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# Mentoring and Networking as the “Silver Lining” of Being Women Leaders: An Exploratory Study in Top World Forestry Schools

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**Abstract:** Although there are multiple efforts to increase gender equality in the forest sector, women are still underrepresented in the forest sector workforce, even more so in top leadership of forest sector companies. This underrepresentation is also found in higher education, and many forestry undergraduate programs still struggle to matriculate and graduate women. A way to attract and retain women is through mentoring and networking. Utilizing interviews, we found that it is quite challenging to find a woman mentor/role model in the forest sector because women are still underrepresented. To find a good mentor, young women are encouraged to be proactive in utilizing different channels, both formal and informal. When it comes to gender, our respondents emphasize the different benefits of having a woman vs. man as a mentor. In a men-dominated field such as the forest sector, women mentors enhance social belonging, confidence, and motivation in relatively alienating environments due to “been there-done that” experiences. Same-gender role models might also protect women from negative stereotypes and show how women can advance despite existing gendered barriers.

**Keywords:** gender diversity; gender equality; leadership diversity; diversity in higher education; women leaders; college leadership; college women leaders



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## 1. Introduction

The forest sector, covering companies involved in the production and utilization of wood and wood fiber as a raw material, holds significant economic importance in North America and Nordic nations like Finland and Sweden. As an illustration, the U.S. forest industry employs around 925,000 persons with a manufacturing output exceeding \$300 billion [1]. However, the U.S. forest sector has not attracted an adequate number of young individuals who are interested in pursuing a career in the industry, resulting in a workforce that is rapidly aging [2]. The U.S. workforce analysis also shows low diversity with respect to gender, race, and ethnicity [2].

With respect to gender diversity, the forest sector has been long perceived as a men-dominated field. The industry, especially in traditional forestry such as logging, has still been associated with a macho-masculinity workplace culture [3]. The masculine image of heavy manual forestry work and physical strength has led to a belief that men are more informed about forests, making it difficult for women to relate with the sector [4].

The issue of underrepresentation is particularly evident in higher education, where numerous forestry undergraduate programs in the U.S. face challenges in enrolling and graduating women [5]. A web content analysis of forestry school landing webpages in the United States finds that women are rarely portrayed [6]. Women are often depicted in a passive role, such as posing on campus, rather than in an active role, like measuring a

tree. Potential students are also less likely to encounter a diverse faculty presence on the internet. This may contribute to the perception that women are less fit for careers in the forest sector [6]. The concept of perceived fit refers to a direct evaluation of compatibility, specifically determining how well an individual integrates into an organization [7]. This concept is founded on the premise that individuals' cognitive evaluations and responses to particular situations are determined by their perceptions of reality.

Looking at history of American forestry schools, the original curriculum prioritized forest management for production over conservation, focusing on exploitative forestry practices with low regeneration priorities [8]. However, due to societal needs, globalization, and digitalization, forestry programs in higher education are undergoing major evolution. The education system is anticipated to incorporate ecological, economic, and social aspects of forestry more comprehensively [9]. Forest instructors have emphasized the significance of personal skills required to properly interact with individuals [10]. They argue that professional foresters should possess problem-solving skills and leadership qualities, suggesting that forest-related education should foster continuous learning [11].

The discipline has developed from traditional timber production to incorporate social science and related natural resource programs (e.g., fisheries and wildlife), and is associated with an increase of women student enrollment [5]. More job roles that do not need physical strength have opened in the forest sector. These jobs include Geographical Information System (GIS) analyst and outreach and communications specialist. In addition, due to technological advancement, manual work, such as logging, can be performed by operating machines.

The gender balance in the forest sector may be shifting because of the increased focus on environmental issues or the implementation of multipurpose forest management [12]. Nevertheless, while it is found that more women are studying in U.S. forest related programs in higher education compared to the past, this increase may not be reflected in the actual workforce [2,13]. Women are found to still have restricted opportunities and constant challenges [14]. This is especially true when it comes to women holding top leadership positions in the North American forest sector companies [15,16].

