversity, often listing identity groups. *Kindness and professionalism* (45 refs.) included mentions of kindness and professionalism as the key; many of these comments also included the Golden Rule (do unto others as you would have them do to you). *Recruitment* (25 refs.) included mentions of recruitment specifically, often recommending recruitment of more diverse groups. Additionally, there was general *support of DEI efforts* (43 refs.); *support, but do not over-do* (31 refs.); and *religious comments* (7 refs.), some of which included biblical scripture. There were also

comments that the researcher could not connect to a category (*Other*, 27 refs.) and some members were just *not sure* (5 refs.).

The researcher used a category to capture *specific DEI issues mentioned* (22 refs.). Two members shared that they were retired and felt they no longer had the power to influence change related to DEI, which demonstrates not feeling included in decision-making and not feeling recognized.

One man of color shared:

> Yet we rarely speak to the most important aspect of diversity, which I feel is the diversity of thoughts (some would say opinions) that is necessary for a mature, fully-functioning professional society to exist. If the sole focus of our diversity concern becomes that of personal identity feedback loops, then we have failed to strive for that higher purpose as a professional society. SAF has struggled for years with declining membership, and I cannot help but think that part of our loss of membership is due to our agonizing over how we want to appear (i.e., reflect the national demographics of the USA), versus what we want to be. Simply put, we should want to focus on becoming the best, most thoughtful professional organization that represents forestry, forest science and management in America, regardless of how we happen to appear at the moment in the simpler metrics of the day. By focusing on where we want to be (most diverse in thoughts and opinions), we will eventually catch the attention of others and will likely become more diverse culturally as well.

Throughout the analysis, members shared the concern that SAF was primarily White men or even older White men. Yet a separate issue that multiple members brought up in different ways was a concern for the current inclusion of the (older) White man: "Too much emphasis on DIE tends to undervalue our main member cohort, older white males. SAF must stop talking about old white males as if *that's* a bad thing." Members bring up the concern of valuing all perspectives, majority and minoritized. Some felt the discussion of race was troublesome because it divides rather than brings together. Another woman member shared a different perspective, "Not making it the job of black and brown people to educate white people about racism."

Religion came up in different ways; one person said, "…and christian [sic] values are what is important," while another shared an alternate perspective "That everyone who wants to be a member is welcomed and feels included. Having a Christian prayer before meals at SAF events is inappropriate."

One person shared, "Just wanted to comment that you left out "T" for transgender in lgbtq [sic]," while others lacked understanding for the trans and non-binary community. Multiple comments expressed disbelief in the gender beyond the binary, such as "and pretending, forcing others to pretend anti-science, anti-biological delusions such as that men can become actual women and that biological men should be allowed to compete in women's sports and so on."

A large grouping included comments that indicated *concerns with DEI* or respondents who expressed that they were somewhat or entirely *against-DEI*. *Anti-DEI* was used to indicate members whose statement seemed very clearly to resist and be against DEI in SAF (87 refs.). There were very few *anti-DEI* references from women for this category (2); there were six references from members of color. Ten of the anti-DEI comments also *mentioned dropping membership,* indicating that they might or thought others would potentially drop their SAF membership due to SAF's DEI efforts.

Other categories of DEI concerns included: *focus on qualifications, character, and merit* (40 refs.); mention of *politics or freedom* (18 refs.); *forestry dilution* (14 refs.), a concern we are watering down 'forestry'; *concerns with 'reverse-racism'* (14 refs.); *other fears and concerns with DEI* (13 refs.); *contradiction examples*, which seemed both for and against DEI (12 refs.); *conditional, include some but not all* (11 refs.); *all are welcome, but identity factors not key* (7 refs.); and *concerns with 'equity' term* (7 refs.). Some quotes were included below to help demonstrate comments in these categories. The group voicing concerns with a DEI focus most in

SAF was White men, but there were DEI concerns raised by some women and some members of color.

Focus on qualifications, character, and merit, an example would be *"*that we seek new persons to add to our community with no bias beyond technical merits." An example of *forestry dilution* would be, "SAF's mission should be to promote forestry not social programs! Stay in your lanes. Leave social activism to the activists." *Concerns with 'reverse-racism,'* connected to comments such as, "…in recent years if you are a white male you may not be treated equally," and "Women and people of color are not in the forestry/conservation classroom, but if one does come along they get the high paying jobs right out of college. UNFAIR!!" A *conditional* comment mentioned some to include but in an exclusive way, highlighting qualification or degree as necessary first, or they may have specifically mentioned a group to exclude. There was one homophobic comment shared in the category, *conditional, include some but not all.*

Other fears and concerns with DEI was a mottled category. It included comments such as,

> When I see the term "equity" used I think of an ever changing *definition* that works itself out by telling certain people that because of how they look, they can't make it unless they get extra help. This is the soft bigotry of low expectations.

Another member shared, "Attempting to include all demographic subsets while not demonizing the current majority." Another comment was, "SAF should work to maintain current diversity but allow members to come and go naturally. Doing otherwise would not reflect the forestry community, as well as possibly make members uncomfortable." One woman said, "Forestry isn't a very diverse profession period and I understand that. I fear that organizations are too worried about recruiting diverse candidates that aren't necessarily qualified or trained in forestry."

Looking at our qualitative research questions, all our primary EJ principles appeared through comments and categories regarding the meaning of DEI commitment in SAF. We saw recognition of philosophies, promotion of capabilities, and participation and inclusion as frequently referenced ideas. Injustices and impacts on minoritized groups were highlighted, often in specific quotes and as a focus in some categories. The *leadership and accountability* umbrella showed participants' expression of concern for impacts on SAF business and sustainability as an organization and the ripple effect on the stakeholders, resources, and our world.

We also saw different patterns that tie back to some of our quantitative findings. Some groups feel less belonging, some political and religious perspectives seem polarizing, and mutual respect was sometimes not perceived. Examples of exclusionary language used indicated opposition to discussions about differences. There were references indicating some presence of harassment, discrimination, and overt bias. Some groups felt they did not have a voice and representation. There were indicators that there is room for improved and increased engagement. These patterns point to challenges that likely impact culture, inclusion, recruitment, and retention in SAF.

Reasons for a Break from SAF

One key open-ended survey question was regarding why members took a break (if ever) from SAF membership. About a quarter of respondents (25.9%) indicated that they had taken a break from their SAF membership (left the organization) for a period. These members returned to the organization, but many of these respondents shared reasons for leaving SAF for a period. Those qualitative responses were examined through content analysis, and the following patterns emerged.

Table 8 below shows coding by general category of the responses SAF members wrote explaining why they had taken breaks from their SAF membership in the past. There were 326 different references coded in NVivo (Note- a respondent could have provided text with multiple codes/categories in one response; it was even possible that a specific excerpt within one comment might have connected to more than one code). The codes were batched into similar groupings. The most common reason for a break overall was *life and transitions* (100 refs.), followed closely by *cost* (93 refs.), then *overall SAF culture* (57 refs.), and then *overall relevance and value* (50 refs.). The reasons within these broad categories matter too. When we look through a critical lens and consider some of the expanding principles of EJ, *recognition* of philosophies; *capabilities* and support; *participation and inclusion* in decision making, areas emerge that SAF could address to engage better and include all members.

References to *overall life and transitions* included a grouping of several sub-categories, *time of transition* (33 refs.), *student drop-off* (28 refs.), *non-forest job or scope* (23 refs.), *early career* (14 refs.), and *unemployed* (2 refs.). *Time of transition* was connected to references where respondents shared about moves, job changes, international or domestic travel, military, or Peace Corp service. Some of the higher reference counts from women were within the *overall life and transitions* theme. Specifically, there were a few comments from women, such as: "single working mom," men also shared family as a reason for a membership break. Members of color also mentioned *time of transition* and *student drop-off*. In connecting *overall life and transitions* to EJ, SAF might consider supports that offer greater equities and capabilities to stay and thrive during these transition times.

The *student drop-off* category was connected to responses where members indicated that they were active as students but dropped off and took a break after college, which was a common

response. Potentially tied to this sub-category was also *early career*. One comment that included both *early career* and *student drop-off* references from a woman respondent was:

> Left after undergraduate - had no idea why I was in SAF or what it was or that I could even remain a member after undergraduate. After graduate school, I realized I could be a professional member but no one from the local chapter ever reached out to me. I definitely would have joined back then if someone had asked me.

References coded as the *early career* sub-category specifically mentioned that their break was in the early years of their career but did not necessarily tie it to more active years as a student. In any case, these two sub-categories connect to statistical data from the survey as well; more attention and support are needed for students, early-career professionals, and the transition from student to professional membership. This can also be tied to the capabilities EJ principle, do all members and potential members have the resources and supports needed to thrive in the organization and profession?

Many of the *cost* references were similar, cost was prohibitive, and respondents could not afford it at a time in their lives. Many responding members specifically mentioned (21 refs.) *cost in the early years*, indicating cost was particularly prohibitive in the earliest part of their career. Another DEI issue that came up with cost was the challenge of the 'forestry couple.' In these cases, only one household member got the 'membership' recognition because the house could not afford to pay for two (in some, it was explicitly mentioned that the husband was the household member at the time, though this was not always the case). The cost was one of the highest mentioned reasons for a break from women and was also one of the reasons cited by members of color. Since the cost was prohibitive, this was also considered an area where members' *capability* to thrive, an EJ principle, was hampered due to a need for financial support.

The *overall SAF culture* theme, closely tied to the tenets of EJ and DEI, had the highest reference count (5) from members of color; this category also had a high count from women (13). Subcategories under the *overall SAF culture* umbrella (57 refs.) included references to *SAF National culture (19 refs.)*, *local culture and activity (19 refs.)*, *DEI (12 refs.)*, and *SAF leadership (nationally) (7 refs.).* Women made multiple references in the *local culture and activity* sub-category and the DEI sub-category; members of color also had references in these two sub-categories. One member of color said: "No opportunities to engage as a young professional. Bunch of old friends running leadership, and complete opacity as to what the organization actually offered." Another member of color describes local SAF as "parochialism at state level." An American Indian respondent shared that they left the organization for a long period, feeling it did not represent their views on forest management and ecology. This respondent came back to the society hoping to help shift the culture in both SAF and the profession; this comment points to a need for *recognition* of different philosophies. Again, some members push back on these initiatives:

> I quit out of anger when SAF began delving into leftist politics, but when my employer expected me to be a member, I renewed my membership. Now, I feel like if I am going to be a member, I might as well try to "hold the line" against what I see as out-of-touch, elitist, DC-beltway, Marxist ideologues running the organization.

This quote from a woman in SAF points to *DEI* and *local culture and activity*: "As the only woman attending a chapter meeting in a very remote location was uncomfortable for me. I use(d) to drag my husband to the meetings, so I would feel more comfortable." Other comments in the DEI sub-category from women were: not feeling valued, feeling other organizations better represented their interests and demographics, lack of diversity in SAF and antiquated discussions about the topic, and disappointment in attitudes of aging SAF members. Responses here again

tied to EJ principles, particularly *inclusion and participation*, as well as *recognition* of different philosophies and ways of knowing.

There were also quite a few mentions of *SAF's National culture* (19 refs.) and *SAF leadership (*7 refs.*)* nationally. Many of these references pointed to philosophical differences about what SAF's focus should be. The flavor of these comments was often influenced by leadership and staff in place at a period in SAF history. Some referenced current times, some the past, and some it was not clear. Varied cultural perspectives included: feeling SAF was too industrial, and logging focused, with "narrow views," or feeling SAF was opposed to climate change science, or that SAF "minimized forestry stakeholders like nontimber forest products harvesters (they pointed out even the survey minimized this)." Meanwhile, there were comments about feeling SAF was not focused enough on 'forestry' but instead "trying to be too PC" or comments like "Too much focus on academic forestry instead of functional & industrial, real-world forestry." There were also breaks due to disagreements with leaders' approaches or feeling like leaders were exclusive in their leadership. There was also discussion of the importance of local engagement and action, even when respondents did not feel connected nationally. Here again, some groups and perspectives did not feel *included* and *recognized*.

The next major idea shared was a break due to *overall relevance and value* (50 ref.) Such comments indicated a lack of relevance or value for these members, which led to a break from SAF. Specific subcategories included a lack of *value and content* (32 refs.), *lack of interest/relevance/engagement* (14 refs.), *dual professions and opportunities* (4 refs.). The *dual professions and opportunities* subcategory was linked to participants sharing that they wore multiple discipline hats and had been more active in other professional organizations rather than SAF at times. Women referenced all three subcategories. Members of color referenced

value/content and *dual professions/opportunities*. This lack of relevance and value may connect to some disciplines and philosophies feeling less represented and *recognized* in SAF programs and media. A few other categories included: simply *did not maintain* membership (10 refs.), a lack of *employer support* (8 refs.), and a short list of '*other*' reasoning for breaks (8 refs.).

In looking at our qualitative research questions, we see references to fundamental EJ principles through both comments and categories about the reasons that members might have taken a SAF break. Members expressed a need for space to respectfully debate and still *recognize* varied conservation and stewardship philosophies. Sometimes women and members of color share feeling 'minoritized' within the organization. Many respondents shared financial challenges and times of transition where further supports were needed to help them thrive (capabilities). Members also shared situations and times where they had barriers to inclusion and full participation. There is also a definite pattern related to early-career and the student-to-professional transition as particularly difficult times to maintain membership.

Table 8

Qualitative Analysis by Category: Reasons for a Break from SAF Membership

Reasons for a Break in SAF	References	Women	Men	Members of Color	White
	326				
Break- Overall Life & Transitions	100	29	62	3	84
→ Break- Time of transition	33	9	24	2	31
→Break- Student drop-off	28	10	18	3	24
→Break- Non-forest job or scope	23	7	16	0	2
→Break- Early career	14	4	9	0	13
→Break- Unemployed	2	1	1	0	2
Break- Cost	**93**	27	61	3	81
→Break- Cost in early years	21	5	16	1	18
→Break- Forestry couple	2	2	0	1	1
Break- Overall SAF culture	**57**	13	37	5	42
→Break- SAF National Culture	19	2	15	0	16
→Break- Local culture & activity	19	7	11	3	15
→Break- Diversity, equity, inclusion	12	6	6	2	9
→Break- SAF leadership (National)	7	0	6	0	4
Break- Overall Relevance & Value	50	7	41	4	41
→Break- Value, content	32	6	24	2	25
→Break- Lack interest, relevance, engagement	14	1	17	0	14
→Break- Dual professions & opportunities	4	1	3	2	2
Break- Did not maintain	10	3	7	0	9
Break- Employer support	8	1	7	0	5
Break- Other	8	0	8	1	7

Reasons for Hesitancy in SAF Membership

Another open-ended question that had close connections to the reasons for a break from SAF membership was a question about why respondents had ever hesitated about their SAF membership ($N = 576$). Response content was again analyzed and organized through coding. Table 9 summarizes key hesitancy categories, bundling some similar codes together.

Table 9

Qualitative Analysis by Category: Reasons for a Hesitancy about SAF membership

Code Category	Description of references	Total References	Men	Women	Nonbinary	MOC	White
Cost vs. Benefit	Overall (134); early career (33); life balance (30); contribute (9); relevance (15)	221	172	40	3	5	204
Nothing	Nothing	133	122	11	0	5	125
DEI Overall	(*See subcategories below*)	103	31	24	2	3	58
→Capabilities, access, barriers, supports	Lack employer support (7); distance/remoteness; family; access; international	29	18	10	1	2	26
→Majority white men	White men majority mentioned	12	6	5	0	0	11
→Not included	Contributions not valued, included, ignored (16); not welcoming (6); women (5); retirees (2); international (2); sexual orientation (1)	33	17	13	1	2	28
→Discrimination, harassment, or safety	Specifically said 'discrimination', harassment, fear for 'safety', or accountability	8	4	3	0	0	7
→Others	DEI suggestion (7); tokenism (1); slow to change (3); bias/crude humor (4); conservative (6)	21	9	11	0	0	17
Recognition of varied perceptions and philosophies	Academic divide; politics; not open to ideas; PC; industry; traditional vs. change	63	57	2	0	1	58
Discipline & stakeholders included/excluded	Forest technicians, urban forestry, geography, industry, CF requirements, government, the non 'forester', social science, fire, recreation, timber, academic divide, others	59	41	14	0	0	53
Forestry dilution	Concern we are diluting what is 'forestry'	24	21	1	0	0	17
Local level inclusion	Local engagement, not welcoming, not included (but also a few greater connected to local)	26	18	7	0	1	23
SAF sustainability or future	Future, direction, decline, adapt, accreditation, advocacy, leadership	17	14	3	0	0	13
Against DEI or survey	against DEI efforts or the survey	21	13	3	0	2	9

The most common reason for hesitancy about SAF membership was the *cost versus the benefit* (134 refs.). There were also specific mentions of cost challenges in *early career* (33 refs.); cost vs. benefit associated with *life balance* (30 refs.); lack of *relevance and content* (15 refs.); and mentions regarding the ability to make a *personal contribution* (9). One member shared, "as a student and young professional, cost of membership was a barrier." Regarding life balance, one woman shared, "I'm tired of having to pick between family and SAF for conferences/events. National conventions over Halloween; local meetings at facilities with only

single sex dorms, as a mother of boys that's a problem." Another woman offered a reason and suggestion:

> cost - my spouse dropped his membership and I maintain mine - we both still read the publications we *receive* under my membership and I can share info with him that he would have otherwise missed out on. *I* think there could be a member+1 option for membership - charge a little more than a single member costs for households containing more than one member.

Regarding challenges with *personal contribution*, a man shared, "Because I don't have time to participate in the organization, I see my membership as a newspaper and journal subscription."

The researcher grouped several code categories under the umbrella of *DEI overall* (103 refs.). Several members mentioned feeling that they were *not included* (33 refs). This comprised specific references to not feeling valued or included, feeling ignored or not welcomed, concerns regarding less inclusion for women, retirees, international members, and members of color, and exclusion based on sexual orientation. Eight references mentioned *discrimination, harassment, or safety*, which included mentions of experiences or the need for accountability in these areas. One member shared, "Being able to be open about my sexuality and my family. Seems like I have to hide it because of how some folks have reacted in the past."

Twenty-nine references were made to *capabilities, access, barriers, and supports*, including lack of employer support, distance or remoteness challenges, family, international access, and general access. Specific to access, members of color shared the following, "Opportunities for involvement in my area. (My town) is far from everything," and a separate comment, "Early on the geographic variability in regional SAF membership populations was daunting -- not so now."

Under the *DEI overall* umbrella, there were multiple references to SAF membership being majority White men (12 refs.). Additionally, the phrase 'good ol boy' was used numerous

times here and in other open-ended questions. There were also references to SAF membership being conservative (6 refs.). *Other* general DEI mentions included overall DEI suggestions, tokenism, slowness to change, and references to bias or crude humor. A few women brought up one specific incident related to crude humor, which the researcher also recalls witnessing in person. A woman shared these details "The joke during the opening plenary in Baton Rouge gave me pause (The one about ... where's my wife while I'm at convention???)."

