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Native American Student Perspectives of Challenges in Natural Resource Higher Education

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Native Americans have vital interests in promoting forest management decisions based on sound science and consistent with cultural values to sustain and conserve tribal natural resources. Advancing the next generation of natural resource professionals into key positions is essential to advance the self-determination of tribes; yet, there are unique challenges Native American students encounter when pursuing an advanced degree in natural resources. We formed an informal group of Native Americans who have been undergraduate and/or graduate students in natural resource fields to discuss their experiences in higher education. The group discussed their personal paths to and experiences in undergraduate and graduate programs, including academics and campus culture. Students collectively identified several significant deterrents, including insufficient access to mentors with experience working with tribal communities at nontribal universities, as well as a lack of interdisciplinary courses that integrate tribal land management practices and traditional ecological knowledge with nontribal and western ecological science. Based on our findings, we suggest practices and programs that academic institutions can emphasize to address the challenges in recruiting and retaining Native Americans in natural resource-related programs.

Keywords: Indian forestry, higher education, traditional ecological knowledge, American Indian tribes

Universities are promoting Native American higher education in natural resource fields, agencies want to hire more Native Americans both to diversify their institutions and fill positions behind a wave of retirements, and tribes can benefit from having more of their members with advanced education in natural resources. Both recruitment and retention of minorities such as Native Americans in forestry-related majors have been long-standing problems at nontribal universities and colleges (Sample et al. 2015). Enrollment of Native American (hereafter referred to as "Native") students in natural resource programs at nontribal universities and colleges increased by 19% from 2004 to 2011 (Indian Forest Management Assessment Team-III [IFMAT-III] 2013). However, Native students still comprise less than 1.0% of the student body at nontribal universities and colleges and have the lowest graduation rates (Wright 1991, National Research Council 2002, National Center for Education Statistics 2015). It is important to understand the perspectives of Native students in postsec-

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ondary natural resources education to understand how to increase these low enrollment and graduation rates. To address this need, we formed a group of current and former Native students in natural resource programs to explore how various circumstances influenced their higher education pursuits and to consider insights that might improve student graduation rates. By building a community of Native scholars, we sought to achieve a collective understanding of these challenges and identify actions that might help others in their pursuit of higher education.

Ensuring that Native students complete natural resource degrees is important to help diversify and fill a wave of retirements in both tribal and federal natural resource agencies. Within the Bureau of Indian Affairs, 51.1% of tribal forestry and fire staff are older than age 50 (IFMAT-III 2013). Within the US Department of Agriculture Forest Service and US Fish and Wildlife Service, 40% of employees are older than age 50 (Renewable Natural Resources Foundation 2003, Copeland 2011). As much of the current workforce enters retirement, the nation's land management agencies are at risk of experiencing gaps in leadership, a loss of institutional knowledge, and a loss of scientific expertise (Minority Outreach Subcommittee 1998, Outley 2008, IFMAT-III 2013, Balcarczyk et al. 2015). Previous studies have suggested that a diverse workforce, specifically in forestry-related fields, can promote a broader understanding of natural resource values and solutions; yet diversity still remains low (Kuhns et al. 2002, Schelhas 2002, Outley 2008, Balcarczyk et al. 2015). Native graduates with education and experience in both western science as well as traditional ecological knowledge (TEK) can help to address distinctive challenges in tribal communities and enhance opportunities for collaborative scientific advancement (Bussey et al. 2016).

Approach

A subset of the authors recruited Native students in natural resources to contribute to this exploratory effort. We employed a modified snowball method, or "chain referral sampling," in which an initial group identifies other potential contributors who they know (Bernard 2002, Wilmsen et al. 2015). We relied on this approach to generate in-depth discussion within the group about important challenges, rather than trying to obtain a random sample of Native students. We recognized that our use of the chain referral method entailed potential biases. Following common practices described by Biernacki and Waldoff (1981), after seeking out an initial group of contacts known to the researchers, we recruited additional contributors who we thought, at least in qualitative terms, reflected the population of Native students and graduates from tribal colleges, community colleges, and research universities. We purposefully included both males and females from different tribes around the nation, who had received their degrees along with those who had left their programs without completing their degrees.

