

REMOVING GENDER BARRIERS TO CAREER PROGRESSION IN THE GEOSCIENCES



Annie Bauer receiving the Doris M. Curtis Outstanding Woman in Science Award at GSA Connects 2022 in Denver, Colorado, USA.

Position Summary. The Geological Society of America (GSA) strongly endorses the right for all to work in a safe, supportive, welcoming, nondiscriminatory, and reprimand-free environment where trust, respect, equity, fairness, accountability, and justice are honored. Historically, white males have dominated the geosciences, and even today, the geosciences are the least diverse of any of the STEM (science, technology, engineering, and mathematics) fields (Barnard and Cooperdock, 2018). The geosciences are unique in that many undergraduate degrees and professional job responsibilities include fieldwork in remote areas. These situations may pose a risk to individuals who do not conform to the traditional geoscientist stereotype of white, able-bodied, cisgender, straight men. Data reveal that women are underrepresented in the geoscience workplace, and women of color even more so. Gender discrimination can impact professionals in a variety of ways including less pay for the same work; fewer professional awards; a disproportionate expectation to assume service roles; disadvantages for following alternative career paths due to life circumstances; and implicit or explicit biases on perceived competence regardless of accomplishments and qualifications. In addition, intersections with race, sexual identity, religion, and class can create further challenges for women and gender nonbinary individuals in the geosciences as noted in GSA's position statement, *Diversity in the Geosciences*

Community. Therefore, GSA is committed to policies, programs, and services that will ensure the success of all in the geoscience professions and considers sexual harassment, violence, and all forms of discrimination unacceptable.

This position statement (1) affirms the pressing need for a change in professional culture so that all people are welcomed, supported, and able to thrive in the geoscience profession and for policies that aspire to the highest standards of conduct as a professional society; (2) advocates for resolving implicit and explicit biases and the elimination of harassment, bullying, and sexual misconduct in the workplace; (3) recommends elevated personal and professional responsibility and evidence-based policies that extend beyond civil and legal remedies to promote inclusive, safe, and productive environments in the geoscience classroom, laboratory, field, and office; and (4) establishes GSA's commitment to identifying and implementing reporting procedures and clear consequences for members who discriminate, harass, bully, retaliate, and commit sexual misconduct or violence.

CONCLUSIONS AND RECOMMENDATIONS

Addressing systemic injustices and barriers to career progression for women and gender nonbinary individuals in the geosciences requires recognition and resolution of bias and elimination of harassment. This can only be achieved by changing the factors and conditions that affect our professional culture. Depending on civil or criminal remedies is not enough and deflects from the personal, professional, and moral responsibility that we must own as a professional society. In order to change our professional culture, we advocate for evidence-based strategies to overcome gender barriers and to increase the recruitment, retention, and successful reentry in the geosciences. These include the following:

- Educating the geoscience workforce on the presence, nature, and impact of implicit biases. This includes promoting the use of anonymized evaluations for fair assessments and including members on every evaluative committee with training on the impact of implicit bias on evaluations.
- Establishing zero tolerance for sexual violence, gender-based harassment, harassment, bullying, and reprimand.
- Establishing and promoting family-friendly policies, such as paid family leave and flexible scheduling, that will enable full participation of all geoscientists regardless of their personal or professional situation.
- Addressing the disproportionate burdens of workforce precarity and contingent work on women and gender nonbinary individuals in the geosciences.
- Promoting flexible career paths that accept and value alternate pathways to and within the geoscience profession.
- Obtaining additional data and research on systemic challenges to gender diversity in the geosciences.
- Encouraging executives to adopt, implement, and monitor compliance with enforceable conduct policies and procedures.

RATIONALE

Underrepresentation of Women in the Workplace

Between 2010 and 2019, women accounted for 50% of the United States workforce, but only one third of geoscientists and environmental scientists (AGI, 2019). While there have been steady gains in the number of women earning PhDs in the geosciences, reaching 45% in 2016

(Bernard and Cooperdock, 2018), women are still only 27% of geoscience faculty. The percentage of women in faculty positions decreases with rank, and there is a higher rate of attrition for women than men from geoscience faculty positions (Ranganathan et al., 2021). Women of color represent less than 1.5% of geoscience degrees and less than 1% of all geoscience faculty positions, despite women of color making up 18% of the United States population (Bernard and Cooperdock, 2018). The recommended reading list at the end of this document provides the research foundation that supports the rationale for this position statement. Currently, there is a lack of data and need for more research on the challenges faced by gender nonbinary geoscientists. The geoscience profession, and society at large, cannot afford to lose this human capital critical to understanding Earth and its interactions with human society.