The EJ research lens also helped to detect *recognition of varied perceptions and philosophies* (63 refs.); comments that indicated greater recognition of different philosophies were needed. This included mentions of the divide between academic and non-academic ways ('academic-divide'), politics, close-mindedness to different ideas, political correctness, industrial forestry ways versus non-industrial, and traditional ways versus change. Some references called attention to the SAF Code of Ethics and better attention to good stewardship and ethical forestry. Additionally, a member of color shared, "If anything, occasionally the need to adhere to the dominant paradigm at local, regional, national levels." One man shared, "Many SAF members I have come in contact over my career are very set in their ways and unwilling to try new approaches, ideas, and possible solutions to traditional work and forest management methods." Another member shared, "I'd like to see more emphasis in SAF to promote forestry as applied conservation ecology." Some mentioned too conservative a lean, and some others discussed too liberal. Some felt SAF does not incorporate private and industrial forest needs, others felt climate change is not fully acknowledged. Another member shared:

> SAF's aversion to taking risks, i.e. pulling back the SAF report on Conservation of Biological Diversity (1990s), not pushing membership for people involved in the broad range of natural resource management (2000s) -- both because SAF leadership was adverse to taking the risk of offending a portion of the membership.

There were also many references to *discipline and stakeholder inclusion or exclusion* (59 refs.) as an issue that led to hesitancy. This category was connected to mentions of disciplines and stakeholders that members felt were less included in SAF programming and engagement. Some listed were forest technicians, urban forestry, industry, government, the non 'forester,' social science, fire, recreation, timber, and others. There were also mentions of certified forester requirements as exclusive criteria, the academic divide, and division by geography, indicating that SAF content favored certain regions. One member shared, "They don't let people with two year technical degrees from accredited schools to become CFs." Another said, "I'm a political scientist by training, not a forester. I suffer from chronic imposter syndrome." Urban forestry was brought up often, "*It's* slow evolution to accept and properly promote urban forestry as a discipline." There were comments about private forestry and scale, "Increasingly not relevant to smaller scale/private landowners hardwood forest management." Yet another perspective, which connects both discipline and philosophy was,

> I think we'd do better at attracting younger, more diverse membership if young people recognized how active forest management can meet more social-ecological goals, less focus on sawlog economics. Too many "ologists" view us as part of the problem rather than conservation partners.

Additionally, there were references to concern for *forestry dilution* (24 refs.), feeling that DEI and other disciplines detract from or water down what is true 'forestry.' There were also references to *local level inclusion* (26 refs.); this included discussion of variations in local engagement opportunities, some local chapters and regions being less welcoming, and both not feeling included locally, as well as a few who share that they felt better included locally as compared to larger scale (national) SAF involvement. Regarding local level inclusion, a woman of color shared, "Don't see national SAF values trickling down to local/regional chapters very

well." Another woman shared, "this is my last *year with* SAF. the local group is a total turn off. the local lead chooses who will be invited to speak at the state level... and it's not a female."

Lastly, some SAF membership hesitancy was connected to *concerns for SAF sustainability and future* (17 refs.). This included concerns for the future of SAF and directions headed, declines in the organization, the need to adapt, and needs for advocacy, accreditation changes, and leadership. One woman shared, "but I think that it has to adapt to have a future, especially as baby boomers retire." Another common response category was for those who said *nothing* (133 refs.) had given them hesitancy with SAF membership.

There were members against DEI efforts and this survey research (21 refs.). One member shared, "The *politically correct*, increasingly leftist, identity politics that SAF has been embracing. I am all for people of all races, cultures, backgrounds, gender, etc. belonging to SAF and achieving success in SAF and in their forestry related careers...but this is the wrong the way go about it." The 'this' may mean this approach or this survey; the researcher cannot be sure.

SAF hesitancy comments included references to fundamental EJ principles. Respondents expressed concern for *recognition* of *varied perceptions and philosophies*. It was clear that some disciplines and stakeholders feel less included. Some members expressed challenges in fully participating at a local level. Concerns about discrimination, harassment, and safety were mentioned. Some expressed a need for better *capabilities*, access, and support to overcome barriers. Some comments articulate the ripple effect that DEI issues can have on stakeholders, management decisions, policy, and our natural resources. Clear patterns that triangulate back to other qualitative analyses and the quantitative data were differences between disciplines, minoritizing of certain groups, life balance challenges, and early career challenges. Many have

not had reasons for hesitancy with membership, and there were some members who pushed back on DEI efforts in SAF.

Pipelines and Paths to Forestry and Natural Resources Professions

Part two of the survey blended some quantitative and qualitative approaches, asking questions about participants' entry into forestry and natural resources as a career. This component was not a primary focus of the dissertation but was seen as an important contributor to E&I in SAF: What is the pathway that students and professionals take to natural resources disciplines, as well as to SAF? What are barriers and supports along the pathway, and how might this look different for minoritized groups?

Specific nature-based experiences respondents indicated participating in as youth, in order of most selected: hiking (80.8%), fishing (77.9%), camping (77.8%), travel to outdoor areas or parks (74.1%), exposed to gardening (70.8%), reading about nature (63.1%), Scouting (Girl Scouts, Boy Scouts, Explores) (55.6%), watching nature shows on television or other media (56.3%), had a family member or friend who nurtured outdoor interests (54.6%), time in local parks (54.6%), visiting zoos and aquariums (50.9%), lived near a stream or river (50.6%), hunting (44.3%), lived or worked on a farm, woodlot, and/or ranch (31.3%), horseback riding (26.5%), nature-based or environmental education programs (29.8%), had a family member or friend who worked in forestry, natural resources, or a related field (25.8%), observed or experienced harmful environmental impacts in my own community (25.3%), 4H (14.0%), eco-camps (through school or otherwise) (9.4%), FFA (8.6%) (N = 869 unique respondents), note the percent sum exceeds 100% as participants could select multiple as they applied). Most respondents selected multiple of these nature-based experiences (86% of respondents selected six or more of these categories) (N = 869). When looking at nature-based experiences that

participants encountered as a youth, the researchers see connections to EJ principles of *capabilities* (barriers and supports), as well as *participation and inclusion* in these activities.

When asked if they would say that nature-based experiences during their youth (as described in the survey) were a key contributor to their choice to study/work in forestry/natural resources, 93.5% said yes (N=779). Most respondents, 75.3% indicated that they engaged in nature-based experiences very often (every 1-2 months), 17.1% often (4-5 times per year), 5.6% sometimes (2-3 times per year), 1.7% rarely (maybe once per year), and 0.2% never (N = 870). Members of color also reported engaging in these 'nature-based' activities often to very often, but frequency percentages were lower (56.8% monthly and 27% every few months).

Table 10 below shows percent comparisons between groups for nature-based activity exposure as a youth. In many cases, the highest percent activities were high for the overall sample and members of color and women. A few differences to note, *Scouting* (Boy Scouts, Girl Scouts, Explorers, etc.) was higher for members of color than White members. *Watching nature shows on television* was also a higher percent exposure for members of color. *Observed or experienced harmful environmental impacts in my own community* was also a higher percent for members of color than for White members; it was also higher for women as compared to the percent for members overall, a direct connection to the EJ literature (Holifield et al., 2009; Buckingham & Kulcur, 2009; Schlosberg, 2007; Taylor, 2002). *Time in local parks* was also higher for members of color and women. Women had higher percentages than other groups for *4H*, *nature-based or EE programs*, and *horse-back riding*. *Hunting* exposure was much lower for women.

Table 10

Nature-Based Youth Exposure for SAF Members

Nature-based activity	% Overall	% Members of color	% Women	Nature-based activity	% Overall	% Members of color	% Women
Hiking	80.8	72.2	72.3	Lived near a stream or river	50.6	41.7	45.2
Fishing	77.9	66.7	57.1	Hunting	44.3	41.7	10.2
Camping	77.8	63.9	68.4	Lived or worked on a farm, woodlot, and/or ranch	31.3	30.6	25.4
Travel to outdoor areas or parks	74.1	72.2	71.8	Nature-based or environmental education programs	29.8	30.6	37.29
Exposed to gardening	70.8	69.4	71.8	Horse-back riding	26.5	25.0	39.6
Reading about nature	63.1	61.1	61.6	Had a family member or friend who worked in forestry, natural resources, or a related field	25.8	16.7	21.5
Watching nature shows on television or other media	56.3	66.7	57.6	Observed or experienced harmful environmental impacts in my own community	25.3	33.3	27.1
Scouting (Girl Scouts/Boy Scouts/ Explorers)	55.6	61.1	50.9	4H	14.0	11.1	19.8
Time in local parks	54.5	52.8	56.5	Eco-camps (through school or otherwise)	9.4	13.9	15.8
Had a family member or friend who nurtured outdoor interests	54.5	52.8	51.4	FFA	8.6	5.6	3.4
Visiting zoos and aquariums	50.9	50.0	57.6				

Interestingly, 54.3% of respondents indicated that they never or rarely (maybe once per year) engage in environmental education (EE) with youth audiences (16.3% and 38.0%, respectively), 25.7% indicated they do so sometimes (2-3 times per year), 11.8% often (4-5 times per year), and 8.2% do so very often (every 1-2 months) ($N = 773$). The literature clearly shows

that youth engagement is crucial to choosing to study and work in natural resources (NR) (Chawla, 1999; Laird et al., 2014; Louv, 2005), and most respondents in this study connected to NR through these channels. Yet, it was still a small portion of members who seem to regularly engage in EE with youth as an adult and professionals in the field.

Respondents shared the barriers they have personally faced in the pursuit of their overall careers. The original measure assessed anticipated future barriers to education and career and coping efficacy for overcoming those barriers (Luzzo & McWhirter, 2001; McWhirter, 1996). With permission, this study used Luzzo's and McWhirter's barrier list to inform this research and used a 5-point Likert scale. Our questions asked if they had experienced each item and, if so, to what degree it may have been a barrier, from 1- *not a barrier* to 5- *extremely major*. The researcher notes that this question had lower participation than some others in part two of the survey, but respondents may have skipped it whom the first few barriers did not resonate with (NOTE: Question just prior to barriers had $N = 773$, and just post barriers had $N = 771$). Those who responded shared the following potential barriers were most experienced: money challenges (586 experienced, 376 considered it a barrier (64.2%)); lack of exposure to the career path (403 experienced, 234 considered it a barrier (58.1%)); not having enough confidence (413 experienced, 220 considered it a barrier (53.3%)); not fitting in (357 experienced, 197 considered it a barrier (55.2%)); lack of role models or mentors (339 experienced, 194 considered it a barrier (57.2%)); not being prepared enough (327 experienced, 131 considered it a barrier (40.1%)); lack of support from my employers (264 experienced, 159 considered it a barrier, (60.2%)); family troubles (240 experienced, 122 considered it a barrier (50.8%)); personal troubles (257 experienced, 103 considered it a barrier, 40.1%); lack of support from co-workers (216 experienced, 99 considered it a barrier, (45.8%)), lack of support from university advisers (215

experienced, 119 considered it a barrier, (55.4%)); lack of support from teachers (198 experienced, 95 considered it a barrier, (48.0%)); lack of support from my family (136 experienced, 52 considered it a barrier, 38.2%); experiences with discrimination or harassment (191 experienced, 125 considered it a barrier, 65.5%); lack of support from friends (129 experienced, 39 considered it a barrier, 30.2%); lack of childcare (113 experienced, 65 considered it a barrier, 57.5%); lack of support from my significant others (110 experienced, 50 considered it a barrier (45.5%); my desire to have children (126 experienced, 57 considered it a barrier, 45.2%); a disability (physical or mental) (37 experienced, 21 considered it a barrier, 56.8%); and personal mental health (112 experienced, 52 considered it a barrier, 46.4%).

The barriers analyzed demonstrated that many different career obstacles were experienced and that perceptions of what was considered a barrier and to what level also varied. Some of the barrier items had a high percentage of those experiencing who perceived that item as a barrier. This could help practitioners determine which barriers to prioritize for potential mitigation and support efforts. In looking at minoritized identity categories as a barrier, 174 indicated gender as a potential barrier experienced, and of those, 131 (75.3%) did feel it was a barrier in their career pursuit. Regarding race and ethnicity, 60 saw it as a potential barrier; of those, 36 (60%) felt it was a barrier in the pursuit of their career.

In comparing barrier means between groups, the mean for most barriers was higher for women than for men (the only exception was *experience with a disability*). For the barriers provided in the survey, the highest means from women were for seeing *my gender* as a barrier (mean = 2.49, SE = 0.98, N=126); *experiences with discrimination or harassment* (mean = 2.34, SE = .124, N=71); *lack of role models* (mean =2.39, SE= .104, N=114); and *lack of childcare* (mean = 2.32, SE=.174, N=44). Independent t tests also found significant differences between

groups. Table 11 shows all the gender comparisons that were significant for gender. The effect-sizes varied, but most were in the typical (.50) to substantial range (.80) (Vaske, 2019). Some of these measures violated *t*-test assumptions, for those items the Mann-Whitney *U* test was also run, and still showed significant differences in these cases (Appendix Q). Women in SAF had significantly greater mean perceptions of the following as barriers: *not fitting in*, *my gender*, *not having enough confidence*, *lack of role models and mentors*, *lack of support from my employer*, *lack of support from co-workers*, *lack of childcare*, *desire to have children*, and *experiences with discrimination or harassment*. Women in SAF experienced and perceived overall career barriers to a higher degree than men, and barriers would certainly be a component of overall E&I in SAF.

Table 11

Comparison of Barriers by Gender: All Significant Differences Shown

Barriers Experienced	**Men**			**Women**			***t*-test**	
	Mean	**N**	**SE**	**Mean**	**N**	**SE**	***p*-value**	**Cohen's *d***
Family troubles	1.73	170	0.07	2.17	65	0.13	0.002	0.446
Not fitting in	1.72	228	0.06	2.24	118	0.10	<.001	0.535
Lack exposure to career path	1.84	281	0.06	2.19	108	0.10	0.002	0.353
My gender	1.87	38	0.13	2.49	126	0.10	.001	0.599
Not being prepared enough	1.52	250	0.05	1.73	67	0.09	0.044	0.278
Not having enough confidence	1.66	301	0.05	2.16	102	0.10	<.001	0.558
Lack of role models or mentors	1.70	215	0.06	2.39	114	0.10	<.001	0.723
Lack of support from teachers	1.67	138	0.08	2.05	55	0.14	.011	0.409
Lack of support from my employer	1.85	187	0.07	2.39	71	0.12	<.001	0.545
Lack of support from co-workers	1.50	139	0.06	2.17	70	0.13	<.001	0.758
Lack of childcare	1.74	66	0.11	2.32	44	0.17	0.004	0.57
Desire to have children	1.42	72	0.08	1.94	52	0.14	<.001	0.656
Discrimination or harassment	1.77	83	0.09	2.34	98	0.11	<.001	0.573

Looking at barriers through a lens of race and ethnicity, the mean for some barriers was higher for members of color compared to White members, though there were multiple items

where this was not the case. Table 12 shows barrier categories where a significant difference was found between members of color and White members. Some of these responses had fewer than 30 members of color for comparisons which were less than would be ideal for statistical comparisons (Morgan et al., 2013); in any case, these comparisons showed a significant difference and had typical to substantial effect sizes. Some items came up here that did not appear significant when looking through the gender filter. *Money challenges* and *lack of support from family* were barriers to a greater degree for members of color. *Lack of support from family* was also skewed, see Appendix Q for the Mann-Whitney *U* results as well. *Not fitting in* was a barrier at a significantly higher level for women and members of color. Gender also popped as a barrier for members of color, which may point to some intersections of race/ethnicity and gender. Members of color in SAF shared some different barrier experiences as compared to White members and perceived some barriers as a greater inhibitor to their career.

Table 12

Comparison of Barriers by Race and Ethnicity: All Significant Differences Shown

		Barriers Experienced		
Race & ethnicity grouping		**Money challenges**	**Not fitting in**	**Lack of support from family**
Member of color	**Mean**	2.58	2.53	2.36
	N	24	19	11
	SE	0.22	0.269	0.338
White member	**Mean**	2.13	1.85	1.56
	N	514	316	116
	SE	0.05	0.054	0.081
***t*-test**	***p*-value**	0.045	0.004	0.005
	Cohen's *d*	0.42	0.69	0.902

There were several other open-ended questions asked in the survey. In coding these questions, the researcher hit saturation where no additional codes were developing, so they stopped formal coding after looking through 500 participants. For the question that asked what led the person to SAF, the most common responses were *college exposure*, from student forestry or SAF chapters, professors, advisers, or peers. Other common responses were *community connection*, the opportunity to *contribute and be a part of the profession*, *education and resource* access, and encouragement from *mentors through employment or family*. People shared some interesting stories about their connection to joining SAF, such as,

> As a forestry undergraduate, we were all told to join. So we did. When I rejoined it was because someone from the local chapter told me I was the new secretary treasurer. I said I wasn't a member. They said "Well, you better pay your dues then". So I did. And I love my local chapter

Someone else shared, “The SAF XXX Chapter advisor personally invited me to attend. It was Quiz Bowl prep time. I was on the team that "won," and I received a free SAF T-shirt. I joined SAF the next morning.” Another said, “I was an outsider (one of about 3 women) in my community college forestry program. I figured by joining the SAF student chapter, I could at least get to know people. And I did.”

Another pathway-related question was about key contributors to choosing forestry or natural resources as a career path. Frequently mentioned contributors were *outdoor play, camps, youth exposure*, *love of plants, environment, and the outdoors; mentorship and guidance from others*; *career exposure*, and *education influence*. The *outdoor play, camps, and youth exposure* included comments about being in nature and the outdoors as a child or teen, participation in outdoor recreation, and travel centered on nature. Many of these mentions also specifically pointed to Scouting (primarily Boy Scouts), as well as a few references to FFA and other youth organizations.

The *love of plants, environment and outdoors* category included mentions of wanting to work outside, a love of trees and nature, and sometimes other environmental components. *Mentorship and guidance from others* were also mentioned a great deal, with respondents often pointing out a specific person of influence, including grandfather, father, or other family members, teacher, family friend, neighbor, natural resource professional they bonded with, Scout leader, and guidance counselors. *Career exposure* was another main factor; this often was a connection to career options through seasonal work or a link to a professional on a field trip or visit. Connected to this category were also mentions of selecting this profession due to its 'good fit' for the individual's skills and interests and perceptions of good job prospects in forestry. Some also mentioned a good fit because of a desire to live outside the city or suburban areas. *Education influence* was connected to comments that pointed primarily to college classes or content but also to high school classes and career placement results. A few respondents revealed that they started in another major of study (engineering and computer science were mentioned) and then found forestry and NR. Some responding members also referenced *interest in the overall professional field*, sometimes citing specific NR disciplines or the sciences.