We therefore designed this effort as a contributory and exploratory effort involving current Native students and graduates. Our modified snowball method, or chain referral approach, included a group of "experts" in the subject identifying other individuals based on their knowledge and experience and expanding the sample from this network. This approach is well-suited for research of sensitive and private matters, where insider knowledge helps to identify participants and hidden populations (Bernard 2002, Wilmsen et al. 2015). The challenges many Native students face in pursuing higher education can be sensitive topics, especially among students who endured hardships that prevented them from completing a program.

In September 2015, the initial group of contributors used social media to recruit Native contributors to join a discussion about obstacles and challenges of pursuing natural resource education. We also held informal conversations to recruit contributors at the Intertribal Timber Symposium in April 2015 and the American Indian Science and Engineering Society (AISES) national conference in November 2015. Over a 7-month period from August 2015 to March 2016, we held face-to-face discussions, group e-mail exchanges, and conference calls through which contributors recounted their natural resource education experiences. Contributors developed an initial list of questions that covered topics of paths to education, curriculum, advising, campus culture, sources of support, and opportunities to conduct research in tribal contexts. Contributors understood that each participant would be a coauthor, but that their contributions would not be individually identified. Questions ranged from the mundane to the intimate such as, "How did you pay for college?", "Have you considered graduate school?", "Have you ever felt like 'the token Indian'?" and "Who supported you through college?" We encouraged contributors to go beyond the initial list of questions in their responses. We attempted to maintain autonomy and privacy among contributing authors by omitting identifying information such as names of people, places, and institutions. The two lead authors volunteered to lead the synthesis and writing team, although throughout the discussion period, we invited equal contributions and recognition. One student who joined our group was already doing doctoral research on this topic, and we encouraged that student and others to use our initial findings to guide development of more in-depth research.

Management and Policy Implications

The standard educational experience of a forester or natural resource manager takes place at nontribal institutions of higher learning. In the face of a vulnerable climate, it is necessary for these professionals to have an education rooted in interdisciplinary skills that balances the management of natural resource products and services with consideration of societal values. Tribal foresters and natural resource managers have an added expectation in that they must also be well versed in tribal regulations and protocols and consider indigenous cultural values surrounding those resources. This article explores the complex experience of being a Native American student studying natural resources. Native students have practical challenges like any other student, namely financial and relocation issues. Additional challenges regarding the learning environment include subject material, impostor syndrome, and scarcity of Native American mentors. It is important for educational and management programs that are steeped in western scientific approaches to not marginalize traditional ecological knowledge, but instead help students in reconciling and applying different sources of knowledge and values to address contemporary challenges. Institutions can address these issues through programs and training advisers to support students in upholding their family and community obligations, hiring more faculty of Native backgrounds and with tribal experience, and developing interdisciplinary curricula that prepare students for careers working in Native communities by encouraging investigation of tribal issues and context.

We wanted the process to be inclusive of many perspectives, although many of the contributors did not yet have much experience with research and publications beyond the requirements of their degree programs. We emphasized coauthorship to facilitate inclusion of all contributions, and we included quotes from contributors to illustrate key themes that emerged from our discussions. Because our group is small and self-selected, we recognize that our perspectives may not be representative of the vast diversity of Native Americans with experience in higher education natural resource programs.

Opportunities and Challenges in Higher Education

Paths to College

The circumstances leading up to an individual student's entry into postsecondary education varied. Some contributors within the group were nontraditional students who entered college without earning a high school diploma, pursued their college education later in life, or had dependent family members during their college career. Others entered college immediately after high school and went on to earn 4-year degrees. Such students, while labeled "traditional" in academia, represent an unfortunately rare path in many Native American communities, which have high rates of suicide between the ages of 15 and 24 (Le and Gobert 2015), high rates of teen pregnancy (McMahon et al. 2015), low high school graduation rates (Institute of Education Sciences 2016), and high rates of poverty (Macartney et al. 2013). Contributors attended both tribal and nontribal colleges and universities, but most identified themselves as first-generation college graduates. Some contributors, from both the "nontraditional" and "traditional" paths, continued to graduate school.