Realizing the gaps in the U.S. forest workforce, the Forest and Wood Products Inclusion Council is formed in 2022 to address the issues of diversity, equity, and inclusion in the sector [17]. The Council includes representatives from public, private, not-for-profit, academic, and Indigenous organizations in the forest sector [17]. Led by the U.S. Endowment for Forestry and Communities, the group of leaders will work collaboratively to formulate a National Action Plan with the objective of establishing a more diverse and inclusive workplace culture in the U.S. forest and wood products sector [17].

In 2018, the Canadian government announced a National Action Plan aimed at fostering gender equity within the forest sector [18]. The government asserts that increasing the participation of young women in the forest sector will enhance Canada's economic competitiveness in the global market, as it recognizes the value of gender diversity in this regard [18]. An investment of nearly half a million Canadian dollars was made in a three-year project with the objective of eliminating obstacles that hinder or discourage women from pursuing professions in the forest industry [19]. The specific challenges that need to be addressed are disparities in wages, limited availability of childcare services, unequal opportunities for training and employment in certain fields, limited chances for advancement into management positions, and general misconceptions about the forest industry [19]. Gender disparity in the forest workforce was also a significant concern in Sweden as early as thirty years ago [20]. In 2011, the Swedish Government initiated a gender equality policy in the forest sector, titled "Competitiveness Requires Gender Equality" [20].

Increasing representation of women in the workforce is seen as an effective strategy to attract more young women to the forest industry [16]. However, this approach faces a "circular" dilemma, where the solution is hindered by an inherent situation inside the problem itself [13]. Promoting and enabling women to remain in the industry could create

a ripple effect, enticing more women to join. However, having more women in the sector is seen as a “circular problem” since in order to attract women, there must already be a significant number of women present in that field. Hence, efforts to increase the number of women in the sector should be accompanied with measures to retain women who are already studying and/or working in the field. A way to support the retention is through mentoring and networking [12,21].

This study aims to investigate how mentoring and networking influence women leaders in universities that provide forestry programs (here we refer to as “forestry schools”). We chose to focus on higher education institutions due to their role providing an educated workforce and future leaders/managers. We believe that with a better understanding of how to support women in the forest sector, this study can contribute to the implementation of gender equality initiatives. Because certain gender-related mechanisms can transcend any sector and reflect societal issues, the results of this study can also be extended beyond the forest sector. While the societal issues might be particularly visible in the forestry disciplines, we believe that the results can be applied not only to men dominated academic disciplines that are usually the most mathematically intensive, such as engineering, computer science, and physical sciences; but also to women dominated academic fields such as psychology, life science, and social science [22].

In this article, we use “man/men” and “woman/women” instead of “male” and “female” (except the direct quotes from respondents) for supporting gender-inclusive language with a purpose to not discriminate against a particular sex, social gender or gender identity, and to avoid perpetuating gender stereotypes. In the remainder of the paper, we first provide a theoretical background, followed by a description of the methods employed in the study, results and a discussion and conclusion. We conclude with study limitations and potential paths forward.

## 2. Theoretical Background

### 2.1. Influence

Interest in influence arises from its recognition as the primary intervening factor in decision-making process, commonly found in politics [23]. Influence is analogous to force in the study of motion, providing a fundamental explanation for observed occurrences in decision making. Generally, any statement of influence can be equally expressed in terms of causality [23]. However, not all statements of causality can be treated as statements of influence. Since the theory defines influence as that which induces a change, the problem of specifying that state in meaningful terms becomes of the utmost importance.

In this study, we are interested to investigate how mentoring and networking influence how the social bond is formed and developed over time. Our objective is inspired by developmental network research, in which literature could pay more attention to the broader context of mentoring and networking, for example [24]. We focus on the influences of particular individual attributes and characteristics such as the specific constellation of gender: women as leaders in a men-dominated sector.