Some members shared that their interest peaked due to *observation of environmental concerns*, including lack of green spaces, landscape change, wildland fire, deforestation, and others. *Other* mentions included inspiration from TV shows; Lassie was mentioned a few times; Flipper was also mentioned; exposure to books and magazines also came up. Being a military veteran was also cited as a contributor.

There were many powerful stories from participants; one participant shared, "Girl Scouts exposed me to the profession which I was told did not hire women. I didn't listen." Another said, "Finding value in my *outdoor* experiences. I didn't want to be rich, I wanted to be useful and

engaged with my values." One respondent offered, "A friend recommended an intro to forestry course for easy biology credits. I took it and LOVED it so much I knew it was the career for me. Also spent all of my early youth outdoors." This person shared about needing solitude and self-sufficiency,

> I wanted to work outside, and not sit at a desk all the time. I also enjoy solitude and being alone in the forest which is what originally led me to the variety of outdoor activities as a child. I also get a huge sense of satisfaction in providing a sustainable forest product, working toward a more self sufficient [sic] lifestyle.

Yet another, a White SAF member, shared about the powerful influence of Tribal leaders,

> The critical connection to the natural environment. Tribal leaders spoke to me of the importance of the environment & the impact of man. Emphasizes that when man put a foundation in the ground, the forest is forever changed. Thus I wanted to manage the forest.

There were many different stories shared. These anecdotes point to both supports and barriers to the profession. It was evident in these comments that outdoor exposure was crucial and that there were influences from educational systems, youth programs, popular media, and interactions with other people.

In looking at responses to the open-ended question, describe the activities/programs/ offerings where you feel most engaged as a SAF member; respondents shared many ways they felt involved. The most responses were about engagement in events, meetings, and programs at the *regional, state, and local levels*. Many members specifically mentioned the local chapter level. Engagement in SAF's *National Convention* was also cited a lot. The subsequent most frequent mentions included *field trips/tours/hands-on*, SAF *publications* (national and local), and *continuing education* in a broad sense. Other comments included, certified forester, leadership opportunities, participation in national committees and working groups, supporting students and

youth, webinars or virtual offerings, and forestry/NR outreach. Some also indicate they did not feel engaged currently. One person shared,

"Not really engaged but I do like the publications. I have been attending a few chapter meeting virtual from outside my area to listen to presentations. I am thankful for being able to do this virtually." A few comments mentioned not having access to local events and how webinars allowed them to connect better. One member shared the impact of the national convention,

> The two national conventions I have attended (Portland) & the virtual one in 2020 were really worthwhile [sic] but they were attended by only a fraction of the members if there are 10,000 members. Increasing the attendance would be one of the best ways to increase interactions between members of different backgrounds.

SAF members engaged in various ways, and engagement was essential to overall recruitment and retention into the profession and the organization. Some barriers to engagement came up here, primarily mentioning regions where there was not good access to a local chapter. Virtual offerings seem like one solution respondents saw to overcoming this barrier. In-person components, social interactions, meetings, and field trips at all levels were vital to members. Many members also appreciated the weekly and monthly SAF publications as an important part of their engagement.

In summary, there were many informative findings from analyzing pathways to SAF, forestry and NR. Nature-based youth exposure was crucial, and there were differences between minoritized and majority groups. There were many different barriers, and the ways they were experienced and perceived varied among some identity groups. Respondents shared important stories about their path and engagement in the open-ended questions. The researcher was able to connect these components of quantitative and qualitative analysis along with support from the literature, which informed the following discussion.

CHAPTER 5: DISCUSSION

This study utilized transformative mixed methods and an environmental justice (EJ) lens, blending both qualitative and quantitative approaches to enhance understanding of the engagement and inclusion (E&I) of minoritized groups and other members of the Society of American Foresters (SAF). The research takes an innovative approach in applying prior notions from Schlosberg and others, which call for continued expansion of the EJ field (He et al., 2021; Holifield et al., 2009; Schlosberg, 2004; 2007; Schlosberg, 2013; Schlosberg & Coles, 2016). This study also used preceding work in the areas of culture, respect, sense of belonging, stereotype threat vulnerability, and organizational commitment to measure SAF's engagement and inclusion (E&I) in multiple ways (CSU Climate 2018; Johnson et al., 2007; Kidder et al., 2004; Luzzo & McWhirter, 2001; McWhirter, 1996; O'Reilly & Chatman, 1986; Spencer, 1993; Woodcock et al., 2012). This chapter summarizes the quantitative and qualitative findings and then shares the overall mixed methods synthesis. Findings are organized by E&I measures and by identity group differences found. The researcher also provides recommendations and suggests a few critical areas for future research. In short, this research demonstrates the urgent need to acknowledge that there have been and are exclusionary and discriminatory issues in SAF and the broader forestry profession. We must continue to rethink and reshape the 'master narrative,' the dominant story, of *what is forestry*. The future of our profession, our organization, and the resources we steward are undoubtedly at stake.

Quantitative Summary: SAF Engagement and Inclusion Survey

Over 1200 SAF members responded to a survey focused on E&I in the organization. The researcher sought to answer the following quantitative research questions:

1) Are there differences in reported engagement and inclusion measures, including perceptions of culture, respect, commitment, sense of belonging, and stereotype threat vulnerability between men, women, and other minoritized gender categories among the SAF membership?
2) Are there differences between racial/ethnic identifications among SAF membership regarding reported engagement and inclusion measures, including perceptions of culture, respect, commitment, sense of belonging, and stereotype threat vulnerability?
3) Is there an interaction between gender and race/ethnicity on measures of engagement and inclusion, including perceptions of culture, respect, commitment, sense of belonging, and stereotype threat vulnerability within SAF membership?
4) Are there associations between the variables collected that will predict measures of engagement and inclusion, including perceptions of culture, respect, commitment, sense of belonging, and stereotype threat vulnerability among SAF members?

Regarding the first two research questions, the researcher rejected the null hypothesis that there would be no differences in both cases. There were differences in reported E&I measures. Measures that focused on engagement showed a few statistically significant differences between groups, with regards to SAF media and attendance at National conventions. The *engagement* measures were developed by the researcher, so they do not have the same reliability and validity as many of our other more established multi-item *inclusion* constructs. However, it is also key to note that *engagement and inclusion* are rather symbiotic. Engagement is a foundation of inclusion (Person et al., 2015) and members are more likely to engage if they feel included! Engagement and inclusion are interdependent concepts and prior research links the two concepts

(Downey et al., 2014; Hoffer, 2020; Sladowski et al., 2013). In this research, we talk about engagement and inclusion (E&I) as intertwined. More work to seek and develop multi-item engagement constructs, and an expansion of inclusion constructs, is recommended.

Significant differences in E&I measures between men and women were found for culture, respect, commitment, sense of belonging, and stereotype threat vulnerability. There were also statistically significant differences between racial/ethnic identifications among SAF membership regarding some reported E&I measures, including perceptions of culture, stereotype threat vulnerability, and barrier perceptions. Some important significant differences surfaced between LGBQ+ SAF members and non-LGBQ+ for culture and sense of belonging measures. Beyond the original research questions, there were statistically significant differences between age groupings for organizational commitment measures. The reliability results of the measures agreed with prior research (CSU Climate, 2018; Johnson et al., 2007; Kidder et al., 2004; Luzzo & McWhirter, 2001; McWhirter, 1996; O'Reilly & Chatman, 1986; Spencer, 1993; Woodcock et al., 2012).

Looking at the third research question, there were multiple significant interactions between IVs on E&I DVs. The null hypothesis that there would be no interaction was rejected. There were interactions among minoritized factors, including gender and race/ethnicity, on perceptions of both racial/ethnic and gender stereotype threats. Significant interactions were not found between race/ethnicity and gender on culture, respect, sense of belonging, and organizational commitment.

The fourth quantitative research question looked for associations between IVs that might predict E&I DV measures. The null hypothesis that there would be no predictive associations was rejected. Multiple combinations of the independent variables: age, employment type, length

of time as a SAF member, discipline, gender, and race/ethnicity showed statistically significant predictions of multiple E&I measures. Linear regression showed that the percent of variance explained by each model varied. Race and ethnicity groupings, and gender associations, explained 50% of the variance in *gender stereotype threat* ($p < .001$), and the combination of race/ethnicity and gender predicted 17.9% of the variance in *racial/ethnic stereotype threat* ($p < .001$).

Looking beyond the original research questions, this research also assessed barriers and looked at differences between groups. Women in SAF had significantly greater mean perceptions of the following as barriers, as compared to men: *not fitting in*, *my gender*, *not having enough confidence*, *lack of role models and mentors*, *lack of support from my employer*, *lack of support from co-workers*, *lack of childcare*, *desire to have children*, and *experiences with discrimination or harassment*. *Money challenges*; *not fitting in*; and *lack of support from family* were barriers to a greater degree for members of color as compared to White members. Educational and career barriers impede access and could impact experiences with engagement and inclusion in a professional organization. Next, the researcher dug deeper to find potential explanations for the quantitative findings through qualitative analysis.

Qualitative Findings: Stories Shape the Stats

Using transformative mixed methods and modified content analysis combined with an EJ lens, the researcher sought to answer the following qualitative research questions.

1. In what ways do environmental justice principles appear in the qualitative data specifically are there mentions of *recognition of different ways of knowing and philosophies*, participation and *promotion of capabilities* through supports, and *injustices or impacts on minoritized groups*?

2. What are participants' comments on the potential impact of the current engagement and inclusion situation in SAF? Do they see specific impacts on people? The organization? The profession? The forests, natural resources, environment, or Earth?
3. What other patterns and ideas appear in the open-ended responses?

Content analysis fits the audience of SAF members and NR professionals well, as it raises members' voices and allows the researcher to share the frequency of reference mentions. Numbers seem to resonate and help with message absorption for this science-oriented audience. Content analysis was also helpful in checking any potential biases from the researcher, as it was a systematic and thorough approach. However, the researcher again cautions that frequency is not equivalent to importance. Frequency is useful, but minoritized groups do not have the numbers in their favor. One lived experience, one story about exclusion, matters, and the qualitative analysis helps us to honor those individual stories with quotes and descriptions.

All fundamental EJ principles in the research questions were found in respondent comments and code categories. Multiple open-ended questions were analyzed about SAF culture, the meaning of DEI commitments breaks in SAF membership, and hesitancies about SAF, among others. Researchers saw recognition of philosophies, promotion of capabilities, and participation and inclusion as frequently referenced ideas throughout members' comments. Injustices and impacts on minoritized groups were highlighted. There were specific mentions of minoritized groups, including people of color, women, the LGBQT+ community, and Indigenous peoples. Many expressed that their discipline was not fully included or served. This included various fields, such as the private forest industry, urban forestry, forest technicians, ecologists,

social scientists, and others. Many members along the age continuum shared E&I challenges, including students, early-career professionals, and retired members.

Participants expressed concern for impacts on their fellow SAF members and concern for SAF's sustainability as an organization if DEI issues were not addressed better. Some members also commented on the ripple effect that SAF E&I problems could have on various human stakeholders, the natural resource itself, and our world (Schlosberg, 2004; 2007; Schlosberg & Coles, 2016; Schlosberg, 2013).

Additionally, participants shared information about their pathways to SAF, forestry, and the NR field. They included information about the variety of ways they were exposed to nature as a youth and barriers they have faced along their career paths. There were some differences between minoritized and majority groups in youth nature-based exposure and barriers faced, as found in other studies (Adams & Moreno, 1998; Haynes & Jacobson, 2015). Throughout the qualitative analysis, members also shared the importance of engaging youth and providing support to help all people, particularly minoritized youth and students, to access forestry, NR, and SAF.

Some respondents pushed back on DEI initiatives, and others expressed concerns about messaging and potential negative impacts. Language and terminology such as 'equity' came up as an issue for some members. There were comments to open-ended questions that indicated bias and even discrimination toward minoritized groups, including women, members of color, and members of the LGBQT+ community. There were also concerns that SAF must be careful not to alienate well-meaning White men and 'older White men,' with fear that some current DEI messaging might estrange them. Some comments expressed feeling that there were biases in SAF

across the political spectrum. There were specific mentions of religious beliefs, both in support of DEI and, at times, seemingly not in support of DEI.

Blending the Methods: Stats and Stories

The overarching mixed methods research question was: How do qualitative methods help explain and enhance quantitative findings, and deepen overall understanding, related to measures of engagement and inclusion of minoritized groups and other members of the Society of American Foresters?

Considering both our quantitative and qualitative findings, the researcher blended statistical testing and qualitative responses to provide additional context and meaning; to better tell the stories of these responding SAF members. Quantitatively, we found many differences in various E&I measures between groups in SAF. Often minoritized groups indicated lower or different levels of E&I measures as compared to majority group members. Interesting interactions and associations added to this story and highlighted some of the identity intersections at play.

The mixed methods approach helped the researcher draw upon stories and explanations for why SAF members (or potential members) might or might not feel fully welcomed, included, and able to thrive in the organization. This can help explain why members might have differing levels of both engagement and inclusion. For instance, based on quantitative findings in the sample and what was known about the population, SAF has a low representation of people of color (less than 6% of the population). At the national level, both members of color, and women overall, had lower perceptions of SAF culture. Both members of color and women expressed different, and in some cases significantly higher, experiences with barriers as compared to majority groups. Women had significantly lower levels of sense of belonging and culture as

compared to men; and women had significantly higher perceptions of stereotype threats and other career barriers. The LGBQ+ community in SAF had lower perceptions of culture and sense of belonging as compared to those outside this community. In qualitative analysis, members called for a need to offer equitable capabilities and support so that more people (and different people) can better access forestry, NR, and SAF. Members also shared some of the reasons they have ever had hesitancy about SAF. This included sharing that SAF had a low representation of specific demographics, feelings of exclusion in certain facets of SAF, and incidents of bias and discrimination. SAF members called attention to some challenges they faced regarding inclusion and participation as members and decision-makers in the organization. In sum, members shared reasons that might contribute to lower representation, engagement, and inclusion for minoritized groups in SAF.

Another potential contributor to varied perceptions of culture, belonging, and respect that were found quantitatively may connect to the issue that some *philosophies and ways of knowing* were not as accepted in SAF. The qualitative analysis demonstrated many different philosophies about forestry, NR, science, management, and DEI. Members called for the need to recognize better diverse and different *ways of knowing* and contributions. This included a few mentions of Indigenous ways needing to be better included and celebrated. Some disciplines did not feel fully included in SAF. Different religious and political philosophies also came up in open-ended responses. There were also calls for more leadership and accountability with the overall support of DEI efforts in SAF. Then there were members who push back on DEI initiatives, and others who had some questions and concerns about DEI approaches in SAF. There is a wide variety of philosophical perspectives among SAF members, this adds to the challenge of creating and

maintaining a diverse, inclusive, and equitable organizational climate, but it also adds to the richness of differences to celebrate in the organization.

Demographic analysis of both the sample and the known SAF population showed that SAF does not have strong percentages of students and early-career professionals as compared to older and later career members. The data showed there is room for improvement on E&I measures with students in SAF. Some interesting predictive associations involved age as an IV. In looking at reasons for SAF breaks and hesitancies, members shared life transition challenges, particularly when shifting from college student to professional and in the early part of their career. There were also calls for greater student support, including financial needs, job connections, and mentorship.

The transformative approach and the EJ lens aided the researcher in looking at quantitative and qualitative data more critically. It helped the researcher craft the survey and analysis to remain attentive to minoritized groups throughout the research process and intentionally uncover inequities and power imbalances. There were differences between groups on several E&I measures. There were also differences between groups with perceptions of barriers, youth NR exposure, and pathways to NR and SAF. The qualitative analysis clearly identified the importance of youth exposure, mentorship, and support. This information helps the researcher better understand and see a bigger picture of E&I in SAF, address social and environmental justice challenges in the organization, and call for change where it might be needed. Further discussion, practical applications, research recommendations, and calls for change follow. The researcher will now cover some other key discussion points digging deeper into positionality and ethics, stereotype threat, and showcasing more detail on identity group differences found.

Positionality and Research Ethics

An essential ethical component of the research process was to recognize the researcher's positionality. Positionality, however, is often not addressed in forestry and NR research. The lead researcher in this study was well connected to SAF and the forestry/NR professions. This perspective was very helpful in framing research questions, crafting the survey, and analyzing the data, particularly the qualitative data. The researcher is a woman and mother in forestry and SAF. These are some identities where she can connect personally to the perspectives of minoritized groups. Yet, she is also White, cisgender, heterosexual, and fully-abled, thus carrying a great deal of privilege. The researcher has been active in SAF in three different states and has worked in various aspects of forestry and natural resources. She has been engaged in social justice work connected to NR for several years. Her capabilities help shape her research lens, but also present biases based on her own lived experiences. The researcher engaged in self-reflection and worked with fellow scholars and professional peers to watch for and mitigate these biases in the research process.

Another primary ethical consideration is recognizing the power that the researcher holds in research design and decisions. The transformative design seeks justice, works toward change and empowerment, and asks that the research not tax or further marginalize already minoritized groups in the research process (Creswell & Plano Clark, 2011); it focuses attention on power dynamics. The EJ frame helped the researcher ask critical questions through different lenses of inquiry in looking at the data. There were constructs where differing findings appeared based on how the data were analyzed; as an example, perceptions of the level of agreement with statements about diversity and inclusion in SAF changed based on whether the question looked at the whole sample, or women, or people of color. The researcher sought to achieve full transparency in research design, statistical methods, and decisions. Also, the researcher

acknowledges and reminds readers that the minoritized groups in SAF, people of color, LGBQ+ community members, women, veterans, and participants with disabilities, do not hold the statistical power in the quantitative analysis of this study.

The researcher sought and selected methodological approaches that would honor transformative mixed methods and EJ in the research. Many of the E&I measures were established survey constructs selected for this instrument because they already had demonstrated reliability and, in some cases, validity. Multiple regression is a quantitative approach that can be used in an intersectional frame to assess multiple main or additive effects (Else-Quest & Hyde, 2016a,b; Sandil et al., 2015). Crenshaw originally described the additive or multiple main effects of both race and gender (1988). Statistical interactions (through ANOVA) can also demonstrate multiplicative effects and potential identity intersection (Else-Quest & Hyde, 2016a,b; Irvine, 1985; 1986). These analyses were used, and statistical interactions and associations were found; as an example, there were statistically significant interactions between gender, race/ethnicity, and age on *stereotype threat by race/ethnicity*. Interactions and predictive associations, both of which were found in this study, might point to intersectionality and simultaneity of multiple identity factors (race, gender, sexuality, class) impacting stereotype threat and other DVs (Cadaret et al., 2017; Collins, 1990; Holvino, 2008; Zinn & Dill, 1996). Bowleg and Bauer also called for mixed methods approaches to better recognize intersectionality (2016). Mixed methods synthesize quantitative findings with comprehensive qualitative approaches to offer a greater depth of understanding than either method alone (Creswell, 2015). A mixed methods approach served this research well. Several impactful quantitative findings demonstrated significant differences between groups, which were then blended with qualitative data to understand respondents' experiences more fully.