Personal Relationships to Land and Community as Motivation

A deep sense of environmental stewardship and obligation to give back to their communities was a driving force for contributors in pursuing higher education. Phil Rigdon, President of the Intertribal Timber Council and Director of the Department of Natural Resources with Yakama Nation, has described this belief: "Indians feel as though they are part of the land or that the land is what makes us who we are" (Rigdon 2014, p. 13). Our contributors identified such a perspective as a compelling reason to pursue a degree in natural resource fields, and nearly all contributors pointed to time spent outdoors as providing motivation. Some contributors emphasized the significance of deep, personal cultural and familial relationships to tribal lands and their resources:

> As a kid my grandma told me that we human-animals have the ability to care for all things. I realized that I could improve the lives of my people, including my daughter and other members of the future generation by restoring our rangelands.

Although such attitudes are not unique to Native students, the strong personal motivation and focus on natural resources distinguishes many of our respondents from other students who may choose from a wide variety of academic fields based on considerations that are less central to their personal identity. Some students found it jarring to try to reconcile their deeply personal motivations with a more impersonal approach to science and management often emphasized in the classroom or their research. In particular, some students had difficultly reconciling western science with traditional cultural and religious beliefs. One contributor was able to do so through personal research and reaching out to teachers and other Native Americans:

> (I had) difficulty tying together the contradicting science [I] learned with my cultural and religious beliefs. Teachers and Native outreach helped me open my mind. I did my own research and grew as an open-minded person.

Lack of Faculty as Mentors in Tribal Issues

Contributors noted a lack of Native Americans in faculty positions at nontribal colleges and universities and that the faculty frequently lacked awareness of tribal cultures, issues, and opportunities for support:

> I don't have a mentor in my field that's Native or a woman that I know of, (and) I have a lack of knowledge of graduate programs/funding opportunities for what I want to do.

Insufficient Instruction in Tribal Issues and TEK

Among contributors, a recurring disparity was insufficient reference to tribal natural resource management and policy in the classroom. In particular, contributors reported that most classroom instruction lacked consideration of how TEK could be used to guide management. Past and present land management techniques of Native peoples were often lacking or entirely absent in classes related to forestry, ecology, and conservation biology. Some contributors had to look to other departments (e.g., Native American or applied indigenous studies and anthropology) for opportunities to find meaningful and relevant education in such topics:

> Full courses dedicated to Native American natural resources were taught in the Native American Studies department….

However, those students often found that those alternative disciplines often lacked a focus on managing natural resources:

> Anthropology courses offer the only opportunity to study native peoples, but lack the natural resource element.

Campus Culture

The nontribal institutions that contributors attended all had a multicultural center and/or a Native American center. At nontribal universities and colleges, undergraduate students commonly interacted with only a few other Native Americans on campus. Some contributors were the only Native students in their department even at the undergraduate level. As contributors moved beyond an undergraduate degree into graduate programs, they commonly were the only students who self-identified as Native American. Very few contributors had interactions with Native American faculty in natural resource departments.

> The "native community" and the "natural resource" community on college campuses are completely separate.
> There are very few Native students within my department and much less, if any, in wildlife management and conservation.
> The fact that Native Americans have to remember their traditional and cultural values, beliefs, and practices while living off the reservation and attending college [can make it] difficult at times to try and be a part of the "norm" at a university or college where Native Americans are the minority.

On Being Asked or Obliged to Represent Native Communities. Contributors noticed that as Native students in natural resources they will probably act, or be recruited, as a Native American representative or liaison. Multiple contributors recall being looked to as sources of information about Native American communities within the classroom, as one contributor shared:

> In pretty much any humanities course in graduate school and in all courses in undergrad, and even when working with the community, I have to be the spokesperson

> for Native issues or the go-to person for someone to ask is this okay? But mostly though, sometimes I feel added as the diversity checkmark, but at the same time I feel that I have to be outspoken for these issues and causes.