### 2.2. Mentoring

As a form of developmental relationship, mentoring is often linked to favorable work-related consequences, including psychological and material advantages [25]. Protégés, in comparison to individuals who do not have mentors, exhibit higher levels of career satisfaction, possess stronger beliefs in their career advancement, and have greater commitment to their careers [25,26]. Within this relationship, a mentor has been recognized as fulfilling three distinct roles [27,28]. The initial role entails providing support that is directly relevant to one’s profession or career, such as sponsorship, opportunities for exposure, increased visibility, coaching, and protection. Career mentoring offers protégés the chance to enhance their job-related abilities by doing demanding tasks assigned by their mentors. The second form of support is psychological, which pertains to the interpersonal parts of a relationship. This includes elements such as acceptance, confirmation, coaching, counseling, and

friendship. Mentors provide psychosocial mentoring to assist their protégés in managing job-related anxiety. The third purpose entails exemplifying suitable attitudes, values, and behaviors as a form of role modeling.

Mentoring is considered a crucial tool for dismantling the enduring glass ceiling phenomenon, as it facilitates the advancement of more women into high-level leadership and management roles [29]. This is achieved by effectively overcoming career barriers, comprehending organizational politics, and gaining access to valuable information and resources [30,31]. Women have faced difficulties in obtaining informal mentoring, which is crucial for their advancement [31]). This is likely because of homosocial practices, which involve a preference for same-gender relationships [32]. Due to this trend, informal mentoring may be less available for women. Women may have limited access to venues commonly visited by possible men mentors, such as golf courses, fishing spots, hunting grounds, and saunas [16,31].

Acknowledging the limitations, many organizations have initiated structured mentoring initiatives to facilitate the professional growth of their women members and to address the obstacles imposed by gender biases [33]. Nevertheless, a significant number of these initiatives is criticized for providing a narrow approach to “fix” women rather than to challenge the underlying gendered structures that persistently marginalize and exclude women [34,35].

### 2.3. Networking

In addition to mentoring, networking can enhance gender equality initiatives [12,36]. Networking is a crucial element for personal career advancement and achievement [37]. It offers benefits such as sharing information, gaining implicit knowledge, forming partnerships, fostering collaboration, increasing visibility, and receiving support [37]. Individuals who demonstrate exceptional networking skills typically achieve high levels of success within their respective enterprises [37]. Nevertheless, the notion of organizational networks is frequently linked to the exclusionary practices of old boys’ clubs or old boy networks [38], which effectively marginalize women and restrict their opportunities [39]. Consequently, it is necessary to establish a network that is inspired by women, in order to specifically address the experiences of women, with the goal of enhancing their sense of belonging and involvement [12,21].

A case study of the University of Maine’s Supporting Women in Forestry Today (SWIFT) gives an example of an adaptive and evidence-based approach to building and retaining gender diversity within a forestry program in higher education [21]. The group is established based on the educators’ concern of decreases in women’s undergraduate enrollment and difficulties in retaining women from education to employment in forestry. SWIFT aims to empower and promote women in forestry by implementing strategies to address and overcome obstacles such as gender discrimination and lack of representation in a men-dominated field. It also seeks to create a more inclusive community through enhanced networking opportunities for women and educational initiatives for allies. Beyond this example, the literature provides little additional insight regarding these issues.

## 3. Methods

Our respondents are college leaders in the top four global forestry schools based on the Center for World University Rankings: The Swedish University for Agricultural Sciences, Oregon State University, University of British Columbia, and University of Helsinki [40]. We divide college leaders into two groups: (1) administrative leaders such as the dean, vice dean, and department head, and (2) student leaders of student led organizations such as president, vice president, secretary, and treasurer. Respondents were identified from public domain college websites and social media platforms (e.g., Facebook Pages). We contacted potential respondents through email, in which they were asked to participate if they identified as a woman and a leader and if they were able to be interviewed in English. Those who volunteered to participate were sent a document explaining informed consent.

Semi-structured interviews were utilized to gain a comprehensive understanding of complex experiences, enriched by contextualization [41]. Before finalizing the interview protocol, we conducted two pretests, one with a group of forest sector-related social science researchers, and one with four women who are ex-student organization leaders in the targeted universities.

All potential respondents whom we contacted agreed to be interviewed. In total, we obtained 52 respondents (11 administrative leaders and 41 student leaders). Interviews were conducted in English and at the end of the interview, participants were assigned a random number. For privacy purposes, we do not differentiate regions (e.g., North America vs. Nordic), but only differentiate the hierarchy: administrative leaders (1–11 A) and student leaders (1–41 S).