Stereotype Threat

Stereotype threat was evident by *gender* as well as *race and ethnicity* in the SAF respondents. The minoritized group perceived a greater stereotype threat than the majority group in both cases. These differences were significant, and effect sizes indicated that it is likely an issue in forestry and natural resources beyond SAF. SAF members also revealed vulnerability to stereotypes beyond race, ethnicity, and gender. Additional identities that respondents mentioned this vulnerability to included sexual orientation, ability, age, professional discipline of study or practice, political affiliation/perspective, geographic location, career level, religious/spiritual affiliation, veteran status, sexual orientation, and others. We must understand these stereotype threat experiences better and look to potential interventions to help mitigate the impacts of stereotype threat on SAF members. SAF is intentionally trying to improve the organization's diversity; stereotype threat experiences will be a barrier to progress.

There were also significant interactions between various IVs on stereotype threat and associations that predicted some variance in stereotype threat. Interactions and predictive associations are quantitative approaches that can show potential intersectionality or the compounding factors of multiple minoritized identities. The interactions found were *between gender and race/ethnicity on stereotype threat by race or ethnicity*; *minoritized racial/ethnic groups and age, again on stereotype threat by race/ethnicity*; *gender and age on stereotype threat by gender*; and *gender, race/ethnicity, and age on stereotype threat vulnerability by race/ethnicity. Some associations predicted* stereotype threat perceptions, including race/ethnicity and gender combined to predict *gender stereotype threat*, and race/ethnicity and gender combined to predict *racial/ethnic stereotype threat*. These findings suggest intersectionality and simultaneity that these identities are connected and compounding in their impact on the overall experience and perception of stereotype threat (Collins, 1990; Holvino,

2008; Zinn & Dill, 1996). There were also predictive associations of multiple identity factors for culture, organizational commitment, sense of belonging, and respect, pointing to intersections and simultaneity in those measures as well.

There are also practices that prior research suggests can help to mitigate stereotype threat (Shnabel et al., 2013). Liu et al. published a recent metanalysis that showed belief-based stereotype interventions, which focus on changing one's belief about the negative stereotype, were the most effective at countering stereotype threat (2021). These approaches included blurring group boundaries and showcasing overlapping characteristics (Doise, 1978; Rosenthal & Crisp, 2006; Rosenthal et al., 2007); promoting social belonging, such as sharing narratives (Walton et al., 2015); and providing in-group role-models (McIntyre et al., 2005). Identity-based interventions, which aim to alter the salience of the identity with the negatively stereotyped identity, had smaller effect sizes but were significant and still seemed to be impactful. Identity-based interventions included activating a single-positive identity (Gibson et al., 2014); activating multiple identities or self-concepts (Gresky et al., 2005); and lastly to increase numeric representation of the stereotyped group (Cherney & Campbell, 2011). Resilience-based interventions, which initiate practical self-regulation or aid in self-confidence, coping tasks, motivation, and self-concept showed mixed effectiveness, but improving confidence, self-affirmation, and teaching about learning orientations and tactics significantly reduced the effect of stereotype threat (Liu et al., 2021).

SAF and other NR organizations should look to incorporate many of these established best practices to help mitigate stereotype threat effects. SAF might start with, blurring group boundaries, use of role models and mentors, positive self-affirmations, and better representation (Liu et al., 2021; Shnabel et al., 2013). These would also be important considerations for

educational institutions and NR employers. This study could help support these interventions, by demonstrating the need, by offering narratives that might help promote belonging and, in some cases, by showing areas where identity boundaries blur and/or where similar experiences were shared.

Other Differences for Minoritized Racial and Ethnic Groups

Members of color in SAF had lower perceptions of culture at the national level and had greater perceptions of some career barriers; with statistically significant differences as compared to White members. Money challenges, not fitting, lack of support from family, and gender were perceived as greater barriers for members of color as compared to White members. The barriers shared show some similarities to past studies (Balcarczyk et al., 2015; Haynes & Jacobson, 2015). Support for these barriers would be key to better helping potential and current members of color access the forestry profession and SAF.

There was room for improvement on the agreement level with multiple SAF diversity and inclusion statements. In general, when asking about perceptions of *inclusion* and *diversity* in SAF, women had lower agreement than men. When looking at comparisons between members of color and White members the patterns are not quite as clear. Interestingly, the minoritized group, members of color, had higher percent agreement that SAF is a diverse organization and an inclusive organization as compared to White members. It would be useful to investigate this further in later research. It is possible their perceptions are higher because they are more engaged in the work. A lower percentage of members of color agreed that SAF recognizes member accomplishments equitably as compared to White members. Members of color also expressed higher agreement than White members (and members overall) that: SAF could do a better job recruiting and retaining a more diverse membership; and felt that SAF should be a leader in

diversity, equity, and inclusion for the forestry and natural resources professions. It seems that gender is a greater factor in percent agreement with some of these statements than race and ethnicity, but women also have greater numbers overall as compared to members of color in SAF currently.

There were also factors where women had significant differences as compared to men; but where people of color as compared to White members did not show a significant difference. This sample had limited numbers of respondents who were members of color, partially because there is a small percentage of members of color in the overall SAF member population. Still, some significant differences were found. Members of color shared valuable qualitative insights as well, such as "Geographic locations make a big difference -- I moved and things got much more collegial and respectful." It is not acceptable that members of color (or any member) should feel disrespected based on geographic location, and a non-welcoming environment. Though we cannot control a town or community's culture, SAF could and should take additional steps to address the organizational culture at multiple levels. Some members of color shared feeling most engaged and included at their local level, and quantitatively members of color had stronger agreement than even overall members with, the local chapter's being treated with respect, person-to-person respect at the local chapter level, and feeling valued as a SAF member. Having more data from members of color would be helpful and allow more opportunities to look at multiple identity factors at once, as perceptions might differ even more if one is minoritized in multiple ways. The researcher also intends to look at some geographic comparisons in follow-up analyses.

Differences for Women

Women had significant differences as compared to men in SAF on several measures, including stereotype threat by gender, culture, respect, sense of belonging, organizational commitment, and some engagement measures. This helps the researcher to begin to triangulate measures as respect, sense of belonging, and stereotype threat would likely all contribute to perceptions of SAF culture and toward organizational commitment. Multiple established E&I measures with significant gender differences, where women reported less inclusion, along with moderate to large effect sizes connected with patterns and experiences shared in the qualitative data paint a more complete picture. Women do not feel as included in many aspects of SAF. This finding also triangulates with the literature; conservation, and natural resources broadly, need continued attention to inclusion and empowerment of women (Coutinho-Sledge, 2015; Coppock et al., 2013; Jones & Solomon, 2019; Radel & Coppock, 2013; Redmore, 2011).

Women reported several career barriers they experienced, and many that they experienced at significantly higher levels as compared to men in SAF. The barriers listed should be considered to help guide priority action areas, including addressing harassment and discrimination issues, connecting women with other women and role-models, supporting child-care needs at professional meetings, and perhaps including financial supports.

More support for women overall and with particular attention to local SAF, state level and smaller, is needed. Local-level challenges also came up some for members of color. The researcher suggests continued work to include minoritized groups in local, state, and regional SAF engagement, decision making, and leadership. Attention to equity in the recognition of members' accomplishments might also improve these perceptions and was a recommendation from SAF participants. There are certainly engaged women in forestry and NR who choose not to participate in SAF. More recruitment and retention of women may also help this issue through

better representation, reaching beyond ‘traditional forestry’ avenues, and showcasing the variety of NR areas that connect to forestry and SAF. Importantly, addressing bias and harassment toward women was brought up multiple times in members’ open-ended comments. Biases and harassment against women in NR have been well documented in other studies (Jones & Solomon, 2019; Kern et al., 2020).

Other Minoritized Gender Groups

There were some SAF members who indicated they were non-binary or trans. One member response indicated that the survey should have been more inclusive of the trans community by including a T in the LGBQ+ question. The researcher deliberated about that very idea in crafting the survey, but after talking with D&I peers thought it best to collect information about our trans colleagues separately in the gender question. In hindsight, the researcher would include the T in LGBQ+ and did so in a replication of this work with another organization.

Some open-ended comments made it clear that some SAF members were not open or respectful to the trans or non-binary community, and therefore also not respectful to women and men who celebrate and support our trans and gender-non-conforming colleagues. There were also several members who voiced that they felt gender did not even matter and should not be discussed in SAF, providing responses such as “I am a man and this is a stupid question.” The researcher is hopeful that this study's results, more discussions, and education might help some of the less supportive members understand the importance of honoring an individual’s own gender identity and fluidity. The researcher, and many SAF members, support the welcoming of all people interested in forestry and NR. There should also be accountability for comments that harm, harass, or exclude any SAF member. Men can be stereotyped and discriminated against as

well and men are a minoritized group in some other discipline areas, such as nursing (Jamieson, et al, 2019).

Differences for LGBQ+ Members

A 2021Gallop poll estimated that LGBQT+ community members make up 7.1% of the overall US population (Jones, 2022). LGBQ+ SAF members reported significantly lower perceptions of culture and sense of belonging; and these means were also lower than collective means of women or members of color. About two-thirds of LGBQ+ community members in our SAF sample indicated feeling stereotype threat vulnerability toward their sexual orientation. At least one member specifically commented on not feeling like they could be open about their sexuality due to reactions in the past. Often gender, race, and ethnicity gain the most attention in DEI work, including the research questions and focus of this survey. More research is needed with attention to other identity areas, including the LGBQ+ community.

Age and Career Level Differences

SAF is known to be an aging organization, as are many NR-related professional societies. This trend aligns with what we see in our data on years as a member and age. It is wonderful to have many retired members in SAF however having such high percentages in their upper years raises some concerns for the future and sustainability of the organization. Some participants also commented that, as retired members, they felt less engaged, and some also indicated they had no power to make changes to help the organization. In short, some members do not feel fully included in SAF as a retiree.

The age and membership tenure breakdowns indicated that recruitment and retention of early-mid career professionals are indeed needed; an issue that has been discussed in SAF for many years (Cubbage, F., Town Hall at SAF National Convention, 2017; T. Baker, Personal

Communication, February 11, 2022). Throughout this analysis, there were data suggesting that more consideration is particularly needed for student members and prospective student members. When looking at student engagement responses about their own student chapters, the mean was below the agreement level (4) for all items. The lowest mean engagement level was 3.13 for *feeling a sense of belonging to my SAF chapter or affiliated student club*. Covid has likely impacted student chapter engagement, as it has impacted college students, including financial stressors, and straining mental health (Reyes-Portillo et al., 2022). The survey was primarily administered in months when higher education was not in session, so it was likely not the best time to reach students. Student-focused research has been done in the past, but more is needed.

Additionally, there were many qualitative comments in multiple questions that mentioned the student drop-off, basically that members were engaged as students but then dropped their membership for a time. Women felt that they were more active as students to a greater degree than men did. Early-career professionals also mentioned financial hardships and life transition struggles that led to a break in membership.

SAF membership has indeed been declining over time; at its peak, it was roughly 26,000 members. In 1979, SAF had about 21,000 but has experienced a steady decline to its current level of approximately 10,000 members (T. Baker, Personal Communication, February 11, 2022). Thus, the urgency of the work to better recruit and retain early cohorts is essential to SAF's long-term sustainability. SAF should consider further supports for students and early-career professionals. Based on qualitative data, financial support could help substantially with this student-drop off; perhaps SAF should offer recent graduates a discounted or free year or two; they have tried transitional programs in the past, but it may be time to try again. Added engagement with students and early-career professionals would also be critical support. Yet,

about 73% of participants indicated they do not engage with SAF student chapters. Engagement is difficult if professional members are not interacting with SAF student chapters and other natural resources student organizations. In this survey, zero students indicated that they attended an HBCU, Hispanic-Serving institution, or other minority-serving institution; future research should focus on students with particular attention to schools that serve minoritized groups.

There were predictive associations with age; there was a more considerable influence from being in a minoritized race and ethnicity on *stereotype threat by race/ethnicity* for age 64 and under, compared to those 65 or older. There also seemed to be a greater impact of gender on perceptions of *gender stereotype threat* for women age 64 and under, than for women 65 and older in SAF. These findings make logical sense considering that DEI conversations and terminology might be newer concepts for more senior members. Terms like stereotype threat may not resonate the same with members over 65, or their perceptions of the level of stereotype threat that they might or might not face may differ from younger members. This might also suggest that we should consider different messaging and outreach related to DEI to target different age demographics in SAF separately.

Discipline Differences

The majority of SAF members shared that forestry was one of their top two discipline areas (83%); this was listed on the survey as including management, science, and urban forestry aspects, which is an important distinction. A good portion of members though, indicated NR and conservation management as also in their top two (33%), and then another third of members indicated many other categories, social science, wood science/products, environmental science/studies, wildlife/fisheries science/management, watershed science/management, range

science/management, and others. In other words, attention to a diversity of disciplines in SAF is an integral part of inclusion.

The researcher gained additional perspective on the discipline varieties when considering members' responses regarding reasons they have had hesitancies about SAF. There were many mentions (59 refs.) of disciplines or trade groups that did not feel included in SAF, such as forest technicians, urban forestry, geography, the forest industry, government sectors, the non 'forester,' social scientists, wildland fire, recreation, timber, and others. There were also mentions of an 'academic divide' and some discussions that the SAF Certified Forester credentialing process was exclusive. There were also quite a few members who mentioned the idea of forestry being diluted by other disciplines and by DEI efforts. To counter those comments, some thought DEI was a strategic asset and essential to forestry and NR overall. The discipline discussion also ties to the EJ principle that calls for recognizing *different philosophies and ways of knowing*. Some feel traditional forestry ways are threatened by changes, while others think some SAF members are not open to new and different approaches to forestry and stewardship. Many members indicated that SAF should be open to celebrating and welcoming a variety of disciplines that connect to forestry and NR broadly; the researcher also believes that embracing a more comprehensive range of disciplines would be the most inclusive and sustainable approach for SAF to take.

Recognition of Philosophy, Spirituality, and Politics

The EJ principle that calls for recognizing *different ways of knowing*, *philosophies, and contributions* warrants further discussion, as it came up in multiple open-ended questions. In some of the most basic senses, members mentioned a lack of recognition of openness to different ideas, different lived experiences, and overall change. There were specific mentions of historical

examples where members felt SAF leadership had not been open to less-traditional ways, including policy decisions, climate science debates, ecology, and different forest management approaches. There were some, though not many, tribal relations and Indigenous approaches mentioned. Some members felt the philosophy of DEI and social sciences seemed to have low recognition and regard. Members also mentioned the need for recognition of efforts, such as speaking engagements, publications, and awards toward minoritized groups.

The EJ principle that considers *impacts to the resources* and environment also came up. Some distribution imbalances were also mentioned, minoritized groups with greater negative effects or less access to environmental goods and services (Agyeman et al., 2016; Schlosberg, 2004; 2007; Schlosberg & Coles, 2016). Respondents who made these connections presented a somewhat different philosophy than a traditional forest management approach might have taken. The researcher would argue that this connection to the resources and the Earth also relates to Indigenous ways of knowing, which SAF must continue to better honor and celebrate (David-Chavez & Gavin, 2018; Gilio-Whitaker, 2019).

Politics and religion also came up in the survey. Perceptions of respect for the full range of perspectives, from conservative to liberal, and respect for spiritual differences had the lowest overall mean respect levels of all the items in the respect items grouping. Members of color also had a high percent disagreement on these same two respect statements. The qualitative analysis showed that many respondents felt SAF was too political, interestingly some thought it was too liberal, and others felt it was too conservative. Many members who resisted DEI also indicated they saw SAF aligning with the liberal political side. Religion also came up; some used religion and even scripture to explain their commitment to DEI; these appeared to be Christian views. Some mentions indicated they saw Christian prayers at SAF as not fully inclusive. Some

members indicated that by embracing some elements of DEI that they felt excluded based on their own political and religious beliefs. Politics and religion are philosophical perspectives that add complexity to engagement and inclusion and warrant further research in SAF and NR professions.

Resistance, Bias, and Discrimination

Resistance, bias, and discrimination certainly came up in this study. Some were resistant to the salience of identity factors such as gender. There was somewhat prevalent resistance to DEI in multiple of the open-ended questions. Another resistance example was from multiple respondents who pushed back on the question about race and ethnicity. Common text entries indicating resistance included: *human*; *American*; *I do not think this should matter or is not appropriate*. We also had additional comments*: "*Color/race/ethnicity is unimportant to the forest we are managing*."* Additionally, some remarks could be interpreted as blatantly racist; one such text entry was a respondent who indicated *other* and then typed 'tan,' intentionally mocking the idea that skin color and race impact the individual's experience and advantage (or disadvantage) (Bell, 2007b).

This study demonstrates that there are identity groups that do not feel fully included in SAF. Members have shared that discrimination, bias, and harassment do happen in the organization. Some expressed that much more needs to be done to hold offenders accountable. The quantitative data also showed that there is room for improvement regarding a wide variety of DEI aspects in SAF, including the awareness and effectiveness of some policies and relatedly how SAF and members hold people accountable. As one member shared,

> I do *not* feel that I can look my very diverse group of students in the eye and tell them that SAF is a safe space for them based on what I have seen and heard from our membership statewide and nationally in the past year.

Engagement: Local and National Scales

Engagement in SAF at the local level seems to be a crucial factor in the overall member experience. It is challenging to tackle SAF culture at local, state, and regional levels as leadership and approaches vary across the country. First, many members feel most engaged locally, including members of color overall. Yet, women seem not to feel as fully engaged or included locally. One access issue is that some areas of the country do not have local chapters and activities or rarely do, so state and regional is the only established 'local' option for some members. If SAF is not active locally, perhaps a few driven members could initiate some action; SAF members could partner with other NR professionals to celebrate a variety of NR disciplines and spur local action. Considering how to assist local and state chapters to be more welcoming and inclusive is a challenge; the SAF Diversity and Inclusion Working Group and some regions have made initial strides with a few state-level DEI committees, DEI training components at local and state meetings, DEI focused Leadership Academies, mentorship programs, and other initiatives.

A critical part of member engagement is certainly the SAF National Convention. Just over half of respondents had attended one SAF Nation Convention in the last decade, and about a fourth had participated in three. A key takeaway here is that for a good portion of the membership attending the National Convention is a luxury that may occur a few times throughout their career. Some may never or very rarely attend a convention. SAF needs to consider how to make the convention accessible and mitigate barriers to attendance so that more and different people can participate, and then also make their National Convention experience memorable and valuable so that those who do attend want to return. Additional national engagement mentions from members included committees, leadership roles, educational opportunities, and publications. Women indicated higher engagement at the national level as

compared to men. Engagement at all levels of SAF matters, and there are again some differences between groups. Future research could look at potential regional differences.

Why Does it Matter?