These circumstances are not limited to the classroom but also occur within internships and other career exploration opportunities. This experience can exacerbate a feeling of being a "token Indian," which can result in an internal conflict where a student wants to advocate for and represent their individual tribes and the larger Native American community, while simultaneously honoring the cultural teaching that it is disrespectful to assume one person, unless designated by that community, can speak on the behalf of others. At times, contributors felt obligated to defend important principles or correct stereotypes or myths associated with Native Americans and their culture. These moments occurred among peers, during lectures, and in meetings with an adviser. Contributors acknowledge that offering perspective and understanding often brings about an enriching dialogue; however, it can also reinforce negative feelings of isolation and a feeling of being exploited:

> I would get called on in class or I would be asked to volunteer and give a lecture on TEK or indigenous perspectives regarding specific issue, which was all right but I felt obligated because nobody else was able to fill those gaps. These duties went above and beyond my current expectations as a student.
>
> I have also found myself both defending and questioning my personal identity, stemming from the realities of isolation that have enveloped me in an institution whose claims of diversity I have come to find lacking. Often, this has led me to fight with impostor syndrome.

Several contributors acknowledged that at times they had feelings of not belonging in their program. Impostor syndrome refers to feelings of being fake or not capable and attributing success to luck and discounting how effort has led to accomplishments (Brems et al. 1994, Elon and Brown 2011). One contributor cited low college diversity and having to defend one's personal identity as contributing to these feelings.

Social and Cultural Supports

There are many sources of guidance, encouragement, and recognition contributors relied on while earning their respective degrees. For our contributors, these sources include families, tribes, multicultural and diversity centers on college campuses, and Native groups and Native natural resource and science associations that provided contributors with a sense of belonging, community, and greater purpose. Specifically, these same sources at times helped contributors navigate, "walking between two worlds" (Larimore 1997, p. 18). It is through these specific channels that some contributors were introduced to each other and came together to reflect on our collective experiences.

Financial Supports

As college tuition and student debt increases, contributors have relied on a combination of tribal, university, scholarships, grants, and fellowships to fund educational pursuits. Examples of these funding sources include, but are not limited to, the Intertribal Timber Council (ITC), Sloan Indigenous Graduate Program (SIGP), the American Indian Science and Engineering Society (AISES), and the American Indian Graduate Center (AIGC). Many collaborators also recognized their families and tribes (i.e., tribal scholarships) as significant financial contributors to their higher education. These funding opportunities also lead to mentoring and professional development opportunities, such as those with ITC and AISES. For some contributors, this combination of social, mentorship and financial support provided stability while they were attending nontribal colleges and universities. However, for some nontraditional students with dependents (e.g., children), this network was not able to provide enough support to meet their needs.

Barriers to Pursuing Graduate Education

The majority of the contributors considered entering into a graduate program in natural resources at some point in their academic careers. Contributors expressed concerns relating to funding, academic preparedness, family responsibilities, applicability/usefulness beyond academia, and academic politics as possible deterrents:

> I've considered it, but I don't know that I would like to be in the academic politics.
>
> Yes, I am interested. However, I struggle with the idea of getting further into debt and sacrificing more family time. Will it actually provide me with more skills to find a job?
>
> …I have a hard time seeing how a PhD will strengthen my ability to be helpful to my tribal people more than a Master's degree would have.
>
> …I was planning on pursuing a Master's degree when I was asked to go to work instead.

In some cases, these same concerns prevented students from completing their graduate programs or influenced them to take extended amounts of time to complete degree requirements or to delay those plans. The challenge of relocating to an often distant university, rather than returning home to maintain ties to family and cultural practices, was a particularly important factor discouraging students from pursuing graduate degrees.