All interviews were then verbatim transcribed and, utilizing NVivo 12 software, were thematically analyzed. Coded analysis was conducted in two cycles [42]. The first coding cycle focused on two themes (“mentorship” and “networks”) based on our interview protocol. In this stage, we found “role model” as a third theme which was not explicitly addressed by the protocol questions but emerged organically during interviews. Therefore, we conducted the second coding cycle for analyzing interview results under three themes: Mentorship, Role Model, and Networks.

#### 4. Results

Thirty-three leaders had a mentor, ten gave an ambiguous answer indicating that they do have a mentor, but they may not readily identify them as such, four gave an ambiguous answer suggesting that they are not sure, and only five lacked mentors. The leaders who did not have mentors explained some type of guidance relationship that they have experienced in the past and/or in a very specific context. Examples included a mentor program that one participated in while volunteering, and another explained her relationship with an advisor which she described as similar to mentorship, but only specifically in a task she had to complete to earn her degree.

##### 4.1. Mentorship

In this study, student leaders defined a mentor as a person whom they can lean on and is actively involved with what they are doing on a regular basis. An administrator leader considered mentorship as something that is personal and individual, as she needed to find someone whom she felt confident to talk to. Another administrator leader defined a mentor as someone who helped her to do and/or understand something better. Therefore, in her opinion, mentors are not necessarily associated with someone who is older or in a better position than her. A respondent described the difficulty of finding one person who has sufficient qualities to be a “fully integrated mentor” (1 A) as every individual has their own strengths and weaknesses.

Although there are similar opinions about mentorship, some respondents associated mentors with role models. An administrator leader mentioned “coach” (6 A) as a term to replace mentor, referring to senior women who help her in a variety of situations. Another administrator leader in the same university explained that her institution provided access to professional coaches, which was helpful for improving her time management and decision-making skills.

Most student leaders who claimed to have a mentor indicated that there is more than one person with which they have a mentor relationship. Student respondents identified family members such as parents (particularly mother), friends, or colleagues as mentors along with academic advisors, thesis advisors, and professors. A North American undergraduate leader, who was a student worker, considered her boss as her mentor. She also implicitly looked up to her mentor as her role model. A few other respondents, both student and administrator leaders, considered their colleagues as their peer mentors. Interestingly, an administrator leader referred to her book group members as her mentors, benefitting her on diverse perspectives.

To the participants in this study, mentoring included many types of relationships, falling into two general categories: formal and informal. Formal mentors are described using the terms professional, academic, and industry. Some formal mentorships were endorsed by respondents' affiliated organizations such as their university or a professional society. Informal mentors were described as personal mentors, such as friends and family.

When it comes to criteria to be a mentor, student leaders wished for a woman who was a hard worker, doing extraordinary things, or "a powerhouse" (27 S). Another student respondent testifies that having women mentors would be really encouraging and would help her stay in a forestry career. Similarly, since there were no women mentors available in her initial institution, an administrator leader felt isolated and decided to leave for another university.

Reasons for looking to one gender rather than the other for mentorship involved contextual differences in lived experiences for some participants. An example was a student leader who was specifically looking for woman professors as her advisors/academic mentors since she thinks that she "would work better with women" (39 S) than men. An administrator leader stated that she trusts her women mentors more than her men mentors because she can ask questions "from the standpoint of [expecting] more holistic answers" (2 A). Another administrator leader said that she had a man professional mentor when she was a PhD student, but it did not work well because "he could not understand what [she] was doing and [vice versa]" (4 A). Women mentors "probably understand better because they have experienced it themselves" (6 A), and are, therefore, able to discuss career issues as well as family issues such as marriage and having kids. A student leader who happens to have both men and women mentors, related differences in relationships that they have.

"I would say with the female mentor, we talk much more about kind of things she has encountered as a female in a leadership role within the forest products industry, what she did to mitigate that, and what she did to be perceived as a leader. While [with] males, I gain a lot of differing skills. I would say that both are actually really useful because we're trying to gap this difference between males and females in leadership. I would say it really is important to have a female mentor in leadership, but I would say it's also really important to get those differing views and differing opinions of a male." (30 S).