So why does this all matter? Why does SAF need DEI efforts and this E&I study? To start, SAF demographics simply do not represent society at large or even natural resources graduates well; SAF is much less diverse in comparison. Some NR fields are seeing improvements, but forestry as a discipline is moving slowly when it comes to diverse representation. Forestry and SAF have not seen much shift in participation from women over the last 20 years (Westphal et al., 2022). It also appears we are lower on LGBQT+ representation than national estimates. This study adds to the literature that indicates many factors contribute to SAF's diversity and inclusion challenges.

SAF membership numbers are struggling, though there were some very slight increases (4%) in 2021 with a major recruitment emphasis and push (SAF, 2021); SAF membership numbers continue to hover around 10,000 members and over multi-year trends tend to show steady declines overall. SAF membership is less than half of what it was in 1981. If you take any recent membership age chart and forecast it out another 10-20 years, the level of concern only increases. SAF appears to be an aging and thus fading organization if we cannot turn the long-term tide; membership and the lack of diversity is an existential threat. We first must be able to acknowledge the membership crisis and look to information such as this study to understand better how we got here. It seems clear that exclusionary elements systemically and culturally, both historically and presently, are major contributing factors. Yes, women and people of color exist in the organization, but in very low numbers and still many did not participate in the survey effort. There are many more who have left SAF or choose not to join, likely for a variety of

reasons. As one doctoral committee member, Dr. Daniel Birmingham pointed out with regards to minoritized groups in this organization, *their voices were already excluded before this survey*.

The business case for DEI in SAF is clear, but there are many other reasons why DEI matters to SAF. The researcher appreciates all the SAF members who shared the reasons they thought that DEI mattered to SAF, including that it is the right thing to do; some people do not feel included or cannot participate fully; we can better solve NR problems and serve people and the resource; because access and supports are not equitable; because there are biases and discrimination that need to be addressed; we do it to recognize better and celebrate diverse/different people and philosophies; it is essential to the sustainability of the resources and of our profession.

We also want to acknowledge, SAF is currently making some positive changes in DEI. There were indeed stories of SAF's positive role for many members. Some members praise SAF for sending this survey and doing the vital work in DEI. In fact, 66% agreed that SAF should be a leader in DEI for the forestry and NR professions. Members shared how they felt most engaged in SAF, including regional, local, and state engagement; the National Convention; field trips and tours; education, and publications. The ability to connect with the SAF community and social aspects were a thread throughout survey comments. SAF has helped and supported many members throughout their careers, including members from minoritized groups; yet there is much more work to do, and our members call on SAF to lead in DEI!

Recommendations for SAF

Recommendations follow from both the respondents and the researcher. First, the researcher hopes SAF staff and members can **use this study**, the data, and stories to raise awareness about why DEI matters in SAF and what is currently known! Hopefully, this research

information will help SAF members understand and agree that there is much E&I work to do. It seems necessary to raise further awareness of SAF's D&I Policy, SAF's Code of Ethics, and related processes, and then hold members accountable. Incidents of bias, harassment, and discrimination must be addressed transparently and in a timely manner. Accountability of SAF leaders is crucial; if leaders exhibit exclusionary practices, they should be held accountable. SAF's Code of Ethics is a tool we should use to inform members and to ensure accountability. Listening to members and raising awareness about DEI and ethics will help these endeavors. Some harm is not intentional, but it still needs to be addressed. Members must be brave, and when it is safe to do so, have the hard conversations so that we can learn, adapt, and keep on growing. Additionally, SAF and our members must be willing to openly acknowledge and atone for an exclusive history; and continue to be open to growth and change.

To best do this work, SAF should continue to **seek expertise from social scientists**, DEI experts, and environmental educators to help pull in the best resources and approaches. This also means recognizing social science and environmental education as fundamental research-informed disciplines that contribute and connect to forestry and NR. Efforts like this survey offer a safe and anonymous way to gather information and feedback. Continued research should be done to help measure progress and continue to adapt DEI efforts. We must also work with current experts, SAF staff, leaders, and members to embrace further education and regular conversations centering on justice, equity, diversity, inclusion, and more (JEDI+).

Another key recommendation is to implement interventions to help **mitigate stereotype threats**. The researcher recommends blurring group boundaries so that minoritized groups do not feel isolated and instead see ways they may differ, yet also share many similarities with other members; use of role models and mentors who represent diversity and foster inclusion, utilizing

positive self-affirmations to help instill self-confidence and value; and better representation of diverse people as starting points (Liu et al., 2021; Shnabel et al., 2013). These interventions will likely address more than stereotype threats. Role models and representation came up in multiple parts of the survey. Mentorship could also be a tactic to help mitigate the student drop-off and to better support early-career professionals. Solid mentorship and engagement with diverse role models should continue and expand in SAF. Formal mentorship and potentially reverse mentorship programs at a local/state level would also be a high-priority recommendation (Flyckt & Asklöf, 2020).

SAF needs to **promote access to the organization; to support members' capabilities** to thrive in the organization and profession. Survey data provided detailed information on experiences with barriers and how exposure to those barriers varied across groups. SAF could best support different members by better targeting audience segments that appear in this research. Some barrier items were higher for all groups, such as money challenges, lack of exposure to the career path, and not having enough confidence. Overall, SAF must continue asking questions and listening to its diverse membership. This information also connects to the need for better engagement, outreach, and support toward youth, including minoritized youth. Youth exposure is an essential contributor to increasing the likelihood that one studies and works in NR (Adams & Moreno, 1998; Chawla, 1999; Haynes & Jacobson, 2015; Louv, 2005; Laird et al., 2014). The survey also shows that many members do not participate in environmental education often enough. Respondents shared that they do not have much engagement with students and SAF student chapters. The researcher **urges all members to focus energy and attention, early and often, on students and youth!**

Another key component of access and support is the need to better welcome, include, and celebrate an array of NR disciplines. SAF must *prop our doors wide open* to a variety of NR disciplines, education levels, and professional experiences. Respondents clearly call on this issue. Forests connect to all people; the reach of forests and their resources are broad, so too should be the make-up of this professional forestry organization. This includes celebrating different disciplines, different life experiences, and varied education levels!

Effective outreach and education require informed message framing, whether for DEI or NR stewardship initiatives (Holladay et al., 2003; Krantz & Monroe, 2016). This study helps us better understand similarities and differences in SAF membership across various E&I measures and demographic factors. Acknowledgment and more intentional recognition of different philosophies and contribution efforts in the organization would be one way to better connect with and include minoritized groups. Respondents specifically mentioned better recognition of Indigenous practices in stewardship and of urban/community forestry as two examples. Several also called for a need to better recognize women's professional contributions to SAF. The researcher suggests more targeted messaging toward and highlighting minoritized identity groups and disciplines.

Targeted messaging could also help reach some members who might be less connected to DEI. For example, targeting older age groups, particularly over 65, with modified language and approaches. More education, outreach, training, and candid conversations on DEI are needed. The researcher suggests thoughtfulness to language choices to make DEI more accessible and approachable for all. The word equity seemed to be a negative trigger for some members. Equity is still an important term, but perhaps it must always be accompanied by context to aid in understanding, and maybe it is not a focus of initial broad messaging. Though SAF nor DEI is

meant to be political; political sensitivities still came up in members' comments. Messaging could also consider moral foundations theory, suggesting word choices that might better resonate with different political leanings (Feinberg & Willer, 2013; 2019). It is also apparent that some members feel that "White men" and "older White men" seem to be under attack; consideration of word choice is important so that White men can also access and support DEI conversations and efforts. However, the researcher urges White men, White women, and others with advantaged identities to learn about and openly acknowledge their own privileges and power in the organization; to channel that power to help the DEI cause. Be cautious of the defensiveness of privileged groups, of White fragility and masculinity, and do not let it detract from and derail the very purpose of DEI work, to center, fully celebrate, and include differences. Brown (2020) also calls attention to a need for more inclusive, respectful, and inclusive language related to diversity and demographics in NR. The messaging, overall culture, and structure of SAF have not welcomed and included people of color, women, and other minoritized groups. This is both a current and historical issue.

In diversity and inclusion labors, members must be **reflective and open to the ongoing self-work**. Some members, though not many, mentioned this self-reflection and effort in their comments. Survey data tells us that most respondents thought SAF should be a leader in DEI. Yet, most also felt they would not benefit from more training and education on DEI. It would be helpful to understand this training resistance better; perhaps it connects to negative training experiences? There will continue to be members who believe DEI does not have a place in SAF. The researcher believes continued research demonstrating the need might help this problem, but some DEI pushback is anticipated for the foreseeable future. This quote highlights the

importance of personal contributions well; the comment was in response to reasons for hesitancy about SAF membership; one woman said

> Insularity, lack of innovative/modern adaptation. That said, I stay in because if I don't move things, who will? I love SAF, and I have a great experience here. If I leave for the things that make me uncomfortable, no one else will bother to stay.

More Questions for SAF

As is often the case in research, we come away with more questions. Here are some for SAF staff, leadership, and members to ponder. Who holds power in SAF, and how can power continue to shift in more just, equitable, and inclusive ways? Do we want SAF to continue to reflect a monoculture that is aging, White, and mostly men? Why do some fear this DEI discussion and survey effort? How do we acknowledge and redress power dynamics and history? When do we stop trying to retain members and leaders who blatantly exclude and oppress others? How do we hold each other accountable, and how might we best use the SAF Code of Ethics to support DEI work? What is the sustainability of this organization, and how does it change as we see a more ethnically and racially diverse U.S. population? How do we evolve as we see women and the LGBQT+ community closing the gaps outside of our SAF community? How do we raise and empower more minoritized groups into leadership and engagement? How do we engage and include young people in SAF? How do we better welcome the breadth of forest-related disciplines? What other groups of people need more support to access forestry and SAF? How can SAF better embrace and recognize social science expertise to better solve these challenging problems?

Forming a DEI Vision

In the 2021-2025 strategic plan, SAF's vision is to be "The trusted voice and leader empowering the forestry profession in advancing sustainable forest management to ensure thriving forests and strong communities." This strategic plan includes five pillars: establish financial security; increase tangible value to members; elevate the professional status of forestry; grow membership in three dimensions: numbers, diversity, and generational; promote policy and science. SAF acknowledges some of the concerns raised in this study in their planning. They seek to build community, empower more locally, recognize, and serve diverse people, build multi-generational relationships, and improve communication and overall engagement.

This research helps to convey the urgency and need to keep environmental justice and DEI at the forefront of SAF's evolving strategy and vision. The findings provide insights on areas that might be prioritized and point to the need for continued research and effort in all things DEI. I hope that the vision can be expanded better to recognize different perspectives and ways beyond "forest management" and to better showcase the array of disciplines that forestry and forests connect to in natural resources, environmental, and social science broadly; to embrace and recognize more approaches and philosophies to solving the complex problems we face. For SAF to be a *trusted voice and leader and to ensure thriving forests and communities, we must work together to address the critical questions posed by this research*. I also urge us to fully engage in high-quality and inclusive environmental education for youth and all ages; and acknowledge the impact this essential profession has on people, natural resources, and the planet!

Future Research

Both design and analysis approaches can enhance the quantitative study of identity intersections. More research on minoritized groups and identity intersections in NR is needed. Regarding design and sampling, future studies in natural resources and SAF should work to 'oversample' minoritized groups, which hold lower representation in the overall population, and consider any potentially 'hidden' or lesser-known population components (Else-Quest & Hyde, 2016b; Bowleg & Bauer, 2016).

Future research should better target and connect with minoritized racial and ethnic groups in SAF. This research methodology attempted to directly disseminate the survey through student chapters, university advisers, local chapters, working groups, and colleagues of color, but more information from minoritized groups is needed. Follow-up work with interviews and focus groups with members of color is planned, including partnering with more NR researchers from minoritized racial and ethnic groups. More qualitative work targeting other minoritized groups is also recommended, including members and stakeholders from many communities, including LGBQT+, women of color, Indigenous, international, retired, veterans, students, past SAF diversity scholars, and forestry/NR professionals who are not members of SAF. Interviews and additional qualitative work will allow a deeper understanding of members' stories. Focused work on members who have left SAF would also be helpful but studying those the organization has already lost is harder to do as they can be challenging to find.

Lastly, the researcher encourages others to continue to utilize mixed methods and critical approaches. The blending of quantitative and qualitative methods added to the overall depth of understanding of engagement and inclusion in SAF. The use of transformative mixed methods and EJ helped keep the research focused on minoritized groups and encouraged recognition of different philosophical approaches. More of this work is needed. As Wangari Maathai, the Nobel

Peace Laureate, once said, “Finally I was able to see that if I had a contribution to make, I must do it, despite what others said. That I was OK the way I was. That it was alright to be strong” (The Green Belt Movement, 2018, p. 1). SAF needs contributions from all its members, and hopefully some new and different members too! The forestry and NR professions and stakeholders seek strength and leadership from SAF in DEI.

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APPENDIX A

Measures, Items, Scale, Summation, Reliability, and Validity of Constructs

Original Measures	Items	Scale and Measure	Summation approach	Scale Reliability and/or Validity	Modification and Use
Coping with Barriers Scale (CWB) (Luzzo & McWhirter, 2001; McWhirter, 1996)	CWB measures coping efficacy. CWB is 28 items with subscales: Career Related Barriers (7 items) and Education-Related Barriers (21), (such as: "money problems" or "not being prepared enough") Cadaret et al. used only the educational barriers.	Likert-type scale (1, *not at all confident* to 5, *highly confident*); measures efficacy for coping with barriers to career or educational goals	Total scores were summed and divided by the number of items; lower scores indicate less perceived ability to overcome barriers (less coping efficacy).	Validity supported (Luzzo & McWhirter, 2001); convergent validity and discriminant validity (Lopez & Ann-Yi, 2006; Tate et al., 2015; Thompson, 2013); test-retest reliability moderately stable with coefficient 0.48 (Luzzo & McWhirter, 2001); Cronbach's alpha was 0.91 (Cadaret et al., 2017)	Lists and content from CWB informed the Barriers list and construct in the SAF Inclusion and Engagement Survey. The scale was modified to reflect the level of the barrier rather than the confidence to overcome, since our population includes people at different levels of their career. (Permissions not requested as this scale was merely a guide, which will be cited in the dissertation.)
Backlash (Kidder et al., 2004)	Measured through 4 proposed sub-constructs, Kidder et al. measured emotional reactions (4-items) (Watson, Clark, and Tellegan 1988), attitudinal response (3-items), fairness (4-items) perceptions, and organizational commitment (3-items) (org. commitment from O'Reilly and Chatman, 1986) .	Likert-scale strongly disagree (1) to strongly agree (5) for all except emotional reactions (which used a continuous variable 1 to 5.	In all cases items were averaged to one scale.	Attitude toward the program had a Cronbach's alpha of 0.80. Fairness had an alpha of 0.87. Organizational commitment had an alpha of 0.82. They also checked factor loadings using exploratory principal-axis factor analysis with varimax rotation (all loaded on expected factors and no cross-loadings above 0.40). This survey was refined based on three pre-tests, to examine if manipulations in this study were accurately perceived by	Attitudinal response (Kidder et al., 2004) and organizational commitment (O'Reilly and Chatman, 1986) will be used in the SAF Inclusion and Engagement Survey. (Permission asked and granted by Kidder, also fine to use a modified version and cite accordingly).

				participants and to remove scales that were not showing significant effects. These pre-tests help contribute to validity.	
Stereotype Vulnerability Scale (SVS-4) (Woodcock, Hernandez, Estrada & Schultz, 2012; modified from Spencer, 1993)	Woodcock, Hernandez, Estrada & Schultz modified the original scale to look at ethnicity rather than gender. They also reduced the original SVS scale from 8-items to four-items. They found that some items were redundant and led to complexity. The reduced model better preserved simple structure and exhibited excellent fit to the data $x^2(2)=2.76$, $p= 0.251$.	Likert-type scale (1, *never* to 5, *almost always*);	Scores are summed and divided by four, for an average score (between 1 and 5).	Woodcock et al. found this to be a reliable self-report measure with alpha = 0.85. Scale validation was addressed in that SVS measures were psychometrically validated in a large sample of ethnically and racially diverse students using confirmatory factor analysis to assess fit (2013).	The SVS-4 scale will be used in the SAF Inclusion and Engagement Survey for gender and then also race/ethnicity. SVS-4 will be used in the SAF Inclusion survey (Woodcock et al., 2012; Cadaret et al., 2017).)
Overall Sense of Belonging (OSB) from the National Study of Living-Learning Programs (NSLLP) (Johnson et al., 2007)	5-item construct	Measured level of agreement, but they did not share the exact scale, but it appears strongly disagree (1) to strongly agree (5).	It appears scores were summed and averaged.	Face validity established by working with two survey development experts and 15 administrators; survey pilot tested twice. Cronbach's alpha for internal consistency and reliability of Sense of Belonging measure was 0.898.	**Portions were used for the SAF Inclusion and Engagement Survey.**
Stereotype Vulnerability Scale (SVS) (Spencer, 1993; Woodcock, Hernandez, Estrada & Schultz, 2012)	8-items; Measure experience of stereotype threat for women (such as: "How often do you feel that because of your gender…Some people believe that you have less ability.")	Likert-type scale (1, *never* to 5, *almost always*); measure the experience of stereotype threat for women in math originally; Woodcock et al. modified the scale to	Scores are summed and divided by eight, for an average score (between 1 and 5).	Spencer found coefficient alpha 0.67 (1993); Woodcock et al. reported coefficient alpha 0.85 in a large sample of racially/ethnically underrepresented college students, with a revised 4-item version (2012);	**The shortened version of this construct was used in the SAF Inclusion and Engagement Survey**. See above SVS-4.

		reflect perceived judgments of ethnicity.		coefficient alpha 0.91 (Cadaret et al., 2017)	
Colorado State University's Employee Climate Survey (2018) Culture and Respect constructs	Two separate multi-item constructs asking questions about Culture and Respect	Likert-scale strongly disagree (1) to strongly agree (5)	Items averaged within one construct.	Cronbach's Alpha 0.92 for culture within the unit and 0.89 for unit diversity focus; sense of belonging (0.82); all respect items were analyzed separately	**Portions were used in the SAF Inclusion and Engagement Survey.** Most items pulled from CSU's culture construct, but a few are dropped because they do not apply to this population.

The constructs and scales below will not be used directly in the SAF Inclusion survey, but they were considered and are included for additional reference.