Motivations for Pursuing Graduate Education. Reasons for attending graduate school included gaining skills necessary for professional development, enhancing career prospects, and satisfying intellectual curiosity. In several cases, motivation for pursuing graduate degrees also reflected a desire to serve one's tribe and the larger Native community, as well as support tribal sovereignty over natural resources. Others felt they had a responsibility to fulfill the opportunities afforded by past hard work of others from their communities:

> I wanted to pursue graduate school because of the lack of Native American natural resource managers who have a combination of experience, training, and education.
>
> I also wanted to continue (graduate school) because there are so few on my reservation that have received a graduate level education in forestry or fire ecology.
>
> I believe tribes can take pride in making contributions to the scientific community and say, "Hey, we exist and we have the ability to produce high quality research, and we are open to participation and collaboration on wildlife conservation issues."
>
> I thought an advanced degree could help out my community the most, which created a sense of responsibility within myself. Generations before me worked hard to get us to the place we are today, [therefore it would be] disrespectful to our ancestors to not pursue it.

Benefits of Addressing Tribal Issues in Research. Some of the contributors have tried to tailor their graduate studies around Native American natural resource issues, including management of wildlife, fisheries, water resources, forests, and rangelands. Many contributors received encouragement, support, and input from the larger Native American community, tribal natural resource departments, and other tribal government branches and, in doing so, felt confident in their objectives and study design. Contributors who did work with tribes on graduate research highlighted the reward of providing meaningful biological and cultural information to tribes, while also demonstrating research opportuni-

ties for those interested in similar pursuits. One contributor noted:

> The research question was identified by the tribe itself so it's been a really positive experience.

Challenges in Addressing Native Issues in Research. Contributors found that choosing to address Native American natural resource issues in their research often involved additional personal and academic burdens. For example, such research often requires extra effort in building and maintaining face-to-face relationships:

> There are *n*-dimensional complexities of doing research with a tribal community. There's a lot of responsibility involved and time spent building relationships that most people don't understand. They don't understand the value of face-to-face time and the commitment and dedication it takes.

Finding an experienced adviser in natural resources, whether Native or non-Native, who was willing to work with tribes added another layer of difficulty, especially as contributors considered graduate programs. Contributors debated the feasibility of working with one's own tribe in pursuit of graduate education, and many encountered difficulty selecting a project that would allow them to study tribal natural resource issues, as one noted:

> The challenge is finding people who can relate to the challenges of collaborating with a tribe on a wildlife-related study.

While some contributors had the privilege to collaborate with tribes in their graduate research, it was an uncommon occurrence. In some cases, tribes have regulations that hamper natural resource research, particularly by nontribal researchers. In other cases, complicated social dynamics can make it difficult for tribal members to engage their own communities as a researcher (Long et al. 2015). Beyond the challenge in finding an adviser and funding support for their research, contributors encountered tensions when trying to meet expectations of the academic institutions with expressing their cultural identity and representing the cultural significance of their work. Specifically, one contributor described the experience of doing research with their tribe as impacting their connection to the community:

> …I feel like a distant academic that has gone in and extracted data and is now going to use it for their own benefit.

Establishing such a detached relationship can be jarring to students attracted to the field because they wanted to uphold obligations to their land and community.

Potential Remedies

Student Supports

Past research at nontribal universities and colleges recommended providing students who are parents with family services and financial assistance unique to their needs (Guillory 2009). At tribal colleges and universities, research found that providing overarching financial, mentorship, and academic preparation supports while integrating the family, community, and work experience into academic experience is a successful approach to meet the needs of the Native American natural resource student (Sloan and Welton 1997, Gervais et al. 2014, Hoagland and Gervais 2014).

Faculty Recruitment and Training

Recruitment of Native faculty in natural resource positions, especially at nontribal universities, may increase the recruitment of both Native undergraduate and graduate students (Tierney 1991, Austin 2005, Tippeconnic Fox 2005, Sharik et al. 2015, Sanyal et al. 2016). In the meantime, significant progress can be made in promoting better awareness of tribal issues and cultural backgrounds of Native students through training of existing faculty (Hornett 1989), particularly for those who are advising Native students. Such training can also extend to agency professionals who recruit Native students to work on tribal related projects or to meet an agency's diversity goals.