Summary of Systemic Challenges to Success of Women in the Geosciences

Research indicates that women routinely face more challenges in career advancement than men. Documented challenges faced by women include both “push” and “pull” factors. Push factors are those that nudge women out of their chosen career paths, e.g., a negative culture toward women in STEM; experiences of implicit and explicit biases such as exclusion, invisibility, microaggressions, and other subtle hostilities; less subtle sexual harassment, harassment in general, and bullying; assault; sexual coercion and sexual violence; and recrimination for confronting or reporting crimes, discrimination, hostilities, and biases. Inequities such as lower salaries and smaller benefit packages, lower performance reviews, less mentoring, fewer opportunities for informal networking within a male-dominated field, and diminished opportunities for professional rewards and recognition are well documented. Pull factors impact women by pulling them away from the workplace. For example, women are more likely than men to bear a disproportionate burden of familial responsibilities, such as first-responding and caregiving, particularly when the workplace lacks family-friendly policies and flexible career paths for women. Growing trends in employment precarity and contingent work amplify the vulnerability of nonpartnered persons and women, especially older women, to poverty, which can create barriers to reentry into stable, secure employment. Dual-career situations may also disadvantage partnered women (the male partner is more likely to have more lucrative compensation). Research shows that women with children are far less likely to enter a tenure-track position compared to men with children, whereas women without children are roughly as successful as men with children in obtaining tenure-track positions.

Pressing Need for Resolving Implicit and Explicit Biases

Implicit and explicit biases are beliefs and associations that impact our perceptions and decision-making processes. These biases result from prevailing stereotypes in society and can include a number of legally protected characteristics: race, sexuality, age, religion, appearance, gender identity and expression, disability, etc. To ensure equity in the geoscience community, these biases must be acknowledged and proactively addressed by the entire geoscience community. Consequences of such biases are numerous and well documented in both STEM and non-STEM fields. Women are far less likely than men to receive glowing letters of recommendation and are more likely to receive negative workplace evaluations compared to equivalent males. They are perceived as less competent than men with similar qualifications and are more likely to be assigned supporting roles rather than leadership roles. Women make up a disproportionately small percentage of reviewers for geoscience journals and are less likely to receive fair reviews on their manuscripts. Research also suggests that male co-authors are perceived as having contributed more than female co-authors. In addition, women are more likely than men to be criticized for assertive behavior—women who negotiate higher salaries are perceived as “bossy” or “too aggressive” compared to men. Women also hesitate to accept leadership positions because of the negative stereotype of aggressiveness associated with such positions. This is compounded by the observation that women have less access to senior leaders, even though mentorship by senior leaders is considered essential for professional success. Women and minorities are also less likely to receive enthusiastic PhD mentorship compared to white male students and are underrepresented in the number of professional awards conferred in the geoscience profession. Even more troubling is that women of color experience the “double bind” of gender as well as racial and ethnic biases. For example, a study found that almost half of Black and Latina women scientists had been mistaken as janitors and support staff. In a similar vein, Black PhD scientists are less likely to receive grant funding compared to white PhD scientists with a similar research record; and CVs with traditionally white names are significantly more likely to receive callbacks for job interviews compared to identical CVs with ethnic names.

Pressing Need for Elimination of Harassment, Sexual Harassment, Sexual Violence, and Retribution

Women, transgender, genderqueer, and gender nonbinary scientists disproportionately face threats of discrimination and violence. These threats range from criminal sexual assault and coercion (quid pro quo) to unwanted physical contact, unwanted sexual attention, bullying, insulting, and other demeaning behaviors that derive from asymmetric and hierarchical power distributions. Further compounding the problem is reluctance on the part of many geoscientists to accept evidence of gender bias or any occurrences of sexual misconduct in the workplace. Silence is complicity, and neutrality in situations where harassment arises is not an acceptable option. Empowering bystanders to act and developing ally networks are essential steps toward changing the culture of acceptance.