Original Measures	**Items**	**Scale and Measure**	**Summation approach**	**Scale Reliability and/or Validity**	**Modification and Use**
Stigma Consciousness Questionnaire (SCQ) (Pinel, 1999)	10-item questionnaire adapted toward populations experiencing negative stereotypes regarding their identity (Pinel, 1999) (such as: Stereotypes about women have not affected me personally")	Likert-type scale (0, *strongly disagree* to 6, *strongly agree*); meant to reflect an "expectation that one will be stereotyped, irrespective of one's actual behavior" (Pinel, 1999, p. 115)	Scores are summed and divided by seven delivering a mean score from 0 to 6.	Test-retest reliability of 0.76 over a 1-month period and predicted correlations with sexism and sex-role demands (Pinel, 1999; Study 2); Cronbach's alpha 0.72 (Pinel, 1999; Study 1); Cronbach's alpha of 0.81 (Cadaret et al., 2017)	This construct was not utilized for the SAF Inclusion and Engagement Survey.
Psychological Sense of School Membership Scale (PSSM) (Goodenow, 1993)	18-item construct to measure sense of membership and belonging	Five-point Likert-scale from not at all true (1) to completely true (5)	Scores are summed and divided by 18, for an average score.	Two separate study's demonstrated Cronbach's alpha of 0.875 and 0.884 respectively. Goodenow established some construct validity through contrasted group validation by assessing various construct predictions backed by the literature.	Portions of PSSM informed the Sense of Belonging items selected for multiple studies. (Forbes-Ingram and others). PSSM is not used in the SAF Inclusion and Engagement Survey.
Math Sense of Belonging Scale (MSBS) (Good, Rattan, and Dweck, 2012).	28-item construct, development and validation of this scale led to five key factors: Membership;	Eight-point Likert scale, strongly disagree (1) to strongly agree (8).	Scores are summed and averaged.	Conducted test-retest reliability analyses with a test-retest correlation over time of 0.87.	Portions of MSBS were used to inform a few additional Sense of Belonging items selected for the SAF Inclusion

	Acceptance; Trust; Affect; and Desire to Fade.			Also tested predictive validity by assessing various construct predictions backed by the literature, such as would Sense of Belonging for Math be a significant predictor of intention to pursue math in the future, demonstrating the MSBS' power to predict.	and Engagement Survey. (Permission not requested since this scale just helped inform choices in the SAF Inclusion and Engagement Survey, but this study will be cited in the dissertation).
Other Group Orientation subscale from Phinney's (1992) (cited in Kidder et al. 2004)	Orientation toward ethnic groups measure with 4-items, used as an independent variable	Likert-scale strongly disagree (1) to strongly agree (5)	Items were averaged to one scale.	Alpha of 0.77 (Kidder et al. 2004)	Not being used in the SAF Inclusion and Engagement Survey.
Self-Efficacy for Academic Milestones (AM-S) (Lent, Brown, and Larkin 1984; 1986)	11-items (such as "complete the mathematics requirements for most science, agriculture, or engineering majors")	10-point Likert-type scale (0, *no confidence* to 9, *complete confidenc*e); measures participants' confidence in ability to accomplish specific academic tasks, with focus on items critical to science, agriculture, and engineering	Scores are summed across items and divided by total number of items for a measure of strength of self-efficacy for academic milestones	Coefficient alpha 0.89 (Lent et al. 1984, 1986); Cronbach's alpha 0.92 (Byars-Winston et al., 2010); Cronbach's alpha 0.89 (Cadaret et al. 2017).	AM-S was used as a guide to develop appropriate items for the SAF Inclusion and Engagement Survey. (Permissions not requested as this scale was merely a guide, which will be cited in the dissertation.)
Diversity Engagement Survey (Person et al., 2015)	Construct measures several engagement and inclusion factors (8 factors/sub-constructs, total of 22-items): Common Purpose, Trust; Appreciation of Individual Attributes; Sense of Belonging; Access to Opportunity;	Likert-scale strongly disagree (1) to strongly agree (5).	Items were averaged for each of the eight engagement and inclusion factors.	The DES Cronbach alphas ranged from 0.68 to 0.85 for the eight factors. Face and content validity were established through use of a review panel of representative respondents. For construct validity, Person et al. (2015) ran a	Scale was not used because permission/licensing was too costly.

	Equitable Reward and Recognition; Cultural Competence; and Respect.			confirmatory factor analysis, two fit indices the comparative fit index (0.917) and the standardized root mean square residual (0.038) showed model fit and mapping of selected items to inclusion and engagement factors. Criterion validity of the DES was also supported, a measure of how well a construct predicts an outcome based on other variable information.	

APPENDIX B

Letter to SAF Introducing the SAF Inclusion Survey

Subject: Request for Member Participation: SAF Engagement and Inclusion Survey

Greetings SAF Members & Colleagues,

My name is Jamie Dahl, I am a Society of American Foresters (SAF) member and a researcher at Colorado State University (CSU). We are helping SAF to conduct a study on engagement and inclusion. I am asking for some of your valuable time and input to help us better understand and improve SAF as an organization. The results of this study will help to inform and guide best practices in member recruitment, engagement, and retention. The survey asks important questions about the culture and climate of our organization, with a focus on diversity and inclusion. We seek the perspectives of all of our members so that we can better serve and include everyone.

As you know, SAF has made diversity and inclusion an organizational priority and this survey is one step toward helping SAF thrive for the long-run and better serve all of its constituencies. Currently, SAF membership hovers under 10,000 members. We struggle to retain young members and have not improved our participation by women (~11%) and people of color (~5%) much despite decades of discussing these as issues. Forestry education and the profession face similar challenges with respect to the recruitment and retention of a diversity of people (Sharik et al. 2015, Bal et al. 2020).

It is important that we better understand our engagement and inclusion climate at SAF, so we can best assess how to move forward and track when we make improvements. We appreciate each member taking the time and energy in helping make SAF and the natural resources professions better by sharing your valuable perspectives. This survey should take most people **about 12 minutes** to complete. If you are willing to share a bit more time with us, you can also choose to continue on and complete a short second survey component (an additional 8 minutes). We truly appreciate whatever time and information you can share with us.

Please know that your responses will be kept anonymous and any potential self-identifying information will be kept confidential. The survey software uses security encryption to protect data.

We will also share the results of this survey with all SAF members! Both the SAF leadership and researchers at CSU are guiding this effort. We sincerely appreciate your time and support in this important initiative. **Please click the link to learn more and begin the survey:** http://colostate.az1.qualtrics.com/jfe/form/SV_3TVcR485kOX6UGW.

The Principal Investigator is Dr. Gene Gloeckner (CSU School of Education), and I am the Co-Principal Investigator. If you have any questions about the research, please contact Jamie Dahl at jdahl@colostate.edu or Terry Baker, SAF CEO, at terryb@safnet.org. This research was partially sponsored through the SAF Mollie Beattie Visiting Scholar in Forest Policy program.

Jamie Dahl
SAF Member since 2000
Doctoral Candidate at Colorado State University

Terry Baker
Chief Executive Officer
Society of American Foresters

Connect with us:

This email was sent to **jdahl@colostate.edu**.
Edit your communication preferences. All billing-related emails will be sent separately.
2121 K Street, NW, Suite 315 | Washington, DC 20037
(301) 897-8720 | toll free (866) 897-8720 | fax (301) 897-3690

Greetings SAF Members & Colleagues,

My name is Jamie Dahl, I am a Society of American Foresters (SAF) member and a researcher at Colorado State University (CSU). We are helping SAF to conduct a study on engagement and inclusion. I am asking for some of your valuable time and input to help us better understand and improve SAF as an organization. The results of this study will help to inform and guide best practices in member recruitment, engagement, and retention. The survey asks important questions about the culture and climate of our organization, with a focus on diversity and inclusion. We seek the perspectives of all of our members so that we can better serve and include everyone.

As you know, SAF has made diversity and inclusion an organizational priority and this survey is one step toward helping SAF thrive for the long-run and better serve all of its constituencies. Currently, SAF membership hovers under 10,000 members. We struggle to retain young members and have not improved our participation by women (~11%) and people of color (~5%) much despite decades of discussing these as issues. Forestry education and the profession face similar challenges with respect to the recruitment and retention of a diversity of people (Sharik et al. 2015, Bal et al. 2020).

It is important that we better understand our engagement and inclusion climate at SAF, so we can best assess how to move forward and track when we make improvements. We appreciate each member taking the time and energy in helping make SAF and the natural resources professions better by sharing your valuable perspectives. This survey should take most people **about 12 minutes** to complete. If you are willing to share a bit more time with us, you can also choose to continue on and complete a short second survey component (an additional 8 minutes). We truly appreciate whatever time and information you can share with us.

Please know that your responses will be kept anonymous and any potential self-identifying information will be kept confidential. The survey software uses security encryption to protect data. We will also share the results of this survey with all SAF members! Both the SAF leadership and researchers at CSU are guiding this effort. We sincerely appreciate your time and support in this important initiative. **Please click the link to learn more and begin the survey:** http://colostate.az1.qualtrics.com/jfe/form/SV_3TVcR485kOX6UGW.

The Principal Investigator is Dr. Gene Gloeckner (CSU School of Education), and I am the Co-Principal Investigator. If you have any questions about the research, please contact Jamie Dahl at jdahl@colostate.edu or Terry Baker, SAF CEO, at terryb@safnet.org. This research was partially sponsored through the Mollie Beattie Visiting Scholar in Forest Policy program.

Jamie Dahl
SAF Member since 2000
Doctoral Candidate at Colorado State University

Terry Baker
Chief Executive Officer
The Society of American Foresters

APPENDIX C

Consent notification before beginning survey:

(Once they click the link on the intro letter/email, they will come to this additional consent information and then can proceed to the survey. Proposed email subject: ***SAF Member Survey regarding Engagement and Inclusion****)*

Thank you for your interest and willingness in participating. My name is Jamie Dahl and I am fellow Society of American Foresters (SAF) member and a researcher at Colorado State University (CSU). We are helping SAF to conduct a research study on engagement and inclusion. I am asking for some of your valuable time and input to help us better understand and improve SAF as an organization. The results of this study will help to inform and guide best practices in member recruitment, engagement, and retention. The survey asks important questions about the culture and climate of our organization, with a specific focus on inclusion and diversity. We seek the perspectives of all of our members so that we can better serve and include everyone.

We would like you to take this anonymous online survey. Participation will take **approximately 12 minutes**. If you are willing to volunteer more time, there will be an opportunity to share additional information in a second survey component (an additional 8 minutes). Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participation at any time without penalty.
We will not collect your name or personal identifiers. When we report and share the data to SAF, we will combine the data from all participants. There is a direct benefit to you, as this research will help us continue to improve SAF as an organization, contributing to recruitment, retention, engagement, and inclusion strategies.

There are no known risks to completing this survey. If you have any questions about the research, please contact Co-Principal Investigator, Jamie Dahl at jdahl@colostate.edu or Terry Baker, SAF CEO, at terryb@safnet.org.. If you have any questions about your rights as a volunteer in this research, contact the CSU IRB at: RICRO_IRB@mail.colostate.edu; 970-491-1553.
Please click the YES box below if you are willing to participate and then the arrow to proceed.

YES- I am willing to participate and am committed to providing my best data

APPENDIX D

Timeline for survey invite and reminders:

The survey will be sent out sometime this spring. I will work with SAF to determine best timing based on other SAF communications. The weekday selected and the time of day for sending will be calculated for each invite and/or reminder. Timing and approach follow Tailored Design Method recommendations (Dillman et al., 2014).

1) First direct contact will send the recruitment letter (Appendix B), via email.
2) A few days after the email goes to all members, a letter will go out to regional leaders in the SAF House of Society Delegates (Appendix G), as well as leadership of the SAF Social and Related Sciences Working Groups, asking them to help support this effort and promote the survey to their members through their targeted communication channels (Appendix H).

3) The next reminder, which will go out about 3-7 days after the initial contact most likely in the E-Forester email news (Appendix I) or on social media (Appendix H).

4) The second reminder will follow about 7-10 days after the second contact most likely in the E-Forester email news, or on social media, or via email (based on recommendations from SAF (see Appendix I, H, J).

5) Hopefully at about 2-4 weeks from the initial email, the third reminder will follow most likely in the E-Forester email news, or on social media, or via email (based on recommendations from SAF (see Appendix I, H, J)).

6) The fourth and final reminder (Appendix J) will be as an email about 4-6 weeks after the initial contact (we will look at responses and determine if this is needed).

7) Additionally, we will have the opportunity to promote the study in an article in the *Forestry Source*, a print media that goes out to all SAF members about once a month. SAF will help determine the best timing for this announcement. This article will share about the general research project and the Mollie Beattie Visiting Scholar in Forest Policy fund, and announce that the survey is coming soon! (Appendix L)

8) There is a call out box/ad for the survey that will go in the Forestry Source, which targets members without an email (Appendix O).

The SAF Engagement and Inclusion Survey – Final Timeline Details:

- Initial launch was May 25, 2021
- A survey reminder was sent through the E-Forester on June 11 and the week of June 25
- Another email reminder went on 6/30
- A survey deadline of July 14 was announced in final email reminders
- A message in the LinkedIn group was posted.
- Another post scheduled for 6/28 on LinkedIn Facebook.
- Similar to the message sent by HSD and FS&TB, SAF helped push student participation.
- Survey was also plugged at a virtual SAF Water Cooler meeting as well

APPENDIX E

Email and Announcement to HSD and Working Groups:

Greetings HSD and WG Leadership:

My name is Jamie Dahl, I am an active Society of American Foresters (SAF) member and a researcher at Colorado State University (CSU). We are helping SAF to conduct a study on engagement and inclusion. I am asking for some of your valuable time and input to help us better understand and improve SAF as an organization. We know that as leaders in SAF your support might also help encourage members in your area to participate. If you are willing to promote this opportunity in your regions and working group circles, we would be most grateful!

Request for SAF member participation: SAF Engagement and Inclusion Survey Research

Researchers in the School of Education at Colorado State University are seeking SAF member participation to conduct a study on engagement and inclusion within SAF. All SAF members are invited to participate.
As you know, SAF has made diversity and inclusion an organizational priority and this survey is one step toward helping SAF thrive for the long-run, and better serve all of its constituencies. We welcome any time and information you are willing to share, participation should take between 12-20 minutes.
To learn more about the study objectives and how to participate in the anonymous online survey, just click this link: http://colostate.az1.qualtrics.com/jfe/form/SV_3TVcR485kOX6UGW
Feel free to contact us for more information:
Jamie Dahl (Study Coordinator & SAF Member), jdahl@colostate.edu
Terry Baker (SAF CEO), terryb@safnet.org

APPENDIX F

Social Media Post (might be used for multiple reminders):

SAF Engagement and Inclusion Survey Research

Request for SAF member participation: SAF Engagement and Inclusion Survey Research

Researchers in the School of Education at Colorado State University are seeking SAF member participation to conduct a study on engagement and inclusion within SAF. All SAF members are invited to participate. We welcome any time and information you are willing to share, participation should take between 12-20 minutes. To learn more about the study objectives and how to participate in the anonymous online survey, just click this link: http://colostate.az1.qualtrics.com/jfe/form/SV_3TVcR485kOX6UGW

Feel free to contact us for more information:
Jamie Dahl (Study Coordinator & SAF Member), jdahl@colostate.edu
Terry Baker (SAF CEO), terryb@safnet.org

APPENDIX G

Reminder messages for the E-Forester (3 options):

Header for reminder 1 in E-Forester: Voice your perspectives now about SAF engagement and inclusion

As you know, SAF has made diversity and inclusion an organizational priority and this survey is one step toward helping SAF thrive for the long-run, so that we may better serve all of our constituencies. Click here to learn more and participate in this voluntary and anonymous survey: http://colostate.az1.qualtrics.com/jfe/form/SV_3TVcR485kOX6UGW, participation should take about 12-20 minutes.

Header for reminder 2 in E-Forester (if needed): Share Your Valuable Input with SAF

Recently we sent you an e-mail to ask for your help in better understanding the current climate and culture of SAF. This survey is one step toward helping SAF thrive for the long-run, so that we may better serve all of its constituencies. Click here to learn more and participate in this voluntary and anonymous survey: <LINK--- to consent notification and survey>.

Header for reminder 3 in E-Forester (if needed): We want to hear from you--- voice your perspectives now about SAF engagement and inclusion

SAF is trying to plan a path forward to improve recruitment, retention, and engagement to help the organization thrive in the long-run. Every member's input is important in this effort! Click here to learn more and participate in this voluntary and anonymous survey: <LINK--- to consent notification and survey>.

APPENDIX H

Additional email reminder:

SUBJECT: Share Your Valuable Input with SAF

Dear SAF Member (hopefully personalized),

Recently we sent you an e-mail to ask for your help in better understanding the current climate and culture of SAF. You can click on this link to participate in this voluntary and anonymous survey: <LINK>, which should take between 12-20 minutes.

SAF is trying to plan a path forward to improve recruitment, retention, and engagement to help the organization thrive in the long-run. Every member's input is important in this effort! (If you have already participated we thank you!)

Sincerely,

Jamie Dahl
SAF Member since 2000
Doctoral Candidate at Colorado State University
jdahl@colostate.edu

Terry Baker
Chief Executive Officer
The Society of American Foresters
terryb@safnet.org

APPENDIX I

Final email reminder:

SUBJECT: Last Chance to Participate in this Engagement Survey

Dear SAF Member (hopefully personalized),

We are writing to request that anyone who has not yet participated in our SAF inclusion and engagement survey, please consider doing so. Every member's input is important in this effort! You can click on this link to participate in this voluntary and anonymous survey: <LINK>, which should take about 12-20 minutes.

We will be sharing the results with SAF leadership and membership to help shape strategies for SAF to thrive and grow for many years to come!

(If you have already participated we thank you!)

Sincerely,

Jamie Dahl
SAF Member since 2000
Doctoral Candidate at Colorado State University
jdahl@colostate.edu

Terry Baker
Chief Executive Officer
The Society of American Foresters
terryb@safnet.org

APPENDIX J

Article Promoting the Study in the Forestry Source:

Engagement and Inclusion Research through the Mollie Beattie Program: How Each of You Can Help the Cause!

Bio: Jamie Dahl is a Doctoral Candidate, in Education and Human Resources Studies at Colorado State University. Her research focus is on diversity and inclusion within the natural resource professions. She teaches forestry part-time at Front Range Community College. Jamie has a Bachelor of Science in Forest Management and a Master of Science in Forest Resources, Wood Procurement and Utilization, both from The Pennsylvania State University. Her prior work experiences include forest management, volunteer management, training, research, extension outreach, and education. She has been an active member of the Society of American Foresters for 20 years, and serves as the vice-chair of SAF's Diversity and Inclusion Working Group. Jamie is also an engaged Project Learning Tree Facilitator.

I am very honored and appreciative to serve as this year's Mollie Beattie Visiting Scholar in Forest Policy, which granted support and funding towards my doctoral research. Mollie Beattie was the first woman to head the US Fish and Wildlife Service (from 1993-1996), among many other professional accomplishments. *Educated in philosophy and forestry, she inspired, mentored, and dared her friends, colleagues, and young people to be more and do more than they thought possible. To honor her legacy, the program was established to foster diversity in the natural resource professions by encouraging those from underrepresented groups to become foresters or professionals in other natural resource fields.* (SAF website, 2020).