Integrating Tribal Issues, Perspectives, and Knowledge into Programs

Management of natural resources has broadened beyond past emphases on timber and forage to accommodate broad perspectives (Sharik et al. 2015) and evolving sociological and ecological concerns including traditional values held by tribal communities (Sample et al. 2015, Bussey et al. 2016). As students step into the roles of natural resource managers either on nontribal or tribal lands, they need to have an education rooted in interdisciplinary practices that include human dimensions such as community and cultural values (Berardi et al. 2003, IFMAT-III 2013, Bullard et al. 2014). In addition, all parties involved in natural resource research on tribal lands must cultivate awareness of rules, regulations, and protocols that often differ from those on nontribal lands. Among contributors, a recurring disparity was the insufficient reference to Native natural resource management and policy in the classroom. Designing curricula to incorporate indigenous perspectives, science, and knowledge can create a more inclusive educational experience for Native students while preparing them for natural resource careers (Austin 2005, Tippeconnic Fox 2015).

In particular, natural resource curriculums can incorporate teachings of indigenous models of sustainability using examples such as the Menominee Nation Sustainable Development Institutes model, which is a theoretical framework for holistically considering complex issues surrounding sustainable planning (Dockry et al. 2015). Natural resource programs can integrate consideration of TEK to ensure inclusiveness of Native American values and cultivate skills in navigating cross-cultural contexts (Kimmerer 2002, Bengston 2004, Lundberg 2007, Mason et al. 2012, Van Lopik 2012). Toward that end, many tribal colleges and universities and some nontribal ones have created cross-disciplinary courses, minors, and degrees (Berardi et al. 2003, IFMAT-III 2013, Gervais et al. 2014, Verma et al. 2016). Rather than relying on individual Native students to speak on behalf of tribal communities, educators can rely on more systemic approaches rooted in community-centric perspectives including integration of TEK and participatory research (Long et al. 2015). Considering perspectives of people whose ancestors lived on these lands for millennia can facilitate better understanding of ecosystem dynamics (Bussey et al. 2016). Furthermore, these approaches can increase opportunities for students to conduct meaningful research to benefit tribal communities, which would make postsecondary education more inviting to Native students.

Conclusion

Education of Native Americans has been an explicit part of the mission of many of the oldest colleges in the United States since their founding, yet such students have remained a tiny, often "invisible," minority in higher education (Austin 2005). Many Native students contributing to this article sometimes questioned whether they belonged in their programs after overcoming long odds to be accepted. Nontribal colleges and universities can be more welcoming to Native students through specific efforts de-

signed to enhance recruitment, inclusion, retention, and attention to tribal issues (Tierney 1991, Tippeconnic Fox 2005, Sharik et al. 2015, Sanyal et al. 2016). The challenges contributors reported are not exclusive to our fields of study nor necessarily unique to Native students, but they have persisted for generations (Tippeconnic Fox 2005). Overcoming these obstacles by promoting a more inclusive learning environment can not only benefit Native students, but also enhance opportunities for all in addressing the needs of tribal communities and advancing society's collective knowledge. We pursued this project as a means of building a joint community of Native American scholars, achieving a collective understanding of the challenges that we faced, and identifying actions that might help others in their pursuit of a higher education.

Literature Cited

Austin, R.D. 2005. Perspectives of American Indian nation parents and leaders. *New Direct. Stud. Serv.* 109:41–48.

Balcarczyk, K.L., D. Smaldone, S.W. Selin, C.D. Pierskalla, and K. Maumbe. 2015. Barriers and supports to entering a natural resource career: Perspectives of culturally diverse recent hires. *J. For.* 113(2):231–239.

Bengston, D.N. 2004. Listening to neglected voices: American Indian perspectives on natural resource management. *J. For.* 102(1):48–52.

Berardi, G., D. Burns, P. Duran, R. Gonzalez-Plaza, S. Kinley, L. Robbins, T. Williams, and W. Woods. 2003. The tribal environment and natural resources management approach to Indian education and student assessment. *J. Am. Indian Educ.* 42(1):58–74.

Bernard, H.R. 2002. *Research methods in anthropology: Qualitative and quantitative methods*, 4th ed. Rowman Altamira, Lanham, MD. 803 p.