Student leaders expressed concern regarding a lack of women professors in colleges/faculties of forestry making it difficult for them to find a woman academic mentor. The difficulties also happened when these women student leaders tried to find women mentors in the workplace. Two administrator leaders also stressed these difficulties when they were students decades ago. Therefore, one of those two leaders choose to be a mentor and act as a role model to young women.

#### 4.2. Role Models

A particular note is that a few student leaders and an administrator leader used "mentor" and "role model" synonymously. The criteria to be a role model are similar as a mentor as the persons are usually older (senior), have a good career, or hold a high position in leadership.

"I have a mentor who was a graduate of the program like six or seven years ago, and she works [in] the Department now. And she's just kind of a kick ass scientist. She has her PhD. She's also a registered professional engineer. So, she's accomplished a lot at a pretty young age. But she's also a great listener, really eager to help as many people as she can. And she also has two kids under the age of four. So, I think she's definitely a role model for me. And she's definitely helped me out with my research showing that in that sense, she's a mentor." (24 S).

Having a role model helps a student leader to be more confident, especially as a young woman in a men-dominated field. Another respondent said that having a role model gave her an idea of a career path in forestry that she wants to take by seeing representation of a woman like her. It also helped her to fight imposter syndrome and feel like she can meet

the expectations that people have for professionals in this field. It also increased comfort with balancing personal and professional life.

A student leader considered that it would be good to have women role models already before the university. This is particularly important since there is a lack of women role models in the forest sector, due to its perception as “a male profession” (37 S). Therefore, a respondent mentioned that she intentionally sought women role models and kept them in her circle.

“It’s tricky because there are not that many [female professors]. There are more male professors, so you have to be very picky. But if you pay attention, you can find them. They will not come to you. If you do that, then you will only have male role models. So, you have to go seek out for other female role models, not only your niche, you have to go out like you have to, you know, with the internet or whatever. You have to do the homework.” (9 S).

#### 4.3. Networks

A student leader mentioned that women’s networks are beneficial since there is a strong culture of old boy network in forestry. For this old boy network, having women involved “sort of upsets the apple cart” (6 S). Another student respondent mentioned that it is important to have women networks in forestry as she has an impression that a lot of women in forestry actually feel that they do not have enough knowledge compared to their men colleagues. A network is considered a support system for some student leaders. Similarly, a senior administrator respondent considered her network as a support to move forward as there are times when she has imposter syndrome. Having a network also helps an administrator leader to go through hard times when she received criticism.

Being in a network gives a student respondent a sense of belonging due to similar experiences among network members including “[a] potential of being discriminated” (21 S). A student leader mentions it is very important to have an all women network in her career and study and therefore, intentionally formed an all women graduate committee.

“I did not want a man on my committee because I just wanted to be empowered by badass women researchers.” (41 S).

An administrator leader who did not have a forestry background mentions her women in forestry network as a form of informal mentorship. In the network, she feels a “kinship” (1 A) with its members based on similar world perspectives. An international student appreciated her network as “an emotional net” (9 S) for helping her to successfully adapt to a new culture and navigate her academic life.

A Nordic student leader mentioned a women’s network initiated as a Facebook Group. It’s a convenient way to reach people when she has a question. The network was inspired by the “Me Too” campaign and formed for student and professional women who are working or will work within the forest industry.

A postgraduate student leader in a Nordic country mentioned that since there are not many women in her department, they maintained a close relationship. Another respondent felt more comfortable with a small group as her inner circle. She thinks that in a large group, there will be someone who takes over more conversation.

“Because there’s only like four of us in the [whole] department who are girls, we’ve become really close. That has been a really big benefit, kind of a silver lining of having not a lot of girls, just because you are kind of forced to become friends.” (32 S).

Some leaders found that it is difficult to separate between personal and professional networks. Interestingly, another student leader mentioned that for her, a women’s network is only beneficial for her personal development, not professional, because forestry is not women driven. This statement was in contrast with an administrator leader’s statement where she only has a network in her professional life as she felt that she does not have much other life outside academia.