Mollie Beattie's life and virtues have been inspiring to me. I feel connected to her in many ways. One of Mollie's friends had this to say about her life:

> Mollie was a mold breaker. First woman to head the male-dominated "hook and bullet" culture of the "FWS". One of the first to crack the gender barrier of the forestry profession. Outward bound instructor. Hardy homesteader: with husband Rick she cut a road, cleared a patch of land, built a solar-heated house on a south-facing slope, and set up housekeeping amidst beech and maple, black bear and fishercat, hard by the state forest that now bears her name in Grafton, Vermont. Instead of a TV, she hung a painting of a woman standing with her hand on an oak tree, leaves spilling out of her mouth, titled "A Woman Who Speaks Trees." Could have been a self portrait. (Patrick Parenteau, 1997, see the full essay here: http://trumpeter.athabascau.ca/index.php/trumpet/article/view/176/218)

Mollie Beattie is well-known as a leader in natural resources. Her unique educational pairings of philosophy and forestry, along with a women's worldview undoubtedly shaped her vision and leadership. She has several recognized quotes, I saw connections to my own research and view in the following: "When we see the snails and the mussels and the lichen in trouble it is a signal that the ecosystems upon which we, too, depend are unravelling." She went on to say: "I believe there is only one conflict and that is between the short term and the long term thinking. In the long term, the economy and the environment are the same thing. If it's unenvironmental it's uneconomical. That is a rule of nature."

One thing that I have wondered to myself in reading her words, would Mollie also note that (beyond economics) other parts of our social systems are struggling and 'unraveling'? In my mind, there is no question that the *best* forest management practices must also *best* serve society as whole and be informed by social science. The environment, forests, and people are

‘intertwined.’ We must strive to understand both to truly achieve conservation, in the long-run! I believe that Mollie (and others) would still find agreement with that sentiment.

Connecting the social sciences to forestry and natural resource management, is just what I chose to focus on for my doctoral research. As you know, SAF has recently made diversity and inclusion an organizational priority and this research is one stride toward helping SAF thrive for the long-run, and better serve all of its constituencies. Currently SAF membership hovers under 10,000 members. We struggle to retain young members. We have not improved our participation by women (~11%) and people of color (~5%) much despite decades of discussing this as an issue. Forestry education and the breadth of natural resources (NR) professions and related industries face similar challenges with respect to the recruitment and retention of a diversity of people (Sharik et al. 2015, Bal et al. 2020).

Better welcoming and including all people and helping them to connect to forests and NR is crucial to conservation and the future of our professions. There are many groups also who have not had and still do not have equitable access to our profession. These are complex challenges that are both historical and current. It will take all of us working to better understand and approach these social challenges just as it takes many brains and hands to solve complex issues in our forest ecosystems.

The purpose of my study is to use multiple research methods to better understand the current inclusion climate in natural resources and forestry disciplines and to give focused attention on minoritized professionals. I chose the Society of American Foresters as my study population. The SAF is an organization and group that spans forestry and related natural resources disciplines, and reaches across the U.S. (and even beyond).

This work aims to compare responses from minoritized groups to those of dominant groups. Hopefully this approach will increase our overall understanding of different experiences with inclusion in our own organization. This research will establish some current baseline data from a broad swath of SAF members. This will help SAF to better strategize and focus our diversity, equity, and inclusion efforts. What we learn will also help our partners and colleagues in natural resource conservation.

You can support this effort by watching for the research survey and participating! We value any time and perspective that each of you can share. The survey asks important questions about the culture and climate of our organization. We seek the perspectives of all of our members so that we can better understand each viewpoint, in order to better serve and include everyone.

You can also learn more about the Mollie Beattie Visiting Scholar opportunity, and how to support the fund here:
https://www.eforester.org/Main/Community/Apply_for_Beattie_Scholar.aspx. SAF will seek applications for the program again this summer.

APPENDIX K

Invitation to Participate in the Pilot Study, with Consent Form:

Greetings (Personalized Email),
We are asking for your support in a pilot study. We are testing a survey tool that will be used to study engagement and inclusion in the Society of American Foresters. We are asking for your support in this pilot study because you too were once an SAF member. The survey is intended for current SAF members, but we thought that folks who had left the organization might be willing to help us to test the tool. This is an opportunity to help us better understand challenges with inclusion not only in SAF but also in an exerpt of the natural resources profession. We value your input and feedback in helping us to make this overall study a success. Below is the text that will be in the actual letter to SAF, and it will take you on to the consent form and survey link. Any information you provide will remain anonymous and confidential. The following letter and consent form are what we currently plan to use on the actual study.

My name is Jamie Dahl, I am a Society of American Foresters (SAF) member and a researcher at Colorado State University (CSU). We are helping SAF to conduct a study on engagement and inclusion. I am asking for some of your valuable time and input to help us better understand and improve SAF as an organization. The results of this study will help to inform and guide best practices in member recruitment, engagement, and retention. The survey asks important questions about the culture and climate of our organization, with a focus on diversity and inclusion. We seek the perspectives of all of our members so that we can better serve and include everyone.

As you know, SAF has made diversity and inclusion an organizational priority and this survey is one step toward helping SAF thrive for the long-run, and better serve all of its constituencies. Currently SAF membership hovers under 10,000 members. We struggle to retain young members. We have not improved our participation by women (~11%) and people of color (~5%) much despite decades of discussing this as an issue. Forestry education and the profession face similar challenges with respect to the recruitment and retention of a diversity of people (Sharik et al. 2015, Bal et al. 2020).

It is important that we better understand our engagement and inclusion climate at SAF, so we can best assess how to move forward and track when we make improvements. We appreciate each member taking the time and energy in helping make SAF and the natural resources professions better by sharing your valuable perspectives. This survey should take **most people 12 minutes** or less to complete, if you are willing to share a bit more time with us you can also choose to continue on and complete a short second survey component (an additional 8 minutes). We truly appreciate whatever time and information you can share with us.

Please know that your responses will be kept anonymous and any potential self-identifying information will be kept confidential. The survey software uses security encryption to protect data.

We will also share the results of this survey with all SAF members! Both the SAF leadership and researchers at CSU are guiding this effort.

We sincerely appreciate your time and support in this important initiative. Please click <LINK> to learn more and begin the survey.

The Principal Investigator is Dr. Gene Gloeckner (CSU School of Education), and I am the Co-Principal Investigator. If you have any questions about the research, please contact Jamie Dahl at jdahl@colostate.edu or Terry Baker, SAF CEO, at terryb@safnet.org. This research was partially sponsored through the Mollie Beattie Visiting Scholar in Forest Policy program.

Jamie Dahl
SAF Member since 2000
Doctoral Candidate at Colorado State University

Terry Baker
Chief Executive Officer
The Society of American Foresters

APPENDIX L

Additional Questions for Pilot Questionnaire:

There will be a few different questions on the pilot survey, to help get feedback about the tool itself.

At the beginning of the survey:

--Please note your start time for Part I _____.

--Please note your start time for Part II _____.

As you move throughout the survey, please note any particular comments or points of confusion. We will welcome your feedback and recommendations about the tool itself at the end of the survey. As a pilot participant (if you are no longer an SAF member), please do your best to answer questions based on your experience when you were an SAF member.

At the end of the survey:

--Please note your finish-time _____.

--Please let us know any comments, suggestions, or points of confusion you are willing to share regarding this tool. We welcome specific details:

_____

_____

--Please share any feedback about the introductory letter and consent form?

_____

--Please share any comments about visibility and utility in taking the online survey. Feel free to share what type of device you used (phone, tablet, laptop?)

_____

Thank you so much for your support!

APPENDIX M

Call Out Box in the Forestry Source:

(targeting members who may not have email)

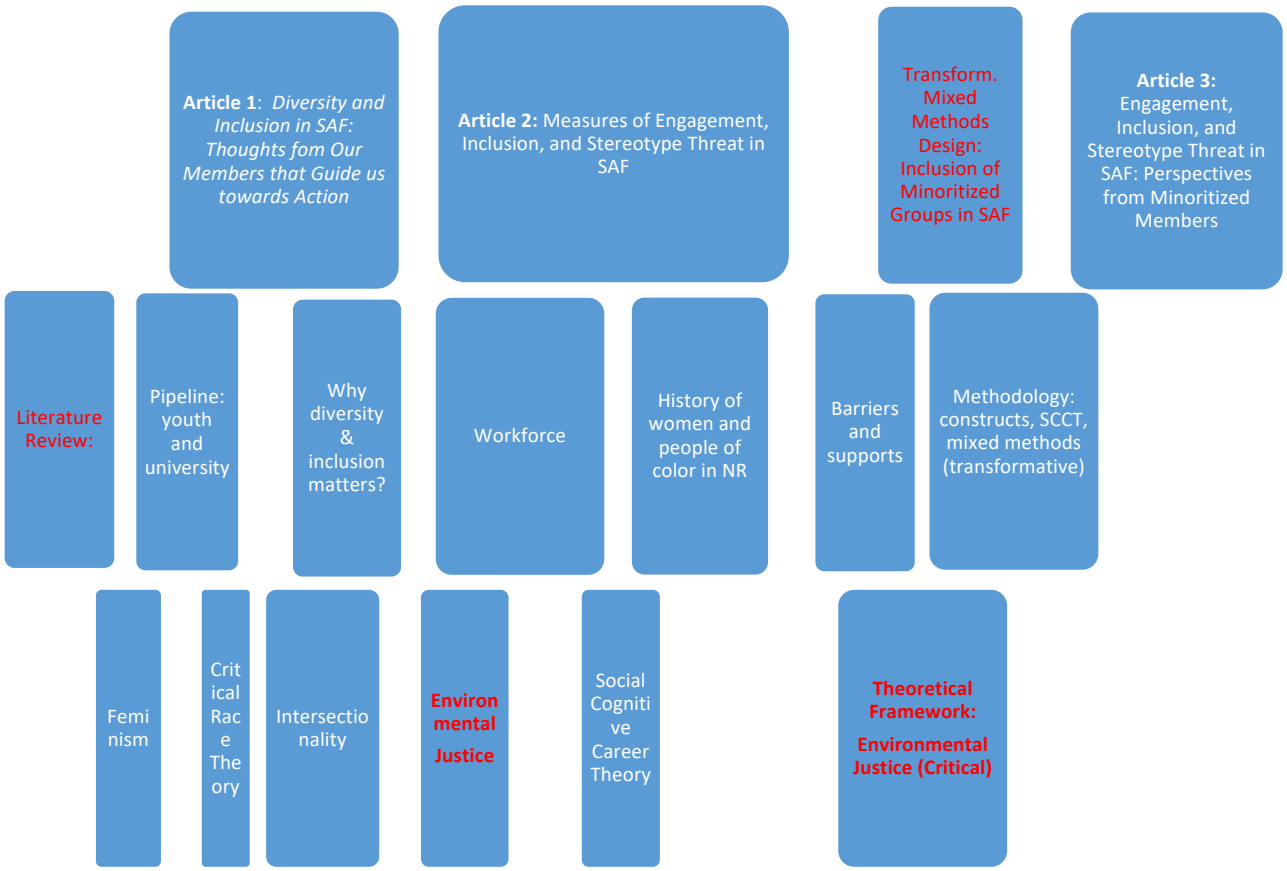
SAF Engagement and Inclusion Survey Research

Request for SAF member participation:

If you do not have an email on file with SAF, this message is for you! Researchers in the School of Education at Colorado State University are seeking SAF member participation to conduct a study on engagement and inclusion within SAF. All SAF members are invited to participate. We welcome any time and information you are willing to share, participation is estimated to take between 12-20 minutes. Most members will receive the survey via email. If you do not have an email on file with SAF and you'd like to learn more about the study objectives and how to participate, you can go to this web address:
http://colostate.az1.qualtrics.com/jfe/form/SV_9t6bH4Bgf1Opake
Please feel free to contact us for more information on the study and participation:
Jamie Dahl (Study Coordinator & SAF Member), jdahl@colostate.edu
Terry Baker (SAF CEO), terryb@safnet.org

APPENDIX N

Literature Review Concept Map



APPENDIX O

SAF Engagement and Inclusion Final Survey, May2021

Start of Block: Default Question Block

Q1 Thank you for your interest and willingness in participating. My name is Jamie Dahl and I am a fellow Society of American Foresters (SAF) member and a researcher at Colorado State University (CSU). We are helping SAF to conduct a research study on engagement and inclusion. I am asking for some of your valuable time and input to help us better understand and improve SAF as an organization. The results of this study will help to inform and guide best practices in member recruitment, engagement, and retention. The survey asks important questions about the culture and climate of our organization, with a specific focus on inclusion and diversity. We seek the perspectives of all of our members so that we can better serve and include everyone.

We would like you to take this anonymous online survey. Participation will take approximately 12 minutes. If you are willing to volunteer more time, there will be an opportunity to share additional information in a second survey component (an additional 8 minutes). Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participation at any time without penalty.

We will not collect your name or personal identifiers. When we report and share the data to SAF, we will combine the data from all participants. There is a direct benefit to you, as this

research will help us continue to improve SAF as an organization, contributing to recruitment, retention, engagement, and inclusion strategies. There are no known risks to completing this survey. If you have any questions about the research, please contact Co-Principal Investigator, Jamie Dahl at jdahl@colostate.edu or Terry Baker, SAF CEO, at terryb@safnet.org. If you have any questions about your rights as a volunteer in this research, contact the CSU IRB at: RICRO_IRB@mail.colostate.edu; 970-491-1553.

Please click the YES box below if you are willing to participate and then the arrow to proceed.

○ YES- I am willing to participate and am committed to providing my best data

Page Break

Q2 ***All personal information is strictly confidential. This information will help in understanding the context for your responses. All questions are valuable to this research effort and SAF, but you may skip any questions that you are not comfortable answering (or that do not apply to you).***

Q3 Are you an SAF Member?

- ○ a. Yes
- ○ b. Not currently, but was in the past
- ○ c. I have never been an SAF member

Skip To: Q4 If Are you an SAF Member? = a. Yes
Skip To: Q4 If Are you an SAF Member? = b. Not currently, but was in the past
Skip To: Q59 If Are you an SAF Member? = c. I have never been an SAF member

Q4 ***In this section we are interested in learning about your engagement with Society of American Foresters (SAF). Please consider engagement to include your own interactions with programs, events, social media, publications, etc.***

Q5 Over the past few years, how engaged have you been with...

	1-Not engaged	2- Rarely engaged (maybe once every few years)	3- Sometimes engaged (about once per year)	4- Often engaged (a few times per year)	5- Very often engaged (regularly engage in offerings)	N/A
SAF events & programs, either virtual or in-person, at the local chapter level (note this is smaller than	○	○	○	○	○	○

state or regional SAF level)?						
SAF events & programs, either virtual or in-person, at the state/regional level?	○	○	○	○	○	○
SAF events & programs, either virtual or in-person, at the national level?	○	○	○	○	○	○
SAF media (online, social, or print) at the state/regional level?	○	○	○	○	○	○
SAF media (online, social, or print) at the national level?	○	○	○	○	○	○
SAF Student Chapters, forestry clubs, or other related natural resources student groups (could be as a student or as a supporting professional)?	○	○	○	○	○	○

Q6 Overall COVID pandemic changes have

- a. Decreased my SAF engagement
- b. My engagement has stayed at roughly the pre-COVID level
- c. Increased my SAF engagement

Q7 Please briefly share any specific COVID impacts on your SAF engagement

_____

Q8 Over the past 10 years about how many SAF National Conventions have you attended (just give a best guess if you are not sure)?

- a. 0
- b. 1
- c. 2
- d. 3
- e. 4
- f. 5
- g. 6
- h. 7

○ i. 8

○ j. 9

○ k. 10

Q9 I feel that I was more engaged in SAF as a student member than I am currently as a professional

○ a. Strongly disagree

○ b. Disagree

○ c. Neither agree nor disagree

○ d. Agree

○ e. Strongly agree

○ f. I was not active in SAF as a student

○ g. I am currently a student member of SAF

Skip To: Q10 If I feel that I was more engaged in SAF as a student member than I am currently as a professional = g. I am currently a student member of SAF
Skip To: Q11 If I feel that I was more engaged in SAF as a student member than I am currently as a professional != g. I am currently a student member of SAF

Q10 Thinking about your experiences with an SAF student chapter (or affiliated student forestry/natural resources club) please indicate the extent to which you agree or disagree with the following statements about your student organization's culture, using the five-point scale below (*portions modified from Colorado State University's Employee Climate Survey, 2018*):

	1- Strongly Disagree	2- Disagree	3- Neither agree nor disagree	4- Agree	5- Strongly Agree
Demonstrates understanding of the value of diversity	○	○	○	○	○
Promotes an organizational environment where all members feel included	○	○	○	○	○
Treats all members equitably	○	○	○	○	○
Provides me with opportunities for professional development	○	○	○	○	○
Promotes respect for cultural differences	○	○	○	○	○
I feel a sense of belonging to my SAF student chapter or affiliated student club	○	○	○	○	○

Q11 *In the next set of questions, we ask about your overall sense of belonging and commitment to SAF.*

Q12 For each of the following statements, please indicate your level of agreement from strongly disagree to strongly agree. (*portions modified from Johnson et al., 2007; O'Reilly & Chatman, 1986; Kidder et al., 2004*)

	Strongly Disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly Agree (5)
I feel a sense of ownership for SAF	○	○	○	○	○
I am proud to tell others that I am an SAF member	○	○	○	○	○
I would talk up SAF to my colleagues and friends as a great organization to participate in	○	○	○	○	○
I feel a sense of belonging to SAF	○	○	○	○	○
I feel I am part of the SAF community	○	○	○	○	○
I feel comfortable in SAF	○	○	○	○	○
SAF is supportive of me personally	○	○	○	○	○
SAF is supportive of me professionally	○	○	○	○	○

Q13 *In the following section, we ask about your perspectives on the organizational culture in SAF, first at a state/regional chapter scale and then at a national scale.*

Q14 Thinking about your experiences with SAF on a state or regional scale please indicate the extent to which you agree or disagree with the following statements about SAF's organizational culture, using the five-point scale below (*portions modified from Colorado State University's Employee Climate Survey, 2018)*:

	Strongly Disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly Agree (5)
Supports a healthy life balance both professionally and personally	○	○	○	○	○
Demonstrates understanding of the value of diversity	○	○	○	○	○
Promotes an organizational environment where all members feel included	○	○	○	○	○
Treats all members equitably	○	○	○	○	○
Communicates the importance of valuing diversity	○	○	○	○	○
Provides me with opportunities for	○	○	○	○	○

professional development					
Promotes respect for cultural differences	○	○	○	○	○
Is open and transparent in communication	○	○	○	○	○
Values members' input in major organizational decisions	○	○	○	○	○
SAF leadership is open and transparent in communication	○	○	○	○	○
SAF leadership promotes respect for cultural differences	○	○	○	○	○
I feel a sense of belonging to my SAF State/Regional Chapter	○	○	○	○	○
I feel a sense of belonging to my SAF Local Chapter	○	○	○	○	○
I would be able to be a more engaged SAF member if I received more information from my local, state, or	○	○	○	○	○

regional chapter	

Q15 Thinking about your experiences with SAF on a national scale please indicate the extent to which you agree or disagree with the following statements about SAF's organizational culture, using the five-point scale below (*portions modified from Colorado State University's Employee Climate Survey, 2018)*:

	1- Strongly Disagree	2- Disagree	3- Neither agree nor disagree	4- Agree	5- Strongly Agree
Supports a healthy life balance both professionally and personally	○	○	○	○	○
Demonstrates understanding of the value of diversity	○	○	○	○	○
Promotes an organizational environment where all members feel included	○	○	○	○	○
Treats all members equitably	○	○	○	○	○
Communicates the importance of valuing diversity	○	○	○	○	○
Provides me with opportunities for professional development	○	○	○	○	○

Promotes respect for cultural differences	○	○	○	○	○
Is open and transparent in communication	○	○	○	○	○
Values members' input in major organizational decisions	○	○	○	○	○
SAF leadership is open and transparent in communication	○	○	○	○	○
SAF leadership promotes respect for cultural differences	○	○	○	○	○
I feel a sense of belonging to SAF at a national level	○	○	○	○	○

Q16 Thinking about your experience with SAF, please indicate the extent to which you agree or disagree with the following statements about respect, using the five-point scale below (*portions modified from Colorado State University's Employee Climate Survey, 2018)*.