Biernacki, P., and D. Waldorf. 1981. Snowball sampling: Problems and techniques of chain referral sampling. *Sociol. Methods Res.* 10(2):141–163.

Brems, C., M.R. Baldwin, L. Davis, and L. Namyniuk. 1994. The imposter syndrome as related to teaching evaluations and advising relationships of university faculty members. *J. High. Educ.* 65(2):183–193.

Bullard, S.H., S.P. Williams, T. Coble, D.W. Coble, R. Darville, and L. Rogers. 2014. Producing "society-ready" foresters: A research-based process to revise the Bachelor of Science in forestry curriculum at Stephen F. Austin State University. *J. For.* 112(4):354–360.

Bussey, J., M.A. Davenport, M.R. Emery, and C. Carroll. 2016. "A lot of it comes from the heart": The nature and integration of ecological knowledge in tribal and nontribal forest management. *J. For.* 114(2):97–107.

Copeland, C.W. 2011. *The federal workforce: Characteristics and trends.* Congressional Res. Serv. Tech. Rep. RL34685. Congressional Research Service, Washington, DC. 28 p.

Dockry, M.J., H. Katherine, W.V. Lopik, and C.M. Caldwell. 2015. Sustainable development education, practice, and research: An indigenous model of sustainable development at the College of Menominee Nation, Keshena, WI, USA. *Sustain. Sci.* 11(1):127–138.

Elon, D.T., II, and M. Brown, II. 2011. The mentoring and induction of educators of color: Addressing the impostor syndrome in academe. *J. School Leadership* 21(4):607–634.

Gervais, B., S. Hoagland, and A. Leighton. 2014. Tribal colleges and universities: A critical link in Indian education and workforce development. *Evergreen Mag.* Spring, p. 40–41.

Guillory, R.M. 2009. American Indian/Alaska Native college student retention strategies. *J. Dev. Educ.* 33(2):14.

Hoagland, S., and B. Gervais. 2014. Investing in the next generation of Indian foresters. *Evergreen Mag.* Spring, p. 38–39.

Hornett, D. 1989. The role of faculty in cultural awareness and retention of American Indian college students. *J. Am. Indian Educ.* 29(1):12–18.

Indian Forest Management Assessment Team-III. 2013. *An assessment of Indian forest and forest management in the United States.* Available online at www.itcnet.org/issues_projects/issues_2/forest_management/assessment.html; last accessed Mar. 4, 2016.

Institute of Education Sciences. 2016. Public high school graduation rates. National Center for Education Statistics, Washington, DC. Available online at http://nces.ed.gov/programs/coe/pdf/coe_coi.pdf; last accessed Feb. 26, 2016.

Kimmerer, R.W. 2002. Weaving traditional ecological knowledge into biological education: A call to action. *BioScience* 52(5):432–438.

Kuhns, M.R., H.A. Bragg, and D.J. Blahna. 2002. Involvement of women and minorities in the urban forestry profession. *J. Arboricult.* 28(1):27–34.

Larimore, C. 1997. *First person, first peoples: Native American college graduates tell their life stories.* Cornell University Press, Ithaca, NY. 18 p.

Le, T.N., and J.M. Gobert. 2015. Translating and implementing a mindfulness-based youth suicide prevention intervention in a Native American community. *J. Child Fam. Stud.* 24(1):12–23.

Long, J.W., H.L. Ballard, L.A. Fisher, and J.M. Belsky. 2015. Questions that won't go away in participatory research. *Soc. Nat. Res.* 29(2):250–263.

Lundberg, C.A. 2007. Student involvement and institutional commitment to diversity as predictors of Native American student learning. *J. Coll. Stud. Dev.* 48(4):405–416.

Macartney, S., A. Bishaw, and K. Fontenot. 2013. Poverty rates for selected detailed race and Hispanic groups by state and place: 2007–2011. *Am. Community Surv. Briefs.* Available online at http://www.census.gov/prod/2013pubs/acsbr11-17.pdf; last accessed Jan. 1, 2017.