## 5. Discussion and Conclusions

Although most of our respondents agreed that mentorship and networking are important to address gender inequality and influence their developmental relationship, it was quite challenging to find a woman mentor/role model in the forest sector because women are underrepresented. Most respondents were involved in informal mentoring, not in structured mentoring program types. To find a good mentor, young women are encouraged to be proactive in utilizing different channels, both formal and informal. For example, a student leader found a mentor/role model through a conference where she approached one of the speakers whom she admired and followed up with more personal communication.

With respondents' different leadership experiences and generational differences, it is natural to have a variety of perspectives on the effects of mentoring and networking. Student leaders generally stressed the need for having a mentor, both in personal and professional life. Administrator leaders, due to their multiple decades of life experience, felt that they have passed the stage of looking for a mentor and even position themselves as a mentor. However, half of our administrator leaders emphasized the importance of having a specific mentor in their leadership journey, particularly for providing career development, advice, guidance, and support. A commonality between the groups is relying on mentoring/networking to fight their imposter syndrome. The term is introduced in a psychological study of high achieving women [43]. This study found that, despite their outstanding accomplishments, the respondents persistently doubt their skills, resulting in a fear that they can be exposed as fraud.

When it comes to gender, our respondents emphasized the benefits of having women as their mentors. Referring to the theoretical background, in a men-dominated field such as the forest sector, women mentors provide psychosocial mentoring, enhancing social belonging, confidence, and motivation in relatively alienating environments due to "been there-done that" experiences [44,45]. Same-gender role models might also protect women from negative stereotypes and show how women can advance despite existing gendered barriers, which in turn, enhance women's intentions to retain and pursue careers in the forest sector. For example, having a woman mentor is particularly important for young women who plan to balance their career with motherhood/starting a family, e.g., [46].

In terms of networking, previous studies show that most women's groups in forestry come from a grass roots movement, based on a concern over being underrepresented in the sector [12,21,36]. The goal of networking is varied from providing a safe space where women can feel comfortable asking basic questions without worrying about being perceived as "dumb" and sharing gender related experiences to strengthening the visibility of women in a men-dominated sector.

In a wider context than forestry, women's networks are said counter homosociality and tokenism. The term "homosocial" refers to the preference for forming relationships with individuals of the same sex [32]. This term should be differentiated from "homosexual", which denotes sexual attraction between individuals of the same sex. For example, homosociality means that men prefer engaging with other men in activities like networking due to a practical acknowledgment that men own significant resources and occupy influential positions in social institutions.

The term "token" refers to minority representatives of their gender in organizations who are frequently seen as symbols rather than individuals [47]. Gender studies indicates that while token men may seem to get advantages from being in a token position, token women have contrasting experiences. Prominent women representatives feel compelled to demonstrate their professional value in comparison to their men counterparts. Token women often face isolation, stereotyping, and obstacles in advancing in the management hierarchy when they join an organization. These adverse results are supported by research conducted in several organizational environments, including men-dominated policing [48] and construction [49].

However, while women's networks are advantageous for influencing the enhancement of women's prominence, there is an argument that single-gender organizations could

potentially disrupt societal norms. When women collectively engage in actions, they may inadvertently reinforce the gender distinctions they are striving to break free from [20]. The members of women-only networks can be considered outsiders in men-dominated environments because they may be perceived as primarily advocating for women's issues. Hence, opening the women's network to other genders could be a beneficial tactic. However, it could also result in diluting the original objective of establishing a women's network.

## 6. Study Limitations and Future Pathways

We recognize a few potential limitations of this study. For example, student leaders were a mix of undergraduate and graduate students and may have different concerns and job trajectories. Another limitation is related to varied respondent experiences and knowledge, from having work experience for decades to students who are just recently enrolled. This different exposure and career stages create different perspectives between current and past experiences, and may impact their responses.

Future research can be directed to explore mentor relationships in different settings such as informal vs. structured mentoring program, in group vs. out group, peer mentor vs. senior mentor, or education vs. workplace. It is also beneficial to explore mentorship benefits for minority/underrepresented groups in the forest sector (e.g., First Nations, Asian American, African American, and Latinx students in the North American settings), and whether our findings would generalize to these groups.

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