	Strongly Disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly Agree (5)	N/A
My local chapter is treated with respect by my	○	○	○	○	○	○

regional/state SAF chapter						
My regional/state chapter is treated with respect by SAF National	○	○	○	○	○	○
The people I interact with in SAF at the local chapter level treat each other with respect	○	○	○	○	○	○
The people I interact with in SAF at the regional/state level treat each other with respect	○	○	○	○	○	○
The people I interact with in SAF at the National level treat each other with respect	○	○	○	○	○	○
There is respect for spiritual differences in my SAF community	○	○	○	○	○	○
There is respect for the full range of perspectives, from	○	○	○	○	○	○

conservative to liberal, in my SAF community						
I feel valued as an SAF member	○	○	○	○	○	○

Q17 What three words (or phrases) would you use to describe SAF's culture (*portions modified from Colorado State University's Employee Climate Survey, 2018)*?

○ Word/phrase 1 _____

○ Word/phrase 2 _____

○ Word/phrase 3 _____

Q18 Considering SAF as an organization, please indicate your level of agreement or disagreement with the following statements (*portions modified from Colorado State University's Employee Climate Survey, 2018)*:

	Strongly Disagree (1)	Disagree (2)	Neither agree nor disagree (3)	Agree (4)	Strongly Agree (5)
SAF is a diverse organization	○	○	○	○	○
SAF is an inclusive organization	○	○	○	○	○
SAF recognizes member accomplishments in an equitable manner	○	○	○	○	○

I am aware of SAF's policy/commitment to Diversity & Inclusion	○	○	○	○	○
I am aware of SAF's anti-harassment policy	○	○	○	○	○
SAF could do a better job recruiting and retaining a more diverse membership	○	○	○	○	○
It is important for SAF to become a more diverse organization that better reflects society at large (in the US)	○	○	○	○	○
It is important for SAF to improve its "culture" within the organization to sustain its membership	○	○	○	○	○
The diversity and inclusion policy and programs at SAF are good initiatives	○	○	○	○	○
I have previously had some diversity, equity, and inclusion training	○	○	○	○	○
I feel that I would benefit from either initial or additional diversity, equity,	○	○	○	○	○

and inclusion training					
I feel that my co-workers and peers would benefit from additional diversity, equity, and inclusion training	○	○	○	○	○
I feel that my SAF community peers would benefit from additional diversity, equity, and inclusion training	○	○	○	○	○
SAF should collect current member demographic data	○	○	○	○	○
SAF should change current member demographic categories to better capture a wider and more inclusive range of information	○	○	○	○	○
I have personally interacted with diverse racial and ethnic groups in SAF	○	○	○	○	○
I personally read, write, and reflect on topics such as: diversity, equity, and inclusion	○	○	○	○	○
I believe SAF leadership will hold members accountable when	○	○	○	○	○

diversity & inclusion policies are violated					
I feel that SAF should be a leader in diversity, equity, and inclusion for the forestry and natural resources professions	○	○	○	○	○
I am aware of the process in place to deal with SAF Code of Ethics violations	○	○	○	○	○
I believe that the SAF Code of Ethics holds members accountable	○	○	○	○	○

Q19 Next, we are interested in roles you have served within SAF.

Q20 I currently serve as a leader in SAF (could be national, state, or local level)

○ Yes

○ No

Q21 I have served as a leader in SAF in the past (could be national, state, or local level)

○ Yes

○ No

Q22 I have served on the SAF Board (past or present)

- ○ Yes
- ○ No

Q23 I am an SAF Certified Forester

- ○ Yes
- ○ No

Q24 I have been an SAF diversity ambassador/scholar in the past:

- ○ Yes
- ○ No

Q25 I have served as a mentor to an SAF diversity ambassador/scholar in the past:

- ○ Yes
- ○ No

Q26 *We'd like to know a little more about you and your background and relationship to SAF. All information is strictly confidential and will help us to understand the context of responses.*

Q27 I have been an SAF member for:

- ○ a. 0 to 5 years
- ○ b. 6-10 years
- ○ c. 11-30 years
- ○ d. 31-50 years
- ○ e. >50 years

Q28 Have you ever taken a break from your SAF membership, as in left the organization for a period of time?

- ○ Yes
- ○ No

Skip To: Q29 If Have you ever taken a break from your SAF membership, as in left the organization for a period of... = Yes
Skip To: Q30 If Have you ever taken a break from your SAF membership, as in left the organization for a period of... = No

Q29 If you did take a break from SAF, for what reason(s) did you leave?

_____

Q30 I am a (check all that currently apply):

- ☐ a. Undergraduate student (for 2 year, technical, Associate's degree)
- ☐ b. Undergraduate students (for 4 year, Bachelor's degree)

☐ c. Graduate student (for Master's degree)

☐ d. Graduate student (for Doctoral degree)

☐ e. Early-career professional (been working roughly less than 10 years)

☐ f. Mid-career professional (been working roughly 10-25 years)

☐ g. Late-career professional (been working for over 25 years)

☐ h. Retired professional

☐ i. Other, please explain: _____

_____

Q31 If currently a student, I would describe my institution as:

○ a. Predominately White Institution

○ b. Tribal College or University

○ c. Historically Black College or University

○ d. Hispanic-Serving Institution

○ e. Other Minority-Serving Institution

○ f. I am not sure

○ g. I am not a student

Q32 Which category best describes your current work status?:

○ a. Private company

○ b. Federal government agency

○ c. State government agency

○ d. Local government agency

○ e. Nonprofit or non-government organization

○ f. Self-employed

○ g. Educational institution

○ h. Retired

○ i. Not currently working, but looking

○ j. Not currently working and not looking

○ k. Other, please share category: _____

_____

Q33 Please select 1-2 category(ies) which best describe your primary discipline area(s) for study or work?

☐ a. Forestry (includes management, science, and urban aspects of forestry)

- [ ] b. Natural resources conservation and management
- [ ] c. Environmental science and studies
- [ ] d. Watershed science and management
- [ ] e. Wildlife and/or fisheries sciences and management
- [ ] f. Wood science/products
- [ ] g. Recreation
- [ ] h. Range science and management
- [ ] i. Social science (including human dimensions & policy)
- [ ] j. Other, please specify:_____

_____

Q34 What is your age category?

- ○ a. 18 - 24
- ○ b. 25 - 34
- ○ c. 35 - 44
- ○ d. 45 - 54

○ e. 55 - 64

○ f. 65 - 74

○ g. 75 - 84

○ h. 85 and over

Q35 I identify my race and/or ethnicity as (please select all that apply):

☐ a. American Indian or Alaskan Native

☐ b. Asian

☐ c. Black or African American

☐ d. Hispanic or Latinx

☐ e. Native Hawaiian or Other Pacific Islander

☐ f. White

☐ g. Other (please specify): _____

_____

Q36 I identify my gender as:

○ a. Man

○ b. Woman

○ c. Non-binary/non-conforming

○ d. Transwoman/feminine

○ e. Transman/masculine

○ f. The gender I most closely align with is not listed (specify): _____

_____

○ g. I prefer not to disclose

Q37 Are you a member of the LGBQ+ (Lesbian, Gay, Bisexual, Queer, Questioning) community?

○ Yes

○ No

Q38 Are you a person with a disability (disabilities)?

○ Yes

○ No

Q39 Are you a veteran or currently serving in a military branch?

☐ a. Active/currently serving in US military branch

☐ b. Reservist

☐ c. ROTC

☐ d. Veteran

☐ e. Not currently serving in the military and not a veteran

☐ f. Other, please explain:

_____

Q40 My youth was spent mostly in settings that I would classify as:

○ a. Urban

○ b. Suburban

○ c. Rural

○ d. A mix of 2-3 of the above

○ e. Other, please explain: _____

_____

X→

Q41 In which country do you currently reside?
▼ Afghanistan ... Zimbabwe

Q42 In which state do you currently reside?
▼ Alabama ... I do not reside in the United States

Q43 Describe the activities/programs/offerings where you feel most engaged as an SAF member?

_____

Q44 What does a commitment to diversity, equity, and inclusion mean to you?

_____

Q45 *Thank you for completing part I of our survey! <u>We have a few additional questions for those willing to share more</u> about their entry into forestry and natural resources as a career, if you are willing to share a bit more time please continue on to the questions in part II, this last section should take about 8 minutes. We truly appreciate you sharing your valuable time with us! In section II, we are interested to learn more about <u>your specific experiences and pathway into a forestry or natural resources education and career</u>. This will help us better understand how we might reach and support others.*

○ Yes- I will continue and participate in section 2

○ No- I will not participate in section 2

Skip To: Q47 If Thank you for completing part I of our survey! We have a few additional questions for those willi... = Yes- I will continue and participate in section 2
Skip To: Q61 If Thank you for completing part I of our survey! We have a few additional questions for those willi... = No- I will not participate in section 2

Q46 We want to better understand your specific experiences and pathway into a forestry or natural resources education and career.

Q47 As a child, I participated in the following nature-based experiences (check all that apply) (*informed by various literature: Adams & Moreno, 1998; Chawla, 2014; Haynes & Jacobson, 2015; Laird et al., 2014*)

- [ ] Hiking
- [ ] Fishing
- [ ] Hunting
- [ ] 4H
- [ ] FFA
- [ ] Lived or worked on a farm, woodlot, and/or ranch
- [ ] Exposed to gardening
- [ ] Horse-back riding
- [ ] Lived near a stream or river
- [ ] Scouting (Girl Scouts/Boy Scouts/ Explorers)
- [ ] Camping
- [ ] Eco-camps (through school or otherwise)
- [ ] Time in local parks
- [ ] Visiting zoos and aquariums

☐ Watching nature shows on television or other media

☐ Reading about nature

☐ Nature-based or environmental education programs

☐ Travel to outdoor areas or parks

☐ Observed or experienced harmful environmental impacts in my own community

☐ Had a family member or friend who nurtured outdoor interests

☐ Had a family member or friend who worked in forestry, natural resources, or a related field

☐ Others: _____

☐ Others: _____

☐ Others: _____

Q48 As a child, how often did you engage in nature-based experiences (such as those listed above)?

○ a. Never

○ b. Rarely (maybe once a year)

○ c. Sometimes (2-3 times a year)

○ d. Often (4-5 times a year)

○ e. Very often (every 1-2 months)

Skip To: Q50 If As a child, how often did you engage in nature-based experiences (such as those listed above)? = a. Never
Skip To: Q49 If As a child, how often did you engage in nature-based experiences (such as those listed above)? = b. Rarely (maybe once a year)
Skip To: Q49 If As a child, how often did you engage in nature-based experiences (such as those listed above)? = c. Sometimes (2-3 times a year)
Skip To: Q49 If As a child, how often did you engage in nature-based experiences (such as those listed above)? = d. Often (4-5 times a year)
Skip To: Q49 If As a child, how often did you engage in nature-based experiences (such as those listed above)? = e. Very often (every 1-2 months)

Q49 Would you say that nature-based experiences as described above during your youth was a key contributor to your choice to study/work in forestry and natural resources?

○ Yes

○ No

Q50 What were the key contributors to you choosing forestry and/or natural resources as a career path?

_____

Q51 As a student and/or professional, I currently engage in environmental education with youth audiences

○ a. Never

○ b. Rarely (maybe once a year)

○ c. Sometimes (2-3 times a year)

○ d. Often (4-5 times a year)

○ e. Very often (every 1-2 months)

X→

Q52 I have considered the following to be barriers I faced in the overall pursuit of my career *(portions modified from McWhirter, 1996; Luzzo & McWhirter, 2001)*:

	0- Not experienced personally	1- Experienced but not a barrier	2- Experienced as a slight barrier	3- Experienced as a moderate barrier	4- Experienced as a major barrier	5- Experienced as an extremely major barrier
Money challenges	○	○	○	○	○	○
Family troubles	○	○	○	○	○	○
Personal troubles	○	○	○	○	○	○
Not fitting in	○	○	○	○	○	○
Lack of exposure to the career path	○	○	○	○	○	○
Lack of support from family	○	○	○	○	○	○

Not being prepared enough	○	○	○	○	○	○
Not having enough confidence	○	○	○	○	○	○
Lack of support from friends	○	○	○	○	○	○
My gender	○	○	○	○	○	○
Lack of role models or mentors	○	○	○	○	○	○
Lack of support from teachers	○	○	○	○	○	○
Lack of support from university advisers	○	○	○	○	○	○
Lack of support from my employer	○	○	○	○	○	○
Lack of support from co-workers	○	○	○	○	○	○
My race or ethnicity	○	○	○	○	○	○
Lack of childcare	○	○	○	○	○	○

Lack of support from my significant other	○	○	○	○	○	○
My desire to have children	○	○	○	○	○	○
Disability (e.g., physical, mental)	○	○	○	○	○	○
My mental health	○	○	○	○	○	○
Experiences with discrimination or harassment	○	○	○	○	○	○
Other barriers I'd like to add (please specify):	○	○	○	○	○	○
Other barriers I'd like to add (please specify):	○	○	○	○	○	○
Other barriers I'd like to add (please specify):	○	○	○	○	○	○

Q53 *The following section asks questions about vulnerability to stereotypes.*

Q54 Within the SAF Community, because of your gender (*modified from Woodcock et al., 2012, based off originally longer measure from Spencer, 1993*):

	1- Never	2	3	4	5- Almost Always
Some people believe that you have less ability	○	○	○	○	○
If you're not better than average people assume you are limited	○	○	○	(	○
If you do poorly on a professional task people will assume that it is because of your gender	○	○	○	○	○
People of your gender face unfair evaluations because of their gender	○	○	○	○	○

Q55 Within the SAF community, because of your race and/or ethnicity (*modified from Woodcock et al., 2012, based off originally longer measure from Spencer, 1993)*:

	1-Never	2	3	4	5-Almost Always
Some people believe that you have less ability	○	○	○	○	○

If you're not better than average people assume you are limited	○	○	○	○	○
If you do poorly on a professional task people will assume that it is because of your race and/or ethnicity	○	○	○	○	○
People of your race and/or ethnicity face unfair evaluations because of their race and/or ethnicity	○	○	○	○	○

X→

Q56 Please select any other identity factors where you personally have experienced vulnerability to stereotypes within the SAF Community.

- ☐ Age
- ☐ Ability/disability
- ☐ Sexual orientation

- [ ] Professional discipline of study or practice
- [ ] Religious/spiritual affiliation
- [ ] Political affiliation/perspective
- [ ] Veteran status
- [ ] Geographic location
- [ ] Career level
- [ ] Others _____

Q57 Could you briefly share what first led you to join SAF?

_____

Q58 What (if anything) has given you hesitancy regarding SAF membership? (*informed by Sharik, 2015; Sharik et al., 2015*)

_____

Q59 Please share some of the ways that SAF has positively impacted you and/or your career path:

_____

Q60 Please share some of the ways that SAF has negatively impacted you and/or your career path:

_____

Q61 Please share any additional comments, suggestions, or concerns regarding engagement and inclusion in the SAF community:

_____

Q62 ***Thank you for completing our survey, we look forward to sharing these results more widely with our SAF Community! Additionally, we are seeking a few participants for follow-up interviews to better capture the experiences of our members. We are particularly interested in highlighting the experiences and stories of women and people of color, but we welcome all interested. If you might be interested in participating in a follow-up interview to better share your experience, please click this separate link (below) to leave your name (this is in no way linked to your survey responses). The names of any interview participants will be kept confidential.*** https://colostate.az1.qualtrics.com/jfe/form/SV_0TywaDGCzZRlyvQ

There were several other published studies and survey constructs that contributed to the SAF Engagement and Inclusion Survey. If you would like to know more about those studies and tools we are happy to share that information and will include that when we share methods and results with SAF.

End of Block: Default Question Block

APPENDIX P

CSU IRB Approval:

From: Kuali Notifications <no-reply@kuali.co>
Date: May 20, 2021 at 5:05:54 PM MDT
To: gene.gloeckner@colostate.edu
Subject: IRB Protocol Approved

The protocol listed below has been approved on Tuesday, May 18th 2021 by IRB

Determinations Fort Collins.

A Continuing Review by no date provided is required to keep this protocol active.

- Principal Investigator: Gloeckner,Gene
- Submission Type and ID: Amendment 2046
- Title: A MIXED METHODS APPROACH TO UNDERSTANDING INCLUSION AND ENGAGEMENT OF MINORITIZED GROUPS IN THE SOCIETY OF AMERICAN FORESTERS (The Survey Portion)
- Approval Date: Tuesday, May 18th 2021
- Continuing Review Date: no date provided
- Expiration Date: Tuesday, March 17th 2026
- Committee: IRB Determinations Fort Collins
- Link to this protocol: colostate.kuali.co/protocols/protocols/60a2bab885fadb003a6745a1

If you have additional questions about this please contact RICRO IRB Staff.

APPENDIX Q

Mann-Whitney *U* Testing for Skewed Barriers:

Table 13: Mann-Whitney U Results, for Gender Comparison of Barriers with Skewness

Barrier	Man (N)	Man Mean Rank	Women (N)	Women Mean Rank	p-value	Z	r	Effect Size
Not being prepared enough	250	153.14	67	180.87	0.012	2.514	0.14	small
Not having enough confidence	301	187.06	102	246.1	<.001	4.781	0.24	small
Lack of teacher support	138	91.16	55	111.65	0.012	2.506	0.18	small
Lack of support from co-workers	139	93.26	70	128.31	<.001	4.362	0.30	medium
My desire to have children	72	54.47	52	73.63	0.001	3.265	0.29	medium

Table 14: Mann-Whitney U Results, for Race/Ethnicity Comparison of Barriers with Skewness

Barrier	White (N)	Man Mean Rank	POC (N)	POC Mean Rank	p-value	Z	r	Effect Size
Lack of family support	116	88.64	11	61.66	0.007	2.682	0.24	small