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ABOUT THE GEOLOGICAL SOCIETY OF AMERICA

The Geological Society of America (<https://www.geosociety.org>) unites a diverse community of geoscientists in a common purpose to study the mysteries of our planet (and beyond) and share scientific findings. Members and friends around the world, from academia, government, and industry, participate in GSA meetings, publications, and programs at all career levels to foster professional excellence. GSA values and supports inclusion through cooperative research, public dialogue on earth issues, science education, and the application of geoscience in the service of humankind. Inquiries about GSA or this position statement should be directed to GSA’s Director for Geoscience Policy, Kasey S. White, at +1-202-669-0466 or kwhite@geosociety.org.

OPPORTUNITIES FOR GSA AND ITS MEMBERS TO HELP IMPLEMENT RECOMMENDATIONS

GSA is strongly committed to adopting policies that promote a professional culture that is welcoming, inclusive, supportive, and fair to all. These policies should identify and address issues that unjustly impact the professional development of women and gender nonbinary individuals in the geosciences and should be applied to all GSA functions, such as membership, governance, meeting and field-trip participation, and award consideration.

This statement recommends that GSA promote awareness of implicit and explicit bias by disseminating the data that demonstrate bias in candidate selection for scholarships, graduate school admission, honors and awards, peer review and publications, and geoscience jobs. GSA should demonstrate executive commitment and follow-through by producing collaborative op-eds by leadership and research papers on this topic, distributing this information at workshops, setting high standards of conduct at all GSA events, and circulating this information in GSA governance to increase the recognition of bias and thereby reduce its impact.

GSA leadership and its members are encouraged to take the following actions to actively dismantle gender discrimination in the geosciences following the principles of diversity, equity, and inclusion:

- GSA should maintain that all members and awardees are aware of the expectation to adhere to the highest ethical standards in all professional activities, including those articulated in GSA's Code of Ethics & Professional Conduct, which all members and awardees are required to acknowledge as a condition of eligibility.
- GSA should continue to promote and enforce its Events Code of Conduct, leveraging its Respectful Inclusive Scientific Events (RISE) principles to reinforce the Society's long-standing commitment to safe, professional scientific events.
- GSA should continue to adopt and implement strategies to promote inclusion, so everyone in GSA service roles is treated with dignity and respect and has an opportunity to make their voices heard.
- GSA should advocate for and promote policies that support partnered and nonpartnered women geoscientists in overcoming structural barriers such as providing recommendations on dual-career, workforce re-entry, stop-the-clock, and family support programs.
- GSA should continue developing and promoting scholarship and mentoring programs for students from underrepresented groups and fund those initiatives with demonstrated success.
- GSA should encourage the growth of inclusive workplace and teaching practices throughout the geoscience profession and the implementation of bias-reducing hiring practices.
- GSA should provide implicit bias training to all GSA employees, Division and Committee leadership, Council members, Foundation trustees, editors, and reviewers. This training is needed to ensure that implicit bias is minimized in GSA governance, award selection, and publications.
- GSA should provide bystander intervention training to empower GSA members to use best practices for creating and protecting the safety and inclusivity of all learning and work environments. GSA should develop and implement strategies that empower GSA members and program participants to proactively serve as allies and to promote a safe, supportive environment that encourages learning and professional development, particularly in remote field environments.
- GSA members should serve as mentors, allies, advocates, and champions of women and gender nonbinary individuals in their career progression.
- GSA should encourage further study of barriers and remedies to the full participation and career progression of women in the geosciences by promoting conference sessions, workshops, publication of rigorous studies thereof, and monitoring and evaluation.
- GSA should continue to require nominees for leadership roles and awards to complete an ethics disclosure form as a condition of eligibility to ensure that individuals serving in such roles meet commonly held standards of professional ethics and scientific integrity, including those set forth in GSA's Code of Ethics & Professional Conduct.
- All GSA members should do their part to stop the "pass the harasser" phenomenon. This means that GSA members must not recommend someone for a leadership role, award, or position of influence when they know or have reason to believe that the individual has engaged in misconduct. It also means that GSA members must not give their tacit approval by remaining silent.

RECOMMENDED READINGS

Underrepresentation of Women in the Workplace

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Pressing Need for Elimination of Harassment

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