Mason, L., G. White, G. Morishima, E. Alvarado, L. Andrew, F. Clark, M. Durglo, et al. 2012. Listening and learning from traditional knowledge and western science: A dialogue on contemporary challenges of forest health and wildfire. *J. For.* 110(4):187–193.

McMahon, T.R., J.D. Hanson, E.R. Griese, and D.B. Kenyon. 2015. Teen pregnancy prevention program recommendations from urban and reservation Northern Plains American Indian community members. *Am. J. Sex. Educ.* 10(3):218–241.

Minority Outreach Subcommittee. 1998. *Executive summary on a nationwide assessment of the status of State Fish and Wildlife Agencies' efforts to research minorities in their education and outreach programs.* US Fish and Wildlife Service. Available online at www.funoutdoors.com/files/Minority%20Outreach%20Subcommittee%20Report.pdf; last accessed Mar. 4, 2016.

National Center for Education Statistics. 2015. Public high school graduation rates. Chapter 3 in *Elementary and secondary education*. Available online at nces.ed.gov/programs/coe/pdf/coe_coi.pdf; last accessed Feb. 26, 2016.

National Research Council. 2002. *National capacity in forestry research*. National Academies Press, Washington DC. Available online at www.nap.edu/catalog/10384; last accessed Feb. 26, 2016.

Outley, C. 2008. Perceptions of agriculture and natural resource careers among minority students in a national organization. P. 139–153 in *Recreation visitor research: Studies of diversity*, Chavez, D.J., P.L. Winter, and J.D. Absher (eds.). USDA For. Serv., Gen. Tech. Rep. PSW-GTR-210, Pacific Southwest Research Station, Albany, CA.

Renewable Natural Resources Foundation. 2003. Federal natural resources agencies confront an aging workforce and challenges to their future roles. *Renew. Res. J.* 21(4):1–32.

Rigdon, R. 2014. The sacred Indian commitment to mother earth. *Evergreen Mag.* Spring, p. 14–15.

Sample, V.A., R.P. Bixler, M.H. McDonough, S.H. Bullard, and M.M. Snieckus. 2015. The promise and performance of forestry education in the United States: Results of a survey of forestry employers, graduates, and educators. *J. For.* 113(6):528–537.

Sanyal, N., K. Ward, and L.M. Becerra. 2016. Culturally competent mentoring: The chair's role toward a culturally responsive culture in support of American Indian and Native Alaskan students. *Dept. Chair.* 26(3):24–26.

Sharik, T., R. Lilieholm, W. Lindquist, and W. Richardson. 2015. Undergraduate enrollment in natural resource programs in the United States: Trends, drivers, and implications for the future of natural resource professions. *J. For.* 113(6):538–551.

SCHELHAS, J. 2002. Race, ethnicity, and natural resources in the United States: A review. *Nat. Res. J.* 42:723–763.

SLOAN, G.L., AND B. WELTON. 1997. Haskell Indian Nations University: Holistic education in the natural resources. *J. For.* 95(11): 37–40.

TIPPECONNIC FOX, M.J. 2005. Voices from within: Native American faculty and staff on campus. *New Direct. Stud. Serv.* 109:49–59.

TIERNEY, W.G. 1991. Native voices in academe: Strategies for empowerment. *Change* 23(2):36–44.

VAN LOPIK, W. 2012. Traditional ecological knowledge in the tribal college classroom. *J. Environ. Stud. Sci.* 2:341–345.

VERMA, P., K. VAUGHAN, K. MARTIN, E. PULITANO, J. GARRETT, AND D.D. PIIRTO. 2016. Integrating indigenous knowledge and Western science into forestry, natural resources, and environmental programs. *J. For.* 114(6):648–655.

WILMSEN, C., D. BUSH, AND D. BARTON-ANTONIO. 2015. Working in the shadows: Safety and health in forestry services in Southern Oregon. *J. For.* 113(3):315–324.

WRIGHT, B. 1991. *American Indian and Alaska Native higher education: Toward a new century of academic achievement and cultural integrity*. Available online at files.eric.ed.gov/fulltext/ED343771.pdf; last accessed Feb. 16, 2016.